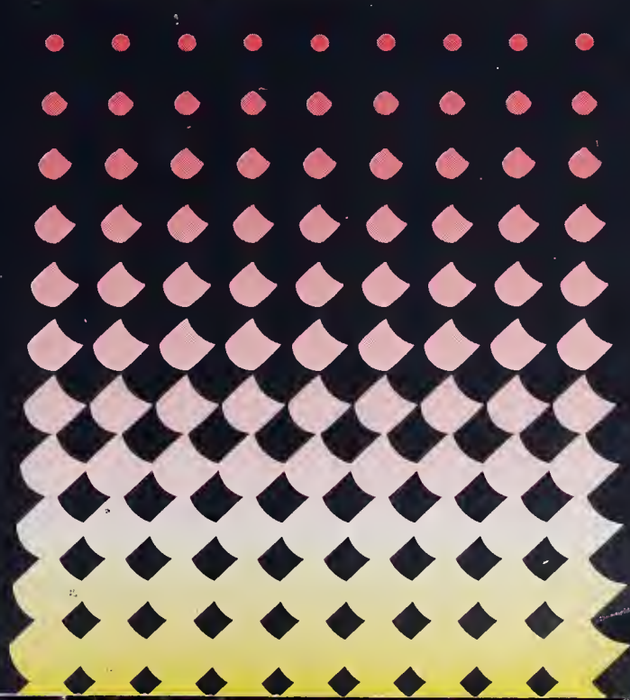
Office of Technology Transfer
National Institutes of Health
Bethesda, Maryland

1992 PHS TECHNOLOGY TRANSFER DIRECTORY

NIH/ADAMHA/CDC/FDA



OFFICE OF TECHNOLOGY TRANSFER

The Office of Technology Transfer (OTT) is responsible for the central development and implementation of technology transfer polices and procedures for two major components of the U.S. Public Health Service (PHS)—The National Institutes of Health (NIH) and the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA). OTT also provides patenting and licensing services to other PHS components, including the Centers for Disease Control (CDC) and the Food and Drug Administration.

Additional copies of this Directory can be obtained from:

Office of Technology Transfer
National Institutes of Health
301-496-7736
Fax: 402-0220

Official Mailing Address:
National Institutes of Health
Box OTT
Bethesda, MD 20892

Actual location (temporary):
Solar Building
Room 310P (NIH 301)
6003 Executive Boulevard
Rockville, MD 20852

Office of Technology Transfer
National Institutes of Health
Bethesda, Maryland

1992 PHS TECHNOLOGY TRANSFER DIRECTORY

NIH/ADAMHA/CDC/FDA

"Technology transfer is a vital methodology for NIH to realize her mission."

Bernadine Healy, M.D.
Director
National Institutes of Health

Published October 1992
NIH Publication Number 92-3450

PREFACE

Technology transfer is the process by which the fundamental discoveries of laboratories are brought forth into practical knowledge and useful products for the benefit of mankind. The Federal Technology Transfer Act (FTTA) of 1986, followed by Executive Order 12591 in 1987, resulted from a congressional recognition that the public good and U.S. industrial competitiveness can be greatly enhanced if technology developed in Federal laboratories is developed commercially. In order to stimulate technology transfer, incentives are offered to Federal scientists and their laboratories as well as to industrial partners.

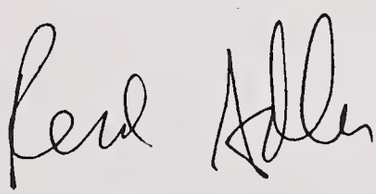
The FTTA encourages greater interactions between the Federal Government and universities, foundations (profit and non-profit), and industry through Cooperative Research and Development Agreements (CRADAs) and through the licensing of patented inventions developed at PHS. Authority under the Public Health Service (PHS) Act provides further authority for the transfer of research materials and data through Material Transfer Agreements (MTAs). Collectively, these authorities encourage product development, stimulate economic development and international cooperativeness, and also allow for financial benefits to be shared by Federal scientists and their research programs based on the development of inventions by their independent efforts as well as joint research collaborations with scientists from other organizations.

The PHS and the biomedical research community have responded vigorously to such encouragement. In recent years, the PHS has utilized the patent system in a socially responsible manner. There is no better example than the list of licensed inventions from the PHS that have or are expected to have clinical and commercial application. The list includes: DDI, recently approved by the FDA as an AIDS therapeutic; magainins, which are potentially a new generation of antibiotics; antibodies used as cancer markers; immunotoxins linked to monoclonal antibodies as a potential anticancer therapy; and a vaccine for meningitis. Federal law authorizes both nonexclusive and exclusive licensing of these and other PHS inventions. Over the years, the PHS has used both options: nonexclusive licensing when that option was in the public interest, and exclusive licensing when rapid development was crucial for public benefit and exclusivity was necessary as a business incentive to the company.

The NIH Office of Technology Transfer (OTT) has the central responsibility for coordinating and facilitating technology transfer for three major agencies of the Public Health Service (PHS): the National Institutes of Health (NIH), the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), and the Centers for Disease Control (CDC). The Food and Drug Administration (FDA) also works closely with the OTT on technology transfer matters. In general, the major responsibilities of the OTT include the development of policy and procedures, the drafting of model agreements, patenting intellectual property, and licensing patented inventions.

Through CRADAs, the FTTA enables the pooling of Federal research and development resources with those from corporations to accomplish the PHS's ultimate goal of enhancing the general public health. This climate of partnership is intended to strengthen research efforts and transfer new technology to the private sector for commercial development and eventual use by the public. The implementation of the FTTA is greatly benefiting all parties, allowing the U.S. biomedical industry to retain its preeminent position in both domestic and international markets.

I hope that the members of the industrial community find this directory to be a valuable tool as they work with PHS laboratories to ensure better health worldwide by developing medical products from government-sponsored research.



Reid G. Adler, J.D.
Director
Office of Technology Transfer
National Institutes of Health

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ACKNOWLEDGMENTS

The NIH/ADAMHA/CDC Patent Policy Board advises PHS agency heads on matters of policy involving technology transfer in accordance with the Federal Technology Transfer Act of 1986. This board is composed of senior scientists and administrators of the National Institutes of Health (NIH), the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), and the Centers for Disease Control (CDC), as well as liaison representative of the Food and Drug Administration (FDA) and the Office of the Assistant Secretary for Health (OASH).

NIH/ADAMHA/CDC Patent Policy Board

Philip Chen, Jr., Ph.D., Office of Intramural Affairs, NIH; Chairman
Richard Adamson, Ph.D., National Cancer Institute, NIH
Reid Adler, J.D., Office of Technology Transfer, NIH
Theodore Colburn, Ph.D., National Institute on Alcohol Abuse and Alcoholism, ADAMHA
Carolyn Craig, Office of Technology Transfer, NIH; Executive Secretary
John Ferguson, M.D., Office of Medical Applications of Research, NIH
Peter Frommer, M.D., National Heart, Lung and Blood Institute, NIH
George Galasso, Ph.D., Office of Extramural Research, NIH
John Gallin, M.D., National Institute of Allergy and Infectious Diseases, NIH
Eric Greene, M.P.A., Centers for Disease Control
John Mahoney, Office of Administration, NIH
Edward McManus, National Eye Institute, NIH
Jay Moskowitz, Ph.D., Office of Science Policy and Legislation, NIH

Liaison

Felton Armstrong, Food and Drug Administration
Douglas Campion, National Technical Information Service
Sharon Holston, Food and Drug Administration
Frank Young, M.D., Ph.D., Office of the Assistant Secretary for Health

Ex Officio

MaryAnn Guerra, National Institute of Allergy and Infectious Diseases, NIH
Robert Lanman, J.D., Office of General Counsel
Thomas Mays, Ph.D., J.D., National Cancer Institute, NIH
Christopher Pascal, J.D., National Institute of Mental Health, ADAMHA

Forum Planning Committee

(The members of this committee are from the Office of Technology Transfer, NIH)
Carolyn Craig; Chairperson
Reid Adler, J.D.
Steve Ferguson
Carol Lavrich
Mike Miller
Daniel Passeri

This Directory is produced in conjunction with the annual PHS Technology Transfer Forum. The Forum Planning Committee expresses its appreciation to Dr. Cyrus Creveling and Dr. Charles Roberts from the National Institute of Diabetes and Digestive and Kidney Diseases for their valuable help in developing the keyword lists.

HOW TO ACCESS PHS OTTO ELECTRONIC BULLETIN BOARD

Access to PHS OTTO *(Office of Technology Transfer On-line)* is available 24-hours-a-day via modem through the NIH Computer Center in Bethesda, Maryland. This service is provided at no charge.

Local users can connect to the Computer Center by using NIH KERMIT or by calling 301-492-2221. If you are not using NIH KERMIT, configure your terminal emulator as follows: 7 databits; 1 stop bit; even parity; Local Echo on. You will also get a blank screen after connecting to the Computer Center. At this point you must type **,GEN1** then press ENTER. If the message "***Illegal Terminal Type***" is displayed, do not be alarmed. Respond to this message by again typing **,GEN1** and pressing ENTER. The message "**Generic Terminal Type 1**" will then be displayed.

When the system prompts you for "***Initials?***", you should type **Z5A** and press ENTER. When it prompts you for "***Account?***", you should type **APV1** and press ENTER. This process will give you access to PHS OTTO. Information on how to access specific information and how to download information to your own computer will be displayed after you sign on.

Users outside the local calling area can similarly access the computer (WYLBUR) by calling one of the numbers listed below. If you are not using NIH KERMIT, configure your terminal emulator as follows: 7 databits; 1 stop bit; even parity; Local Echo on.

FTS-2000	Non-FTS-2000
WYLBUR (8-492-2221)	WYLBUR (800-358-2221)

After connecting to the Computer Center, follow the same instructions as the local users in order to log-on to PHS OTTO.

For assistance or additional information, please contact Mike Miller at 301-496-7736.

INDUSTRY LICENSING AND CRADA INTEREST PROFILE

This information profile will be used by the Office of Technology Transfer to target technologies to potential licensees and to seek partners for Cooperative Research and Development Agreements (CRADAs).

Name _____

Title _____

Specialty Code _____ Company Type _____ (Refer to attached listing)

Division _____

Company _____

Street _____

City, State, Zip Code _____

Telephone Number _____

FAX Number _____

Licensing Contact (if different from above) _____

Address _____

1. Circle or highlight keywords from the attached list that describe your areas of LICENSING INTEREST. Please add categories, change titles or write in explanations.

2. Describe your areas of CRADA interest (use attached technology keywords, if possible).

_____

_____

_____

Send completed form to: Technology Management Branch, Office of Technology Transfer, National Institutes of Health, Box OTT, Bethesda, MD 20892 [or FAX to 301-402-0220]. For further information, phone 301-496-7736.

SPECIALTY CODES

20	Academic Recruiting	22	Press
13	Chair	08	Product Manager/Development
15	Contract/Industrial Liaison	12	Research & Development
18	Federal Technology Transfer	04	Scientist
21	Information Manager	09	Technical Manager
02	Licensing	07	Technology Acquisition
03	Marketing/Sales	05	Technology Development Coordinator
17	Media	06	Technology Management
10	New Business/Corporate Development	16	University Technology Transfer
01	Patent Counsel	19	Venture Capital
14	President	11	Other

COMPANY TYPE

01	Large Business	02	Small Business

TECHNOLOGY KEYWORD LIST

ADHESIONS

AGING
- Alzheimer's Disease
- Dementia

AIDS-HIV
- Antisense
- Antiviral Drugs
- Diagnostics
- Immunotherapy
- Nucleoside Analog
- Vaccines
- Other Therapeutic Approaches (specify) _____

ANALYTICAL INSTRUMENTS, MATERIALS, AND METHODS
- 3D-Structural Analysis
- Analytical/Medicinal Chemistry
- Biodegradable Polymers
- Bioreactor/Fermentation Technology
- Biosensors
- Centrifugation
- Chromatography
- Contrast Agents
- Electron Microscopy
- Electrophoresis
- Electrostimulation
- Fiber Optic Probes
- HPLC
- Imaging/Image Analysis
- Instrumentation
- Mass Spectroscopy
- Microscopy
- NMR
- Nucleic Acid (Analysis/Synthesis)
- Optics
- PET
- Production Methods
- Protein Purification
- Protein Synthesis
- Separation Techniques
- Spectroscopy
- Other

ANIMAL MODELS
- Strains and Species Variables
- Transgenic Imbreds

ANTI-INFLAMMATORY
- Disease Modifiers
- Gold, etc.
- Nonsteroidal AIDS
- Ocular
- Steroids

ANTISENSE
- Molecular Biology
- Therapeutic Methods

ARTHRITIS (See **MUSCULOSKELETAL DISORDERS**)

AUDITORY DISORDERS

BLOOD & BLOOD PRODUCTS
- Anemia
- Anticoagulant and Coagulant
- Apheresis
- Blood Characterization
- Blood Collection
- Blood Fractions
- Vaccines (derived from blood)

BUSINESS SERVICES
- Consulting
- Economic Development
- Federal Agency
- Informational Sciences
- Legal
- Technology Transfer
- Venture Capital

CANCER
- Adjunctive Therapies
- Antibody-Based Therapy
- Antiemetics
- Biological Response Modifiers
- Cancer Biology
- Cancer Diagnostics (markers)
- Carcinogenesis
- Chemotherapy
- Devices
- Growth Factors Inhibitors
- Hormonal Therapies
- Multidrug Resistance
- Oncogenes
- Prevention
- Receptors
- Risk Analysis
- Topoisomerase Inhibitors
- Toxicity Management
- Tumor Necrosis Factor
- Vaccines
- Viruses

CARBOHYDRATES

CARDIOVASCULAR
- Angiogenesis
- Antiarrhythmics
- Anticoagulants
- Antihypertensives
- Atherosclerosis
- Cholesterol Modifiers
- Complement Regulation
- Congestive Heart Failure
- Diagnostic Techniques
- Free Radical Scavengers
- Instrumentation
- Lipid-Lowering Drugs
- Myocardial Ischemia
- Thrombolytics

CELL BIOLOGY
- Baculovirus Production Systems
- Cell Culture (equipment, lines, etc.)
- Ion Channels
- Large Scale Fermentation
- Receptors
- Vaccinia Production Systems
- Yeast Production System Strains

CENTRAL NERVOUS SYSTEM
- Affective Disorders
- Analgesics
- Anticonvulsants
- Antidepressants
- Antiepileptics
- Antipsychotics
- Anxiolytics
- Memory Enhancers
- Neurobiology Research
- Neuropeptides
- Neuroreceptors
- Neurotransmitters
- Opiates
- Pain
- Parkinson's Disease
- Psychotropics
- Schizophrenia
- Sleep Disorders
- Stroke
- Tranquilizers

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CLINICAL DEVICES/ INSTRUMENTATION
- Catheters
- Disposable Products
- Hearing
- Heart
- Imaging Techniques
- Implantables
- Lasers
- Microsurgery
- Oxygenators
- Patient Monitoring - Surgical
- Patient Monitoring - Nonsurgical
- Personnel/Product Safety
- Prosthetics
- Pumps
- Specimen Processing
- Surgery
- Ultrasound

COMPUTER SOFTWARE
- Data Analysis Program
- Information Systems
- Molecular Modeling

DEGENERATIVE DISEASES

DENTAL
- Diagnosis
- Implantology
- Periodontal Disease
- Prevention
- Reattachment
- Treatment

DERMATOLOGY
- Acne
- Antiaging
- Hair Growth
- Psoriasis
- Retin-A
- Topicals

DIABETES
- Pancreatic Implants
- Therapeutics
- Type I
- Type II

DIAGNOSTICS
- Assay Methods
- Cancer (see **CANCER**)
- Clinical Chemistry
- DNA/RNA Probes
- Genetic Diseases/Traits
- Imaging Techniques & Reagents
- Immunoassays
- Infectious Diseases
- Labeling Compounds
- Over-the-counter Diagnostics
- Sexually-transmitted Diseases
- Tropical Diseases
- Viral Diseases

DRUG DELIVERY
- Drug Formation
- Inhalation
- Liposomes
- Ocular
- Oral
- Prodrugs
- Proteins
- Syringes
- Transdermal
- Transmucosal

DRUG/ALCOHOL ABUSE
- Diagnostics
- Pharmaceuticals

ENDOCRINOLOGY
- Hormonal/Growth Factor
- Metabolic Disease

ENZYMES

GASTROINTESTINAL
- Antiulcer Drugs
- Gastrointestinal Cytoprotection

GENETIC DISEASES
- Fetal Defects
- Genetic Screening
- Genetic Therapy

HEALTH PROMOTION/EDUCATION

HORMONAL/GROWTH FACTORS
- Delivery Systems
- Hard Tissue Repair
- Soft Tissue Repair

IMMUNOLOGY
- Allergy
- Antigens
- Antiidiotype Antibodies
- Autoimmune Diseases
- Cell Subsets
- Chimeric Antibodies
- Cytokines
- Graft-vs.-Host Disease
- Immune Modulation
- Immune Monitoring
- Immunoprophylaxis
- Immunotherapy
- Immunotoxins
- Lymphokines
- Monoclonal Antibodies
- Phospholipase Inhibitors
- Polyclonal Antibodies
- Protease Inhibitors
- Toxic Shock Syndrome
- Tumor Necrosis Factor

INFECTIOUS DISEASES
- Antibacterials
- Antibiotics
- Antifungal
- Antimicrobials
- Diagnostics
- Microbiology
- Multidrug Resistance
- Parasites
- Prevention
- Sterilization
- Tropical Diseases
- Vaccines

MICROBIOLOGY (See **INFECTIOUS DISEASES**)

MOLECULAR BIOLOGY
- Bacterial Expression Systems
- Cloning Vectors/Methods
- DNA Probes
- Gene Amplification
- Gene Mapping
- Gene Therapy
- *In Vitro* Mutagenesis
- Instrumentation (DNA/Protein Analyzer/Synthesizer)
- PCR
- Recombinant DNA
- Yeast Expression Systems

MUSCULOSKELETAL DISORDERS
- Osteoarthritis
- Osteoporosis
- Remineralization, Oral
- Rheumatoid Arthritis

NUTRITIONAL PRODUCTS
- Assessing Nutritional Status
- Food Supplement
- Lactose Intolerance
- Vitamins

OBESITY

OBSTETRICS & GYNECOLOGY
- Contraceptives
- Diagnostics

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- Fertility
- Therapeutics

OCCUPATIONAL HEALTH
- Monitoring Devices
- Safety Equipment

OPHTHALMICS
- Cataract
- Devices
- Diagnostics
- Drug Delivery
- Drugs
- Instrumentation
- Surgery
- Therapeutics
- Vision Correction

PHARMACOLOGY

PHYSIOLOGY

RATIONAL DRUG DESIGN
- Agonists/Antagonists
- Analogs
- Receptors
- Specialty Pharmaceuticals

REHABILITATION THERAPY & EQUIPMENT

RESPIRATORY
- Acute Respiratory Distress Syndrome
- Asthma
- Bronchoconstriction
- Bronchodilator
- Emphysema
- IRDS

TOXICOLOGY
- Risk Assessment

TOXINS

TRANSPLANTATION
- Graft-vs.-Host Disease
- Rejection
- Xenografts

TRAUMA

UROLOGY

VACCINES
- Adjuvant Technology
- Cancer
- Childhood Diseases
- Formulations
- Infectious Diseases
- Mumps
- Tropical Diseases

VETERINARY
- Diagnostics
- Nutrition
- Therapeutics

VIROLOGY
- Antivirals
- Cancer
- Diagnostics
- HTLV-I
- HTLV-II
- Hepatitis
- Hepatitis A
- Parainfluenza
- Retroviruses (not HIV)
- Rotaviruses

WOUND HEALING

Additional Categories:

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SECTION 1

PARTICIPATING PUBLIC HEALTH SERVICE (PHS) LABORATORIES

This section includes

- PHS institutes, centers, and divisions (ICDs) and their laboratories participating in technology transfer activities,
- Each ICD's mission and major areas of research,
- The current number of Cooperative Research and Development Agreements (CRADAs) per institute,

  (For further information on CRADAs, refer to Section 3. For further information on how to develop a CRADA, refer to Section 7.)
- The names and phone numbers of the Technology Development Coordinator representing each ICD, and

  (For further information on the NIH/ADAMHA/CDC/FDA Technology Development Coordinators, refer to Section 2.)
- The names and phone numbers of the Office of Technology Transfer Licensing Specialists representing the research of each ICD.

  (For further information on the Licensing Specialists, refer to Section 2.)

SECTION 1: PARTICIPATING PUBLIC HEALTH SERVICE LABORATORIES

DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS)
PUBLIC HEALTH SERVICE (PHS)
NATIONAL INSTITUTES OF HEALTH (NIH)
OFFICE OF THE DIRECTOR (OD)
OFFICE OF THE GENERAL COUNSEL (OGC)

NATIONAL INSTITUTES OF HEALTH (NIH)

NATIONAL INSTITUTE ON AGING (NIA)

Mission: To conduct biomedical, social, and behavioral research and training related to the aging process and diseases and other special problems and needs of the aged.

Research Areas: Aging process, Alzheimer's disease, cardiovascular, cerebral metabolism, dementia, membrane biology.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NIA Technology Development Coordinator:
Nancy Braymer 410-402-8104

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Laboratory of Biological Chemistry (LBC)
Laboratory of Behavioral Sciences (LBS)
Laboratory of Cellular and Molecular Biology (LCMB)
Laboratory of Clinical Physiology (LCP)
Laboratory of Cardiovascular Science (LCS)
Laboratory of Molecular Genetics (LMG)
Laboratory of Neurosciences (LN)
Laboratory of Personality and Cognition (LPC)

NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES (NIAID)

Mission: To conduct and support research to study the causes of allergic, immunologic, and infectious diseases, and develop better means of preventing, diagnosing, and treating illnesses

Research Areas: Asthma and allergies, autoimmunity, chronic glomerulonephritis, immune deficiencies, immune system, lupus erythematosus, infections (including those caused by viruses, mycoplasma, bacteria, fungi, and parasites), treatment of infections (including antibiotics, antimicrobial, antifungal, and antiviral therapy, antisera, and vaccines).

Number of Active Cooperative R&D Agreements (CRADAs): 21

NIAID Technology Development Coordinator:
MaryAnn Guerra 301-496-7089

Licensing Contact: Todd Leonard/Mark Hankins/Carol Lavrich
301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Asthma and Allergy Branch (AAB)
Antiviral Research Branch (ARB)
Basic Immunology Branch (BIB)
Bacteriology and Mycology Branch (BMB)
Biological Resources Branch (BRB)
Biostatistics Research Branch (BRB)
Community Clinical Research Branch (CCRB)
Clinical Immunology Branch (CIB)
Developmental Therapeutics Branch (DTB)
Epidemiology Branch (EB)
Epidemiology and Biometry Branch (EBB)
Enteric Diseases Branch (EDB)
Genetics and Transplantation Branch (GTB)
Laboratory of Clinical Investigation (LCI)
Laboratory of Cellular and Molecular Immunology (LCMI)
Laboratory of Immunology (LI)
Laboratory of Intracellular Parasites (LICP)
Laboratory of Infectious Diseases (LID)
Laboratory of Immunogenetics (LIG)
Laboratory of Immunopathology (LIP)
Laboratory of Immunoregulation (LIR)
Laboratory of Molecular Microbiology (LMM)
Laboratory of Microbial Structure and Function (LMSF)
Laboratory of Parasitic Diseases (LPD)
Laboratory of Persistent Viral Diseases (LPVD)
Laboratory of Viral Diseases (LVD)
Laboratory of Vectors and Pathogens (LVP)
Pathogenesis Branch (PB)
Parasitology and Tropical Diseases Branch (PTDB)
Respiratory Diseases Branch (RDB)
Rocky Mountain Operations Branch (RMOB)
Sexually Transmitted Diseases Branch (STDB)
Virology Branch (VB)

NATIONAL INSTITUTE OF ARTHRITIS AND MUSCULOSKELETAL AND SKIN DISEASES (NIAMS)

Mission: To investigate the causes, methods of preventing, and treating arthritis and musculoskeletal and skin diseases, including rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, osteoporosis, low back pain, Paget's disease, scleroderma, sports injuries, pemphigus, and psoriasis, musculoskeletal disease, muscle biology, skin diseases.

Research Areas: Arthritis (including immune system abnormalities, rheumatic diseases, inflammation, osteoarthritis and gout/pseudogout, and drug action, intervention, and treatment), musculoskeletal disease (including normal bone growth and metabolism, bone, joint, and connective tissue disorders, and the fractures, healing, and repair of bone), muscle biology, and skin disease (including bullous diseases, basement membranes, and keratinization, pigmentation and hair growth disorders).

Number of Active Cooperative R&D Agreements (CRADAs): Number signed: 0

NIAMS Technology Development Coordinator:
Marsha Hennings 301-402-1375

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Arthritis and Rheumatism Branch (ARB)
Laboratory of Physical Biology (LPB)
Laboratory of Skin Biology (LSB)
Laboratory of Structural Biology Research (LSBR)

NATIONAL CANCER INSTITUTE

Mission: To conduct and support research, training, health information dissemination, and other programs with respect to the cause, diagnosis, prevention, and treatment of cancer and the continuing care of cancer patients and the families of cancer patients.

Research Areas: Cancer prevention and treatment, dietary and metabolic development, host susceptibility, Kaposi's sarcoma, risk factors (including air and water pollutants), oncology, radiation therapy, and smoking, tobacco, and cancer control.

Number of Active Cooperative R&D Agreements (CRADAs): 25

NCI Technology Development Coordinator:
Thomas Mays, Ph.D., J.D. 301-496-0477

Licensing Contact: Marjorie Hunter/Daniel Passeri
301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Division of Cancer Biology and Diagnosis (NCI/DCBD)
Dermatology Branch (D)
Experimental Immunology Branch (EIB)
Laboratory of Biochemistry (LB)
Laboratory of Cell Biology (LCB)
Laboratory of Cellular Oncology (LCO)
Laboratory of Genetics (LG)
Laboratory of Immunobiology (LIB,FCRDC)
Laboratory of Molecular Biology (LMB)
Laboratory of Mathematical Biology (LMMB)
Laboratory of Pathology (LP)
Laboratory of Tumor Immunology and Biology (LTIB)
Metabolism Branch (MET)
Division of Cancer Etiology (NCI/DCE)
Biological Carcinogenesis Branch (BCB)
Clinical Epidemiology Branch (CEB)
Chemical and Physical Carcinogenesis Branch (CPCB)
Chemical and Physical Carcinogenesis Program (CPCP)
Environmental Epidemiology Branch (EEB)
Laboratory of Biology (LB)
Laboratory of Comparative Carcinogenesis (LCC,FCRDC)
Laboratory of Chemoprevention (LC)
Laboratory of Cellular Carcinogenesis and Tumor Promotion (LCCTP)
Laboratory of Cellular and Molecular Biology (LCMB)
Laboratory of Experimental Carcinogenesis (LEC)
Laboratory of Experimental Pathology (LEP)
Laboratory of Human Carcinogenesis (LHC)
Laboratory of Molecular Carcinogenesis (LMC)
Laboratory of Molecular Oncology (LMO)
Laboratory of Molecular Virology (LMV)
Laboratory of Tumor Cell Biology (LTCB)

Laboratory of Tumor Virus Biology (LTVB)
Laboratory of Viral Carcinogenesis (LVC)
Radiation Effects Branch (REB)
Radiation Epidemiology Branch (REPB)
Division of Cancer Prevention and Control (NCI/DCPC)
Biometry Branch (BB)
Cancer Prevention Studies Branch (CPSB)
Chemoprevention Branch (CB)
Diet and Cancer Branch (DCB)
Laboratory for Nutrition and Molecular Regulation (LNMR)
Early Detection Branch (EDB)
Community Oncology and Rehabilitation Branch (CORB)
Division of Cancer Treatment (NCI/DCT)
Biometric Research Branch (BR)
Biological Resources Branch (BRB,FCRDC)
Biological Testing Branch (BTB)
Clinical Investigations Branch (CIB)
Clinical Pharmacology Branch (CPB)
Clinical Research Branch (CRB,FCRDC)
Diagnostic Imaging Research Branch (DIRB)
Drug Synthesis and Chemistry Branch (DS&CB)
Investigational Drug Branch (IDB)
Information Technology Branch (ITB)
Laboratory of Biological Chemistry (LBC)
Laboratory of Biochemical Physiology (LBP,FCRDC)
Laboratory of Drug Discovery Research and Development (LDDRD)
Laboratory of Experimental Immunology (LEI,FCRDC)
Laboratory of Medicinal Chemistry (LMC)
Laboratory of Molecular Immunoregulation (LMI,FCRDC)
Laboratory of Molecular Pharmacology (LMP)
Medicine Branch (MB)
NCI-Navy Medical Oncology Branch (NCI-NMOB)
Natural Products Branch (NPB)
Pediatric Branch (PB)
Pharmacology Branch (PHB)
Pharmaceutical Resources Branch (PRB)
Regulatory Affairs Branch (RAB)
Radiotherapy Development Branch (RDB)
Radiation Oncology Branch (ROB)
Surgery Branch (SB)
Toxicology Branch (TB)

NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT (NICHD)

Mission: To conduct and support research on the reproductive, developmental, and behavioral processes that determine the health of children, adults, families, and populations.

Research Areas: Behavioral development (including brain, cognitive, social, and motivational), contraceptives, fertility, growth, human development, immunity, reproduction, fetal development, pregnancy, and birth.

Number of Active Cooperative R&D Agreements (CRADAs): 4

NICHD Technology Development Coordinator:
Gordon Guroff, Ph.D. 301-496-4751

Licensing Contact: Mark Hankins 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Cell Biology and Metabolism Branch (CBMB)
Center for Population Research (CPR)
Developmental Endocrinology Branch (DEB)
Epidemiology Branch (E)
Endocrinology and Reproduction Research Branch (ERRB)
Human Genetics Branch (HGB)
Laboratory of Comparative Ethology (LCE)
Laboratory of Developmental and Molecular Immunity (LDMI)
Laboratory of Developmental Neurobiology (LDN)
Laboratory of Molecular Embryology (LME)
Laboratory of Molecular Genetics (LMG)
Laboratory of Mammalian Genes and Development (LMGD)
Laboratory of Molecular Growth Regeneration (LMGR)
Laboratory of Theoretical and Physical Biology (LTPB)
Mental Retardation and Developmental Disabilities Branch (MRDD)
Pregnancy and Perinatology Branch (PP)

NATIONAL INSTITUTE ON DEAFNESS AND OTHER COMMUNICATION DISORDERS (NIDCD)

Mission: To conduct and support research and research training with respect to disorders of hearing and other communication processes, including diseases affecting hearing, balance, smell, taste, voice, speech, and language.

Research Areas: Balance, hearing (including deafness, heredity, auditory sensory cells, electrical output of inner ear in response to sound, the natural repair and restoration of damaged hair cells in the inner ear), taste and smell (including gustatory and olfactory systems), and voice, speech, and language disorders (including cause, treatment, and prevention, and the relation of the left hemisphere of the brain to communication and language).

Number of Active Cooperative R&D Agreements (CRADAs): 0

NIDCD Technology Development Coordinator:
Anne Sumner 301-402-2220

Licensing Contact: Carol Lavrich 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Laboratory of Cell Biology (LCB)
Laboratory of Neurochemistry (LN)
Laboratory of Molecular Biology (LMB)
Neuro-Otology Branch (NR)
Voice, Speech, and Language Branch (VSL)
Speech and Voice Unit (SV)

NATIONAL INSTITUTE OF DENTAL RESEARCH (NIDR)

Mission: To conduct, foster, and coordinate research into the causes, prevention, diagnosis, and treatment of oral and dental diseases and conditions.

Research Areas: Function and development of bone, teeth, salivary glands and connective tissues; genetic disorders and tumors of the oral cavity; cause and treatment of acute and chronic pain; development of new and improved diagnostic methods; salivary and hypofunctional glands; xerostomia (dry mouth).

Number of Active Cooperative R&D Agreements (CRADAs): 4

NIDR Technology Development Coordinator:
Jacob A. Donkersloot, Sc.D. 301-496-4216

Licensing Contact: Steve Ferguson 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Bone Research Branch (BRB)
Craniofacial Anomalies, Pain Control and Behavioral Research Branch (CAPCBR)
Clinical Investigations and Patient Care Branch (CIPCB)
Epidemiology and Oral Disease Prevention Program (EODPP)
Laboratory of Cellular Development and Oncology (LCDO)
Laboratory of Developmental Biology (LDB)
Laboratory of Immunology (LI)
Laboratory of Microbial Ecology (LME)
Laboratory of Oral Medicine (LOM)
Neurobiology and Anesthesiology Branch (NAB)

NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES (NIDDK)

Mission: To conduct and support research on diabetes, digestive, and kidney diseases; urology and renal diseases.

Research Areas: Metabolic diseases (including diabetes, diabetes mellitus, other inborn errors of metabolism, endocrine disorders, mineral metabolism, digestive diseases, nutrition, urology and renal disease, hematology, and cystic fibrosis), bone metabolism, drug receptors, endocrinology, genetics, insulin growth factors and resistance, protein chemistry, and thyroid hormones.

Number of Active Cooperative R&D Agreements (CRADAs): 18

NIDDK Technology Development Coordinator:
Benjamin T. Burton, Ph.D. 301-496-4955

Licensing Contact: Carol Lavrich 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Clinical Endocrinology Branch (CE)
Clinical Hematology Branch (CH)
Diabetes Branch (D)
Digestive Diseases Branch (DD)
Division of Digestive Diseases and Nutrition (DDDN)
Division of Diabetes, Endocrinology, and Metabolic Diseases (DDEM)
Division of Kidney, Urologic, and Hematologic Diseases (DKUH)
Genetics and Biochemistry Branch (GB)
Laboratory of Analytical Chemistry (LAC)
Laboratory of Bioorganic Chemistry (LBC)
Laboratory of Biochemistry and Metabolism (LBM)
Laboratory of Biochemical Pharmacology (LBP)
Laboratory of Chemical Biology (LCB)
Laboratory of Cell Biology and Genetics (LCBG)
Laboratory of Cellular and Developmental Biology (LCDB)
Laboratory of Chemical Physics (LCP)
Laboratory of Molecular Biology (LMB)

Laboratory of Medicine Chemistry (LMC)
Laboratory of Molecular and Cellular Biology (LMCB)
Laboratory of Neuroscience (LN)
Molecular, Cellular, and Endocrinology Branch (MCE)
Metabolic Diseases Branch (MD)
Molecular Pathophysiology Branch (MP)
Phoenix Epidemiology and Clinical Research (PECR)
Pediatric Metabolism Branch (PM)

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES (NIEHS)

Mission: To investigate the effects of chemical, physical, and biological environmental agents on human health.

Research Areas: Epidemiology, environmental toxicology, mutagenesis, and pathology.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NIEHS Technology Development Coordinator:
Jerry Phelps 919-541-4259

Licensing Contact: Steve Ferguson 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Comparative Medicine Branch (CMB)
Laboratory of Cellular and Molecular Pharmacology (LCMP)
Laboratory of Genetics (LG)
Laboratory of Molecular Biophysics (LMB)
Laboratory of Molecular Carcinogenesis (LMC)
Laboratory of Molecular Genetics (LMG)
Laboratory of Molecular and Integrative Neurosciences (LMIN)
Laboratory of Pulmonary Pathobiology (LPP)
Laboratory of Reproductive and Developmental Toxicology (LRDT)

NATIONAL EYE INSTITUTE (NEI)

Mission: To conduct, foster, and support basic and applied research, including clinical trials related to the cause, natural history, prevention, diagnosis, and treatment of disorders of the eye and visual system (including visual impairment and its rehabilitation)

Research Areas: Amblyopia, cataract, corneal diseases, retinal and choroidal diseases, glaucoma, inherited eye diseases, inflammation, strabismus, and visual processing.

Number of Active Cooperative R&D Agreements (CRADAs): 3

NEI Technology Development Coordinator:
Karen M. Wright 301-496-9463

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Clinical Branch (CB)
Laboratory of Immunology (LI)
Laboratory of Molecular and Developmental Biology (LMDB)
Laboratory of Mechanisms of Ocular Disease (LMOD)
Laboratory of Ophthalmic Pathology (LOP)
Laboratory of Retinal Cell and Molecular Biology (LRC)
Laboratory of Ocular Therapeutics (LOT)

Laboratory of Sensorimotor Research (LSR)
Ophthalmic Genetics and Clinical Services (OGC)

NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES (NIGMS)

Mission: To support research and research training in the sciences basic to medicine that form the foundation needed to make advances in understanding disease, and thereby providing new knowledge, theories, and concepts for disease-target studies.

Research Areas: Cellular and molecular basis of disease, genetics, pharmacological sciences, and biophysics and physiological sciences.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NIGMS Technology Development Coordinator:
James Onken, Ph.D. 301-496-7008

Licensing Contact: Steve Ferguson 301-496-7735

NATIONAL HEART, LUNG AND BLOOD INSTITUTE (NHLBI)

Mission: To conduct, foster, and support research, investigations, clinical trials, and demonstration and education projects relating to the causes, prevention, methods of diagnosis, and treatment (including emergency medical treatment) of cardiovascular, lung, and blood diseases.

Research Areas: Heart and vascular diseases (including arteriosclerosis, control and prevention of hypertension, and lipid metabolism), cardiac transplantation and organ rejection, cardiovascular imaging and spectroscopy, AIDS-associated cardiovascular disorders; lung structure, function, and disease; blood coagulation, red blood cell disorders and erythropoiesis (including Cooley's anemia, hematopoiesis and stem cell kinetics, bone marrow transplantation, aplastic anemia, hemoglobin synthesis and structure, red cell membrane structure and function, cellular enzyme disorder, red cell and blood rheology, and oxygen transport), and sickle cell disease.

Number of Active Cooperative R&D Agreements (CRADAs): 5

NHLBI Technology Development Coordinator:
Stephen A. Ficca 301-496-2411

Licensing Contact: Todd Leonard 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Division of Blood Disease and Resources (BD)
Laboratory of Biophysical Chemistry (BC)
Laboratory of Biochemical Genetics (BG)
Cardiology Branch (CB)
Laboratory of Cardiac Energetics (CE)
Clinical Hematology Branch (CHB)
Laboratory of Cellular Metabolism (CM)
Laboratory of Chemical Pharmacology (CP)
Hypertensive-Endocrine Branch (HE)
Laboratory of Kidney and Electrolyte Metabolism (KE)
Laboratory of Biochemistry (LB)
Laboratory of Cell Biology (LCB)
Laboratory of Molecular Cardiology (MC)
Molecular Disease Branch (MD)
Molecular Hematology Branch (MH)
Pathology Branch (PA)
Pulmonary Branch (PB)

NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE (NINDS)

Mission: To conduct, foster, coordinate, and guide research on the causes, prevention, diagnosis, and treatment of neurological disorders and stroke, and basic research in related scientific areas.

Research Areas: Convulsive, developmental, and neuromuscular disorders (muscular dystrophy, myasthenia gravis, peripheral neuropathies, diagnosis, prevention and treatment of epilepsy), convulsive and other paroxysmal disorders of the nervous system (including narcolepsy and disorders of sleep), neurological disorders of adults and the aged (including Alzheimer's disease, dementia, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis), nerve receptors, stroke and trauma (including injury to the head and spinal cord, cerebral ischemia, tumors of the central nervous system, nerve regeneration, imaging techniques).

Number of Active Cooperative R&D Agreements (CRADAs): 6

NINDS Technology Development Coordinator:
Carole N. Kirby 301-496-4697

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Clinical Neuroscience Branch (CNB)
Laboratory of Central Nervous System Studies (CNSS)
Developmental and Metabolic Neurology Branch (DMNB)
Experimental Therapeutics Branch (ETB)
Laboratory of Biophysics (LB)
Laboratory of Central Nervous System Studies (LCNSS)
Laboratory of Experimental Neuropathology (LENP)
Laboratory of Molecular Biology (LMB)
Laboratory of Molecular and Cellular Neurobiology (LMCN)
Neuroimaging Branch (NB)
Laboratory of Neurobiology (LN)
Laboratory of Neurochemistry (LNC)
Laboratory of Neural Control (LNLC)
Laboratory of Neurophysiology (LNP)
Laboratory of Viral and Molecular Pathogenesis (LVMP)
Medical Neurology Branch (MNB)
Neuroepidemiology Branch (NEB)
Neuroimmunology Branch (NIB)
Stroke Branch (SB)
Surgical Neurology Branch (SN)

NATIONAL LIBRARY OF MEDICINE (NLM)

Mission: To collect, organize, and make available biomedical information to investigators, educators, and practitioners, and carry out programs designed to strengthen existing and develop new medical library services in the United States.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NLM Technology Development Coordinator:
Elliot R. Siegel, Ph.D. 301-496-8834

NATIONAL CENTER FOR HUMAN GENOME RESEARCH (NCHGR)

Mission: To analyze the structure of human DNA and determine the location of the estimated 100,000 human genes, and to understand the functioning of the human genome.

Research Areas: Mapping and sequencing the human genome, mapping sequencing the genome of model organisms, including chromosome maps and DNA sequence.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NCHGR Technology Development Coordinator:
Robert Strausberg, Ph.D. 301-496-7531

Licensing Contact: Steve Ferguson 301-496-7735

NATIONAL CENTER FOR NURSING RESEARCH (NCNR)

Mission: To support research and research training related to promoting health and preventing disease, understanding and mitigating the effects of acute and chronic illnesses and disabilities, and improving patient care as well as the environment in which it is delivered.

Research Areas: Behavioral and environmental modification to promote health, disease prevention, and improved recovery.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NCNR Technology Development Coordinator:
Mary Ropka, Ph.D., R.N. 301-402-1446

NATIONAL CENTER FOR RESEARCH RESOURCES (NCRR)

Mission: To conceive and develop a wide variety of research resources and ensure their availability, thereby strengthening and enhancing biomedical research supported by the NIH.

Research Areas: Biomedical engineering and instrumentation, biomedical imaging, pharmacokinetics, and development of prosthetic devices.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NCRR Technology Development Coordinator:
Thomas Ingalls 301-496-1086

Licensing Contact: John Fahner-Vihtelic 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Biomedical Engineering and Instrumentation Program (BEIP)
Biological Models and Material Research Program (BMMRP)
Biomedical Research Technology Program (BRTP)
Veterinary Resources Program (VRP)

FOGARTY INTERNATIONAL CENTER (FIC)

Mission: To facilitate the assembly of scientists in the biomedical, behavioral, and related fields for discussion, study, and research relating to the development of health science internationally

Number of Active Cooperative R&D Agreements (CRADAs): 0

FIC Technology Development Coordinator:
F. Gray Handley 301-496-5903

WARREN GRANT MAGNUSON CLINICAL CENTER (CC)

Mission: To ensure the highest possible level of medical care to each patient, provide optimal resources and facilities for clinical research, perform research on methods and systems involved in patient care and study, disseminate information to professionals and to the public relevant to clinical investigation, develop and maintain training programs in the techniques and ethics of biomedical and clinical research, and interact with

scientists and physicians, nationally and internationally, on such mutual problems of clinical research as policy, education, ethics, and priorities.

Research Areas: Biomedical research and patient care.

Number of Active Cooperative R&D Agreements (CRADAs): 0

CC Technology Development Coordinator:
Steven M. Galen 301-496-7725

Licensing Contact: Carol Lavrich 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Anesthesiology Service (ANES)
Office of Clinical Center Communications (OCCC)
Critical Care Medicine Department (CCM)
Clinical Pathology Department (CP)
Diagnostic Radiology Department (DR)
Nuclear Medicine (NM)
Nutrition Department (NUTR)
Outpatient Department (OP)
Pathological Anatomy Department (PA)
Pharmacy Department (PHAR)
Rehabilitation Medicine Department (RM)
Surgical Services (SS)
Department of Transfusion Medicine (TM)

DIVISION OF COMPUTER RESEARCH AND TECHNOLOGY (DCRT)

Mission: To incorporate the power of modern computers into biomedical program and administrative procedures for NIH and various PHS components.

Research Areas: Conducting research, developing computer systems, and providing computer facilities.

Number of Active Cooperative R&D Agreements (CRADAs): 1

DCRT Technology Development Coordinator:
Marian L. Dawson 301-496-5206

Licensing Contact: John Fahner-Vihtelic 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Computer Center Branch (CCB)
Computer Systems Laboratory (CSL)
Data Management Branch (DMB)
Laboratory of Applied Studies (LAS)
Laboratory of Statistical and Mathematical Methodology (LSM)
Personal Computing Branch (PCB)
Physical Sciences Laboratory (PSL)

NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM (NIAAA)

Proposed Mission: To conduct and support biomedical and behavioral research, health services research, research training, and health information dissemination with respect to the prevention of alcohol abuse and alcoholism and the treatment of alcoholism.

Proposed Research Areas: Alcohol-related disorders, alcohol abuse among various population groups, and to identify new and improved alcoholism prevention, intervention, treatment, and rehabilitation methods and techniques.

Number of Active Cooperative R&D Agreements (CRADAs): 0

NIAAA Technology Development Coordinator:
Theodore R. Colburn 301-402-1226

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Laboratory of Clinical Studies (LCS)
Laboratory of Membrane Biochemistry and Biophysics (LMBB)
Laboratory of Metabolism and Molecular Biology (LMMB)
Laboratory of Physiologic and Pharmacologic Studies (LPPS)

NATIONAL INSTITUTE OF DRUG ABUSE (NIDA)

Proposed Mission: To conduct and support biomedical and behavioral research, health services research, research training, and health information dissemination with respect to the prevention of drug abuse and treatment of drug abusers.

Proposed Research Areas: The cause, prevention, treatment patterns, and consequences of drug abuse and addiction, and clinical disciplines related to drug abuse.

Number of Active Cooperative R&D Agreements (CRADAs): 2

NIDA Technology Development Coordinator:
Frank Vocci, Ph.D. 301-443-6270

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Addiction Research Center (ARC)
Division of Preclinical Research (DPR)
Division of Clinical Research (DCR)

NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH)

Proposed Mission: To increase the knowledge and advance the effective strategies to deal with problems and issues in the promotion of mental health and the prevention and treatment of mental illness.

Proposed Research Areas: Biological, psychological, behavioral, epidemiological, legal, and social sciences aspects of mental health and illness; financing and management of health services on the quality, cost, access to, and outcomes of care; and the incidence, prevalence, and resources for the treatment of mental illness.

Number of Active Cooperative R&D Agreements (CRADAs): 4

NIMH Technology Development Coordinator:
Kathleen M. Conn 301-496-8826

Licensing Contact: Arthur Cohn 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Biological Psychiatry Branch (BPB)
Clinical Brain Disorders Branch (CBDB)
Child Psychiatry Branch (CHP)
Clinical Neuroendocrinology Branch (CN)
Clinical Neurogenetics Branch (CNG)
Clinical Psychobiology Branch (CPB)

Clinical and Research Services Branch (CRSB)
Laboratory of Biochemical Genetics (LBG)
Laboratory of Cell Biology (LCB)
Laboratory of Cerebral Metabolism (LCM)
Laboratory of Clinical Science (LCS)
Laboratory of Developmental Psychology (LDP)
Laboratory of General and Comparative Biochemistry (LGCB)
Laboratory of Molecular Biology (LMB)
Laboratory of Neuropsychology (LN)
Laboratory of Neurochemistry (LNC)
Laboratory of Neurophysiology (LNP)
Laboratory of Psychology and Psychopathology (LPP)
Laboratory of Socio-Environmental Studies (LSES)
Neuropsychiatry Branch (NPB)
Clinical Neuroscience Branch (NSB)
Veterinary Medicine and Resources Branch (VMRB)

CENTERS FOR DISEASE CONTROL (CDC)

Mission: To improve the quality of life for all Americans by preventing unnecessary disease, disability, and premature death and by promoting healthy lifestyles.

Research Areas: Chronic diseases, controllable risk factors (including poor nutrition, smoking, lack of exercise, high blood pressure, stress, and drug misuse), infectious diseases, and injury or disease associated with environmental, home, and workplace hazards.

Number of Active Cooperative R&D Agreements (CRADAs): 23

CDC Technology Development Coordinator:
Frances Reid-Sanden, M.S. 404-639-3812

Licensing Contact: Mark Hankins 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Center for Chronic Disease Prevention and Health Promotion (CCDPHP)
Center for Environmental Health and Injury Control (CEHIC)
Center for Infectious Diseases (CID)
Center for Prevention Services (CPS)
National Center for Health Statistics (NCHS)
National Institute for Occupational Safety and Health (NIOSH)
Agency for Toxic Substances and Disease Registry (ATSDR)

FOOD AND DRUG ADMINISTRATION (FDA)

Mission and Policy Statement Regarding Technology Transfer: To ensure that (1) foods are safe and wholesome; human and veterinary drugs, human biological products, and medical devices are safe and effective; cosmetics are safe; and consumer products that give off radiation are safe; (2) that regulated products are honestly, accurately, and informatively represented; and (3) that these products are in compliance with FDA regulations and guidelines, noncompliance is identified and corrected, and any unsafe or unlawful products are removed from the marketplace.

Number of Active Cooperative R&D Agreements (CRADAs): 9

FDA Technology Development Coordinator:
Beatrice Droke 301-443-6890

Licensing Contact: Daniel Passeri 301-496-7735

INTRAMURAL RESEARCH LABORATORIES

Center for Drug Evaluation and Research (CDER)
Center for Food Safety and Applied Nutrition (CFSAN)
Center for Devices and Radiological Health (CDRH)
Center for Veterinary Medicine (CVM)
National Center for Toxicological Research (NCTR)

SECTION 2

RESOURCE PERSONNEL

This section includes key people to contact in the

- NIH Office of Technology Transfer,
- NIH and FDA Legal Counsel, DHHS Office of General Counsel,
- ADAMHA Legal Counsel, DHHS Office of General Counsel,
- CDC Legal Counsel,
- National Technical Information Service, Department of Commerce, and
- NIH/ADAMHA/CDC/FDA Technology Development Coordinators.

SECTION 2: RESOURCE PERSONNEL

Office of Technology Transfer, NIH

Actual location (temporary):
Solar Building
Room 310P (NIH 301)
6003 Executive Boulevard
Rockville, MD 20852
Fax: 301-402-0220

Official Mailing Address:
National Institutes of Health
Box OTT
Bethesda, MD 20892

Office of the Director
301-496-7057

Reid Adler, J.D., Director

Administrative Branch
301-496-7057

Kim Hooven, Administrative Officer

Patent Branch
301-496-7056

Thomas Wiseman, J.D., Acting Chief
Robert Benson, Ph.D.
Denise Bernstein
James Haight, J.D.
Ann Hobbs
Larry Hyman
Dante Picciano
Gloria Richmond, J.D.
Susan Rucker
David Sadowski
Jack Spiegel

Technology Licensing Branch
301-496-7735

Sandra Shotwell, Ph.D., Chief
Arthur Cohn
John Fahner-Vihtelic
Steve Ferguson
Mark Hankins, J.D.
Marjorie Hunter, J.D.
Carol Lavrich
Todd Leonard
Daniel Passeri

Technology Management Branch
301-496-7736

Carolyn Craig
Mike Miller, Public Affairs Specialist

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DHHS Office of General Counsel

National Institutes of Health
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Intellectual Property Counsel

Dacia Clayton, J.D.
Attorney Advisor

ADAMHA Legal Counsel
DHHS Office of General Counsel

Parklawn Building
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301-443-9571

CDC Legal Counsel

Centers for Disease Control
Mail Stop C-05
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Gwendolyn Strickland, J.D.
Legal Counsel and Attorney

National Technical Information Service

Office of Federal Patent Licensing
5285 Port Royal Road
Springfield, VA 22161
703-487-4732

Douglas Campion
Papan Devnani, J.D.
Neil Mark
Girish Barua, Ph.D.

NIH/ADAMHA/CDC/FDA TECHNOLOGY DEVELOPMENT COORDINATORS

AGING (NIA)
Nancy Braymer
National Institutes of Health
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Gerontology Research Center
Room 1E19
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410-402-8104/Fax 558-8103

ALCOHOL ABUSE AND ALCOHOLISM (NIAAA)
Theodore Colburn, Ph.D.
National Institutes of Health
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301-402-1226/Fax 402-1643

ALLERGY AND INFECTIOUS DISEASES (NIAID)
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301-496-7089/Fax 402-0166

ARTHRITIS AND MUSCULOSKELETAL AND SKIN DISEASES (NIAMS)
Marsha Hennings
National Institutes of Health
Building 31, Room 4C27
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301-402-1375/Fax 480-6069

CANCER (NCI)
Thomas Mays, Ph.D., J.D.
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CENTERS FOR DISEASE CONTROL (CDC)
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CHILD HEALTH AND HUMAN DEVELOPMENT (NICHD)
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CLINICAL CENTER (CC)
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COMPUTER RESEARCH AND TECHNOLOGY (DCRT)
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Bethesda, MD 20892
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DEAFNESS AND OTHER COMMUNICATION DISORDERS (NIDCD)
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DENTAL RESEARCH (NIDR)
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DIABETES AND DIGESTIVE AND KIDNEY DISEASES (NIDDK)
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DRUG ABUSE (NIDA)
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ENVIRONMENTAL HEALTH SCIENCES (NIEHS)
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EYE (NEI)
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FOGARTY INTERNATIONAL CENTER (FIC)
F. Gray Handley
National Institutes of Health
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FOOD AND DRUG ADMINISTRATION (FDA)
Beatrice Droke
Food and Drug Administration Room 328
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GENERAL MEDICAL SCIENCES (NIGMS)
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National Institutes of Health
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HEART, LUNG, AND BLOOD (NHLBI)
Stephen Ficca
National Institutes of Health
Building 31, Room 5A50
Bethesda, MD 20892
301-496-2411/Fax 402-0299

HUMAN GENOME RESEARCH (NCHGR)
Robert Strausberg, Ph.D.
National Center for Human
Genome Research
Building 38A, Room 610
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301-496-7531/Fax 480-2770

LIBRARY OF MEDICINE (NLM)
Elliot Siegel, Ph.D.
National Institutes of Health
Building 38, Room 2S20
Bethesda, MD 20892
301-496-8834/Fax 496-4450

MENTAL HEALTH (NIMH)
Kathleen Conn
National Institutes of Health
Building 10, Room 4N224
Bethesda, MD 20892
301-496-8826/Fax 480-8348

NEUROLOGICAL DISORDERS AND STROKE (NINDS)
Carole Kirby
National Institutes of Health
Building 31, Room 8A46
Bethesda, MD 20892
301-496-4697/Fax 402-2818

NURSING RESEARCH (NCNR)
Mary Ropka, Ph.D., R.N.
National Institutes of Health
Building 31, Room 5B03
Bethesda, MD 20892
301-402-1446/Fax 480-4969

RESEARCH RESOURCES (NCRR)
Thomas Ingalls
National Institutes of Health
Building 12A, Room 4057
Bethesda, MD 20892
301-496-1086/Fax 402-1774

SECTION 3

CURRENT NIH/ADAMHA/CDC/FDA COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs)

This section gives information on NIH/ADAMHA/CDC/FDA CRADAs, including

- PHS institute and name of PHS investigator,
- collaborator and name of participating investigator, and
- subject of research.

(For further information on how to initiate a CRADA, refer to Section 7.)

SECTION 3: CURRENT NIH/ADAMHA/CDC/FDA COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs)

As of July 27, 1992

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs) WITH THE NATIONAL INSTITUTES OF HEALTH

INSTITUTE, PRINCIPAL INVESTIGATOR	COLLABORATING COMPANY, PRINCIPAL INVESTIGATOR	TITLE
National Institute of Allergy and Infectious Diseases (NIAID)		
NIAID Dr. David Klein	Biocene/Sclavo Dr. Cory Dekker	Evaluation of Acellular Pertussis Vaccine
NIAID Dr. David Klein	SmithKline Beecham Biologicals Dr. Hughes Bogaerts	Evaluation of Acellular Pertussis Vaccine
NIAID Dr. Michael Polis	Parke-Davis/Warner Lambert Company Dr. John Bender	Evaluation of the Drug Sparfloxacin for the MIA Treatment in AIDS Patients
NIAID Dr. David Kaslow	University of Louisville Dr. James Hadley	The Use of rPvDR as a Tool for Cloning the Human Duffy Blood Group Antigen
NIAID Dr. Brian Murphy	Wyeth-Ayerst Laboratories Dr. Alan Davis	Development of a Safe and Effective Live Attenuated Respiratory Syncytial Virus Vaccine
NIAID Dr. Brian Murphy Dr. Carole Heilman	Wyeth-Ayerst Laboratories Dr. Gary Horwith	Cold Adapted Influenza Vaccines
NIAID Dr. Clifford Lane	SyStemix Inc. Dr. J.M. McCune	Pathogenesis of AIDS and Mechanisms of Drugs Against the Proliferation of AIDS in Severe Combined Immunodeficient Human (SCID-hu) Mice
NIAID Dr. David Kaslow	Chiron	Expression of Immunogenicity of Malaria
NIAID Dr. Alan Sher	MedImmune, Inc. Dr. Vidal de la Cruz	Development of Recombinant Mycobacteria and Bacilli Culmette-Guerin (BCG) Vaccines Against Schistosoma
NIAID Dr. Brian Murphy Dr. Robert Chanock Dr. Peter Collins	Genelabs, Inc. Dr. James Larrick	Generation of Neutralizing Anti-Respiratory Syncytial Virus Human Monoclonal Antibodies
NIAID Dr. Seth Pincus	Chimertech, Inc. Dr. Arup Sen	Variants of HIV Arising Following Antibody Therapies
NIAID Dr. Dean Metcalfe	Amgen, Inc. Dr. Kris Zsebo	The Effect of Mast Cell Growth Factor on the Biology of the Mast Cell
NIAID Dr. Bernard Moss	Upjohn Company Dr. Wendell Wierenga	Research on Inhibitors of HIV Binding and Maturation
NIAID Dr. Clifford Lane	MedImmune, Inc. Dr. James Young	Identification of HIV Antigens Which Stimulate Humoral and Cell Immune Responses

NIAID Dr. Bernard Moss	MedImmune, Inc. Dr. Thomas Fuerst	Vaccinia Vectors for AIDS Vaccine Research
NIAID Dr. Bernard Moss	MedImmune, Inc. Dr. Thomas Fuerst	Vaccinia Virus Expression Vectors
NIAID Dr. Thomas Kindt	Transgenic Sciences, Inc. Dr. Chamer Wei	Transgenic Rabbits for HIV-1 Infection
NIAID Dr. Robert Purcell	SmithKline-RIT (Subsidiary of SmithKline Beckman) Dr. Erik D'Hondt	Development of Hepatitis A Vaccine
NIAID Dr. Robert Chanock Dr. Robert Purcell Dr. Brian Murphy Dr. Ching-Juh Lai	Wyeth-Ayerst (Division of American Home Products) Dr. Paul Hung	Development of Adenovirus Recombinants Expressing Protective Antigen(s) of RSV, PIV3, Dengue, HIV, and SIV
NIAID Dr. Robert Chanock Dr. Albert Kapikian Dr. Jorge Flores	Wyeth-Ayerst (Division of American Home Products) Dr. Paul Hung Dr. Alan Davis	Produce and Evaluate the Safety, Immunogenicity, and Protective Efficacy of Rhesus Rotavirus and Rhesus Rotavirus Reassortant Vaccines for Use in Preventing Rotavirus Disease
NIAID Dr. Malcolm Martin	MicroGensys, Inc.	*In Vitro* Expression of AIDS Retrovirus Genes

National Cancer Institute/National Institute of Allergy and Infectious Diseases (NCI/NIAID)

NCI/NIAID Dr. Robert Gallo Dr. Bernard Moss	IMMUNO-U.S. Dr. Eugene Timm Dr. Hans Eibl	AIDS Vaccine Development: HIV gp160

National Cancer Institute/Division of Cancer Treatment (NCI/DCT)

NCI/DCT Dr. Leonard Neckers	Gilead Sciences	Antisense Oligonucleotides as Anticancer and Anti-AIDS Agents
NCI/DCT Dr. Kenneth Cowan	Centocor	Monoclonal Antibodies to Glutathione-S-Transferase
NCI/DCT Dr. Dale Shoemaker	Rhône-Poulenc Rorer Inc. Dr. Kim Lamon	Clinical Development of Taxotere
NCI/DCT Dr. James Battey Dr. Etsuko Wada Dr. Zahra Fathi Dr. Mark Hilmich	Berlex Biosciences, Inc.	Isolation of cDNA that Encode the Murine Gastrin Releasing Peptide Receptor (mGRP-R)
NCI/DCT Dr. Dan Longo	University of Minnesota Dr. Peter Anderson	Therapeutic Use of Peripheral Blood Lymphocytes Stimulated with Antibodies and Lymphokines Encapsulated in Liposomes
NCI/DCT Dr. James Mitchell	American Cyanamid Company Dr. Stuart Marcus	Biological Potential of Aqueous Chemiluminescent
NCI/DCT Dr. Dan Longo	Amgen, Inc.	Effects of Stem Cell Factor on Myelosuppression Caused by Carboplatin
NCI/DCT Dr. James Mulshine	John Hopkins Abbott Laboratories University of Pennsylvania University of Minnesota Dr. Melvyn Tockman Dr. Joseph Tamenda Dr. Prabodh Gupta	Early Detection of Lung Cancer

NCI/DCT Dr. Dale Shoemaker Dr. Michaele Christian	Bristol-Myers Squibb Company Dr. Mariel Rozencweig	Clinical Development of Taxol
NCI/DCT Dr. Dale Shoemaker	U.S. Bioscience Dr. Philip Schein	Clinical Development of PALA

National Cancer Institute/Division of Cancer Etiology (NCI/DCE)

NCI/DCE Dr. Robert Gallo	Wyeth-Ayerst (Division of American Home Products)	Adeno-HIV Recombinants
NCI/DCE Dr. Mark Schiffman	Roche Molecular Systems (Cetus)	Human Papillomavirus (HPV) Infection and Cervical Dysplasia
NCI/DCE Dr. Robert Gallo	Daiichi Pharmaceutical	Research on the Effect of SP-PG/DS-4152 on Kaposi Sarcoma Derived Cells
NCI/DCE Dr. Robert Gallo	Virogenetics Corporation Dr. Enzo Paoletti	Development of Vectored Vaccines and Therapeutics for the Prevention and Treatment of AIDS
NCI/DCE Dr. Charles Evans	Genzyme Integrated Genetics	Cytokines for Enhancing Drug Delivery and Pharmacologic Action

National Cancer Institute/Division of Cancer Biology and Diagnosis (NCI/DCBD)

NCI/DCBD Dr. David Solomon	Berlex BioSciences, Inc. Dr. Steven Mishiyak Dr. Beatrice Langton Dr. Richard Harkins	Generation of a Recombinant Human Cripto Protein and Monospecific Anti-Cripto Antibodies
NCI/DCBD Dr. Jeffrey Schlom	Eli Lilly Company Dr. James Starling Dr. David Johnson	Development of Monoclonal Antibody Drug Conjugates for Cancer Therapy
NCI/DCBD Dr. Ira Pastan	Molecular Oncology, Inc. Dr. Michael Berman	Therapy of Cancers Expressing Erb2 Oncogene
NCI/DCBD Dr. David Segal	Creative BioMolecules Dr. James Huston	Single Chain Bispecific Antibody
NCI/DCBD Dr. Ira Pastan	Upjohn Company Dr. Wendell Wierenga	Novel CD4 Targeted Anti-HIV Agents
NCI/DCBD Dr. Ira Pastan	Hoffman-LaRoche, Inc. Dr. William Benjamin	Interleukin 2-*Pseudomonas* Exotoxin
NCI/DCBD Dr. Lance Liotta Dr. Patricia Steeg	Molecular Oncology, Inc. Dr. Michael Berman	Evaluation of cDNA Clones Related to Cancer Metastases

National Cancer Institute/National Heart, Lung and Blood Institute (NCI/NHLBI)

NCI/NHLBI Dr. Robert Gallo Dr. W. French Anderson	Genetic Therapy, Inc.	Retroviral-Mediated Gene Transfer for AIDS Therapy
NCI/NHLBI Dr. Michael Blaese Dr. W. French Anderson	Genetic Therapy, Inc. Dr. Paul Tolstochev	Retroviral-Mediated Gene Transfer into Bone Marrow Cells and T and B Lymphocytes

National Institute of Child Health and Human Development (NICHD)

NICHD Dr. Anil B. Mukherjee	Peptide Technologies, Inc. Dr. Martha Wright	Development of a Radiometric Assay of HIV-1 Aspartic Protease for Screening Potential Inhibitors of this Enzyme
NICHD Dr. Joan Marini	Smith and Nephew Richards, Inc. Dr. Gary Maharaj	New Materials for Intramedullary Rods

NICHD Dr. Gordon Cutler	Eli Lilly Company Dr. W. Leigh Thompson	Study of Humatrope in Non-Growth Hormone Deficient Children of Short Stature and Study of Humatrope Versus Estrogen in Turner's Syndrome
NICHD Dr. John Robbins	Institut Merieux	Synthesis of a Vaccine for the Prevention of Enteric Fevers Caused by Non-Typhoidal Salmonellae

National Institute of Dental Research (NIDR)

NIDR Dr. Peter Burbelo	Biotrax/Gene Sprint Company Dr. Santo Grillo	Development of a Novel Sequencing Technology Using Short Oligomers
NIDR Dr. Gary J. Bennett	Ciba-Geigy Corporation	Effects of N-methyl-D-aspartate Antagonist in an Experimental, Painful Peripheral Neuropathy
NIDR Dr. Phillip Fox	MGI Pharma Dr. Dennis Anderson	A Phase II Dose Ranging Study of Pilocarpine in the Treatment of Post-Radiation Xerostomia
NIDR Dr. Hynda Kleinman	Searle Research Division of Monsanto Dr. Richard Mueller Dr. George Glover	Regulation of Extracellular Degradation of Matrix, Tumor Invasion, Angiogenesis, and Wound Healing

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

NIDDK Dr. Kenner Rice	G.D. Searle & Company Dr. Michael F. Rafferty	Research on Unnatural Opioids and PCP and Sigma Opioids
NIDDK Dr. Robert T. Jensen	Upjohn Company Dr. Tomi K. Sawyer	Peptidergic Receptor-Antagonist Mechanism of Action Studies on Selected Bioactive Peptides and Their Pseudopeptidyl/ Peptidemimetic Congerners of Therapeutic Interest
NIDDK Dr. Samuel Cushman	Bristol-Myers Squibb Dr. William A. Scott	An Evaluation of a Synthetic Peptide on Glucose Transport in Rat Adipocytes
NIDDK Dr. Lothar Hennighausen	GalaGen, Inc. Dr. Leonard P. Ruiz	Development of Expression Vectors to Synthesize Human Clotting Factor IX in Milk of Transgenic Animals and Purification of the Protein
NIDDK Dr. Kenner Rice	Neurogen Corporation Dr. Andrew Thurkauf	Neuroprotectant and Anticonvulsant Agents: Development of Chemical Processes and Structure-Activity Relationships
NIDDK Dr. Joseph Shiloach	New Brunswick Scientific Company, Inc. Dr. Lee Eppstein	Optimizing Growth and Production Parameters for the Insect Cells/Baculo Virus
NIDDK Dr. Stephen Wank	Triton Biosciences, Inc. Dr. Richard Harkins	Purification, Amino Acid Sequencing and Cloning of the Receptors for Cholecystokinin and Related Peptides
NIDDK Dr. Joseph Shiloach	Pharmacia LKB Biotechnology, Inc. Dr. Leslie Beadling	Optimizing Purification Process of Various Proteins from Mammalian Cell Cultures
NIDDK Dr. Joseph Shiloach	Univax Biologics, Inc. Dr. Ali Fattom Dr. Scott Winston	Development of Conjugated Vaccine for Staphylococcus Type 5 and Type 8
NIDDK Dr. Joseph Shiloach	Fluro Daniel, Inc. Dr. Mo Ahluwali	Development of an Adaptive Control System for Fermentation Processes
NIDDK Dr. Enrico Cabib	American Cyanamid Company Dr. Sanford Silverman	Cross-Links in the Fungal Wall
NIDDK Dr. Angela Gronenborn	Regeneron Pharmaceuticals, Inc. Dr. Nikos Panoyotatos	NMR Structure of Ciliary Neurotrophic Factor (CNTF)
NIDDK Dr. Lothor Henninghausen	American Red Cross Dr. William Drohan	Production of Human Protein C and Factor VIII in Milk of Transgenic Animals

NIDDK Dr. Richard Eastman	Futrex, Inc. Dr. Robert Rosenthal	Near-Infrared Blood Glucose Measurement
NIDDK Dr. Allen Minton	Tritech Field Engineering, Inc. Dr. Mark Circo	Scintillation Counting System Without Vials
NIDDK Dr. Kenneth Jacobson	Cortex Pharmaceutical, Inc.	Investigation of Therapeutic Effects of Synthetic Adenosine Analogs in Neurological Diseases and Disorders
NIDDK Dr. Robert Jensen Dr. Jerry Gardner	Upjohn Company Dr. Tomi Sawyer	Peptidergic Receptor-Agonist Mechanism of Action Studies on Selected Bioactive Peptides and Their Pseudopeptidyl-Peptidemimetric Congeners of Therapeutic Interest
NIDDK Dr. Kenner Rice	G.D. Searle and Company Dr. John Farah	Opioid Synthesis Methods (Unnatural Opioids and Phencyclidine-Like and Sigma-Opioid-Like Compounds)

National Eye Institute (NEI)

NEI Dr. Frederick L. Ferris, III	American Cyanamid Company Dr. Lorraine Brancato	Age Related Eye Disease Study
NEI Dr. Robert B. Nussenblatt	Brigham and Women's Hospital Dr. Howard Weiner	Treatment of Autoimmune Inflammatory Ocular Diseases by Oral Administration of Antigens
NEI Dr. Robert B. Nussenblatt	Cell Genesys, Inc. Dr. Robert DuBridge	Transplantation of Genetically Modified Cultured Ocular Cells

National Heart, Lung and Blood Institute (NHLBI)

NHLBI Dr. James Ferretti	MedImmune, Inc. Dr. Marc Collett	Peptide Structure and Biologic Activity Relationships
NHLBI Dr. Ronald Crystal	Genetic Therapy, Inc.	Gene Therapy for Pulmonary Diseases
NHLBI Dr. W. French Anderson	Genetic Therapy, Inc. Dr. Paul Tolstochev	Tissue-Directed Gene Transfer
NHLBI Dr. Arthur Neinhuis Dr. W. French Anderson	Genetic Therapy, Inc. Dr. Paul Tolstochev	Hemoglobin Gene Transfer Into Bone Marrow
NHLBI Dr. Neal Young	MedImmune, Inc. Dr. James Young	Parvovirus B19 Diagnostic Tests and Vaccine and Exploration of the Utility of the Parvovirus B19 Non-Structural Protein as a Cyctotoxic Agent

National Institute on Neurological Disorders and Stroke (NINDS)

NINDS Dr. Thomas N. Chase	Upjohn Company	Cerebral Imaging Studies
NINDS Dr. Eugene Major	Igen, Inc. Dr. Richard Massey	Electro-Chemoluminescent Labeled Probes for the Detection of Viral Macromolecules
NINDS Dr. Thomas N. Chase	Warner Lambert Company	Anticholine Sterase Therapy for Alzheimer Type Dementia
NINDS Dr. William Theodore	Carter-Wallace, Inc.	Studies of Felbamate, a Novel Antiepileptic Compound
NINDS Dr. Richard Youle	Haflund Nycomed Dr. Tore Tsjaberg	Immunotoxins for Central Nervous System Disease
NINDS Dr. Thomas Chase	Hoechst-Roussel Pharmaceuticals Dr. Michael Murphy	Cholinomimetic Treatment of Senile Dementia

Division of Computer Research and Training (DCRT)

DCRT Dr. Bernard Brooks	Star Technologies	GEMMSTAR, Two Gigaflop Computer for Molecular Simulation

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs) WITH THE ALCOHOL, DRUG ABUSE AND MENTAL HEALTH ADMINISTRATION (ADAMHA)

INSTITUTE, PRINCIPAL INVESTIGATOR	COLLABORATING COMPANY, PRINCIPAL INVESTIGATOR	TITLE
National Institute on Drug Abuse (NIDA)		
NIDA Dr. Richard Kapit	Burroughs Wellcome Company Dr. Peter Bridge	Exploratory Trial for the Clinical Evaluation of Bupropion Hydrochloride (HCl) as a Treatment for Cocaine Addiction
NIDA Dr. Jack Blaine	Bristol-Myers Squibb Company Dr. Robert Pyke	Exploratory Trial for the Clinical Evaluation of Gepirone as a Treatment for Cocaine Addiction
National Institute of Mental Health (NIMH)		
NIMH Dr. Edward I. Ginns	Enzon, Inc. Dr. Robert Shorr	Recombinant Human Glucocerebrosidase for Enzyme Replacement in Gaucher's Disease
NIMH Dr. Carl Merril	Monoclonetics Dr. Richard Warrington	Serum Protein Patterns
NIMH Dr. Bruce Smith	Individual Monitoring Systems	Development and Commercialization of NIMH Patient Activity Monitoring System
NIMH Dr. Lee Eiden	Genelabs, Inc. Dr. Jeffrey Lifson	Peptides that Block HIV

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs) WITH THE CENTERS FOR DISEASE CONTROL (CDC)

INSTITUTE, PRINCIPAL INVESTIGATOR	COLLABORATING COMPANY, PRINCIPAL INVESTIGATOR	TITLE
CDC Dr. D.C. Pascal	Radiometer Analytical A/S Dr. Nils Bitsch	To Develop Improved Blood Lead Measurement Instrumentation
CDC Dr. B. Swaminathan	Roche Diagnostics Research Dr. Diane Leong	To Ensure that the PCR-Based Assay is Reliable for the Identification of the Etiologic Agents of Bacterial Meningitis
CDC Dr. L. Mayer	SmithKline Beckman A.H.P. Dr. Timothy Miller	To Analyze the Immune Response to *B. burgdorferi* when Infection is Transmitted by Ixodes Ticks, the Natural Vector of the Disease
CDC Dr. M. Fekadu	Solvay Animal Health Dr. Mike Gill	Field Test CDC Rabies Potency Test
CDC Dr. James O. Kilburn	Upjohn Company Dr. Gary Zurenko	Evaluation of Novel Upjohn Oxazolidinone Compounds for Antimycobacterial Activity
CDC Dr. Dan Bradley	Genelabs, Inc. Dr. Gregory Reyes	Collaborative Research with the Exchange of Materials Related to Virus Characterization, Liver Disease, ET-NANBH Outbreak Investigations, and Development of Phototype Assays to Detect Virus-Specific Nucleic Acids, and/or Antigen(s) and Antibodies
CDC Dr. R.B. Lal	Case Western Reserve University Dr. James Kazura	To Develop a Sensitive and Specific Filarial Antigen Detection Assay That Would be Used Primarily in Undeveloped Countries
CDC Dr. M. Miller	Hoffman-LaRoche, Inc. Dr. H. Dreismann	Develop a Rotor to be Used in the Characterization of Urinary Tract Isolates on the Cobas Micro System
CDC Dr. E.W. Ades	Pall Corporation Dr. Linda Belkowski	Recognition of Contaminants and Pollutants in Fluids Such As, but Not Limited to, Water, Serum, Plasma, and Tissue Culture Media, Has Required Membrane Barrier Technology to Undergo Continuous Changes to Insure Product Sterility
CDC Dr. Dan Bradley	Chiron Corporation Dr. Michael Houghton	Post-transfusion Non-A Non-B Hepatitis: Pathogenesis of Disease and Molecular Characterization of Hepatitis C Virus (HCV)
CDC Dr. H. Margolis	SmithKline Beckman Dr. David Krause	Evaluation of Safety, Immunogenicity and Protective Efficacy of a Candidate Inactivated Hepatitis A Vaccine (HAV)
CDC Dr. Dan Bradley	Genelabs, Inc. Dr. Gregory Reyes	To Isolate, Characterize, and Molecularly Clone the Virus(es) for Non-A, Non-B Hepatitis, Not Due to Infection with Hepatitis C Virus (HCV), the Major Cause of Parenterally-Transmitted Non-A, Non-B Hepatitis Worldwide
CDC Dr. D.B. Fishbein	Virbac S.A. Laboratories Dr. Andre Aubert	Development of Safe and Effective Oral Rabies Vaccines for Dogs that Permit Vaccination of Animals that Cannot be Reached or Contained for the Purpose of Parenteral Vaccination
CDC Dr. B.H. Robertson	University of Alabama at Birmington Dr. Ming Luo	To Determine the Surface Structure of Hepatitis A Virus (HAV) by X-ray Diffraction

CDC Dr. Phil Pellett	DuPont de Nemours and Company Dr. Lynn Enquist	To Determine the Entire Nucleotide Sequence of the Human Herpes Virus Type 6 (HHV-6) Genome
CDC Dr. L.J. Anderson	Biokit Laboratories Dr. Francisco Duran	To Develop New Diagnostic Reagents for the Detection of Parvovirus B19 Infections in Humans
CDC Dr. Phil Pellett	Biokit Laboratories Dr. Francisco Duran	Development of Serological Assays for Differentiation of Infections Caused by Herpes Viruses
CDC Dr. Robert Cooksey	Upjohn Company Dr. Gary Zurenko	To Evaluate the *In Vitro* Antibacterial Effects of Cefmetazole Against Methicillin-Resistant Isolates of Staphylococcus Species
CDC Dr. Robert Cooksey	Upjohn Company Dr. Gary Zurenko	To Evaluate the *In Vitro* Antibacterial Effects of Trospectomycin Against Methicillin-Resistant Isolates of Staphylococcus Species
CDC Dr. G. Shocketman	Cetus Corporation Dr. William Gerber	To Encompass the Detection and Characterization of HIV and Other Retroid Viruses Responsible for Human Disease
CDC Dr. Vogt	Flow Cytometry Standards Corporation Dr. Abe Schwartz	Development of Quantitative Fluorescent Reference Standards to be Used to Measure Intensity of Cellular Surface Markers
CDC Dr. J.S. Schmid	SmithKline Beckman A.H.P Dr. Timothy Miller	Development of Rabies Diagnostic Assay and Subunit Vaccine Containing Protein Derived From Recombinant DNA Expression of CVS Strain of Rabies Virus Nucleocapsid Gene Coding Sequences and SAD Strain Glycoprotein Gene Coding Sequence
CDC Dr. Olen Kew	Lederle Laboratories Dr. Carolyn Weeks-Levy	Characterization of Vero Cell-Propagated OPV Lots and Epidemiologic Evaluation of Capacity of OPV to Block Circulation of Wild Poliovirus Genotypes in the United States

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS(CRADAs) WITH THE FOOD AND DRUG ADMINISTRATION (FDA)

INSTITUTE, PRINCIPAL INVESTIGATOR	COLLABORATING COMPANY, PRINCIPAL INVESTIGATOR	TITLE
FDA Dr. C. D. Brand	American Institute for Cancer Research	Modularity Effects of Caloric Restriction on Toxicological Process
FDA Mr. Ralph L. Kodell	Clements Associates	Evaluation of Animal Bioassay Data Through Use of Computer-Based Statistical Programs
FDA Dr. Daniel Liu	SNS, Inc.	Auto On-Line Hydrolysis System
FDA Dr. Lionel Porter	Best Foods	Carcinogenic Study: The Effects of Dietary Fat, Carbohydrates, and Fiber
FDA Dr. William A. Allaben	National Grocery Manufactures of America	Effects of Long-Term Exposure to Methyl Bromide
FDA Dr. Frederick Beland Dr. Carl Cerniglia	Electric Power Research Institute	Risk Assessment of Manufactured Gas Plant Residues
FDA Dr. James Victers	Tulane University	Development of Non-Human Primate Model for Krebbe's Disease
FDA Mrs. Karen Carson	Illinois Institute of Technology	Collaborative Research in Food Safety and Quality
FDA Dr. Robert E. Schmukler	Drexel University	Detection of Holes in Latex Condoms and Gloves

SECTION 4

PHS INVESTIGATORS INTERESTED IN CONSIDERING RESEARCH COLLABORATIONS WITH INDUSTRY

This section lists PHS scientists interested in forming research collaborations with industry partners. The information on the PHS scientists includes

- name, position, institute and laboratory, address, telephone and facsimile numbers,
- keywords that identify the PHS scientists' area of interest,
- a brief description of PHS scientists' major laboratory activities,
- a brief description of PHS scientists' goals,
- a brief description of unique resources/techniques available in the PHS scientists' laboratories, and
- a brief description of unique products invented and/or unique accomplishments achieved.

This section is used as a cross-reference with Section 5 that lists keywords alphabetically and PHS investigators interested in that area of research.

SECTION 4: PHS INVESTIGATORS INTERESTED IN CONSIDERING RESEARCH COLLABORATIONS WITH INDUSTRY

Stuart A. Aaronson
NCI/DCE, Laboratory of Cellular & Molecular Biology
Chief, LCMB
Building 37, Room 1E24
NIH, Bethesda, MD 20892
Phone: 301-496-9683
Fax: 301-496-8479
Oncogenes, Retroviruses, Molecular Biology
(tumor markers; growth factors)

Kamal M. Abdo
NIEHS, Carcinogenesis & Toxicology
Chemist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-7819
Fax: 919-541-4714
Toxins, Nutrition
(toxicology and nutrition)

Jerome Abramson
FDA/CDER, DAID
Microbiology Reviewer
Parklawn Building, Room 12B-17 (HFD-520)
5600 Fishers Lane
Rockville, MD 20857
Phone: 301-443-0335
Fax: 301-443-5803
Bacteria, Infection
(infectious diseases; antimicrobial agents; anaerobic bacteria; HIV)

Eric J. Ackerman
NIDDK, GBB
Senior Staff Fellow
Building 10, Room 9D15
NIH, Bethesda, MD 20892
Phone: 301-496-7693
Fax: 301-496-9878
Toxins, Molecular Biology, DNA
(DNA damage/repair; amphibian development biology; toxins; translation)

Edwin W. Ades
CDC/NCID, National Center for Infectious Diseases
Chief, Biological Products Branch
Building 1, Room 3205 (Mail Stop D-34)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3720
Fax: 404-639-3129
Biological Response Modifiers, Multidrug Resistance, Cell Culture
(cellular immunobiology)
Major Laboratory Activities: Generation and maintenance of continuous cell lines and their products.
Unique Products/Accomplishments: Generation of a human microvascular (1) endothelial cell line, and (2) generation of bi-specific (hybrid) hybridomas.

Tom G. Aigner
ADAMHA/NIMH, Laboratory of Neuropsychology
Senior Staff Fellow
Building 9, Room 1N107
NIH, Bethesda, MD 20892
Phone: 301-496-5625
Fax: 301-402-0046
Pharmacology, Memory, Primates, Nuclear Magnetic Resonance (NMR)
(pharmacology of learning and memory in primates; applications of magnetic resonance imaging; drug evaluation for the pharmaceutical industry)

Matti Al-Aish
NCI/DCT, Diagnostic Imaging Research Branch
Program Director, DIRB
Executive Plaza North, Room 800
NIH, Bethesda, MD 20892
Phone: 301-496-9531
Fax: 301-480-5785
Diagnostic Imaging (radiology), Imaging/Imaging Analysis, Monoclonal Antibodies, Nuclear Medicine
(diagnostic imaging (radiology); nuclear medicine)

Abdu I. Alayash
FDA/CBER, Laboratory of Cellular Hematology
Senior Staff Fellow
Building 29, Room B-10
NIH, Bethesda, MD 20892
Phone: 301-496-8359
Fax: 301-402-2780
Blood Characterization, Free Radical Scavengers, Myocardial Ischemia
(hemoglobin-based blood substitutes)
Goals: Toxicity and safety of hemoglobin-based blood substitutes.
Unique Resources/Techniques Available: Hemoglobin-oxygen equilibrium equipment chemox-analyzer.
Unique Products/Accomplishes: Fast reactions technique; stopped flow apparatus.

Akram Aldroubi
NCRR, Biomedical Engineering & Instrumentation Program
Senior Staff Fellow
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Applied Mathematics, Image Processing, Biotechnology
(applied mathematics; image processing)
Major Laboratory Activities: Mathematical modeling and analysis; image and signal processing.
Goals: Solve problems and find new techniques for signal/image processing and mathematical biology.
Unique
Resources/Techniques Available: Image processing software; numerical analysis.
Unique Products/Accomplishments: Software for image analysis of two-dimensional gel patterns; software and techniques for three-dimensional reconstruction algorithm from micrographs; new techniques in signal and image processing using wavelets transformation.

Michael C. Alley
NCI/FCRDC, Division of Cancer Treatment
Pharmacologist
Fort Detrick, Building 321, Room 7
Frederick, MD 21702-1013
Phone: 301-846-5065
Fax: 301-846-6183
Cancer Chemotherapy, Natural Products, Image Analysis
(cancer pharmacology)

Christopher I. Amos
NIAMS, Skin Biology, Genetics Study Section
Staff Fellow
Building 6, Room 429
NIH, Bethesda, MD 20892
Phone: 301-402-2679
Fax: 301-402-2724
Genetic Diseases, Genetic Screening, Data Analysis Program
(statistical genetics; linkage analysis)
Major Laboratory Activities: Gene mapping strategies through statistical analysis of data on families.
Unique Resources/Techniques Available: Many computer programs (i.e., SAGE, MASC, LIPED, Ped Tree).

Rita Anand
NIAID, Division of Research Grants, Virology Study Section
Health Scientist Administrator
Westwood Building, Room 1A04
NIH, Bethesda, MD 20892
Phone: 301-496-3117
Fax: 301-402-1207
AIDS-HIV, Antiviral drugs, Polymerase Chain Reaction (PCR)
(antivirals; anti-HIV agents; retrovirology; neuroAIDS sulphated cyclodextrins)
Major Laboratory Activities: Antiviral testing.
Goals: To find a reasonable drug to combat AIDS.
Unique Resources/Techniques Available: Unique HIV strains from the CNS; techniques—PCR, RT test, ELISA.
Unique Products/Accomplishments: "Alpha-cyclodextrin sulphate activity against HIV" published in Antiviral Agents and Chemotherapy, 1990 1:41-46.

Burt Anderson
CDC/NCID, DVRD/Viral & Rickettsial Zoonoses Branch
Supervisory Research Microbiologist
(Mail Stop G-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1082
Fax: 404-639-3163
Infectious Diseases, Diagnostics, Vaccines, Polymerase Chain Reaction (PCR)
(rickettsiology; diagnostics; vaccines)
Major Laboratory Activities: Cloning, sequencing, diagnotics PCR.
Goals: Improved diagnosis and vaccines for rickettsial diseases.
Unique Resources/Techniques Available: Automated sequencing.
Unique Products/Accomplishments: Diagnostic PCR.

D. Michael Anderson
NCI, Public Health Applications Research Branch
Prevention Research Director
Executive Plaza North, Room 218
NIH, Bethesda, MD 20892
Phone: 301-496-8577
Fax: 301-496-8675
Health Promotion/Education, Cancer Prevention, AIDS-HIV Prevention
(SBIR grants for the application of emerging technologies to cancer prevention)

Ellen Anderson
FDA/CFSAN, DON/NSB
Research Chemist
200 C Street, SW (HFF-266)
Washington, DC 20204
Phone: 202-472-5375
Fax: 202-426-1658
HPLC, Microbiology, Spectroscopy, Vitamins
(HPLC; spectroscopy; vitamin analysis in foods; water soluble vitamins)

Marshal W. Anderson
NIEHS, Laboratory of Molecular Toxicology
Chief, LMT
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3519
Fax: 919-541-7887
Oncogenes, Carcinogenesis
(chemical carcinogenesis; oncogenes; DNA repair; molecular modeling; risk assessment)

W. French Anderson
NHLBI, Molecular Hematology Branch
Chief
Building 10, Room 7D18
NIH, Bethesda, MD 20892
Phone: 301-496-5844
Fax: 301-496-9985
DNA, RNA, Proteins
(gene therapy and genetic engineering)

C. William Angus
CC, Critical Care Medicine Department
Senior Scientist
Building 10, Room 7D43
NIH, Bethesda, MD 20892
Phone: 301-496-5988
Fax: 301-402-1213
AIDS-HIV, Infection, Recombinant Protein Production
(molecular biology; infectious diseases)

Prince K. Arora
NIDDK, Laboratory of Neuroscience
Senior Scientist
Building 8, Room 111
NIH, Bethesda, MD 20892
Phone: 301-496-8073
Fax: 301-402-2872
Immunology, Stress
(neuroimmunology; immunopharmacology; cellular immunology; immunogenetics)

Michael J. Arrowood
CDC, Division of Parasitic Diseases, Parasitic Diseases Branch
Research Microbiologist
(Mail Stop F-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4421
Fax: 404-488-4808
Infectious Disease Diagnostics, Antibodies (monoclonal), Parasites
(parasitology/immunology (cryptosporidiosis))
Major Laboratory Activities: Cryptosporidium/cryptosporidiosis.
Goals: Improved diagnostics, development and application of invivo and invitro models of crytosporidiosis.
Unique Resources/Techniques Available: In-house parasite production.
Unique Products/Accomplishments: Cryptosporidium life cycle stage-specific monoclonal antibody utilized in a commercially available diagnostic kit.

Richard Ascione
NCI/DCE, Laboratory of Molecular Oncology
Assistant to the Chief, LMO
Fort Detrick, Building 469, Room 102
Frederick, MD 21701-1013
Phone: 301-846-1576
Fax: 301-846-6164
AIDS-HIV, Oncogenes, Expression Vectors, Retroviruses
(probes for oncogenes and growth factors; AIDS vaccines; HIV-expression vector systems; HIV-specific antigen reagents; molecular biology of retrovirus and oncogenes)

Adorian Aszalos
FDA, Division of Research & Testing
Head of Laboratory
200 C Street, SW
Washington, DC 20209
Phone: 202-245-1177
Fax: 202-426-1658
Immunomodulation, Cancer Chemotherapy, Antivirals

John P. Bader
NCI/DCT, Antiviral Evaluation Branch, DTP
Chief, AEB
Executive Plaza North, Room 837
NIH, Bethesda, MD 20892
Phone: 301-496-3246
Fax: 301-402-0831
Antiviral Drugs, AIDS-HIV, Cancer Chemotherapy
(AIDS; cancer)
Major Laboratory Activities: Selection and description of anti-HIV substances.
Goals: Discovery and development of effective clinical agents against AIDS.
Unique Resources/Techniques Available: Large-scale antiviral screening system.
Unique Products/Accomplishments: Discovery of several novel compounds active against HIV.

James J. Bailey
DCRT, Laboratory of Applied Studies
Chief, Medical Applications Section
Building 12A, Room 2041
NIH, Bethesda, MD 20892
Phone: 301-496-6561
Fax: 301-402-2867
Cardiovascular Instrumentation, Patient Monitoring (nonsurgical), Computer Software
(electrocardiology; diagnosis)
Major Laboratory Activities: Analysis of biomedical signals and images.
Goals: Improve diagnostic/prognostic power of non-invasive devices.
Unique Resources/Techniques Available: Computer systems expertise and medical and engineering expertise.

Phillip J. Baker
NIAID, Immunogenetics
Section Head/Microbiology
Twinbrook II
12441 Parklawn Drive
Rockville, MD 20852
Phone: 301-496-1220
Fax: 301-480-2618
Immunoregulation, Lymphocytes, Bacterial Endotoxins, Suppressor T Cells
(immunoregulation; immune response to microbial antigens; adjuvants; vaccines; modulation of immune response by microbial products)

Robert S. Balaban
NHLBI, Laboratory of Cardiac Energetics
Chief, LCB
Building 10, Room B12-161
NIH, Bethesda, MD 20892
Phone: 301-496-3658
Fax: 301-402-2389
Heart, Nuclear Magnetic Resonance, Optical Spectroscopy
(cardiology; Nuclear Magnetic Resonance; optical spectroscopy; energy metabolism)

Michael F. Barile
FDA, Center for Biologic Evaluation & Research/ Mycoplasma
Chief, LM/DBP/CBER
Building 29, Room 420
NIH, Bethesda, MD 20892
Phone: 301-496-1893
Fax: 301-402-4772
Mycoplasma, Diagnostics, Vaccines
(monoclonal antibodies capable of distinguishing mycoplasma pneumoniae from other human mycoplasma species)

J. Carl Barrett
NIEHS, Chief, Laboratory of Molecular Carcinogenesis
Research Chemist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-2992
Fax: 919-541-7784
Carcinogenesis, Immortalization, Estrogens
(carcinogenesis; mutagenesis; tumor suppressor genes; aging; cancer)

Julia Barsony
NIDDK, Metabolic Diseases Branch
Visiting Scientist
Building 10, Room 9C101
NIH, Bethesda, MD 20892
Phone: 301-402-2868
Fax: 301-496-0200
Imaging/Image Analysis, Microscopy, Receptors
(steroid hormone action, video-microscopy, microwave)
Goals: Mechanism of rapid steroid hormone effects.
Unique Resources/Techniques Available: Microwave fixation, imaging lab.
Unique Products/Accomplishments: Visualizing cyclic nucleotides in single cells.

John Bartko
ADAMHA/NIMH, Division of Biometry & Applied Sciences
Statistician
Building 10, Room 3N-204
NIH, Bethesda, MD 20892
Phone: 301-496-2586
Fax: 301-480-8348
Statistics in Medicine, Computer Software
(statistical methodology and developments in the life, medical, and behavioral sciences)

Norman W. Barton
NINDS, Developmental & Metabolic Neurology Branch
Chief, Clinical Investigations Section
Building 10, Room 3D03
NIH, Bethesda, MD 20892
Phone: 301-496-1465
Fax: 301-496-9480
Neurobiology Research, Degenerative Diseases, Lipid-lowering Drugs
(disorders of metabolism; degenerative neurological disorders)
Major Laboratory Activities: Investigation of protein targeting strategies.
Goals: Efficient use of lectins as drug delivery systems.
Unique Resources/Techniques Available: Useful model systems.
Unique Products/Accomplishments: Macrophage-targeted glucocerebrosidase.

Mark M. Bashor
CDC, Agency for Toxic Substances & Disease Registry
Associate Adminsitrator, Federal Programs
(Mail Stop E-28)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-0730
Fax: 404-236-0759
Toxicology, Risk Assessment
(toxicology)
Unique Resources/Techniques Available: Public health investigations of hazardous waste sites.

Peter Basser
NCRR, Biomedical Engineering & Instrumentation Program
Senior Staff Fellow
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Physiology, Drug Delivery, Analytical Instruments
(biomedical engineering; applied mathematics)
Major Laboratory Activities: Biomedical engineering research.
Goals: Apply physics and engineering principles to promote biomedical research at NIH.
Unique Products/Accomplishments: Two patents issued in biosensors field.

Robert Bassin
NIAID, Division of AIDS
Acting Chief, Resources & Centers Branch
Solar Building, Room 2B31
NIH, Bethesda, MD 20892
Phone: 301-402-0755
Fax: 301-480-4666
Oncogenes, Retroviruses
(anti-oncogenes; retroviruses; oncogenes)

Milan Basta
NIAID, Laboratory of Clinical Investigation
Visiting Associate
Building 10, Room 11N250
NIH, Bethesda, MD 20892
Phone: 301-496-9662
Fax: 301-496-7383
Autoimmune Diseases, Immunoglobulin Therapy
(immunodiagnosis (monoclonal antibodies; immunoassays))

Steven R. Bauer
FDA, CBER,DBB, Laboratory of Molecular Immunology
Senior Staff Fellow
Building 29, Room 501
NIH, Bethesda, MD 20892
Phone: 301-402-3577
Fax: 301-496-4684
Oncogenes, Polymerase Chain Reaction (PCR), Cell Subsets
(B cell neoplasia; B cell differentiation; quantitative oncogene PCR)
Major Laboratory Activities: Studies of regulation of B cell differentiation and B cell neoplasia in transgenic mice and in normal pre-B cell tissue culture.
Goals: Understanding normal pathways of B cell development and development of the therapeutic strategies to treat B cell neoplasia.
Unique Resources/Techniques Available: Ability to propagate normal pre-B cells in strains of myc-oncogene transgenic mice; ability to quantify RNA expression levels of 21 oncogenes by PCR.
Unique Products/Accomplishments: "Oncoquant-I" oncogene quantitative PCR technique.

Serge Beaucage
FDA/CBER, Laboratory of Molecular Pharamacology
Senior Staff Fellow
Building 29, Room 203
NIH, Bethesda, MD 20892
Phone: 301-496-3378
Fax: 301-496-4684
Automated DNA Synthesis, Phosphorylation, Oligonucleotide Analogues
(nucleoside and nucleotide chemistry)

Kevin G. Becker
NICHD, LMGR
Staff Fellow
Building 6, Room 2A09
NIH, Bethesda, MD 20892
Phone: 301-496-4070
Fax: 301-480-9354
Molecular Biology, Immunology, Business Service (Consulting)
(immunology; immunogenetics; molecular biology)
Major Laboratory Activities: Isolation and characterization of sequence-specific DNA binding transcription factors.
Goals: Identification of factors necessary for MCH class V factors.
Unique Resources/Techniques Available: All molecular biology techniques.
Unique Products/Accomplishments: Masters in Business Administration.

Daniel P. Bednarik
CDC/NCID, Retrovirus Diseases Branch
Chief, Molecular Genetics Section
(Mail Stop G-19)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1024
Fax: 404-639-3163
AIDS-HIV, Oncogenes, Carcinogenesis
(HIV latency; gene expression)
Major Laboratory Activities: Investigation of retroviral gene expression.
Goals: Characterize the regulation of HIV expression.
Unique Resources/Techniques Available: All biochemical/molecular.
Unique Products/Accomplishments: Defining DNA methylation as a HIV latency control mechanism.

William J. Bellini
CDC/NCID, Respiratory & Enteric Viruses Branch
Chief, Measles Virus Section
(Mail Stop G-17)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3596
Fax: 404-639-1307
Diagnostics, Assay Development, RNA Probes, Childhood Diseases, Molecular Biology, Vaccines
(diagnosis, genetics and vaccine development—measles)
Major Laboratory Activities: Rapid diagnosis of measles virus infection, antigenic variation of wild-type measles. Recombinant and subunit vaccines.
Goals: Provide a measles vaccine with increased efficacy in infants, which provides life-long immunity. Provide unequivocal acute measles diagnostics.
Unique Resources/Techniques Available: Monoclonal antibodies specific for wild-type measles. EIA utilizing expressed recombinant measles antigens.
Unique Products/Accomplishments: Development of both EIA and PCR assays to detect wild-type versus vaccine virus infections. IgG and IgM EIA assays useful for acute infection and seroprevalence.

John E. Bennett
NIAID, Laboratory of Clinical Investigation
Chief, Clinical Mycology Section
Building 10, Room 11N107
NIH, Bethesda, MD 20892
Phone: 301-496-3461
Fax: 301-480-0050
Antifungal, Vaccines
(virulence factors of deep fungal pathogens)
Major Laboratory Activities: Systemic mycoses.
Unique Products/Accomplishments: Phase I/II clinical trial of cryptococcal vaccine.

Jack R. Bennink
NIAID, Laboratory of Viral Diseases
Microbiologist
Building 4, Room 213
NIH, Bethesda, MD 20892
Phone: 301-496-7533
Fax: 301-402-7362
Vaccines, Antigens, Antibodies (monoclonal)
(cellular immunology)
Major Laboratory Activities: Cell-mediated immunity to viruses.
Goals: Understanding antigen processing and presentation.

Edward A. Berger
NIAID, Laboratory of Viral Diseases
Expert
Building 4, Room 210
NIH, Bethesda, MD 20892
Phone: 301-402-2160
Fax: 301-480-1147
AIDS-HIV, Receptors, Antivirals
(CD4/gp120 interactions and design of targeted AIDS therapeutics)

Robert L. Berger
NHLBI, Laboratory of Biophysical Chemistry
Section Chief
Building 3, Room B1-03
NIH, Bethesda, MD 20892
Phone: 301-402-0028
Fax: 301-402-1519
Sensor Development, Biophysics, Diamond Coating, Instrumentation, Microcalorimetry, Detectors
(instrumentation; computers; microcalorimetry; stopped-flow; near infrared spectroscopy)

Ira Berkower
FDA, Center for Biologic Evaluation & Research/LM/DBB
Senior Investigator
Building 29, Room 523
NIH, Bethesda, MD 20892
Phone: 301-496-1870
Fax: 301-496-4684
AIDS-HIV, Plaque-forming Assay, Antibodies (polyclonal)
(neutralizing antibodies to HIV-1; immunogenicity of protein and peptide antigens)

John F. Bishop
NINDS, Experimental Therapeutics Branch, Genetic Pharmacology Unit
Biologist
Building 10, Room 5C116
NIH, Bethesda, MD 20892
Phone: 301-496-7872
Fax: 301-496-6609
Molecular Biology, Growth Factors, Genetic Therapy
(neural growth factors, gene therapy)
Major Laboratory Activities: Study regulation of transcription of peptide hormone and brain growth factor genes. Devise methods to modulate transcription of these genes.
Goals: Control growth expression via antisense, triple-helix, or other methods.

R. Michael Blaese
NCI/DCBD, Metabolism Branch
Deputy Director, MB
Building 10, Room 6B05
NIH, Bethesda, MD 20892
Phone: 301-496-5396
Fax: 301-480-7876
Anti-inflammatory, Immunomodulation, Autoimmune Diseases
(immunology; succinylacetone)
Major Laboratory Activities: Study of immunosuppression by succinylacetone.
Goals: Development of succinylacetone for clinical application and investigation of mechanism of immunosuppression.
Resources/Techniques Available: Tissue culture, molecular biology, animal models (porcine, simian, rat, mouse).
Unique Products/Accomplishments: Discoverd the immunosuppressive properties of succinylacetone. Hold patents for its use in the prevention of grant-versus-host disease, the prevention of autoimmune disease, and the prevention of rejection of solid organ transplants.

Aaron Blair
NCI/DCE, Environmental Epidemiology Branch
Chief, Occupational Studies Section
Executive Plaza North, Room 418
NIH, Bethesda, MD 20892
Phone: 301-496-9093
Fax: 301-402-1819
Cancer Biology, Occupational Health, Toxicology
(cancer epidemiology; occupational cancer)
Major Laboratory Activities: Identification and quantification of occupational causes of cancer.
Goals: To reduce cancer incidence and mortality.
Unique Resources/Techniques Available: Methodologic resources for occupational epidemiology studies. Large data sets on groups with occupational exposures.
Unique Products/Accomplishments: Uncovered associations between exposure to herbicides and lymphatic and hematopoietic cancers, formaldehyde and nasopharyngeal cancer, tobacco and soft-tissue sarcoma and colon polyps, truck driving and lung and bladder cancer, and solvents and lymphatic and hematopoietic cancers.

Claudia Blair
OD, Office of Extramural Programs
Director, Institutional Liaison Office
Building 31, Room 5B31
NIH, Bethesda, MD 20892
Phone: 301-496-5366
Fax: 301-496-0166
(policy and regulations; financial conflict of interest)

Roy A. Blay
FDA/CBER, Laboratory of Retrovirology, Division of Transfusion Science
Senior Staff Fellow
8800 Rockville Pike
Bethesda, MD 20892
Phone: 301-496-0456
Fax: 301-480-3254
Immunotherapy (AIDS-HIV), Vaccines, Cytokines
(immunology; immunovirology; immunopathology)
Major Laboratory Activities: Development of liposomes for antiviral drug delivery. Development of vaccines for AIDS. Investigation into autoimmune aspects of AIDS.
Goals: AIDS vaccine development; effective antiviral drug delivery systems.
Unique Resources/Techniques Available: P3 facilities, access to HIV-infected patient materials.
Unique Products/Accomplishments: Demonstrated immune stimulation of AIDS patients using unique combination of Brucella abortus and IL-2.

Diana Blithe
NICHD,
Expert
Building 10, Room 10N258
NIH, Bethesda, MD 20892
Phone: 301-496-6438
Fax: 301-402-0574
Cancer Diagnostics (Markers)

Eda T. Bloom
FDA/CBER, Division of Cytokine Biology, Lab of Cellular Immunology
Research Biologist
Building 29A, Room 2B20
NIH, Bethesda, MD 20892
Phone: 301-402-0482
Fax: 301-402-1659
Immunology, Aging, Cancer
(mechanisms of regulation and lysis of cytolytic cells and relevance to areas of aging, cancer, and transplantation)

William J. Blot
NCI/DCE, Biology Branch
Chief, BB
Executive Plaza North, Room 431
NIH, Bethesda, MD 20892
Phone: 301-496-4153
Fax: 301-402-0081
Cancer, Epidemiology, Statistics in Medicine
(Cancer epidemiology and statistics; environmental and host determinants of cancer)

Vilhelm Bohr
NCI/DCT, Laboratory of Molecular Pharmacology
Senior Investigator
Building 37, Room 5C25
NIH, Bethesda, MD 20892
Phone: 301-496-5943
Fax: 301-402-0752
DNA, Carcinogenesis, Cancer Therapy
(DNA repair)
Major Laboratory Activities: Group leader to topoisomerase inhibitor group.
Goals: Determine mechanism of action of anti-cancer agents and anti-HIV drugs.

Robert Bonner
NCRR, Biomedical Engineering & Instrumentation Program
Physicist
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-5771
Fax: 301-496-6608
Lasers, Noninvasive Optical Diagnostics, Angioplasty, Platelets

Tom Bonner
ADAMHA/NIMH, Laboratory of Cell Biology
Research Biologist
Building 36, Room 3A07
NIH, Bethesda, MD 20892
Phone: 301-496-8907
Fax: 301-402-1748
Pharmacology, Receptors, Molecular Cloning
(cloning; expression and characterization of muscarinic acetylcholine receptor (and other G-protein coupled receptors) genes; neurotransmitter and neuropeptide receptors cloning; expression in mammalian cells and characterization of pharmacology)

Jeff Boyd
NIEHS, Laboratory of Molecular Carcinogenesis
Senior Staff Fellow
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-0284
Fax: 919-541-7784
Gene Expression, Oncogenes, Polymorphism
(molecular genetics of human endometrial pathology; tumor suppressor genes)

Daniel W. Bradley
CDC/NCID, DVRD/Hepatitis Branch
Chief, Virology Section
(Mail Stop A-33)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2335
Fax: 404-639-1563
Vaccines, Diagnostics, Virology
(non-A, non-B hepatitis viruses)
Major Laboratory Activities: Non-A, Non-B hepatitis.
Goals: Clone, characterize viral genome(s).
Unique Resources/Techniques Available: Complete laboratory.
Unique Products/Accomplishments: Cloned HEV.

Linda S. Brady
ADAMHA/NIMH, Section on Functional Neuroanatomy
Senior Staff Fellow
Building 36, Room 2D15
NIH, Bethesda, MD 20892
Phone: 301-496-8287
Fax: 301-402-2200
Antidepressants, Opiates, Neuropeptides
(CNS pharmacology of opiates; antidepressants; CNS effects of stress)
Major Laboratory Activities: Localization of receptors, mRNA species in rat and human brain tissue.
Goals: Determine CNS mechanisms of action of antidepressant drugs.
Unique Resources/Techniques Available: Receptor autoradiography, in situ hybridization of neuropeptides, receptors, neurotransmitter enzymes.
Unique Products/Accomplishments: Research on the role of neuropeptide, CRM, in effects of antidepressant drug treatment and in stress.

Roscoe O. Brady
NINDS, Developmental & Metabolic Neurology Branch
Chief, DMN
Building 10, Room 3D04
NIH, Bethesda, MD 20892
Phone: 301-496-3285
Fax: 301-496-9480
Genetic Diseases, Gene Therapy, Enzyme Replacement Therapy
(hereditary metabolic disorders)
Major Laboratory Activities: Development of successful enzyme replacement therapy for hereditary diseases.
Goals: Extend enzyme replacement to many other metabolic disorders, including those with brain involvement; gene replacement therapy.
Unique Resources/Techniques Available: Knowledge of molecular basis of genetic diseases. First successful enzyme replacement.
Unique Products/Accomplishments: Therapy for a hereditary lipid storage disorder (Gaucher's disease). First restoration of enzyme activity in bone marrow progenitor cells derived from patients with Gaucher's disease by retroviral transfer of gene for deficient enzyme (glucocerebrosidase).

Martin W. Brechbiel
NCI/DCT, Radiation Oncology Branch
Chemist
Building 10, Room 1B53A
NIH, Bethesda, MD 20892
Phone: 301-496-6494
Fax: 301-480-5439
Antibodies (monoclonal)
(radioimmuno imaging; radioimmunotherapy; bifunctional chelates)

Douglas E. Brenneman
NICHD, Laboratory of Developmental Neurobiology
Head, Neurochemistry Unit
Building 36, Room 2A21
NIH, Bethesda, MD 20892
Phone: 301-496-7649
Fax: 301-480-5041
Growth Factors, Neurons
(neurotrophic factors and peptide pharmacology)

Michael Brenner
NINDS, Laboratory of Molecular Biology
Special Expert
Building 36, Room 3C09
NIH, Bethesda, MD 20892
Phone: 301-496-6300
Fax: 301-402-1340
Neurobiology Research, Transgenic Inbreds, Alzheimer's Disease
(molecular neurobiology, neurobiology research)
Major Laboratory Activities: Study of astrocyte-specific transcription; astrocyte-specific expression cassettes in cultured cells and transgenic animals.
Goals: Understanding mechanisms controlling astrocyte-specific transcription and utilizing this knowledge to express genes in astrocytes of transgenic mice to study brain function and to develop disease models.
Unique Products/Accomplishments: Transcriptional regulatory sequences capable of driving astrocyte-specific expression of genes in transgenic mice.

Milton W. Brightman
NINDS, Basic Neurosciences Program, Neurology
Chief, Brain Structural Plasticity Section
Building 36, Room 2A29
NIH, Bethesda, MD 20892
Phone: 301-496-5091
Fax: 301-480-1485
Electron Microscopy, Microscopy, Fluorescence, Video, Confocal Microscopy, Neurobiology Research
(neural transplantation (regeneration); blood-brain barrier)
Major Laboratory Activities: Implantation of neural cell lines into brain.
Goals: To find optimal conditions for survival and reconnections of implanted neurons.
Unique Resources/Techniques Available: Confocal and video enhanced microscopy.
Unique Products/Accomplishments: Grafted, oncogene infected, cell line retains neural character in brain.

Bernard R. Brooks
DCRT, Office of the Director
Research Chemist
Building 12A, Room 2055
NIH, Bethesda, MD 20892
Phone: 301-496-0148
Fax: 301-496-2172
Molecular Mechanics, Computer Software, Molecular Modeling, Molecular Dynamics
(design and development of laboratory equipment)

Kurt Brorson
NIAID, Laboratory of Cellular & Molecular Immunology
Intramural Research Training Award (IRTA) Fellow
Building 4, Room 111
NIH, Bethesda, MD 20892
Phone: 301-496-6447
Fax: 301-496-0877
Transcription, Cytokines, Assay Improvements
(molecular biology; immunology)
Major Laboratory Activities: T cell activation, cytokine gene regulation.
Goals: Study the molecular basis of the activation of cytokine genes.
Unique Products/Accomplishments: In the course of our studies on cytokine gene regulation, we have improved the nuclear run-on assay by eliminating false signals generated by cross-hybridization. Our improvement lowers the background of the assays and allows correct interpretation of the results of the assay.

Leslie A. Bruggeman
NIDR, Laboratory of Developmental Biology
Staff Fellow
Building 30, Room 432
NIH, Bethesda, MD 20892
Phone: 301-496-1761
Fax: 301-402-0897
Molecular Biology, Diabetes, AIDS-HIV
(regulation of gene transcription and DNA binding proteins)
Major Laboratory Activities: Characterization of cis and trans elements controlling the expression of matrix proteins in renal cells and identification of host transcriptional factors regulating the expression of viral proteins from HIV-1 LTR.
Goals: Identify the mechanism of activation of matrix proteins in the kidney resulting in sclerosis.
Identification of a key host transcriptional factor responsible for the tissue tropism of HIV-1.
Unique Resources/Techniques Available: Generation of transgenic mice, DNase I footprinting, electrophoretic mobility shift assay, nuclear run-off, transient transfections.
Unique Products/Accomplishments: Documented a role for vasoactive lipids (thromboxane and prostacyclin) in alterations of extracellular matrix production.

Charlotte A. Brunner
FDA,
Chemist
Parklawn Building, Room 16B19
5600 Fishers Lane
Rockville, MD 20857
Phone: 301-443-0313
Fax: 301-443-9283
Drugs, Chemistry (analysis)
(analytical chemistry of drugs; drug products and drug metabolism; chromatography; chiral drugs)

Chuck Buckler
NIAID, Laboratory of Molecular Microbiology/IRP
Research Biologist
Building 4, Room 301
NIH, Bethesda, MD 20892
Phone: 301-496-1498
Fax: 301-402-0226
Infectious Diseases, Expression Vectors, Mutation
(HIV-I and II; molecular biology)

Frank L. Buczek
NIAMS, Department of Rehabilitation Medicine
Staff Fellow
Building 10, Room 6S-235
NIH, Bethesda, MD 20892
Phone: 301-496-9890
Fax: 301-402-0663
Biomechanics, Bioengineering, Computer Software
(study of human movement; gait analyses; prosthetics; biomechanical modeling of the foot and hand)

R. Mark L. Buller
NIAID, Laboratory of Viral Diseases
Head, Poxvirus Pathogenesis Group
Building 4, Room 236
NIH, Bethesda, MD 20892
Phone: 301-496-1370
Fax: 301-480-1147
Antisense, Vaccines, Anti-Inflammatory
(viral pathogenesis)
Major Laboratory Activities: Study of poxvirus-encoded defense molecules.
Goals: Study virus and host genes important in pathogenesis.
Unique Resources/Techniques Available: Varied.
Unique Products/Accomplishments: Identified anti-inflammatory gene in poxviruses.

Peter M. Bungay
NCRR, Biomedical Engineering & Instrumentation Program
Chemical Engineer
Building 13, Room 3W-13
NIH, Bethesda, MD 20892
Phone: 301-496-5771
Fax: 301-496-6608
Instrumentation, Separation Techniques, Physiology
(transport phenomena; hydrodynamics; applications of synthetic membranes)
Major Laboratory Activities: Mathematical modeling of diffusive and conventive transport in biological systems.
Goals: New and improved methods for biomedical research.
Unique Products/Accomplishments: Vitreous fluorophotometry analysis method; quantitative microdialysis.

A. Lee Burns
NIDDK, Laboratory of Cell Biology & Genetics
Group Leader
Building 8, Room 403
NIH, Bethesda, MD 20892
Phone: 301-496-3306
Fax: 301-402-0053
Molecular Biology, Gene Regulation, Ion Channels
(gene cloning and expression; diagnostic probes)

Benjamin T. Burton
NIDDK, Office of Disease Prevention & Technology Transfer
Associate Director, ODPTT
Building 31, Room 9A35
NIH, Bethesda, MD 20892
Phone: 301-496-4955
Fax: 301-496-2830
(obesity; nutrition; artificial organs; metabolic, digestive and renal diseases)

Michael Bustin
NCI/DCE,
Chief, Protein Section
Building 37, Room 3D-12
NIH, Bethesda, MD 20892
Phone: 301-496-5234
Fax: 301-496-8419
DNA/RNA Probes, Immunoassays, Genetic Screening
(chromosomal proteins; gene regulation)
Unique Products/Accomplishments: Developed probes for a gene located in the Down's syndrome region of human chromosome 21. Developed antibodies and immunoassays for chromosomal proteins.

Salvatore T. Butera
CDC/NCID, Retrovirus Diseases Branch
Staff Fellow
(Mail stop G-19)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1024
Fax: 404-639-1174
Antivirals, Cell Lines, Tumor Necrosis Factor, Cytokines
(HIV latency and activation)
Major Laboratory Activities: HIV activation studies, 2nd messenger pathways, tumor necrosis factor receptor studies, drug screening.
Goals: Understand intracellular pathways leading to activation of HIV from latency.
Unique Resources/Techniques Available: Rapid assays for drugs which block activation of latency.
Unique Products/Accomplishments: A novel CD4+ chronically HIV-I infected promyelocyte clone.

Harlan D. Caldwell
NIAID, Rocky Mountain Laboratories
Chief, Laboratory of Intracellular Parasites
Rocky Mountain Laboratories
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Chlamydia, Trachoma, Vaccines
(diagnosis of chlamydial diseases)

R. Daniel Camerini-Otero
NIDDK, Genetics & Biochemistry Branch
Chief, GBB
Building 10, Room 9D15
NIH, Bethesda, MD 20892
Phone: 301-496-2710
Fax: 301-496-9878
Gene Mapping, Gene Therapy, Recombinant DNA
(molecular biology of recombination)

George M. Carlone
CDC, Molecular Biology/Meningitis & Special Pathogens Branch
Supervisor, Research Microbiologist
Building 1, Room 1260 (Mail stop A-36)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3622
Fax: 404-639-3296
Vaccines, Assay Methods, Protein Purification, Carbohydrates
(vaccines; infectious diseases; carbohydrate and protein chemistry; immunology)
Major Laboratory Activities: Vaccine evaluation and development.
Goals: Quantification of antibody responses and functional antibody activity to polysaccharide and protein vaccines.
Unique Resources/Techniques Available: Animal and tissue culture facilities, serum bank, biostatistics branch, NMR, separation techniques, carbohydrate chemistry, protein purification, anti-human immunoglobulin monoclonal antibodies.

Daniel A. Casciano
FDA, National Center for Toxicological Research
Division Director
NCTR Drive (HFT-120)
Jefferson, AR 72079
Phone: 501-543-7496
Fax: 501-543-7136
Detectors, Mutation
(genetic toxicology and molecular biology)

Horace Cascio
NCRR, Biomedical Engineering & Instrumentation Program
Electronic Engineer
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-5771
Fax: 301-496-6608
Electronics, Television Engineering, Radio Engineering
(analog and digital circuit design—radio and television engineering)

Rachel Caspi
NEI, Laboratory of Immunology, Section of Immunoregulation
Senior Investigator
Building 10, Room 10N222
NIH, Bethesda, MD 20892
Phone: 301-496-6409
Fax: 301-402-0485
Cell Lines, Immunomodulation, Lymphokines
(immunology; immunomodulation; lymphokines/cytokines; autoimmunity; inflammation)

Byron Caughey
NIAID, Laboratory of Persistent Viral Diseases
Senior Staff Fellow
Rocky Mountain Laboratories
904 South 4th Street
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Aging, Alzheimer's Disease, Degenerative Diseases, Infectious Diseases (prevention)
(transmissible spongiform encephalopathies; prion diseases; neurodegenerative diseases; protein metabolism)
Major Laboratory Activities: Studies of the formation of the scrapie-associated, amyloidogenic form of prion protein; identification of inhibitors of scrapie-associated prion protein accumulation in scrapie-infected cells.
Goals: Elucidation of the cellular mechanism of scrapie-associated prion protein accumulation; characterization of effective inhibitors of this accumulation, which may have therapeutic value for transmissible spongiform encephalopathies and other amyloidoses.
Unique Resources/Techniques Available: Scrapie-infected cell culture model for protease-resistant prion protein formation which is useful for screening compounds that may affect this formation and, perhaps, amyloidogenesis generally.
Unique Products/Accomplishments: Determination that the scrapie-associated prion protein is made from its apparently normal prion protein precursor on the plasma membrane or along an endocytic pathway to the lysosomes; identification of several potent and selective inhibitors (including Congo red) of the formation of the amyloidogenic, scrapie-associated prion protein in cultured neuroblastoma cells.

James J. Cereghino
NINDS, Epilepsy Branch
Chief, EB
Federal Building, Room 114
NIH, Bethesda, MD 20892
Phone: 301-496-6691
Fax: 301-496-9916
Anticonvulsants, Seizure, Neurology
(epilepsy; antiepileptic drugs)

Carl E. Cerniglia
FDA, National Center for Toxicology Research
NCTR Drive
Jefferson, AR 72079
Phone: 501-543-7567
Fax: 501-543-7576
Toxicity, Toxins, Molecular Biology
(microbiology/biodegradation; detoxification; microbiometabolism)

Gerald J. Chader
NEI, Retinal Cell & Molecular Biology (RCMB)
Chief, RCMB
Building 6, Room 310
Bethesda, MD 20892
Phone: 301-496-3447
Fax: 301-402-1883
Central Nervous System (CNS), Disorders (CNS affective), Degenerative Diseases, Genetic Diseases, Fetal Defects
(molecular biology/genetics; eye; hereditary diseases)
Major Laboratory Activities: Molecular biology of vision and blinding eye diseases.
Goals: To clone genes responsible for hereditary eye diseases and to treat them.
Unique Resources/Techniques Available: ABI sequencer; novel techniques for cloning unique genes.

Richard S. Chadwick
NCRR, Biomedical Engineering and Instrumentation Program
Biomedical Engineer
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Blood Characterization, Auditory Disorders, Computer Software
(biomechanics of cells, tissues, and organs)
Major Laboratory Activities: Biomechanical analyses of cells, tissues, and organs.
Goals: Development of mathematical models to aid characterization of tropical tissues.
Unique Products/Accomplishments: Computer software for functional analysis of images of the heart.

John C. Chah
NCNR, Office of Scientific Review
Health Scientist Administrator
Building 31, Room 5B10
NIH, Bethesda, MD 20892
Phone: 301-496-0472
Fax: 301-480-4969
Alzheimer's Disease, Cancer, Nutritional Products
(nutritional biochemistry; pharmacology)
Major Laboratory Activities: Risk assessment (toxicology).

Mark D. Challberg
NIAID, Laboratory of Viral Diseases
Senior Staff Fellow & Chief, Macromolecular Biology Section
Building 4, Room 137
NIH, Bethesda, MD 20892
Phone: 301-496-0938
Fax: 301-480-1147
Antivirals, Herpes Virus, Biochemistry
(Herpes virus; DNA replication)

Chi Chao Chan
NEI
Building 10, Room 10N206
NIH, Bethesda, MD 20892
Phone: 301-496-1243
Fax: 301-402-0485
Uveitis, Retinal Antigens, Mouse Strains

John Tim Chance
CDC/NCID, DSTDLR/Treponemal Pathogenesis & Immunobiology Branch
Microbiologist
(Mail Stop D-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3225
Fax: 404-639-3037
DNA/RNA Probes, Sexually Transmitted Diseases, Adhesion Receptors
(pathogenic spirochetes; bacterial flow cytometry)
Major Laboratory Activities: Flow cytometry and cell sorting.
Goals: In vitro cultivation of pathogenic spirochetes.
Unique Resources/Techniques Available: Flow cytometers with the capacity to resolve 0.1 μm particles.

Michael A. Channing
CC
Building 10, Room 1C401
NIH, Bethesda, MD 20892
Phone: 301-496-0344
Fax: 301-496-0114
Imaging, Positron Emission, Radioligand

Robert M. Chanock
NIAID, Laboratory of Infectious Diseases
Chief
Building 7, Room 100
NIH, Bethesda, MD 20892
Phone: 301-496-4205
Fax: 301-496-8312
Viruses, Vaccines
(epidemiology; pathogenesis and immunoprophylaxis of viral diseases of respiratory and gastrointestinal tracts and the liver)

Thomas N. Chase
NINDS, Experimental Therapeutics Branch
Chief, ETB
Building 10, Room 5C103
NIH, Bethesda, MD 20892
Phone: 301-496-7993
Fax: 301-496-6609
Biogenic Amines, Toxins, Gene Regulation
(neuropharmacology of CNS degenerative disorder, especially Alzheimer's disease and Parkinson's disease)

Dhruba K. Chattoraj
NCI/DCBD, Laboratory of Biochemistry
Microbiologist
Building 37, Room 4D18
NIH, Bethesda, MD 20892
Phone: 301-496-9194
Fax: 301-402-3095
Microbial Genetics, E. Coli, Electron Microscopy, DNA, Plasmids, Phage
(phage and E. coli plasmid biology; DNA replication and recombination; electron microscopy; DNA-protein interactions)

Ching-Nien Chen
NCRR
Building 10, Room B1D125
NIH, Bethesda, MD 20892
Phone: 301-496-3658
Fax: 301-402-0119
Nuclear Magnetic Resonance (NMR), Magnets, Electronics

George T. Chen
NIDR
Senior Investigator
Building 30, Room 202
NIH, Bethesda, MD 20892
Phone: 301-496-5057
Fax: 301-402-0823
Fluorine, Fluorocatechols, Adrenergic Agonists

Hao-Chia Chen
NICHD, Endocrinology and Reproduction Research Branch
Section Chief
Building 6, Room 2A-13
NIH, Bethesda, MD 20892
Phone: 301-496-2861
Fax: 301-402-2403
Antibiotics, Antiviral Drugs, Hormones, Growth Factors
(peptide and protein chemistry)
Major Laboratory Activities: Structure function studies of proteins and biologically active peptides.
Goals: To understand the mode of action and the design of agonist and antagonist peptide synthesis and protein sequencing.
Unique Products/Accomplishments: Synthesized potent magainin analogues; purified and characterized anti-HIV-1 proteins.

Zi-Xing Chen
NCI, Division of Cancer Treatment
Visiting Scientist, Developmental Therapeutics Program
Building 37, Room 5D10
NIH, Bethesda, MD 20892
Phone: 301-496-5433
Fax: 301-496-5839
Cancer Biology, Cell Culture, Multidrug Resistance
(leukemia; hematology; induced differentiation therapy)
Major Laboratory Activities: Testing the efficacy of induced differentiation of tumor cell lines and animal models by various single compounds or their combination.
Goals: To provide evidence and strategies for development of new regimens of cytodifferentiation therapy for clinical treatment of cancer patients.
Unique Resources/Techniques Available: Tumor cell lines; cell culture, cell biology, biochemistry, and molecular biology techniques.

Bruce Chesebro
NIAID, Laboratory of Persistent Viral Diseases
Chief
Rocky Mountain Laboratories
903 South Forth Street
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Retroviruses, Immunology
(retroviral vaccines; neurotropic viruses; degenerative CNS diseases (Alzheimer's, Scrapie))

Chuang Chiueh
ADAMHA/NIMH, Laboratory of Cerebral Metabolism
Senior Pharmacologist
Building 10, Room 2D-55
NIH, Bethesda, MD 20892
Phone: 301-496-9820
Fax: 301-402-0743
Parkinsonism (animal models), Calcium Mobilization, Radioligand
(dopamine; neurochemistry; ion channels)

Yoon S. Cho-Chung
NCI/DCBD, Laboratory of Tumor Immunology & Biology
Chief, Cellular Biochemistry Section
Building 10, Room 5B38
NIH, Bethesda, MD 20892
Phone: 301-496-4020
Fax: 301-402-0711
Antineoplastic, Cell Differentiation, Cyclic AMP-Regulated Element (CRE)
(production and invention of cAMP analogs for cancer therapy and chemoprevention; mechanism of cAMP action: antisense, gene transfer, DNA-binding studies)

P. Boon Chock
NHLBI, Laboratory of Biochemistry
Section Chief
Building 3, Room 202
NIH, Bethesda, MD 20892
Phone: 301-496-2073
Fax: 301-496-0599
Enzymes, Biochemistry, Metabolism
(covalent modification of enzymes/proteins and their roles in metabolic regulation; mechanistic studies of enzyme activity and regulation)

Oksoon H. Choi
NHLBI
Research Associate
Building 10, Room 8N108
NIH, Bethesda, MD 20892
Phone: 301-496-5377
Fax: 301-402-0171
Pharmacology, Receptors, Signal Transduction
(pharmacology; phospholipid metabolism; phosphorylation)

Janice Chou
NICHD
Section Chief
Building 10, Room 10N321
NIH, Bethesda, MD 20892
Phone: 301-496-1094
Fax: 301-402-0234
Cell Lines, Placental Genes, Differentiation

Peter Choyke
CC, Diagnostic Radiology Department
Staff
Building 10, Room 1C660
NIH, Bethesda, MD 20892
Phone: 301-496-7700
Fax: 301-496-9933
Nuclear Magnetic Resonance (NMR), Contrast Agents, Imaging Analysis, Renal Function
(nuclear magnetic resonance (NMR))
Major Laboratory Activities: Measuring renal function.
Goals: Accurate measurement of GFR.
Unique Products/Accomplishments: NIH patent on Gadolinium-DTPA GFR measurement.

Andreas C. Chrambach
NICHD, Laboratory of Theoretical & Physical Biology
Head, Section of Macromolecular Analysis
Building 10, Room 6C101
NIH, Bethesda, MD 20892
Phone: 301-496-4878
Fax: 301-402-0263
Electrophoresis, Separation Techniques, Nucleic Acid
(electrophoresis in polymer media)
Major Laboratory Activities: Transverse pore gradient and capillary electrophoresis of DNA.
Goals: DNA and DNA-protein conformation; separations of large DNA and chromosomes.
Unique Resources/Techniques Available: Physico chemical use of gel electrophoresis for molecular characterization and optimization of separations.
Unique Products/Accomplishments: Software packages for the physical interpretation of gel electrophoretic data; capillary electrophoresis in polymer solutions; transverse pore gradient electrophoresis.

George P. Chrousos
NICHD, Developmental Endocrinology Branch
Senior Investigator
Building 10, Room 10N262
NIH, Bethesda, MD 20892
Phone: 301-496-4686
Fax: 301-402-0574
Corticotropin Releasing Hormone, Glucocorticoids, Stress, Cushing Syndrome, Depression
(corticotropin releasing hormone; glucocorticoids; endocrine mechanisms of stress)

May C. Chu
CDC/NCID, Molecular Biology
Research Microbiologist
Division of Vector-Borne Infectious Diseases
P.O. Box 2087
Fort Collins, CO 80522-2087
Phone: 303-221-6458
Fax: 303-221-6476
Vaccines, Tropical Diseases, Recombinant DNA
(virology; immunology; molecular biology)
Major Laboratory Activities: Flavivirus vaccine development, immunopathology of virus diseases.
Goals: Dengue vaccine development.
Unique Resources/Techniques Available: Assays for antibody-enhanced virus replication, dengue virus collection.
Unique Products/Accomplishments: Development of sensitive assays for antibody-dependent replication of virus in monocytes. Fc receptors on monocytes.

De-Maw Chuang
ADAMHA/NIMH, Biological Psychiatry Branch
Chief, Unit on Molecular Neurobiology
Building 10, Room 3N212
NIH, Bethesda, MD 20892
Phone: 301-496-4915
Fax: 301-402-0052
Antidepressants, Psychotropic Drugs, Receptors—Regulation, RNA (messenger expression)
(regulation and physiological role of neurotransmitter receptors (e.g. alpha-and beta-adrenergic, serotoninergic, muscarinic cholinergic and glutamatergic receptors) in neurons; mechanisms and actions of antidepressant drugs and benzodiazepines; development of new receptor drugs)

Peter P. Chuknyisky
NIA, Cellular & Molecular Biology
Senior Staff Fellow
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-1804
Fax: 410-550-1938
Aging, Gene Expression, Transcription
(mechanisms of genetic information transfer; biochemical and biophysical factors affecting the gene expression in relation to the regulatory and aging processes on the molecular level)

Cathie T. Chung
NIAID, Laboratory of Infectious Diseases/Hepatitis Section
Senior Staff Fellow
Building 7, Room 235
NIH, Bethesda, MD 20892
Phone: 301-496-6227
Fax: 301-402-0524
Hepatitis B, Transformation, Gene Cloning
(molecular biology of hepatitis B viruses; bacterial transformation)

G. Marius Clore
NIDDK, Laboratory of Chemical Physics
Chief, Section of Protein Nuclear Magnetic Resonance
Building 2, Room 123
NIH, Bethesda, MD 20892
Phone: 301-496-0782
Fax: 301-496-0825
Nuclear Magnetic Resonance (NMR), Proteins, AIDS-HIV
(biophysical chemistry; NMR)

J. Perren Cobb
CC, Department of Critical Care Medicine
Fellow
Building 10, Room 7D43
NIH, Bethesda, MD 20892
Phone: 301-496-9565
Fax: 301-402-1213
Cytokines, Septic Shock, Immunology
(cytokines in septic shock; molecular immunology)

Roger Cohen
NHLBI, Molecular Hematology Branch
Scientist
Building 10, Room 7D12
NIH, Bethesda, MD 20892
Phone: 301-496-3160
Fax: 301-402-1659
Eukaryotic, Transcription
(molecular biology)

John E. Coligan
NIAID, Biological Resources Branch
Chief, BRB
Building 4, Room 413
NIH, Bethesda, MD 20892
Phone: 301-496-8247
Fax: 301-402-0284
Gene Regulation, Immunochemistry, Proteins
(molecular mechanisms in the immune response; protein structure-function; gene regulation)

Edward J. Cone
ADAMHA/NIDA, Laboratory of Chemistry & Drug Metabolism
Chief, LCDM
Addiction Research Center
Baltimore, MD 21701-1013
Phone: 410-550-1507
Fax: 410-550-1654
Drugs, Biofluids, Drug Testing, Human Performance, Electrophysiology, Abuse Detection
(pharmocokinetics; pharmocodynamics of drugs and of drug abuse; development of noninvasive chemical methods for detection of drug use/abuse)

Richard T. Conlon
CDC, Behavioral & Prevention Research Branch
Assistant Chief, BPRB
(Mail Stop E-44)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-0829
Fax: 404-639-0868
Prostitution Counseling/Testing, Needle Hygiene, Behaviors, Community
(DSTD/HIV counsel; partner notification; perinatal prevention of HIV)
Major Laboratory Activities: Oncogene.
Goals: Role of P53 in oncogenesis.

James Cook
NHLBI, Laboratory of Biochemistry
Staff Fellow
Building 3, Room 203
NIH, Bethesda, MD 20892
Phone: 301-496-2526
Fax: 301-496-0599
Alzheimer's Disease, Radioimmunodetection, Proteins
(metabolic regulation; ubiquitin)

David A. Cooney
NCI/DCT, Laboratory of Medicinal Chemistry
Senior Research Investigator
Building 37, Room 5B-06
NIH, Bethesda, MD 20892
Phone: 301-496-6713
Fax: 301-496-5839
Pharmacology, Antivirals, Antineoplastic
(pharmacology of antineoplastic and anti-HIV agents)

Beth Ann Coonrod
NIDDK, Laboratory of Cell Biology & Genetics
IRTA Fellow
Building 8, Room 322
NIH, Bethesda, MD 20892
Phone: 301-496-1167
Fax: 301-402-1760
Diabetes, Health Education (Promotion)
(epidemiology; diabetes complications; diabetes education)
Major Laboratory Activities: Insulation secretion (perifusion of single microdissected islets).
Goals: Clinical research in diabetes complications, especially microalbuminuria (i.e., prevention of diabetic nephropathy); diabetes epidemiology.
Unique Resources/Techniques Available: Background in nursing (B.S.N., R.N.) and computer science as well as epidemiology.

Mary Frances Cotch
NIAID, Epidemiology and Biometry Branch
Epidemiologist
Solar Building, Room 3A24
NIH, Bethesda, MD 20892
Phone: 301-496-7065
Fax: 301-402-0659
Prevention, Diagnostics, Microbiology
(epidemiology—biomarkers, infectious disease, obstetric disease)

Lino Covi
ADAMHA/NIDA, ARC, Psychosocial Treatment
Visiting Scientist
Addiction Research Center
Baltimore, MD 21224
Phone: 410-550-1617
Fax: 410-550-1638
Antidepressants, Drug/Alcohol Abuse, Psychopharmacology
(treatment of cocaine, PCP, benzodiazepine abuse and dependency; interaction and psychosocial treatment and psychopharmacology)

David L. Cox
CDC/NCID, DSTDLR/Treponemal Pathogenesis & Immunobiology Section
Chief, Treponemal Immunobiology Section
(Mail Stop D-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3446
Fax: 404-639-3037
Flow Cytometry, Microbiology, Enzymes
(bacterial pathogenesis; STD's spirochetes)
Major Laboratory Activities: Cultivation and pathogenic mechanisms of treponema pallidum.
Goal: Serial passage in vitro vaccine.
Unique Resources/Techniques Available: Flow cytometry, 2D page.
Unique Products/Accomplishments: Can cultivate in tissue culture, suspension cultures, microtiter plates, or large culture vessels.

Nancy J. Cox
CDC/NCID, Influenza Branch
Chief Research Chemist
(Mail Stop G-16)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3591
Fax: 404-639-2334
Influenza, Diagnostics, Vaccines, Antivirals
(virology/infectious diseases—influenza virus)
Major Laboratory Activities: Studying influenza virus evolution; vaccine development for influenza; studying antiviral resistance; studying moelcular epidemiology of influenza.
Goals: To improve prevention and control of influenza through application of biotechnology.
Unique Resources/Techniques Available: Large collection of human influenza field strains 1933 to present; large data base of sequences of influenza genes, many unpublished; unique sets of PCR primers for amplification of influenza genes; site-specific mutagenesis and gene rescue for influenza.
Unique Resources/Accomplishments: Sequenced U.S. and Soviet live attenuated influenza vaccines; applied PCR for sequencing region of influenza gene that confers resistance amantadine.

Jacqueline N. Crawley
ADAMHA/NIMH, Experimental Therapeutics Branch
Chief, Unit on Behavioral Neuropharmacology
Building 10, Room 4N214
NIH, Bethesda, MD 20892
Phone: 301-496-7855
Fax: 301-480-8348
Antipsychotics, Anxiolytics, Memory Enhancers
(behavioral neuropharmacology; neuropeptides)
Major Laboratory Activities: Animal behavior models, microdialysis, in situ hybridization.
Goals: Functional analysis of coexisting neurotransmitters; behavioral actions of endogenous neuropepetides; neurochemical mechanisms of behaviors relevant to schizophrenia, Alzheimer's disease, anxiety disorders.
Unique Resources/Techniques Available: Behavioral assays for memory tasks: delayed non-matching to sample, t-maze passive and active avoidance; behavioral assays for anxiety: light-dark exploratory model; neuropeptides (open field, feeding, grooming).
Unique Products/Accomplishments: Release studies: microdialysis and HPLC, push-pull perfusion and immunoassays; in situ hybridization: quantitation of oligonucleotide probes for peptide, enzyme, receptor mRNA; explication of role of endogenous cholecystokinin as a modulator of dopamine and of galanin for acetylcholine.

Cyrus Robbins Creveling
NIDDK, Laboratory of Bioorganic Chemistry
Research Chemist
Building 8A, Room 1A27
NIH, Bethesda, MD 20892
Phone: 301-496-5360
Fax: 301-402-0008
Fluorine, Fluorocatechols, Adrenergic, Sodium Channel
(catechol-O-methyl transferase: role of catechol steriods in hormonally sensitive tumors; mechanism of action of local anesthetics: interactions with the batrachotoxin-binding site in the sodium channel; local anesthetics; adrenergic properties of fluorine substituted biogenic amine)

Lee Cummings
ADAMHA/NIDA, Medications Development Division
Chief, Regulatory Affairs Branch
Parklawn Building, Room 11A-55
5600 Fishers Lane
Rockville, MD 20857
Phone: 301-443-1428
Fax: 301-443-2599
Central Nervous System, Drug/Alcohol Abuse, Drug Delivery (Drug Formulation)
(drug/alcohol abuse; drug discovery)
Major Laboratory Activities: Discovery of agents to treat cocaine addiction.
Goals: Develop new treatment agents for addiction to alcohol and controlled substances, certain mental disorders.
Unique Resources/Techniques Available: Stimulant and opiate profiling, complete preclinical and clinical testing capabilities through Phase III.
Unique Products/Accomplishments: Opiate agonists; opiate antagonists; unique dosage forms.

Edward James Cupler
NINDS, NMS
Clinical Associate
Building 10, Room 4N248
NIH, Bethesda, MD 20892
Phone: 301-496-9979
Fax: 301-402-0672
AIDS-HIV, Neuromuscular Disorders, Immunology
(neuro-AIDS; neuromuscular disorders)

Jeffrey A. Cutler
NHLBI, Prevention and Demonstration Research Branch
Chief, PDRB, CAPP, DECA
Federal Building, Room 604
NIH, Bethesda, MD 20892
Phone: 301-496-2465
Fax: 301-480-1357
Hypertension, Clinical Trials, Drugs

John W. Daly
NIDDK, Laboratory of Bioorganic Chemistry
Chief, LBC
Building 8, Room 1A17
NIH, Bethesda, MD 20892
Phone: 301-496-4024
Fax: 301-402-0008
Natural Products, Receptors, Ion Channels, Fluorine, Fluorocatechols, Adrenergics
(biologically active natural products; interaction receptors; second messengers; ion channels)

Robert L. Danner
CC, Critical Care Medicine Department
Senior Investigator
Building 10, Room 7D43
NIH, Bethesda, MD 20892
Phone: 301-496-9565
Fax: 301-402-1213
Septic Shock, Sepsis, Toxins
(treatment of septic shock and sepsis via antagonists and neutralizers of microbial toxins)

Manuel B. Datiles
NEI, Ophthalmic Genetics & Clinical Services Branch
Acting Chief, Section on Cataracts & Corneal Diseases
Building 10, Room 10N226
NIH, Bethesda, MD 20892
Phone: 301-496-3577
Fax: 301-402-1214
Cataract, Diabetes, Patient Monitoring, Clinical Instrumentation
(ophthalmics; cataract; diabetes; aldose reductase)
Major Laboratory Activities: Imaging/image analysis of cataracts.
Goal: To determine progression rates of growth of various cataract types.
Unique Resources/Techniques Available: Computer/video photography of cataracts with scheimpflug and retroillumination.
Unique Products/Accomplishments: Development of computerized analysis of cataracts.

Richard J. Davey
CC, Department of Transfusion Medicine
Chief, Laboratory Services Section
Building 10, Room 1C-711
NIH, Bethesda, MD 20892
Phone: 301-496-9702
Fax: 301-402-1360
Transfusion, Autoimmune Diseases, Graft-vs.-Host Disease
(transfusion medicine; blood storage; immunohematology)
Major Laboratory Activities: Transfusion-associated GVHD; blood storage and preservation; transfusion-transmitted disease.
Unique Resources/Techniques Available: Radio labeled blood components for in vivo trafficking and localization; apheresis-HLA laboratory.

Charles DeCarli
NIA, Laboratory of Neurosciences, Brain Aging & Dementia Section
Senior Clinical Investigator
Building 10, Room 6C414
NIH, Bethesda, MD 20892
Phone: 301-496-4754
Fax: 301-402-0595
Imaging/Image Analysis, NMR, Dementia
(structural and functional brain imaging)
Major Laboratory Activities: Structural brain imaging in aging and dementia, including AIDS dementia.
Goals: Understanding structure-function relationships in normal and diseased brain.
Resources/Techniques Available: Fully automated segmentation of MRI.
Unique Products/Accomplishments: US/International patent of MRI analysis method.

James M. DeLeo
DCRT, Computer Systems Laboratory
Computer Systems Analyst
Building 12A, Room 2013
NIH, Bethesda, MD 20892
Phone: 301-496-9343
Fax: 301-402-0007
Computer Software, Statistics in Medicine, Data Bases
(clinical and biomedical research application of modern computer technology)

Jurrien Dean
NIDDK, Laboratory of Cellular & Developmental Biology
Section Chief, Mammalian Developmental Biology
Building 6, Room B1-06
NIH, Bethesda, MD 20892
Phone: 301-496-2738
Fax: 301-496-5239
Gene Expression, Fertilization, Oogenesis
(developmental biology; fertilization; oogenesis)

Michael Dean
NCI/FDRDC, Biological Carcinogenesis & Development Program
Scientist
Fort Detrick, Building 560, Room 21-19
Frederick, MD 21702-1013
Phone: 301-846-5931
Fax: 301-846-1909
Genetic Markers, Molecular Biology, AIDS-HIV
(genetic mapping of human disease)

Ravi Dhar
NCI, DCE/LMV
Visiting Chemist
Building 41, Room B506
NIH, Bethesda, MD 20892
Phone: 301-496-0990
Fax: 301-496-4953
Gene Regulation, Gene Transcription, Gene Translation, Gene Expression, AIDS-HIV, Gene Cloning
(oncogene research; Ras genes of yeast S. cerevisiae; expression of eukaryotic genes in yeast strains of S. cerevisiae and S. pombe)

Joseph A. DiPaolo
NCI/DCE, Laboratory of Biology/CPCP
Chief, LB
Building 37, Room 2A19
NIH, Bethesda, MD 20892
Phone: 301-496-6442
Fax: 301-496-2905
Carcinogenesis, Growth Factor Inhibitors, Oncogenes
(interaction of chemical and viral agents in human cancer; human papilloma virus)
Goals: To regulate human papilloma virus expression.

David A. Dichek
NHLBI, Molecular Hematology
Senior Investigator
Building 10, Room 7D-18
NIH, Bethesda, MD 20892
Phone: 301-496-7695
Fax: 301-496-9985
Thrombolytics, Gene Therapy, Atholosclerosis
(cardiovascular disease and gene therapy)
Major Laboratory Activities: Development of gene transfer models for treatment of vascular disease.
Goals: Development of new therapies for intravascular thrombosis and proliferative vascular disease.
Unique Resources/Techniques Available: Delivery and expression of recombinant plasminogen activators from endothelial cells.
Unique Products/Accomplishments: First demonstration of enhancement of endothelial cell fibrinolysis via gene transfer; first demonstration of in vivo gene transfer into vessel wall using a porous balloon catheter and clinically applicable vessel occlusion times.

Jonathan Dinman
NIDDK, Laboratory of Biochemical Pharmacology
Chief, Section on Genetics of Simple Eukaryotes
Building 8, Room 207
NIH, Bethesda, MD 20892
Phone: 301-496-3452
Fax: 301-402-0240
Drug Testing, Retroviruses, AIDS-HIV, Saccharomyces Cerevisiae
(virology; yeast molecular biology & genetics)

Raymond Dionne
NIDR, Laboratory of Neurobiology & Anesthesiology
Building 10, Room 3C407
NIH, Bethesda, MD 20892
Phone: 301-496-8896
Fax: 301-496-2443
Clinical Trials, Opioids, Analgesics, Stress
(clinical assessment of analgesic drugs; role of endogenous pain suppression processes in clinical pain; anesthesia and sedation in dentistry)

Amy M. Donahue
NIDCD, Division of Communication Sciences and Disorders
Chief, Hearing Program
Executive Plaza South, Room 400B
NIH, Bethesda, MD 20892
Phone: 301-402-3458
Fax: 301-402-6251
Hearing, Prosthetics
(hearing sciences, both basic and applied)

Jacob A. Donkersloot
NIDR, Laboratory of Microbial Ecology
Research Microbiologist
Building 30, Room 316
NIH, Bethesda, MD 20892
Phone: 301-496-4216
Fax: 301-402-0396

Nickolas Dorfman
NIDR, Laboratory of Oral Medicine
Expert
Building 30, Room 232
NIH, Bethesda, MD 20892
Phone: 301-496-4682
Fax: 301-402-1512
AIDS-HIV, Cancer, Immunology
(tumor immunology; human monoclonals; autoimmunity)

Margaret A. Douglas
DCRT, Laboratory of Applied Studies
Systems Analyst
Building 12A, Room 2047
NIH, Bethesda, MD 20892
Phone: 301-496-2847
Fax: 301-402-0007
Image Processing, Image Analysis
(medical image processing; volume visualization)

James Drake
NCI/DCT, Medicine Branch
Biologist
Building 10, Room 12C206
NIH, Bethesda, MD 20892
Phone: 301-496-0914
Fax: 301-402-0172
Pharmacology
(biochemical pharmacology—enzymology and antifoles)

John S. Driscoll
NCI/DCT, Laboratory of Medicinal Chemistry
Chief, LMC
Building 37, Room 5C02
NIH, Bethesda, MD 20892
Phone: 301-496-8065
Fax: 301-402-2275
Drugs, AIDS-HIV, Cancer
(anticancer drugs; anti-AIDS drugs; antiviral drugs)

Ronald Dubner
NIDR, Neurobiology & Anesthesiology Branch
Chief, NAB
Building 30, Room B18
NIH, Bethesda, MD 20892
Phone: 301-496-6804
Fax: 301-402-0667
Analgesics, Opioids, Stress

James A. Dvorak
NIAID, Laboratory of Parasitic Diseases
Building 4, Room 138
NIH, Bethesda, MD 20892
Phone: 301-496-4880
Fax: 301-402-2201
Parasites, Protozoology, Flow Cytometry, Microcomputers, Cell Biology
(quantitative analysis of medically important protozoa and host-parasite interactions; cell biology; optical and computer instrumentation; infectious disease)

Dennis M. Dwyer
NIAID, Laboratory of Parasitic Diseases
Supervisory Microbiologist
Building 4, Room.126
NIH, Bethesda, MD 20892
Phone: 301-496-5969
Fax: 301-402-0166
Microbiology, Tropical Diseases, Enzymes, Parasites, Infectious Diseases
(parasitology; cell biology; biochemistry)
Major Laboratory Activities: Cell biology; biochemistry; molecular biology of Leishmania and Toxoplasma.
Goals: Identification of unique/critical enzymes and transport proteins and their genes as new/unique targets for diagnostics, chemotherapy, and vaccine development.
Unique Products/Accomplishments: In vitro cultivation of Leishmania amastigotes (free of host cells); unique parasite enzyme (leishmanial secretory acid phosphatase) being cloned; also, several specific monoclonal antibodies against this enzyme.

William C. Eckelman
CC,
Chief, PET Department
Building 10, Room 1C497
NIH, Bethesda, MD 20892
Phone: 301-496-6455
Fax: 301-496-0114
Radiopharmaceuticals, Diagnostics, Pharmacology
(radiopharmaceutical development)
Major Laboratory Activities: Radiochemistry, radiopharmacy, imaging physics, modeling, and data analysis.
Goals: Development of new radiopharmaceuticals.
Unique Resources/Techniques Available: Two cyclotrons, six hot cells, and three PET cameras.

Edward M. Eddy
NIEHS, Laboratory of Reproductive and Developmental Toxicology
Research Biologist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3015
Fax: 919-541-3800
Gene Expression, Cell Differentiation, Contraceptives
(developmental biology; reproductive biology; immunology; molecular biology)

Murray Eden
NCRR, Biomedical Engineering & Instrumentation Program
Director
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4741
Fax: 301-496-6608
Imaging/Image Analysis, Computer Software, Statistics in Medicine
(image processing; signal processing; biomedical engineering; mathematics)

Gerald Ehrenstein
NINDS, Laboratory of Biophysics
Research Physicist
Building 9, Room 1E124
NIH, Bethesda, MD 20892
Phone: 301-496-3204
Fax: 301-480-0826
Ion Channels, Liposomes, Neurotransmitters
(secretion of neurotransmitters; fertilization)
Goals: Correlation between secretion properties and channel properties.
Unique Products/Accomplishments: Determination of factor in sperm that activates eggs during fertilization.

Gunther L. Eichhorn
NIA, Laboratory of Cellular & Molecular Biology
Chief, LCMB
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-1807
Fax: 410-550-1938
Aging, Nuclear Magnetic Resonance (NMR), Metals, DNA, RNA
(metals in biology; inorganic biochemistry; genetic information transfer; aging; magnetic resonance)

Lee Eiden
ADAMHA/NIMH, Laboratory of Cell Biology
Pharmacologist
Building 36, Room 3A17
NIH, Bethesda, MD 20892
Phone: 301-496-4690
Fax: 301-496-0492
AIDS-HIV, Peptides
(HIV; AIDS; CD4)

Maribeth Eiden
NIMH, Laboratory of Cell Biology
Staff Fellow
Building 36, Room 2D10
NIH, Bethesda, MD 20814
Phone: 301-496-0483
Fax: 301-496-4103
Retroviruses, Virus Receptors, Genetics (viral)
(retroviral mediated gene transfer (targeting genes to specific cell types))

Ronald Elin
CC, Clinical Pathology Department
Chief, CPD
Building 10, Room 2C-306
NIH, Bethesda, MD 20892
Phone: 301-496-5668
Fax: 301-402-1612
Magnesium, Dyes, Nutrition
(magnesium; developing technology to determine free magnesium)

Suzanne U. Emerson
NIAID, Laboratory of Infectious Diseases, Hepatitis Viruses
Microbiologist
Building 7, Room 203
NIH, Bethesda, MD 20892
Phone: 301-496-6227
Fax: 301-402-0524
Molecular Biology, Vaccines, Viruses
(hepatitis A and hepatitis B viruses)

Bernard T. Engel
NIA, Laboratory of Behavioral Sciences
Chief, LBS
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-1791
Fax: 410-550-2913
Cardiovascular Fluid Dynamics, Drugs, Heart
(diurnal hemodynamics; regulation of the circulation; aging)

Charles H. Evans
NCI/DCE, Laboratory of Biology
Chief, Tumor Biology Section
Building 37, Room 2A17
NIH, Bethesda, MD 20892
Phone: 301-496-6442
Fax: 301-496-2905
Lymphokines, Immunology, Oncology, Pharmacology, Carcinogenesis, Drug Uptake
(lymphokines; carcinogenesis; monoclonal antibodies; lymphocyte cytotoxicity; modulation of drug uptake; growth factors; targeting of pharmaceuticals; cancer prevention and control)

Leonard Evans
NIAID, Laboratory of Persistent Viral Diseases
Chemist
Rocky Mountain Laboratories
903 South Forth Street
Hamilton, MT 59840
Phone: 406-363-6096
Fax: 406-363-6406
Retrovirology, Toxins, RNA
(retroviruses; molecular biology; immunology (immunoassays and antibody mediated delivery systems))

Michele R. Evans
CC, Office of the Director
Environmental Safety Officer
Building 10, Room 1C118
NIH, Bethesda, MD 20892
Phone: 301-496-5281
Fax: 301-480-1267
Personnel/Product Safety, Sterilization, Safety Equipment
(health care, safety, and microbiology; infectious diseases)

Henry Fales
NHLBI, Laboratory of Biophysical Chemistry
Chief, LC
Building 10, Room 7N318
NIH, Bethesda, MD 20892
Phone: 301-496-2135
Fax: 301-402-3404
Chemistry (analysis), Chemistry (organic)
(synthesis; mass spectrometry; NMR; pheromones; drugs; natural products; x-ray crystallography; separation sciences; chromatography; toxins; alkaloids; steroids; amino acids; terpenes; peptides and peptide synthesis)

Lameh Fananapazir
NHLBI, Cardiology Branch
Director, Electrophysiology Laboratory
Building 10, Room 7B14
NIH, Bethesda, MD 29892
Phone: 301-496-5202
Fax: 301-402-0888
Antiarrhythmics, Clinical Devices, Catheters, Genetic Diseases/traits, Implantables
(arrhythmias; sudden death; cardiomyopathies; genetics)
Major Laboratory Activities: Risk stratification; new therapeutic strategies.
Goals: Definition of genetic/molecular basis of cardiomyopathies; genetic studies; non-invasive and invasive cardiovascular studies.
Unique Resources/Techniques Available: Electrophysiologic and genetic studies in a large population of cardiomyopathy patients.
Unique Products/Accomplishments: Dual chamber pacemaker algorithms and biosensors.

Patricia E. Fast
NIAID, Vaccine Research & Development Branch, Division of AIDS
Acting Chief, Clinical Development Section
Control Data Building, Room 2B-06
NIH, Bethesda, MD 20892
Phone: 301-496-8200
Fax: 301-480-5703
Vaccines, Immunotherapy, Adjuvant Technology
(AIDS; vaccines)

Martin S. Favero
CDC, Nosocomial Infections Laboratory Branch
Chief, NILB
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3851
Fax: 404-639-2195
Sterilization, Safety Equipment, Microbiology
(hospital infections; dialysis disinfection and sterilization)
Major Laboratory Activities: Dialysis associated diseases; disinfection and sterilization; clinical microbiology.
Goals: Prevent hospital aquired infections.
Unique Resources/Techniques Available: SEM; disinfection evaluation.
Unique Products/Accomplishments: Dialysis equipment and associated contamination problems.

Makonnen Fekadu
CDC/NCID, DVRD/Viral & Rickettsial Zoonoses Branch
Medical Office for Research
(Mail stop G-33)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1050
Fax: 404-639-3163
Subunit Vaccines (ISCOM), Recombinant Vaccines, Synthetic Peptides
(vaccine development/evaluation)
Major Laboratory Activities: Viral pathology, molecular biology, diagnosis, vaccine evaluation, and development.
Goals: Improved rabbits vaccines.
Unique Resoures/Techniques Available: Animal model Know-how.
Unique Products/Accomplishments: Rabies subunit vaccines (in ISCOM system) and rabies recombinant vaccines.

Christian C. Felder
ADAMHA/NIMH, Laboratory of Cell Biology
Senior Staff Fellow
Building 36, Room 3A-15
NIH, Bethesda, MD 20892
Phone: 301-496-8755
Fax: 301-402-1748
Cell Biology, Receptors, Ion Channels
(signal transduction of neurotransmitter receptors)
Major Laboratory Activities: Biochemistry/pharmacology of signal transduction.
Goals: To characterize receptor-operated calcium channels.
Unique Resources/Techniques Available: Single-cell calcium imaging.
Unique Products/Accomplishments: Calcium channel-blocking drugs as tumor suppressors.

Peter Feng
FDA, Food Microbiology Methods
Senior Staff Fellow
200 C Street, SW (HHF-234)
Washington, DC 20204
Phone: 202-245-2518
Fax: 202-472-1270
Bacteria, Diagnostics, Genetic Engineering
(molecular biology; virulence mechanisms; food microbiology)

Robert Fenton
NCI/FCRDC, Div. of Cancer Treatment, Biological Response Modifiers Program
Senior Investigator, Laboratory of Biochemical Physiology
Fort Detrick, Building 50, Room 31-71
P.O. Box B
Frederick, MD 21702-1201
Phone: 301-846-5703
Fax: 301-846-1673
Oncogenes, Cancer Biology, Vaccines
(molecular aspects of cancer cells)
Major Laboratory Activities: Ras oncogene physiology, cytoskeletal control by isoprenylated proteins, tumor immunology.
Goals: Generate new anti-tumor therapies. Unique Resources/Techniques Techniques of molecular biology and immunology.
Unique Products/Accomplishments: New concepts of tumor immunology.

James H. Ferguson
NLM, Specialized Information Service
Special Expert
Building 38, Room 3S-317
NIH, Bethesda, MD 20894
Phone: 301-496-6531
Fax: 301-480-3537
Biotechnology, Data Bases
(biotechnology and molecular biology data handling)

John H. Ferguson, Jr.
OD, Office of Medical Application of Research
Director, OMAR
Federal Building, Room 618
NIH, Bethesda, MD 20894
Phone: 301-496-5641
Fax: 301-402-0420
Informational Sciences, Consensus Development Conferences, Health Promotion/Education
(technology assessment/transfer)
Major Laboratory Activities: Technical assessment/ consensus development conferences.
Goals: Improved health by dissemination of this information to the health care community.
Unique Resources/Techniques Available: Consensus conferences.
Unique Products/Accomplishments: Eighty-four statements of past consensus conferences.

James Ferretti
NHLBI
Building 3, Room 7N418
NIH, Bethesda, MD 20892
Phone: 301-496-3341
Fax: 301-402-3405
Nuclear Magnetic Resonance (NMR), Molecular Dynamics, Simulations

Lance J. Ferrin
NIDDK, Genetics & Biochemistry Branch
Research Biologist
Building 10, Room 9D15
NIH, Bethesda, MD 20892
Phone: 301-496-2038
Fax: 301-496-9878
Genetic Diseases, Genetic Screening, Gene Mapping
(biochemistry of homologous recombination)
Major Laboratory Activities: Recombinant-mediated sequence recognition.
Goals: Developing rapid techniques to map and isolate genes.
Unique Resources/Techniques Available: Highly purified RecA protein.
Unique Products/Accomplishments: A technique to perform sequence-specific cleavage of genomic DNA at any given restriction enzyme site.

Douglas Ferris
NCI/FCRDC, Cell Biology/Biological Respiratory Modifier Program
Scientist
Fort Detrick, Building 567, Room 143
P.O. Box B
Frederick, MD 21702-1013
Phone: 301-846-1427
Fax: 301-846-5651
Cell Biology, Phosphorylation, Signal Transduction
(cell cycle regulation; growth; differentiation; cancer; aging)

Jorgen Fex
NIDCD, Laboratory of Molecular Biology
Chief, LMB
Building 36, Room 5D08
NIH, Bethesda, MD 20892
Phone: 301-496-2583
Fax: 301-480-3242
Molecular Biology, Hearing, Gene Mapping
(molecular biology; molecular genetics; genetic causes of hereditary deafness)
Major Laboratory Activities: Research on (1) linkage analysis of Waardenburg Syndrome I, (2) gene mapping the mutation that causes loss of inner hair cells in mice, (3) techniques for making yeast artificial chromosomes, (4) cochlear cellular signaling gene cloning, and (5) potassium channel gene expression in the chick cochlea.
Goals: (1) Clone genes that have a role in hearing, (2) map and clone those genes that are involved with late onset hearing loss and (3) establish a cDNA library from mRNA from the isolated Organ of Corti.

Stephen A. Ficca
NHLBI,
Executive Officer
Building 31, Room 5A48
NIH, Bethesda MD 20892
Phone: 301-496-2411
Fax: 301-402-0299
Business Services, Drug Delivery

Howard A. Fields
CDC/NCID, Hepatitis Branch
Chief, Molecular and Immunodiagnostics Section
(Mail stop A-33)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2335
Fax: 404-639-1563
Assay Methods, Bacterial Expression Systems, DNA Probes
(diagnostics; gene synthesis and expression; vaccine development)
Major Laboratory Activities: Development of immuno- and molecular diagnostic reagents and methods to detect markers of viral hepatitis.
Goals: Improve existing technology and develop novel approaches to diagnose viral hepatitis.
Unique Resources/Techniques Available: A method to assemble synthetic genes (patent pending); a sequence-specific capture system to detect PCR products (patent pending).
Unique Products/Accomplishments: Expressed core protein of hepatitits C virus from a synthetic gene assembled by our above-discussed new technology; developed a peptide-based enzyme immunoassay to detect antibody activity to hepatitis E virus (patent pending).

Lou Fintor
NCI, Cancer Prevention & Control/Surveillance/Applied Research
Public Health Analyst/Advisor
Executive Plaza North, Room 313
NIH, Bethesda, MD 20892
Phone: 301-496-8500
Fax: 301-402-0816
Prevention, Risk Analysis, Health Promotion/Education
(cancer prevention and control; health services research; epidemiology; AIDS)
Major Laboratory Activities: Data analysis, surveillance, health economics and study design; technology utilization analysis, cost-effectiveness, cost-benefit analysis.
Unique Resources/Techniques Available: SEER data base, patient advocacy data base, cancer map, CANTROL program.
Unique Products/Accomplishments: Publications, policy papers, journal reviews, consulting.

Nicholas M. Fleischer
FDA, Office of Research Resources/Biopharmaceutics
Acting Chief, Pharmacokinetics Evaluation Branch
Parklawn Building (HFD-601)
5600 Fishers Lane
Rockville, MD 20857
Phone: 301-443-2785
Fax: 301-443-4518
Anesthetics, Cardiovascular, New Delivery System
(clinical pharmacology; pharmacokinetics; skin permeability)

John Fletcher
DCRT, Laboratory of Applied Studies
Supervisor, Research Mathematician
Building 12A, Room 2041
NIH, Bethesda, MD 20892
Phone: 301-496-1121
Fax: 301-402-0007
Applied Mathematics
(computers and engineering; biomedical research)

Jorge Flores
NIAID, Laboratory of Infectious Diseases
Visiting Scientist
Building 7, Room 117
NIH, Bethesda, MD 20892
Phone: 301-496-5811
Fax: 301-496-8312
Rotaviruses, Vaccines, DNA/RNA Probes
(virology; infectious diseases; molecular biology)
Major Laboratory Activities: Rotavirus vaccines testing development of DNA probes.
Goals: Development of rotavirus vaccines.
Unique Resources/Techniques Available: Field testing of childhood vaccines.
Unique Products/Accomplishments: DNA probes to serotype rotaviruses.

William E. Fogler
NCI/DCT/FCRDC, Laboratory of Experimental Immunology/DTS
Guest Scientist
BRMP-FCRDC
P.O. Box B
Frederick, MD 21702-1201
Phone: 301-846-1514
Fax: 301-846-1673
Cancer (Antibody-Based Therapy), Monoclonal Antibodies, Immunotoxins
(cancer; immunology)
Major Laboratory Activities: Potentiation of immunotoxin anti-tumor activity; heterobifunctional antibody directed tumor cell localization.
Goals: Drug development.
Unique Resources/Techniques Available: In vitro and in vivo facilities on site.

Thomas M. Folks
CDC/NCID, Retrovirus Diseases Branch
Chief, RDB
(Mail Stop G-19)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1024
Fax: 404-639-3163
Retroviruses, Chronic Viral Diseases, Assay Methods
(all aspects of retrovirology)
Major Laboratory Activities: Characterization of novel retroviruses, study of retrovirus activation.
Goals: Elucidate the possible role of retroviruses in chronic and autoimmune diseases.
Unique Resources/Techniques Available: Peptides, primers, probes for use in retrovirus detection assays, novel cell lines.
Unique Products/Accomplishments: Discovery of novel retrovirus-infected cell lines.

Willis R. Foster
NIDDK, Office of Disease Prevention & Technology Transfer
Senior Staff Physician
Building 31, Room 4B54
NIH, Bethesda, MD 20892
Phone: 301-496-3521
Fax: 301-496-2830
(alternate technology transfer coordinator)

Daniel Fowler
NCI/DCBDC, Experimental Immunology Branch
Clinical Associate
Building 10, Room 4B14
NIH, Bethesda, MD 20892
Phone: 301-496-6899
Fax: 301-496-0887
Receptors (cell biology), Immune Modulation, Cytokines
(transplant; immunology)
Major Laboratory Activities: Bone marrow transplant (murine).
Goals: Immune modulation.

Carl E. Frasch
FDA/CBER, Division of Bacterial Products
Chief, Laboratory of Bacterial Polysaccharides
Building 29, Room 404
NIH, Bethesda, MD 20892
Phone: 301-496-1920
Fax: 301-480-4091
Vaccines (childhood diseases), Carbohydrates, Infectious Diseases
(bacterial polysaccharide vaccines)
Major Laboratory Activities: Bacterial polysaccharide and conjugate vaccine studies and development of outer membrane immunogens.
Goals: Better childhood vaccines.
Unique Resources/Techniques Available: Established ELISA procedure, and conjugation methods.
Unique Products/Accomplishments: Licensed conjugate vaccines for Haemophilus influenzae.

Claire Fraser
ADAMHA/NIAAA, Laboratory of Neurogenetics & Pharmacologic Studies
Chief, Section on Molecular Neurobiology
Flow Building, Room 70
12501 Washington Avenue
Rockville, MD 20852
Phone: 301-443-5880
Fax: 301-443-5894
Receptors, Signal Transduction, Molecular Biology
(molecular biology of neurotransmitter receptors)

Joseph Fratantoni
FDA/CBER, Laboratory of Cellular Hematology
Chief, LCH
Building 29, Room 321
NIH, Bethesda, MD 20892
Phone: 301-496-2577
Fax: 301-402-2780
Platelets, Cell Biology, Instrumentation
(platelet assay; methodology; application to transfusion)

Stephen Freese
FDA/CBER, Division of Bacterial Products
Staff Fellow, Laboratory of Bacterial Polysaccharides
Building 29, Room 404
NIH, Bethesda, MD 20892
Phone: 301-496-9692
Fax: 301-402-2778
NMR, Carbohydrates, Vaccines
(synthetic oligosaccharides; polysaccharide structure)
Major Laboratory Activities: Synthesis of N. meningococcus A conjugate vaccine.

Joyce L. Frey
NCI/FCRDC, Laboratory of Experimental Immunology
Staff Fellow
Fort Detrick, Building 560, Room 31-93
Frederick, MD 21702-1201
Phone: 301-846-1327
Fax: 301-846-1673
Receptors, Antiidiotype Antibodies, Immune Modulation
(immunology)

Major Laboratory Activitives: Protein purfication, antibody production, receptor modulation.
Goals: Develop reagents to simulate NK cells in vivo.

Tsutoma Fujimura
NIDDK
Building 8, Room 210
NIH, Bethesda, MD 20892
Phone: 301-496-3452
Fax: 301-402-0240
RNA, Saccharomyces cerevisiae

Harold Gainer
NINDS, Laboratory of Neurochemistry, Basic Neurosciences Program
Chief, LN
Building 36, Room 5A05
NIH, Bethesda, MD 20892
Phone: 301-496-5468
Fax: 301-402-1566
Molecular Biology, Neuropeptides, Polymerase Chain Reaction (PCR), Antisense
(neuropeptides; neurofilaments)
Major Laboratory Activities: Neurochemical research.
Goals: Neuropeptide and neurofilament regulatory studies.
Unique Resources/Techniques Available: Subtration libraries, Xenopus egg micro injection.
Unique Products/Accomplishments: Receptors cloned, organotypic cultures.

Dennis Gaines
FDA, Division of Toxicology Studies
Research Biologist
Beltsville Research Facility
8501 Muirkirk Road
Laurel, MD 20708
Phone: 301-344-4063
Fax: 301-344-4026
Cancer Diagnostics (Markers), Molecular Biology, Toxins
(toxicological techniques for early evaluation of food additives or contaminants, e.g. mycotoxins, as pathological agents)

Joseph Gallelli
CC, Pharmacy Department
Chief, PD
Building 10, Room 1N-257
NIH, Bethesda, MD 20892
Phone: 301-496-4363
Fax: 301-496-0210
Drugs, Drug Formulation & Development, Chemistry (analysis)
(pharmaceutical manufacturing and development)

Mark M. Garner
NICHD, Laboratory of Theoretical and Physical Biology
Expert, Section on Macromolecular Analysis
Building 10, Room 6C101
NIH, Bethesda, MD 20892
Phone: 301-496-4878
Fax: 301-402-0263
Electrophoresis, DNA/RNA Probes, Nucleic Acid
Major Laboratory Activities: Development of new electrophoretic techniques for the separation of DNA.
Goals: Separation of intact metaphase chromosomes.
Unique Resources/Techniques Available: Capillary electrophoresis of DNA and DNA-protein complexes.

Claude F. Garon
NIAID, Laboratory of Vectors & Pathogens
Chief, LVP
903 S. Fourth Street
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Infectious Diseases Diagnostics, Vaccines, Recombinant DNA
(microbial pathogenesis)
Major Laboratory Activities: Use molecular biology in several medically important systems to characterize features of the host-pathogens interaction.
Goals: To define in molecular terms exploitable features and pathogens.
Unique Resources/Techinques Available: Special skills in arthropod vectors and arthropod-borne diseases.
Unique Products/Accomplishments: A portfolio of laboratory observations that exploit the potential specific microbial bioproducts for improved diagnostics and/or vaccines. The present makeup of the Laboratory of Vectors & Pathogens provides a unique and innovative mixture of basic biology, biochemistry, immunology, electron microscopy, arthropod vector biology and molecular biology characterizing genes and gene products involved in the pathogenesis of Bordetalla pertussis, Escherichia coli, Borrelia burgdorferi, Borrelia hermsii, Yersinia pestis, and Camphylobater jejuni—all important human pathogens.

Harry V. Gelboin
NCI/DCE, Laboratory of Molecular Carcinogenesis
Chief, LMC
Building 37, Room 3E24
NIH, Bethesda, MD 20892
Phone: 301-496-6849
Fax: 301-496-8419
Cytochrome P-450, Antibodies (monoclonal), Drugs, Carcinogenesis
(cytochrome P-450; monoclonal antibodies; expression systems; drugs and carcinogens)

Ronald Germain
NIAID, Laboratory of Immunology, DIR
Chief, Lymphocyte Biology Section
Building 10, Room 11N311
NIH, Bethesda, MD 20892
Phone: 301-496-1904
Fax: 301-496-0222
Immunology, Lymphocytes, Immunoregulation
(basic immunology; antigen recognition; tolerance; gene transfer)

Gad Gilad
ADAMHA/NIMH, Neuropschiatry Branch
Visiting Scientist
WAW Building, Room 435
St. Elizabeth's Hospital
Washington, DC 20032
Phone: 202-373-6184
Fax: 202-373-6248
Aging, Growth Factors, Nerve Regeneration
(nerve cell survival and regeneration; neuroplasticity in stress and aging, and related disorders)

Edward I. Ginns
ADAMHA/NIMH, Clinical Neuroscience Branch
Chief, Section Molecular Neurogenetics
Building 10, Room 3D16
NIH, Bethesda, MD 20892
Phone: 301-496-0373
Fax: 301-402-0430
Retroviruses, Recombinant Protein Production, Gene Transfer, Glucocerebrosidase
(gene transfer and expression; mutation analysis; protein purification; Gaucher's disease; lysosomal storage disorders; neurogenetics; human genetic disorders (diagnosis using molecular biological approaches) and gene therapy (retroviral gene transfer); recombinant production of human enzymes; linkage and chromosomal analyses for genetic disorders affecting the nervous system)

Ann Ginsburg
NHLBI, Laboratory of Biochemistry
Chief, Section on Protein Chemistry
Building 3, Room 208
NIH, Bethesda, MD 20892
Phone: 301-496-1278
Fax: 301-496-0599
Metalloproteins, Enzymes, Microcalorimetry
(protein structure and function; enzyme regulation; protein DNA and protein-protein interactions)

C.P.J. Glaudemans
NIDDK, Laboratory of Medicinal Chemistry
Chief, Section on Carbohydrates
Building 8, Room B1A23
NIH, Bethesda, MD 20892
Phone: 301-496-1266
Fax: 301-402-0589
Immunochemistry, Carbohydrates, Glycoproteins
(immunochemistry; bacterial structure; monoclonal antibodies; carbohydrates)

Steven R. Goldberg
ADAMHA/NIDA, ARC, Behavioral Pharmacology
Chief
Building C
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-1522
Fax: 410-550-1645
Drug/Alcohol Abuse, Animal Models, Psychopharmocology
(behavioral pharmacology; animal drug abuse testing)

David S. Goldstein
NINDS, Clinical Neuroscience Branch
Chief, Clinical Neurochemistry Section
Building 10, Room 5N262
NIH, Bethesda, MD 20892
Phone: 301-496-8850
Fax: 301-402-0494
Degenerative Diseases, Pharmacology, Physiology
(blood pressure; neuropharmacology)
Major Laboratory Activities: Measurement of neurotransmitters and neuropeptides in various biological fluids; microdialysis; microneurography; PET scanning.
Goals: Development of methods for assessing neurotransmitter metabolism and neuropeptide function in man. Pharmacological testing in neurocardiologic disorders.
Unique Resources/Techniques Available: HLPC—electrochemical assays for catechols and metabolites.
Unique Products/Accomplishments: PET scanning of cardiac sympathetic nerves; in vivo microdialysis of central noradrenergic centers; clinical sympathetic microneurography.

Seth Goldstein
NCRR, Biomedical Engineering and Instrumentation Program
Chief, Mechanical Engineering Section
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Clinical Devices, Clinical Instrumentation, Confocal Microscopy
(instrumentation and clinical devices; microscopy)
Major Laboratory Activities: Design instrumentation; perform engineering studies of biomedical problems.
Goals: Provide effective engineering support to NIH intramural program and disseminate results as widely as possible.
Unique Resources/Techniques Available: Highly-trained and experienced staff.
Unique Products/Accomplishments: Video rate confocal microscope; measurement of head motion in a PET scanner.

William H. Goldwater
NIH, Office of the Director, Office of Extramural Programs
Director, Extramural Programs Management Office
Building 1, Room 328
NIH, Bethesda, MD 20892
Phone: 301-496-2241
Fax: 301-402-2831
(extramural program policies and procedures; clinical trials; epidemiology studies; standards of conduct; legal implications of extramural programs)

Frank J. Gonzalez
NCI/DCE, Molecular Carcinogenesis
Section Chief
Building 37, Room 3E24
NIH, Bethesda, MD 20892
Phone: 301-496-9067
Fax: 301-496-8419
Drugs, Carcinogenesis, Metabolism, Polymorphism, DNA, Expression Vectors
(human P450 genes involved in drug and carcinogen metabolism; expression of P450 cDNA in cultured cells; analysis of P450 gene polymorphisms/mutations)

Michael M. Gottesman
NCI, DCBDC, Laboratory of Cell Biology
Chief, LCB
Building 37, Room 1B22
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Phone: 301-496-1530
Fax: 301-402-0450
Multidrug resistance, Gene Therapy, Chemotherapy
(drug resistance; cathepsins)
Major Laboratory Activities: Molecular biology of drug resistance and growth regulation.
Goals: New strategies for cancer diagnosis/therapies.
Unique Products/Accomplishments: Cloned MDR gene; MDR transgenic mice; cloned cathepsin L gene; MDR expression vectors.

Jordan Grafman
NINDS, Medical Neurology Branch
Chief, Cognitive Neurosciences Section
Building 10, Room 5C422
NIH, Bethesda, MD 20892
Phone: 301-496-0220
Fax: 301-480-2909
Dementia, Degenerative Diseases, Memory Enhancers
(human memory; human cognition; amnesia)
Major Laboratory Activities: Cognitive psychological research; cognitive neuropsychological research; brain and behavior.
Goals: To map cognitive processes to brain regions.
Unique Resources/Techniques Available: Selected patient groups; sophisticated testing methods.

Harvey R. Gralnick
CC, Clinical Pathology Department
Chief, Hematology Service
Building 10, Room 2C390
NIH, Bethesda, MD 20892
Phone: 301-496-6891
Fax: 301-402-1612
Oncology, Thrombosis, Von Willebrand Factor
(thrombosis; blood coagulation; adhesive proteins; platelets; monoclonal antibodies)

Derrick Shawn Grant
NIDR, Laboratory of Developmental Biology
Visiting Fellow
Building 30, Room 430
NIH, Bethesda, MD 20892
Phone: 301-496-1660
Fax: 301-402-0897
Basement Membrane, Cell Attachment, Cell Differentiation
(development and regulation of endothelial cell differentiation by the extracellular matrix)

Barry Graubard
NCI, Biometry Branch, Clinical Trials Section
Mathematical Statistician
Executive Plaza North, Room 344
NIH, Bethesda, MD 20892
Phone: 301-496-8547
Fax: 301-496-0816
Statistics in Medicine, Clinical Trials, Computer Software
(statistics; mathematics; computer science)

Michael V. Green
CC, Department of Nuclear Medicine
Head, Imaging Physics Section
Building 10, Room 1C401
NIH, Bethesda, MD 20892
Phone: 301-496-5675
Fax: 301-402-3521
Imaging Techniques, PET, Nuclear Medicine
(nuclear tracer imaging; SPECT, PET imaging)
Major Laboratory Activities: Imaging systems, methods, and applications development.
Goals: Investigation of organ function in health and disease with nuclear tracer methods.
Unique Resources/Techniques Available: High-resolution organ function imaging in small animals.
Unique Products/Accomplishments: Development of a high-resolution planar, SPECT imaging system for small animal studies.

Peter Greenwald
NCI, Division of Cancer Prevention & Control
Director, DCPC
Building 31, Room 10A52
NIH, Bethesda, MD 20892
Phone: 301-496-6616
Fax: 301-496-9931
Cancer, Cancer Detection, Nutrition
(cancer prevention research; cancer epidemiology; cancer control)

Arnold Greenwell
NIEHS, Experimental Toxicology Branch
Biologist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3393
Fax: 919-541-7666
Assay Methods, Immunoassays, Antibodies (monoclonal), Cancer
(immunocytochemistry; pathology)
Major Laboratory Activities: Role of cell proliferation in tumor development.
Goals: Develop cell proliferation markers, elucidate role of cell proliferation in Government pathology laboratory and use immunocytochemical techniques.
Unique Products/Accomplishments: Have paper in press (Cancer Letters) describing technique for proliferating cell nuclear antigen (PCNA) staining in archival tissue; archival tissue is typically unresponsive to many immunocytochemical assays; this will allow scientists to go back and look at the role of cell proliferation in previously conducted studies.

Nigel H. Greig
NIA, Laboratory of Neurosciences
Scientist
Building 10, Room 6C103
NIH, Bethesda, MD 20892
Phone: 301-496-8970
Fax: 301-402-0074
Alzheimer's Disease, Brain, Pharmacology, Cancer
(pharmacology; cancer chemotherapy; Alzheimer's disease)

Dale Grothe
ADAMHA/NIMH, Pharmacy Department
Psychiatric Pharmacist
Building 10, Room 1N257
NIH, Bethesda, MD 20892
Phone: 301-496-4363
Fax: 301-496-0210
Antidepressants, Neurotransmitters, Neuropharmacology
(psychopharmacology, especially affective disorders, and anxiety disorders, also movement disorders, psychotropic pharmacokinetics)

Duane J. Gubler
CDC, OD, Division of Vector-Borne Infectious Diseases
Director
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6428
Fax: 303-221-6476
Dengue Hemorrhagic Fever, Tropical Diseases, Diagnostics
(epidemiology, prevention and control of vector-borne infectious diseases)
Major Laboratory Activities: Develop more rapid, sensitive and specific diagnostic tests.
Goals: Commercially available test kit for dengue hemorrhagic fever.
Unique Resources/Techniques Available: Both state-of-the-art molecular virology and immunology laboratories and field laboratory for testing.
Unique Products/Accomplishments: Developed improved virus isolation techniques used to surveillance for DHF.

Fabian Gusovsky
NIDDK
Senior Staff Fellow
Building 8, Room 1A15
NIH, Bethesda, MD 20892
Phone: 301-496-1577
Fax: 301-402-0008
Fluorine, Fluorocatechols, Adrenergics

H. Robert Guy
NCI, Division of Cancer Biology, Diagnosis & Centers
Laboratory of Mathematical Biology
Building 10, Room 4B56
NIH, Bethesda, MD 20892
Phone: 301-496-2068
Fax: 301-480-2871
Business Service (consulting), Cell Biology, Ion Channels, Molecular Modeling, Receptors
(molecular structure of membrane proteins)
Major Laboratory Activities: Develop structural models of membrane proteins, especially ion channels.
Goals: Understand the structure and functional mechanisms of membrane proteins well enough to allow rational drug design.
Unique Resources/Techniques Available: Computer molecular modeling hardware and software.
Unique Products/Accomplishments: Correct prediction of portions of voltage-gated channels responsible for ion permeation, drug and toxin binding, and channel gating; correct secondary structure prediction for colicin and synexin proteins; development of models for delta-lysin, pardoxin, magainin, cecropin, VDAC, and porin channels.

William Habig
FDA, Laboratory of Bacterial Toxins
Deputy Director
Building 29, Room 103
NIH, Bethesda, MD 20892
Phone: 301-496-9695
Fax: 301-402-2776
Neurons, Immunoflorescence, Antibodies (monoclonal), Tetanus

B. F. Hall
NIAID, Division of Microbiology and Infectious Diseases
Program Officer, Parasitology and Tropical Diseases Branch
Solar Building, Room 3A36
NIH, Bethesda, MD 20892
Phone: 301-496-2544
Fax: 301-402-0804
Vaccines, Tropical Diseases, Parasites
(vaccines; immunology)
Goals: Vaccine development for malaria and other parasitic/tropical diseases.
Unique Resources/Techniques Available: Responsible for extramural "Host Immunity Program" in parasitology and tropical diseases.

John Hallenbeck
NINDS, Stroke Branch
Acting Chief, SB
Building 36, Room 4D04
NIH, Bethesda, MD 20892
Phone: 301-496-6579
Fax: 301-402-2769
Neuropeptides, Cytokines, Neurotransmitters
(molecular and biochemical mechanisms of stroke; stroke treatment and prevention)
Major Laboratory Activities: Perivascular macrophage-endothelium interaction; neuropeptide isolation, purification, and characterization; role of neurotransmitters in stroke; brain microvessel endothelial cell function studied in culture.
Goals: Understand stroke mechanisms at molecular and biochemical levels; improve measures for prevention and treatment of stroke.

Mark Hallett
NINDS, Medical Neurology Branch
Clinical Director, NINDS
Building 10, Room 5N226
NIH, Bethesda, MD 20892
Phone: 301-496-1561
Fax: 301-496-1675
Parkinson's Disease, Stroke, Imaging/Image Analysis
(motor physiology)
Major Laboratory Activities: Physiology of human movement utilizing EEG, EMG, brain stimulating, biomechanical analysis and PET.
Goals: Understand normal movement and movement disorders.
Unique Resources/Techniques Available: Non-invasive brain stimulation techniques; combination of PET, MRI, and physiological imaging of brain regions.
Unique Products/Accomplishments: Localization of function in brain with non-invasive methods. Demostration of brain plasticity.

Myun Ki Han
NHLBI, Laboratory of Biochemistry
Staff Fellow
Building 3, Room 216
NIH, Bethesda, MD 20892
Phone: 301-496-4084
Fax: 301-496-0599
Gene Regulation, Proteins, DNA
(protein-protein and protein-DNA interactions)

Jeffrey H. Hancock
NIH/DCRT, Computer Systems Laboratory/Network Task Group
Electronics Engineer
Building 12A, Room 2049
NIH, Bethesda, MD 20892
Phone: 301-402-1354
Fax: 301-402-0007
Information Systems
(local area networks)
Major Laboratory Activities: Testing and evaluation of networking equipment.
Unique Products/Accomplishments: Built fiber optic test instrument.

Edgar E. Hanna
NICHD, Division of Scientific Revios
Senior Microbiologist/Scientific Review Administrator
Executive Plaza North, Room 520
NIH, Bethesda, MD 20892
Phone: 301-496-1485
Fax: 301-402-0915
Vaccines, Infectious Diseases, Toxins
(microbial actions on immune systems; bacterial toxins and actions on T cell immunity)
Unique Products/Accomplishments: Several original murine functional T cell hybridoma lines (among the first to be constructed).

Carl T. Hansen
NCRR, Veterinary Resources Program
Geneticist
Building 14F, Room 110
NIH, Bethesda, MD 20892
Phone: 301-496-5255
Fax: 301-402-0352
Transgenic Inbreds, Strain and Species Variables, Atherosclerosis
(genetics; immunology; behavior)
Major Laboratory Activities: Developing and maintaining animal models.
Goals: To maintain a broad-based animal models resource.
Unique Resources/Techniques Available: Major resource of genetically defined small animals.
Unique Products/Accomplishments: Primary resource for animal models for the study of immune function, hypertension, disorders of the nervous system, metabolic disorders, and behavior problems.

Dave' Harish
NINDS, Developmental Metabolic Neurology
Visiting Fellow
Building 10, Room 3D04
NIH, Bethesda, MD 20892
Phone: 301-496-8236
Fax: 301-496-9480
Globin Gene Regulation, Erythroid, Drugs
(globin gene regulation; serum-free media formulations; growth factors)

Curtis C. Harris
NCI/DCE, Laboratory of Human Carcinogenesis
Chief, LHC
Building 37, Room 2C01
NIH, Bethesda, MD 20892
Phone: 301-496-2048
Fax: 301-496-0497
Carcinogenesis, Cell Differentiation, Oncogenes
(carcinogenesis)

Charles L. Hatheway
CDC/CID, Enteric Diseases
Chief, Botulism Laboratory
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3867
Fax: 404-639-3296
Diagnostics, Assay Methods, Infectious Diseases, Microbiology, Toxins
(diagnostic microbiology; botulism)
Major Laboratory Activities: Investigation of botulism.
Goals: Development of diagnostic methods.
Unique Resources/Techniques Available: Large collection of bacterial strains.

Eugene G. Hayunga
DRG, SRB
Health Scientist Administrator
Westwood Building, Room 2A10
NIH, Bethesda, MD 20892
Phone: 301-496-7411
Fax: 301-402-1206
Immunoassays, Parasitic Diseases, Vaccines (Tropical Diseases)
(parasitology; immunochemistry)

Vincent J. Hearing
NCI, Laboratory of Cell Biology
Research Biologist
Building 37, Room 1B22
NIH, Bethesda, MD 20892
Phone: 301-496-1564
Fax: 301-402-0450
Melanotropes, Cancer Diagnostics (Markers), Metastasis
(pigmentation; melanocyte biology; melanoma; metastasis)

Carole A. Heilman
NIAID, Respiratory Diseases Branch
Chief, RDB
Solar Building, Room 3A-12
Rockville, MD 20852
Phone: 301-496-5305
Fax: 301-496-8030
Viral Respiratory Pathogens, Vaccines, Antivirals

Arnheiter Heinz
NINDS, Laboratory of Viral & Molecular Pathogenesis
Visiting Scientist & Section Chief
Building 36, Room 5D04
NIH, Bethesda, MD 20892
Phone: 301-496-9661
Fax: 301-496-0899
Transgenic Inbreds, Antisense (therapeutic methods), Antivirals
(virology; molecular biology)
Major Laboratory Activities: Transgenic mice, gene regulation, HIV research.
Goals: Basic understanding of pathogenesis of viral diseases.
Unique Resources/Techniques Available: Inducible promoters in transgenics.
Unique Products/Accomplishments: Transgenic animals with antiviral resistance.

Lothar Hennighausen
NIDDK, Laboratory of Biochemistry & Metabolism
Building 10, Room 9N113
NIH, Bethesda, MD 20892
Phone: 301-496-2716
Fax: 301-496-0839
Gene Expression, Recombinant Protein Production, Recombinant Vectors
(gene expression in the mammary gland)

Jack E. Henningfield
ADAMHA/NIDA, Addiction Research Center
Chief, Clinical Pharmacology Branch
Addiction Research Center
P.O. Box 5108
Baltimore, MD 21224
Phone: 410-550-1494
Fax: 410-550-1438
Drug/Alcohol Abuse, Psychopharmacology, Nicotine
(abuse potential testing; performance testing; human testing)

Eric R. Henry
NIDDK, Laboratory of Chemical Physics
Research Physicist
Building 2, Room B1-03
NIH, Bethesda, MD 20892
Phone: 301-496-6031
Fax: 301-496-0825
Lasers, Molecular Dynamics, Spectral Decomposition
(laser spectroscopy; reduction and analysis of large spectroscopic data sets; molecular simulation and design)

Ronald I. Herning
ADAMHA/NIDA, Addiction Research Center
P.O. Box 5108
Baltimore, MD 21224
Phone: 410-550-1420
Fax: 410-550-1438
Drug/Alcohol Abuse, Information Processing, Drug Testing, Abuse Protection, Human Performance, Electrophysiology
(drug-induced sensory and cognitive deficits; drug-induced performance deficits)

Marion Hetherington
ADAMHA/NIMH, Clinical Neuroendocrinology
Fogarty Fellow
Building 10, Room 3S-231
NIH, Bethesda, MD 20892
Phone: 301-496-1891
Fax: 301-402-1561
Metabolism, Eating Disorders
(eating disorders; energy regulation; metabolism taste perception; appetite regulation; food intake; obesity; bulemia; anorexia)

Indira Hewlett
FDA, Center for Biologic Evaluation & Research
Building 29, Room 309
NIH, Bethesda, MD 20892
Phone: 301-496-0646
Fax: 301-480-3254
Viral Genetics, AIDS-HIV
(genetics; AIDS and AIDS-related viruses; mechanism of virus replication)

John C. Hierholzer
CDC/NCID, DVRD/Respiratory & Enteric Viruses Branch
Supervisory Research Microbiologist
(Mail Stop G-17)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3427
Fax: 404-639-3163
Virology Diagnostics, Respiratory Virus Reagents, Parainfluenza
(respiratory virus diagnostics)
Major Laboratory Activities: Research in TR-FIA assays.
Goals: Increase sensitivity of respiratory virus reagents and diagnostic tests.
Unqiue Resources/Techniques Available: Antibody labeling.
Products/Accomplishments: Development of time-resolved fluoroimmunoassys with monoclonal antibodies.

Gerald A. Higgins
NIA, Biological Chemistry
Chief, Molecular Neurobiology Section
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-8158
Fax: 410-550-1704
Alzheimer's Disease, Transgenic Inbreds, Hormones/ Growth Factors
(molecular neurobiology; neurotrophins; Alzheimer's disease)
Goals: To understand the basic mechanisms that produce Alzheimer's disease pathology.
Unique Resources/Techniques Available: Automated DNA sequencing, in situ hybridization in post mortem human brain, image analysis.
Unique Products/Accomplishments: Transgenic mouse that shows all the features of Alzheimer's disease (plaques, tangles, cell death).

Alan Hinnebush
NICHD, Laboratory of Molecular Genetics
Research Microbiologist
Building 6, Room 320
NIH, Bethesda, MD 20892
Phone: 301-496-4480
Fax: 301-496-0243
Molecular Biology, Transcription, Translation
(genetics and molecular biology of yeasts and fungi)

Nikki J. Holbrook
NIA, Laboratory of Molecular Genetics
Senior Investigator
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-8162
Fax: 410-550-1936
Aging, Acute Respiratory Distress Syndrom, Molecular Biology
(cellular stress responses)
Major Laboratory Activities: Study of cellular stress response mechanism: heat shock proteins, DNA damage, and oxidative stress.
Goals: Define age-related alterations in cellular defense mechanisms; utilize pharmacological or gene therapy approaches to restore age-related deficits.
Unique Products/Accomplishments: Identification of novel gene expressed in response to DNA damage and oxidative stress (hyperoxia). Demonstrated unique expression of heat shock proteins in response to physiologic stress-link to neuroendocrine stress response (sympathetic nervous system).

Brian P. Holloway
CDC, SRP/Biotechnology Core Facility
Chief, Nuclear Acid Chemistry Section
Building 5, Room SB33 (Mail stop G-36)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2412
Fax: 404-639-1331
Analytical Instruments, Diagnostics, Molecular Biology
(development of solid phase automated DNA hybridization assay systems)
Major Laboratory Activities: DNA synthesis.
Goals: To develop solid phase PCR detection systems based on non-radioactive labeling.
Unique Resources/Techniques Available: Robotic stations adapted to perform rapid detection of PCR products.

Walter E. Horton, Jr.
NIA, Laboratory of Biological Chemistry
Senior Staff Fellow
4940 Eastern Avenue
Gerontology Research Center
Baltimore, MD 21224
Phone: 410-558-8154
Fax: 410-558-8137
Osteoarthritis, Hard Tissue Repair, Aging
(regulation of gene expression; cartilage regeneration/repair)
Major Laboratory Activities: Mapping of regulatory sequences; isolation of DNA-binding proteins; analysis of chondrocyte gene expression.
Goals: Therapy for degenerative cartilage disease by activating chondrocyte differentiation, growth, and/or matrix.
Unique Resources/Techniques Available: Immortalized chondrocyte cell line; cartilage-specific enhancer sequence.

Yasutaka Hoshino
NIAID, Laboratory of Infectious Diseases, Epidemiology Section
Visiting Scientist/DVM
Building 7, Room 105
NIH, Bethesda, MD 20892
Phone: 301-496-5811
Fax: 301-496-8312
Vaccines, Rotaviruses, Infectious Diseases
(virology; pathogenesis; genetics; vaccine development)
Major Laboratory Activities: Research on various aspects of rotavirus gastroenteritis and vaccine development.
Goals: Development of safe and effective vaccines against rotaviruses.
Unique Resources/Techniques Available: Genetic reassortment.
Unique Products/Accomplishments: Various human-x-human as well as human-x-animal rotavirus reassortants.

Wan-Ying Hou
NCI/FCRDC, BCDBC/Laboratory of Mathematical Biology
Visiting Fellow
Fort Detrick, Building 538, Room 124
Frederick, MD 21702-1013
Phone: 301-846-1594
Fax: 301-846-1425
Electron Microscopy, Cell Biology, Oncology
(immunopathy; cancer; cell biology; ultrastructure of cells)

Van S. Hubbard
NIDDK, Nutritional Sciences Branch
Director, NSB
Westwood Building, Room 3A18
NIH, Bethesda, MD 20892
Phone: 301-496-7823
Fax: 301-402-1278
Nutritional Products, Obesity, Health Promotion/Education
(clinical nutrition)

Lynn E. Huerta
NIDCD, Division of Communication Sciences and Disorders
Program Administrator
Executive Plaza South, Room 400B
NIH, Bethesda, MD 20892
Phone: 301-402-3458
Fax: 301-496-6251
Auditory Disorders, Hearing, Prosthetics
(hearing science, both basic and applied)

Susanne M. Humphrey
NLM, Lister Hill Natl Center for Biomedical Communications, CSB
Information Scientist
Building 38A, Room 9N903-M.S. 54
NIH, Bethesda, MD 20892
Phone: 301-496-9300
Fax: 301-496-0673
Information Systems
(indexing; knowledge-based expert systems)
Major Laboratory Activities: Knowledge-based indexing research.
Goals: Develop systems that improve indexers' performance and understanding of how systems may improve efficiency and quality of indexers' work.
Unique Resources/Techniques Available: Knowledge-based indexing software, knowledge-based manager software.
Unique Products/Accomplishments: MedIndEx (Medical Indexing Expert system)—a sophisticated, mature prototype; runs in Unix, X Windows environment on Sparkstation 2; extensively reported in the literature.

Lawrence Hunter
NLM, Computer Science Branch
Computer Scientist
Building 38A, Room 9S908
NIH, Bethesda, MD 20892
Phone: 301-496-9300
Fax: 301-496-0673
Biotechnology, Computer Software, Data Bases
(machine learning on genetic sequence data and in other biologically significant areas; case-based reasoning; artificial intelligence)

C. Craig Hyde
NIDDK, Laboratory of Molecular Biology
Senior Staff Fellow
Building 2, Room 316
NIH, Bethesda, MD 20892
Phone: 301-496-4295
Fax: 301-496-0201
Proteins, Enzymes, Biochemistry
(x-ray crystallography; structure and function of biological macromolecules)

Michael J. Iadarola
NIDR, Neurobiology & Anesthesiology
Research Pharmacologist
Building 30, Room B-02
NIH, Bethesda, MD 20892
Phone: 301-496-5003
Fax: 301-402-0667
Opioids, Dynorphin, Analgesics, Peptides
(neuropeptides; opioid peptides; especially dynorphine; analgesia and anti-inflammatory drugs; antipsychotic drugs)

Thomas Ingalls
NCRR, Office of the Director
Budget Officer
Building 12A, Room 4057
NIH, Bethesda, MD 20892
Phone: 301-496-1086
Fax: 301-402-1774
Bioengineering, Animal Models
(biomedical engineering; laboratory animal sciences)

Donald K. Ingram
NIA, Laboratory of Cellular & Molecular Biology
Research Psychologist
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-558-8178
Fax: 410-558-8173
Aging, Animal Models, Neurobiology Research
(psychobiology of aging; neurobiology of learning and memory; neuronal plasticity; nutrition and behavior; behavior genetics)
Major Laboratory Activities: Physiological, biochemical, molecular, and behavioral studies of basic mechanisms of aging.
Goals: Elucidation of basic mechanisms of aging and design of interventions.
Unique Resources/Techniques Available: Aged rodents, primates, and their cells, tissues, and body fluids; dietary-restricted and exercised animals of various ages.
Unique Products/Accomplishments: World's first study of the effects of reduced caloric diet on aging rates of primates (under way 5 years).

John K. Inman
NIAID, Laboratory of Immunology
Chief, Bioorganic Chemistry Section
Building 10, Room 11N311
NIH, Bethesda, MD 20892
Phone: 301-496-2026
Fax: 301-496-0222
Vaccines (infectious diseases), AIDS-HIV (vaccines), Immune Modulation
(bioconjugates; immunomodulators—synthesis; synthetic vaccines; chemical modification of proteins and carbohydrates)
Major Laboratory Activities: Design and synthesis of new reagents for the chemical modification of proteins/polysaccharides. Synthesis of bioconjugates (hapten-protein, protein-protein, antigen-polymer, antibody-polymer, etc).
Goals: Basic research: collaborative studies on cell signaling configurations of effector ligands; applied research: collaborative work in designing and testing new approaches to synthetic vaccines.
Unique Resources/Techniques Available: New reagents and methods for covalent cross-linking of macromolecules, haptenation of immunogen carriers, and functionalization of polymers (natural and synthetic).
Unique Products/Accomplishments: Reagents for introducing haloacetyl (SH-specific) groups at any desired position of a synthetic peptide to be coupled to a carrier (patents filed); polymer-based immunogens and B cell stimulants (papers published).

Yoichiro Ito
NHLBI, Laboratory of Biophysical Chemistry
Senior Investigator
Building 10, Room 7N322
NIH, Bethesda, MD 20892
Phone: 301-496-1210
Fax: 301-496-2443
Chromatography, Separation Techniques, Protein Purification
(countercurrent chromatography)
Major Laboratory Activities: Development and application of countercurrent chromatography.

David Jacobowitz
ADAMHA/NIMH, Laboratory of Clinical Science
Section Chief
Building 10, Room 3D-48
NIH, Bethesda, MD 20892
Phone: 301-496-1956
Fax: 301-402-0188
Proteins, Microglia, Antibodies (polyclonal)
(brain; calcium binding proteins; fluorescence microscopy; 2-dimensional gel electrophoresis)

Kenneth Jacobson
NIDDK, Laboratory of Chemistry
Research Chemist
Building 8A, Room B1A17
NIH, Bethesda, MD 20892
Phone: 301-496-9024
Fax: 301-402-0008
Adenosine, Chemistry (medicinal), Receptors
(medicinal chemistry; receptors; pharmacology; imaging; analytical chemistry)

Sonia Bonita Jakowlew
NCI, Biomarkers Prevention and Research Branch
Senior Investigator
5516 Nicholson Lane, Room 100
Kensington, MD 20895
Phone: 301-402-2138
Fax: 301-402-3131
Cancer Biology, Growth Factor Inhibitors, Prevention
(role and mechanism of polypeptide growth factors in cell growth, differentiation and cancer)
Major Laboratory Activities: Investigation of the role and mechanism of action of polypeptide growth factors and their receptors in cell growth, differentiation, and cancer biology.
Goals: Control the growth and proliferation of human cancer cells using combinations of polypeptide growth factors and their receptors along with natural and synthetic agents as therapeutic agents.
Unique Resources/Techniques Available: Cloning of transforming growth factor Bs 1, 2, 3, and 4 cDNAs and generation of specific transforming growth factor B peptide antibodies.
Unique Products/Accomplishments: Transforming growth factor Bs 1, 2, 3 and 4 cDNAs and peptide antibodies.

Katherine Cook Jaouni
NIAID, Division of Intramural Research
Research Microbiologist
Building 7, Room 206
NIH, Bethesda, MD 20892
Phone: 301-496-1409
Fax: 301-402-0524
Molecular Biology, Viruses
(molecular biology; virology; science administration and education)

Donald M. Jerina
NIDDK, Laboratory of Bioorganic Chemistry/OM
Section Chief
Building 8, Room 1A11
NIH, Bethesda, MD 20892
Phone: 301-496-2771
Fax: 301-402-0008
Carcinogenesis, Drugs, AIDS-HIV
(chemical carcinogenesis and its inhibition; xenobiotic and drug metabolism; design of specific inhibitors for HIV-1 reverse transcriptase and aspartyl proteases)

John A. Jermano
NIAID, DAIDS, Medical Branch, Antiretroviral Treatment Research Sec
Nurse Consultant
Solar Building, Room 2C-32
NIH, Bethesda, MD 20892
Phone: 301-496-0700
Fax: 301-402-3171
Nucleoside Analog, Antisense, Antiviral Drugs
(AIDS-HIV clinical trials; drug development)
Major Laboratory Activities: Contact person for Medical Branch, Antiretroviral Treatment Research Section.
Goals: Rapid development of novel therapeutics for HIV.
Unique Resources/Techniques Available: Extramural clinical trials programs.
Unique Products/Accomplishments: Major national clinical trials efforts in nucleoside analogs, NNRTIs, and other novel anti-HIV agents.

John J. Jessup
FDA/CBER, Division of Hematology, Laboratory of Cell Biology
Senior Research Pharmacologist
Building 29, Room 223
NIH, Bethesda, MD 20892
Phone: 301-496-4538
Fax: 301-402-2780
Lymphokines, Monoclonal Antibodies, Protease Inhibitors
(immunopharmacology; monocytes—mechanism of choline production and release; neuroimmunology)
Major Laboratory Activities: Study of the mechanism of production and release of IL-1 and TNF-alpha from human monocytes and the usefulness of monoclonal antibodies in regulating these processes; neuroimmunology.
Goals: To develop new therapeutic interventions for sepsis, rheumatoid arthritis, and other inflammatory disease.
Unique Resources/Techniques Available: Work with human monocyte system; FACS; monoclonal antibodies; Western blot; ELISA; research is carried out from a pharmacological perspective.

Anton Jetten
NIEHS, Heart Cell Biology Section
Chief, Laboratory of Pulmonary Pathobiology
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-2768
Fax: 919-541-4613
Receptors, Gene Regulation, Retinoids
(regulation of differentiation; gene expression)
Major Laboratory Activities: Mechanism of action of retinoid receptors and molecular mechanisms of gene expression.
Goals: Understanding cell and molecular biology of skin/lung.
Resources/Techniques Available: Understanding cell and molecular biology of skin/lung.
Unique Products/Accomplishments: Making antibodies/cDNA clones for differentiation markers.

Frank Joe
FDA
200 C Street, SW (HFF-413)
Washington, DC 20024
Phone: 202-245-1411
Fax: 202-245-2128
HPLC
(direct food additives)

Cal Johnson
DCRT
Electronics Engineer
Building 12A, Room 2035
NIH, Bethesda, MD 20892
Phone: 301-402-3042
Fax: 301-402-0007
Image Analysis, Image Processing, Bioengineering
(biomedical signal; image processing)

Leslye D. Johnson
NIAID, Enteric Diseases Branch
Chief, EDB
Solar Building, Room 3A05
Rockville, MD 20852
Phone: 301-496-7051
Fax: 301-402-2508
Vaccines, Antivirals, Hepatitis
(vaccines; antivirals; hepatitis)
Major Laboratory Activities: Responsible for preclinical development and screening of hepatitis antivirals; manage contracts for clinical testing of vaccines.
Goals: Move basic research developments into more applied areas so that preventive, therapeutic, and control measures will become available to improve public health.
Unique Resources/Techniques Available: Woodchuck model and in vitro screen available for evaluation of candidate hepatitis B antivirals; former available for hepatitis delta virus as well. IND clinical evaluation of candidate vaccines and therapies.
Unique Products/Accomplishments: Collaborative testing of candidate vaccines and antivirals for many academic and industrial groups.

Margaret I. Johnston
NIAID, Division of AIDS, Basic Research & Development Program
Assistant Director
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NIH, Rockville, MD 20852
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AIDS-HIV, Drugs, Animal Models
(discovery and preclinical development of therapies for HIV infection and the opportunistic infections associated with AIDS)

James A. Joseph
NIA, Laboratory of Cellular & Molecular Biology
Research Pharmacologist
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-558-8178
Fax: 410-558-8110
Aging, Acetylcholine, Dopamine Receptors
(neuropharmacology; signal transduction; CNS aging)
Major Laboratory Activities: Physiological, biochemical, molecular, and behavioral studies of basic mechanisms of aging.
Goals: Elucidation of basic mechanisms of aging and design of interventions.
Unique Resources/Techniques Available: Aged rodents, primates, and their cells, tissues, and body fluids; dietary-restricted and exercised animals of various ages.
Unique Products/Accomplishments: World's first study of the effects of reduced caloric diet on aging rates of primates (under way 5 years).

Bechara Kachar
NIDCD, Laboratory of Cellular Biology
Visiting Scientist, Section of Biophysics of Sensory Processes
Building 10, Room 5D50
NIH, Bethesda, MD 20892
Phone: 301-496-1599
Fax: 301-402-1590
Electron Microscopy, Cell Biology, Hearing
(molecular organization; mechanoelectrical transduction; auditory sensory mechanisms)
Major Laboratory Activities: Research on (1) active processes intrinsic to hearing sensory epithelia, (2) molecular motors and subcellular motility, (3) expression and role of myosins in auditory sensory tissues, (4) active and passive rearrangements of the tip link complex in stereociliary bundles of vestibular sensory epithelia, and (5) characterization of actin-based organelle translocator protein from the algae Nitella.
Goals: (1) Determine if stretch activated channels open in response to axial forces generated on the outer hair cells during sound-produced basilar membrane vibrations, and (2) localization of myosin I in hair cells.

Peter Kador
NEI, Laboratory of Mechanisms of Ocular Diseases
Chief of Ocular Theraputics
Building 10, Room 10B11
NIH, Bethesda, MD 20892
Phone: 301-496-6993
Fax: 301-402-2399
Diabetes, Aldose Reductase Inhibitors, Cataract, Retinopathy
(aldose reductase inhibitors; diabetic complications; anti-cataract drugs; ocular pharmacology)

Michael Kaliner
NIAID, Laboratory of Clinical Investigation
Head, Allergic Diseases
Building 10, Room 11C205
NIH, Bethesda, MD 20892
Phone: 301-496-9314
Fax: 301-480-8384
Allergy, Asthma, Mast Cells
(allergy; asthma; mast cells; rhinitis; mucous membrane functions; histamine; leukotrienes; mucous secretion; airway secretions; sinusitis)

Ravi Kambadwv
NCI, Biochemistry
Visiting Fellow
Building 31, Room 4A13
NIH, Bethesda, MD 20892
Phone: 301-496-9661
Fax: 301-496-0260
Gene Expression, Transgenics, Saccharomyces cerevisiae
(gene expression; transgenic protein chemistry; immunochemistry; cell biology)

Albert Z. Kapikian
NIAID, Laboratory of Infectious Diseases
Head, Epidemiology Section
Building 7, Room 103
NIH, Bethesda, MD 20892
Phone: 301-496-3371
Fax: 301-496-8312
Rotaviruses, Vaccines, Diagnostics
(rotavirus vaccine; diagnostic methods for viral diarrhea)

Nick Karabatsos
CDC/NCID, Arbovirus Diseases
Chief, Diagnostic Section
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6445
Fax: 303-221-6476
Diagnostics, Infectious Diseases, Tropical Diseases
(virology; taxonomy; diagnostics)
Major Laboratory Activities: Supervise vital diagnostic laboratory. Edit international catalogue of Arboviruses.
Goals: Improve laboratory diagnosis of arboviral infections.
Unique Resources/Techniques Available: Unique collection of arboviruses and arboviral reagents and clinical specimens.
Unique Products/Accomplishments: Editor, Arboviral Catalogue.

Frank W. Kari
NIEHS, Systems Toxicology Branch
Toxicologist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-2926
Fax: 919-541-0295
Phenylenediamine Dyes, Mutagenesis, Carcinogenesis
(structure-activity relationships of industrially important phenylenediamines (dyestuff intermediates))

John M. Karon
CDC, National Center for Infectious Diseases
Mathematical Statistician, Division of HIV/AIDS
1600 Clifton Road (G-29)
Atlanta, GA 30333
Phone: 404-639-2032
Fax: 404-639-2029
Computer Software, Data Analysis Program
(statistics; epidemiology)

Farouk Karoum
ADAMHA/NIMH, Senior Neurochemist
St. Elizabeth, Neuro-Science Center
Washington, DC 20032
Phone: 202-373-6236
Fax: 202-373-6248
Addiction, Drugs

Marvin J. Karten
NICHD, Contraceptive Development Branch
Chemist
Executive Plaza North, Room 600
NIH, Bethesda, MD 20892
Phone: 301-496-1661
Fax: 301-496-0962
Rational Drug Design, Analogs, Agonists/Antagonists, Receptors
(contraception; peptides; hormones; LHRH analogs)
Major Laboratory Activities: Extramural programs.
Goals: New contraceptive agents.
Unique Products/Accomplishments: Development of LHRH analogs.

David C. Kaslow
NIAID, Laboratory of Malaria Research
Acting Head, Molecular Vaccine Section
Building 4, Room B1-37
NIH, Bethesda, MD 20892
Phone: 301-496-3655
Fax: 301-480-3807
Vaccines (tropical diseases), Infectious Diseases—Parasites, Molecular Biology, Yeast Expression Systems
(malaria; vaccine development)
Major Laboratory Activities: Transmission of malaria.
Goals: Transmission-blocking vaccine.

Larry K. Keefer
NCI/FCRDC, Laboratory of Comparative Carcinogensis
Chief, Chemistry Section, Division of Cancer Etiology
Fort Detrick, Building 538, Room 205E
Frederick, MD 21701-1201
Phone: 301-846-1467
Fax: 301-846-5946
Cancer, Cardiovascular, Central Nervous System (CNS)
(pharmacology and toxicology of nitric oxide and its progenitors)
Major Laboratory Activities: Development of drugs that release nitric oxide (to aid in understanding its bioregulatory mechanisms as well as controlling its potential).
Goals: To characterize the pathways by which nitric oxide damages DNA and causes point mutations, and to elucidate the body's natural defenses against nitric oxide's toxic effects.
Unique Products/Accomplishments: Nitric oxide-donor drugs with many pharmacological activities, including vasorelaxation, anti-platelet action, and inhibition of tumor cell proliferation.

Jerry Keith
NIAID,
Building 30, Room 316
NIH, Bethesda, MD 20892
Phone: 301-496-2232
Fax: 301-402-0396
Pertussis, Antivirals
(molecular cloning and expression of genes relevant to the toxic components of Bordetella pertussis with goal of producing a better vaccine for pertussis)

Kathleen Kelly
NCI/DCBD, Laboratory of Pathology
Expert
Building 10, Room 2A33
NIH, Bethesda, MD 20892
Phone: 301-496-9287
Fax: 301-402-0043
Lymphokines, Oncogenes
(immune system modulation; lymphokines/cytokines; tumor growth regulation; lymphoma/leukemia diagnosis)

Alan P. Kendal
CDC/NCID, Influenza Branch
Chief, IB
(Mail stop G-16)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3591
Fax: 404-639-3163
Vaccines, Infectious Diseases, Diagnostics, Health Promotion/Education
(diagnostics/vaccines viruses)

James Kenimer
FDA/CBER, Laboratory of Allergy and Immunochemistry
Chief
Building 29, Room B-1
NIH, Bethesda, MD 20892
Phone: 301-496-8805
Fax: 301-402-2776
Neurons

Olen M. Kew
CDC/NCID, Respiratory & Enteric Viruses Branch
Chief, Molecular Virology Section
(Mail stop G-17)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3596
Fax: 404-639-1307
DNA/RNA Probes, Polymerase Chain Reaction (PCR), Diagnostics (viral)
(polioviruses)
Major Laboratory Activities: Poliovirus characterization and molecular epidemiology.
Goals: Eradication of poliovirus.
Unique Products/Accomplishments: Strain characterization using PCR and hybridization.

Dale O. Kiesewetter
CC, Department of Nuclear Medicine
Radiochemist
Building 10, Room 1C401
NIH, Bethesda, MD 20892
Phone: 301-496-0344
Fax: 301-496-0114
Radiopharmaceuticals, Chemistry (organic), Chemistry (medicinal), Fluororaclapride, Dopamine Receptors
(radiopharmaceutical chemistry; positron emission tomography; neuroreceptors; steroid receptors; organic chemistry/medicinal chemistry)

Randall Kincaid
ADAMHA/NIAAA, Laboratory of Molecular & Cellular Neurobiology
Chief, Section on Immunology
Flow Building, Room 61
12501 Washington Avenue
Rockville, MD 20852
Phone: 301-443-1101
Fax: 301-443-1758
Gene Expression, Signal Transduction, Calmodulin
(phosphorylation/neurobiology; non-radioactive molecular biology methods)

Richard M. Kinney
CDC/NCID, Molecular Biology Branch
Research Microbiologist
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6494
Fax: 303-221-6476
Recombinant DNA, Diagnostics, Vaccines
(virology; molecular biology; expression)
Major Laboratory Activities: Cloning, sequencing, PCR, expression of virus genes, vaccines-recombinant vaccinia, infections, and DNA clones.
Goals: Molecular biology of viruses, improved diagnostics and vaccines.
Unique Resources/Techniques Available: Virus growth and purification. Serological and molecular anaylses. Small animal testing.
Unique Products/Accomplishments: Cloning and sequencing of full-length viral genomes. Recombinant vaccinia/Venezuelan equine encephalitis virus vaccine. Construction of full-length, infectious DNA clone of VEE virus; identification of genetic virulence markers for VEE virus.

Kenneth L. Kirk
NIDDK, Laboratory of Bio-Organic Chemistry
Research Chemist/Section Chief Drug Receptor Interactions
Building 8A, Room B1A02
NIH, Bethesda, MD 20892
Phone: 301-496-2619
Fax: 301-402-0008
Fluorine, Catecholamines, Receptors, Adrenergics
(organic chemistry; biochemistry; pharmacology)

Ilan R. Kirsch
NCI, Navy Medical Oncology
Head, AGRS
Naval Hospital, Building 8, Room 5101
Bethesda, MD 20889
Phone: 301-496-0909
Fax: 301-496-0047
Lymphocytes, Oncology, Molecular Biology
(molecular genetics; pediatric oncology)

David C. Klein
NICHD, Laboratory of Developmental Neurobiology
Chief, Section on Neuroendocrinology
Building 36, Room 4A07
NIH, Bethesda, MD 20892
Phone: 301-496-6915
Fax: 301-480-3526
Tumor, Detectors, Pineal Gland, Melatonin, Clinical Pathology, Western Blot
(pharmacology; neurobiology; neuroendocrinology; pineal; tumor detection; 6-sulfatoxymelatonin clinical assay)

David L. Klein
NIAID, DMID, Respiratory Disease Branch
Bacterial Respiratory Diseases Program Officer
Solar Building, Room 3A10
NIH, Bethesda, MD 20892
Phone: 301-496-5305
Fax: 301-496-8030
Vaccines, Infectious Diseases, Prevention
(vaccine development; bacterial infectious diseases)
Major Laboratory Activities: Clinical trials.
Goals: Prevention of bacterial respiratory diseases.
Unique Resources/Techniques Available: Access to patient populations for testing vaccines in the field.
Unique Products/Accomplishments: Conducting trials to test HFLU, pneumonia, and pertussis vaccines.

Hynda K. Kleinman
NIDR, Laboratory of Developmental Biology
Chief, Cell Biology Section
Building 30, Room 407
NIH, Bethesda, MD 20892
Phone: 301-496-4069
Fax: 301-402-0897
Angiogenesis, Receptors, Synthetic Peptides
(cell adhesion; cell differentiation; angiogenesis; tumor metastases)
Major Laboratory Activities: Role of extracellular matrix in tumor growth and angiogenesis and nerve regeneration.
Goals: Define mechanisms of extracellular matrix-induced cell differentiation and tumor growth; develop new metastastic models of human cancer.
Unique Resources/Techniques Available: Synthetic peptides which mimic activity of intact proteins in promoting (or inhibiting) differentiation and tumor growth.
Unique Products/Accomplishments: Matrigel—a culture substratum that promotes differentiation; peptide with laminin activity (Y16SR)—a synthetic peptide that blocks angiogenesis and tumor growth and metastases; and laminin A chain peptide (IKVAV)—a peptide (synthetic) that promotes angiogenesis and tumor growth.

Jay R. Knutson
NHLBI, LCB
Research Physicist
Building 10, Room 5D-14
NIH, Bethesda, MD 20892
Phone: 301-496-2558
Fax: 301-480-6964
Lasers, Imaging Techniques, Spectroscopy
(fluorescence spectroscopy; tissue imaging)
Major Laboratory Activities: Development of time-resolved fluorescence techniques to study protein-protein, protein-DNA interactions. Development of time-resolved laser tissue illumination to obtain images of objects in tissue.
Goals: Understand DNA transcription control mechanisms; develop noninvasive laser mammography devices.
Unique Resources/Techniques Available: Ultrafast laser instruments (few picoseconds to obtain spectra and images. Global analysis software with simulated annealing.
Unique Products/Accomplishments: Two patents pending: photon density wave interference, methods for treating and characterizing color of either absorbing or fluorescent objects (i.e., tumors) inside tissue.

Wayne C. Koff
NIAID, Division of AIDS, Vaccine Research & Development Branch
Chief
Solar Building, Room 2B01
NIH, Bethesda, MD 20892
Phone: 301-496-8200
Fax: 301-402-1506
Vaccines
(vaccine development)

Theodor Kolobow
NHLBI, Laboratory of Cell Biology
Chief, Pulmonary & Cardiac Assistant Devices Section
Building 10, Room 5D17
NIH, Bethesda, MD 20892
Phone: 301-496-2057
Fax: 301-480-6964
Catheters, Disposable Products, Prosthetics
(lung, heart assist devices)
Major Laboratory Activities: Methods for improved pulmonary and cardiac assist devices.
Goals: Improved methods of pulmonary ventilation.
Unique Products/Accomplishments: Novel endotracheal tube; novel method and device for pulmonary ventilation.

Akira Komoriya
FDA/CBER, Laboratory of Cell Biology
Senior Staff Fellow
Building 29A, Room 3B20
NIH, Bethesda, MD 20892
Phone: 301-496-3012
Fax: 301-402-1659
Growth Factors, Receptors, EGF, TGF-alpha, TGF-beta
(structure/function of growth factor and these receptors, specifically EGF/TGF-alpha and TGF-beta)

Kenneth Korach
NIEHS, Reproduction & Developmental Toxicity
Research Biologist
(Mail Stop 1303)
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3429
Fax: 919-541-0696
Estrogens, Hormone Action, Carcinogenesis
(mechanism of estrogen hormone action; reproductive tract biology; hormonal carcinogenesis; steroid hormone receptor biology; mechanism of action)

Mieko M. Korper
NIAID, Information Technology Branch
Computer Specialist
Solar Building, Room 4A40
NIH, Bethesda, MD 20892
Phone: 301-402-2502
Fax: 301-402-0520
Computer Software

Paul Kovac
NIDDK, Laboratory of Chemistry
Research Chemist
Building 8, Room B1A24
NIH, Bethesda, MD 20892
Phone: 301-496-3569
Fax: 301-402-0589
Oligosaccharides, Fluorosugars, Glycosides
(synthetic carbohydrate chemistry; synthesis of glycoconjugates; synthesis of specifically fluorinated sugars)

Barnett Kramer
NCI, Early Detection & Community Oncology Program
Associate Director
Executive Plaza North, Room 300
NIH, Bethesda, MD 20892
Phone: 301-496-8544
Fax: 301-496-8667
Cancer Prevention, Markers
(cancer prevention, cancer screening)
Major Laboratory Activities: Studies on primary and secondary prevention of cancer.
Goals: Decrease in cancer morbidity/mortality.

Martin H. Kroll
CC, Clinical Pathology Department/Clinical Chemistry
Medical Staff Officer
Building 10, Room 2C-407
NIH, Bethesda, MD 20892
Phone: 301-496-1924
Fax: 301-402-1612
Cholesterol, Magnesium, Test Interpretation
(clinical chemistry)
Major Laboratory Activities: Clinical chemistry.
Goals: Develop new brand laboratory methods for cholesterol/lipids and measuring free concentrations, such as magnesium.
Unique Resources/Techniques Available: Clinical chemistry laboratory.
Unique Products/Accomplishments: Develop methods for 5-fluorocytosine.

Danuta Krotoski
NICHD, Genetics and Teratology
Health Scientist Administrator
Executive Plaza North, Room 643
NIH, Bethesda, MD 20892
Phone: 301-496-5541
Fax: 301-402-2085
Neurobiology Research, Cell Differentiation, Genetics
(developmental neurobiology; birth defects; developmental genetics)

Howard S. Kruth
NHLBI, Molecular Disease Branch
Chief, Section of Experimental Atherosclerosis
Building 10, Room 5N-113
NIH, Bethesda, MD 20892
Phone: 301-496-4827
Fax: 301-402-0432
Atherosclerosis, Cholesterol Modifiers, Lipid-lowering Drugs
(atherosclerosos; cholesterol metabolism; macrophages)
Major Laboratory Activities: Isolate lipid particles from atherosclerotic lesions; use cell culture to examine how cells secrete cholesterol.
Goals: To characterize mechanism of cholesterol deposition and removal from atherosclerotic lesions.
Unique Resources/Techniques Available: Methods to localize cholesterol in cells and tissues; culture of human monocyte-derived macrophages; techinques of lipid analysis.

Hsiang-Fu Kung
NCI/FCRDC, Div. of Cancer Treatment, Biological Response Modifiers Program
Chief, Laboratory of Biochemical Physiology
Fort Detrick, Building 560, Room 3171
P.O. Box B
Frederick, MD 21702-1201
Phone: 301-846-5703
Fax: 301-846-1673
Antiviral Drugs, Growth Factor Inhibitors, Oncogenes
(molecular and biochemical physiology)
Major Laboratory Activities: Molecular biology of ras; cell cycle regulation; transcription factor gene cloning.
Goals: Elucidate mechansims of cellular regulation.
Unique Resources/Techniques Available: Cell microinjection, all techniques of molecular biology.
Unique Products/Accomplishments: Characterization of the ras guanine nucleotide exchange factor.

Thomas A. Kunkel
NIEHS, Molecular Genetics
Research Geneticist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-2644
Fax: 919-541-7613
AIDS-HIV, Mutagenesis
(AIDS and intervention therapy; site-directed mutagenesis; fidelity of DNA synthesis)

George Kunos
ADAMHA/NIAAA,
DANAC 4 Building, Room 1
12501 Washington Avenue
Rockville, MD 20852
Phone: 301-443-1234
Fax: 301-443-5894
Adrenergics, Interleukin, Glucocorticoids, Receptors, Beta-adrenergic Receptors
(cell biology)

R. Krishnan Kutty
NEI, Laboratory of Retinal Cell and Molecular Biology
Senior Staff Fellow
Building 6, Room 338
NIH, Bethesda, MD 20892
Phone: 301-496-3447
Fax: 301-402-0750
Degenerative Diseases, Wound Healing, Polymerase Chain Reaction (PCR)
(degenerative diseases; oxidative stress; gene expression)
Major Laboratory Activities: Degenerative diseases and cellular defense against oxidative stress.
Goals: To elucidate the role of hemocyclogenase, a stress-induced cellular protein, in cellular defense against oxidative stress.
Unique Resources/Techniques Available: PCR, immunoblotting, Northern blotting, RNA-PCR.
Unique Products/Accomplishments: Antibody and other probes against a stress-induced protein.

K.J. Kwon-Chung
NIAID, Laboratory of Clinical Investigation, Medical Mycology Section
Research Microbiologist
Building 10, Room 11N104
NIH, Bethesda, MD 20892
Phone: 301-496-1602
Fax: 301-480-0050
Microbiology, DNA Probes, Vaccines
(medical mycology, molecular biology of fungal pathogens)
Major Laboratory Activities: Molecular biological research with fungal pathogens such as Cryptococcus neoformans and Asperfillus fumigatus.
Goals: Determine the virulence factors of these pathogens.
Unique Resources/Techniques Available: Multitudes of fungal strains.
Unique Products/Accomplishments: DNA probe for strain typing of C. neoformans.

William LaRochelle
NCI, Cellular and Molecular Biology/DCE
Senior Staff Fellow
Building 37, Room 1E24
NIH, Bethesda, MD 20892
Phone: 301-496-9052
Fax: 301-496-8479
Oncogenes, Growth Factors, Antibody-based Therapy
(growth factors/receptors, signal transduction)
Major Laboratory Activities: In vitro mutagenesis, mammalian expression systems, purification growth factors and receptors, and signal transduction.
Goals: Development of PDGF antagonists; understanding transformation by c-sis/PDGF B.
Unique Resources/Techniques Available: cDNA and immunochemical probes for PDGF A and PDGF B.
Unique Products/Accomplishments: Neutralizing monoclonal antibody to PDGF B and PDGF AB; neutralizing monoclonal antibody to alpha PDGF receptors.

Jorge Laborda
FDA/CBER, Laboratory of Cell Biology
Visiting Associate
Building 29, Room 232
NIH, Bethesda, MD 20892
Phone: 301-496-4038
Fax: 301-402-2780
Molecular Biology, Cancer, Monoclonal Antibodies
(molecular biology of cancer)
Major Laboratory Activities: Signal transduction in immune cells; tumor differentiation antigens.

Edward G. Lakatta
NIA/GRC, Laboratory of Cardiovascular Science
Chief, LCS
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-558-8202
Fax: 410-558-8150
Congestive Heart Failure, Myocardial Ischemia, Atherosclerosis
(cardiac physiology; aging)
Major Laboratory Activities: Study control mechanisms of cardiac and vascular functions and how these mechanisms are modulated by aging and disease.

Altaf A. Lal
CDC, Center for Infectious Diseases
Scientist, Malaria Branch, DPD
(Mail Stop F-12)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4079
Fax: 404-488-4427
Malaria Vaccine, Polymorphism, Peptides
(molecular biologic and immunologic studies of malaria parasite)

Renu B. Lal
CDC/NCID, Retrovirus Diseases Branch
Acting Chief, Immunology Section
(Mail Stop G-19)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1024
Fax: 404-639-1174
Retroviruses, Cytokines, Immunoassays
(immune regulation in retroviral infection)
Major Laboratory Activities: Characterization of immune responses to HTLVs.
Goals: Understanding mechanims of retroviral replication and their control.
Unique Resources/Techniques Available: HTLV type-specific synthetic peptides.
Unique Products/Accomplishments: Synthetic peptide assays for discrimination of HTLV-I and HTLV-II.

Keith Lampel
FDA, Division of Microbiology
Research Microbiologist
200 C Street, SW (HFF-235)
Washington, DC 20204
Phone: 202-245-2515
Fax: 202-472-1270
Sequencing, Gene Regulation, Molecular Biology
(development of gene probes; regulation of gene expression; molecular biology of pathogenic microorganisms)

David Landsman
NLM, National Center for Biotechnology Information
Visiting Scientist
Building 38A, Room 8N807
NIH, Bethesda, MD 20892
Phone: 301-496-2475
Fax: 301-480-9241
Molecular Biology, Computer Software, Enzymes
(molecular biology; bioinformatics)
Major Laboratory Activities: Bioinformation.
Goals: Molecular sequence data base and software tools.
Unique Products/Accomplishments: GenInfo backbone sequence data base, software tools.

Sandra A. Larsen
CDC/NCID, DSTDLR/Treponemal Pathogenesis & Immunobiology Branch
Chief, TPIB
(Mail stop D-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3224
Fax: 404-639-3296
Diagnostics, Sexually Transmitted Diseases, Assay Methods
(syphilis diagnostic products)
Major Laboratory Activities: Test development and evaluation.
Goals: Quality products for the consumer.
Unique Resources/Techniques Available: International reputation, reference reagents, and serum bank.
Unique Products/Accomplishments: Monoclonal antibodies.

Catherine A. Laughlin
NIAID, Antiviral Research Branch
Chief, ARB
Solar Building, Room 3A22
Rockville, MD 20852
Phone: 301-496-8285
Fax: 301-402-1456
Antivirals, Virology, Clinical Trials, Animal Models
(antivirals; virology; clinical trials; animal models)

Denis Le Bihan
CC, Laboratory of Diagnostic Radiology
Visiting Associate
Building 10, Room 1C660
NIH, Bethesda, MD 20892
Phone: 301-496-7700
Fax: 301-496-9933
Nuclear Magnetic Resonance (NMR), Hyperthermia, Noninvasive Diagnostics
(NMR research and clinical investigations)

Derek LeRoith
NIDDK, Diabetes Branch
Section Chief
Building 10, Room 8S243
NIH, Bethesda, MD 20892
Phone: 301-496-8090
Fax: 301-480-4386
IGF-I, Sequencing, Diabetes, Insulin, Receptors
(regulation of IGF-I (insulin-like growth factor type I); IGF-I receptor gene expression)

Richard D. Leapman
NCRR, Biomedical Engineering and Instrumentation Program
Physical Scientist
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-2599
Fax: 301-496-6608
Electron Microscopy, Elemental Microanalysis
(analytical electron microscopy, spectroscopy)
Major Laboratory Activities: Electron spectroscopy, electron microscopy, x-ray spectroscopy, and high resolution imaging.
Goals: To develop electron beam-based techniques for microspectroscopy and imaging of biological specimens.
Unique Resources/Techniques Available: Field-emission scanning transmission electron microscopy; electron energy-loss spectroscopy.
Unique Products/Accomplishments: Development of elemental mapping techniques; microspectroscopy on the Pauci-atomic scale.

Byungkook Lee
DCRT, Physical Sciences Laboratory
Research Chemist
Building 12A, Room 2007
NIH, Bethesda, MD 20892
Phone: 301-496-6576
Fax: 301-496-2172
GEMM (interdatabase), Macromolecules, Molecular Graphics
(computer-based molecular graphics)

Fang-Jen Scott Lee
NHLBI, Cellular Metabolism
Senior Staff Fellow
Building 10, Room 5N307
NIH, Bethesda, MD 20892
Phone: 301-496-5193
Fax: 301-402-1610
Protein Synthesis, Recombinant DNA, Yeast Expression Systems
(transcriptional and translational regulation)
Goals: Isolate factors which can regulate transcription or translation.
Unique Resources/Techniques Available: PCR cloning, protein modification, and protein targeting.

Robert K. Leedham
CC, Department of Nuclear Medicine
Nuclear Pharmacist
Building 21, Room 136
NIH, Bethesda, MD 20892
Phone: 301-496-1426
Fax: 301-496-3544
Cancer (antibody-based therapy), Drug Delivery (drug formulation), Immunology (monoclonal antibodies)
Major Laboratory Activities: Radiolabeling of monoclonal antibodies for diagnosis and treatment of cancer.

Stephen B. Leighton
NCRR, BEIP, Mechanical Engineering Section
Senior Engineer
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Automation, Clinical Devices, Histology Reconstruction
(medical devices and automation of laboratory equipment)

Michael J. Lenardo
NIAID, Laboratory of Immunology
Senior Investigator
Building 10, Room 11D09
NIH, Bethesda, MD 20892
Phone: 301-496-6754
Fax: 301-496-0222
AIDS-HIV, Immunology, Molecular Biology
(T cell immunology; AIDS; gene regulation; autoimmune diseases; apoptosis)
Major Laboratory Activities: Gene regulation in T lymphocytes; immunomodulation of T cell responses.
Goals: Understand control of T cell activation in health and disease.
Unique Resources/Techniques Available: Cellular and molecular analysis of T lymphocytes.
Unique Products/Accomplishments: Discovery that IL-2 predisposes T lymphocytes to apoptosis by T cell receptor stimulation; methods to carry out gene regulation analysis in non-transformed T lymphocytes.

Marta Leon-Monzon
NINDS, Medical Neurology Branch
Special Expert
Building 10, Room 4N248
NIH, Bethesda, MD 20892
Phone: 301-496-9979
Fax: 301-496-2294
Molecular Biology, AIDS-HIV, HTLV-I, Polymerase Chain Reaction (PCR), HTLV-II
(virology, neuromuscular diseases)
Major Laboratory Activities: Human muscle culture studies to seek for viral infections (retroviral and enteroviruses).
Goals: To determine etiology of neuromuscular diseases.

Warren J. Leonard
NHLBI, Pulmunary/Molecular Immunology, Office of Director
Building 10, Room 7N240
NIH, Bethesda, MD 20892
Phone: 301-496-0098
Fax: 301-402-0971
Molecular Biology, Immunology, Gene Regulation
(molecular biology; immunology; gene regulation)

Stephen H. Leppla
NIDR, Laboratory of Microbial Ecology
Research Chemist
Building 30, Room 309
NIH, Bethesda, MD 20892
Phone: 301-402-0730
Fax: 301-402-0396
Molecular Biology, Immunotoxins, Immunology
(bacterial toxins)
Major Laboratory Activities: Protein purification; structure-function analysis by mutagenesis.
Goals: Understanding mechanisms of action of bacterial toxins, virulence factors.
Unique Products/Accomplishments: Generalized method for delivery of proteins/peptides into eukaryotic cells.

M. A. Lesniak
NIDDK,
Chemist
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NIH, Bethesda, MD 20892
Phone: 301-496-1172
Fax: 301-402-0573
Imaging (video), Positron Emission, Radioligand
(molecular biology, immunology)

Dennis E. Leszczynski
DRG, Referral and Review Branch
Health Scientist Administrator
Westwood Building, Room 348
NIH, Bethesda, MD 20892
Phone: 301-402-3899
Fax: 301-402-1349
Assay Methods, Clinical Chemistry, Hormones/Growth Factors
(lipoprotein and cholesterol metabolism)
Major Laboratory Activities: Human lipoprotein metabolism.
Goals: Simple assay for lipoprotein biological activity.
Unique Resources/Techniques Available: New lipoprotein assay.
Unique Products/Accomplishments: Author of 50 papers.

Thomas Leto
NIAID, Laboratory of Host Defenses
Senior Staff Fellow
Building 10, Room 11N106
NIH, Bethesda, MD 20892
Phone: 301-496-2365
Fax: 301-402-0789
Proteins, Calmodulin
(structure function relationships of protein engineering; cytoskeleton and membrane interaction)

Ronald Levin
NCRR, BEIP, Mechanical Engineering Section
Biomedical Engineer
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Bioheat Transfer, Image Processing
(bioheat and biomass transfer; image processing)

Rod Levine
NHLBI, Biochemistry
Section Chief
Building 3, Room 106
NIH, Bethesda, MD 20892
Phone: 301-496-2310
Fax: 301-496-0599
Enzymes, AIDS-HIV, HPLC
(oxidatative modification of proteins; enzymology of HIV)

Joel S. Lewis
CDC/NCID, DSTDLR/Treponemal Pathogenesis & Immunobiology Branch
Research Microbiologist
(Mail Stop D-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3952
Fax: 404-639-3037
Sexually Transmitted Diseases, Infectious Diseases, Microbiology
(Sexually transmitted diseases)
Major Laboratory Activities: Research on sexually transmitted diseases.
Goals: Improvement of diagnostics.
Unique Resources/Techniques Available: 30 years experience. Unique sexually transmitted diseases diagnostics.

Jun Li
NEI,
Postdoctoral Fellow
Building 6, Room 332
NIH, Bethesda, MD 20892
Phone: 301-496-6679
Fax: 301-402-0750
Eye, Cell Biology, HPLC
(fatty acids (22=6w3))

Steven Li
NIEHS, Laboratory of Genetics
Research Geneticist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-4253
Fax: 919-541-7593
Dehydrogenase, Phosphatase, Genetics
(molecular genetics)

C. Tony Liang
NIA, Laboratory of Biological Chemistry
Research Chemist
4940 Eastern Avenue
Gerontology Research Center
Baltimore, MD 21224
Phone: 410-558-8154
Fax: 410-558-8137
Osteoporosis, Hormones/Growth Factors, Tissue Repair
(osteoporosis; bone biology)
Major Laboratory Activities: Effect of growth factor, estrogen, and other possible therapeutic agents on bone activity in adult and old animals.
Goals: To assess the mechanism and the effectiveness of therapeutic agents and treatments on old bone.
Unique Resources/Techniques Available: We use the marrow ablation model in aged rats, which allows us to examine the bone formation and resorption activities separately in an in vivo system.
Unique Products/Accomplishments: We have established the marrow ablation model to quantify the age-related changes in bone activity at molecular and cellular levels. This model is currently being used to test the effectiveness of treatments on impaired bone activity in aged animals.

Shu-Mei Liang
FDA/CBER, Cytokine & Biology
Research Chemist
Building 29A, Room 3C22
NIH, Bethesda, MD 20892
Phone: 301-496-9012
Fax: 301-402-1659
Lymphokines, Receptors
(protein chemistry; immunology)

Jung-Chung Lin
CDC, Hematologic Diseases Branch, Division of HIV/AIDS
Chief, Molecular Biology Section
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3991
Fax: 404-639-3296
Molecular Biology (gene amplification), Antisense (molecular biology), Virology (antivirals)
(virology; molecular biology)
Major Laboratory Activities: Identification and characterization of infectious agents associated with hematologic diseases; development of diagnostic reagents.
Unique Resources/Techniques Available: Well equipped laboratory with modern biotechnology available.

Melody H. Lin
Acting Director, OD
Division of Human Subject Protections
Building 31, Room 5B59
NIH, Bethesda, MD 20892
Phone: 301-496-7041
Fax: 301-402-0527
AIDS-HIV, Immunomodulation, Biotechnology

Ilona Linnoila
NCI, PBPRB, Proposed Experimental Pathology Section
Section Head
Building A, Room 100
5516 Nicholson Lane
Kensington, MD 20895
Phone: 301-402-3128
Fax: 301-402-3131
Carcinogenesis, Cancer Diagnostics, Cancer Biology
(study of lung cancer and premalignant lesions; new markers)
Major Laboratory Activities: Immunohistochemistry, in situ hybridization; study of lung cancer and its premalignant lesions.
Goals: Role of differentiation in the development of lung cancer; pathology and molecular pathology of premalignant lesions.
Unique Resources/Techniques Available: Automatic immunostainer (Codeon); image analysis; immunohistochemistry, in situ hybridization.
Unique Products/Accomplishments: The concept of non-small cell lung cancers with neuroendocrine markers that are initially responsive to cytotoxic therapy; models of premalignant lesions of lung cancer.

Markku Linnoila
ADAMHA/NIAAA, Laboratory of Clinical Studies
Scientific Director
Building 10, Room 3C103
NIH, Bethesda, MD 20892
Phone: 301-496-8996
Fax: 301-402-0445
Alcoholism, Violent Behavior, Genetics
(alcoholism; violent behavior; suicidal behavior; glucose metabolism; neurotransmitters; psychopharmacology)

Lance Liotta
NCI, Laboratory of Pathology
Chief, LP
Building 10, Room 2A33
NIH, Bethesda, MD 20892
Phone: 301-436-3185
Fax: 301-402-0043
Cancer Diagnostics (Markers), Cancer Therapy, Cell Matrix Interactions

David Lipman
NLM, National Center for Biotechnology Information
Director, NCBI
Building 38A, Room 8N803
NIH, Bethesda, MD 20892
Phone: 301-496-2475
Fax: 301-480-9241
Computer Software, Data bases, Molecular Biology
(computational problems in molecular biology)

Kenneth Lippel
NHLBI, Lipid Metabolism-Atherogenesis Branch
Health Scientist Administrator
Federal Building, Room 4A-10
NIH, Bethesda, MD 20892
Phone: 301-496-1681
Fax: 301-496-9882
Atherosclerosis, Aphersis, Cholesterol Modifiers
(lipid metabolism; atherosclerosis)

Jennifer Lippincott-Schwartz
NICHD, Cell Biology and Metabolism Branch
Senior Staff Scientist
Building 18T
NIH, Bethesda, MD 20892
Phone: 301-402-2454
Fax: 301-402-0078
Cell Culture, Imaging/Image Analysis, Data Analysis Program
(cell biology)
Goals: Understand intracellular membrane traffic pathways.
Unique Resources/Techniques Available: Immunofluorescence microscope; protein purification.
Unique Products/Accomplishments: Educidating effects of fungal metabolite brefeldin A.

Allan Lock
NICHD, Genetics & Teratology, CRMC
Health Science Administrator
Executive Plaza North, Room 643
NIH, Bethesda, MD 20892
Phone: 301-496-5541
Fax: 301-402-2085
Animal Models, Diagnostics, Immunology
(transgenic animal development; development abnormalities; molecular genetics)
Major Laboratory Activities: Primarily involved with program administration and contracts. Not currently in laboratory.

Yoke Peng Loh
NICHD,
Building 36, Room 2A21
NIH, Bethesda, MD 20892
Phone: 301-496-3239
Fax: 301-496-9938
Prohormone Processing Enzymes

Jack London
NIDR, Laboratory of Microbial Ecology
Chief, Microbiology Section
Building 30, Room 308
NIH, Bethesda, MD 20892
Phone: 301-496-5760
Fax: 301-402-0396
Adhesion, Receptors, Proteins
(microbial adhesions; receptors)

George Lucier
NIEHS, Biochemical Risk Analysis
Chief, Laboratory of Biochemical Risk Analysis
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3802
Fax: 919-541-3647
Dioxin, Tumor, Lymphocytes
(toxicology; biochemistry; molecular epidemiology)

Christy L. Ludlow
NIDCD, Voice & Speech Section
Chief, VSS
Building 10, Room 5D38
NIH, Bethesda, MD 20892
Phone: 301-496-9365
Fax: 301-480-0803
PET, Patient Monitoring, 3D Structural Analysis
(laryngeal physiology)

Robert J. Lutz
NCRR, Biomedical Engineering & Instrumentation Program
Chemical Engineer
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-5771
Fax: 301-496-6608
Catheters (vascular), Cardiovascular Fluid Dynamics
(vascular access devices (catheters); cardiovascular fluid dynamics; catheter development)

Mary Anne Luzar
NIAID, Division of AIDS, Pharmaceutical and Regulatory Affairs Br
Special Assistant to the Branch Chief
Solar Building, Room 2A02
NIH, Bethesda, MD 20892
Phone: 301-496-8213
Fax: 301-480-5703
AIDS-HIV, Antisense, Antiviral Drugs, Vaccines
(AIDS research; drug development and clinical trials; legal agreements: CTAs, LOUs, CRADAs)
Goals: Develop and negotiate clinical trials agreements with pharmaceuticals collaborators.

Mitsugu Maeno
NCI/FCRDC, Div. of Cancer Treatment, Biological Response Modifiers Program
Visiting Fellow, Laboratory of Biochemical Physiology
Fort Detrick, Building 560, Room 31-76
P.O. Box B
Frederick, MD 21702-1201
Phone: 301-846-5471
Fax: 301-846-1673
Growth Factors, Immunoassays, Electrophoresis
(differentiation of hemopoietic cells)
Major Laboratory Activities: Oncogene and signal transduction.
Goals: Define regulatory mechanism of hemopoietic cell differentiation in embryo.
Unique Resources/Techniques Available: Microsurgery of frog embryo.
Unique Products/Accomplishments: Monoclonal antibody against larval and adult specific hemoglobin.

Rose G. Mage
NIAID, Laboratory of Immunology, Molecular Immunogenetics Section
Section Chief
Building 10, Room 11N311
NIH, Bethesda, MD 20892
Phone: 301-496-6113
Fax: 301-496-0222
Polyclonal Antibodies, Genetic Therapy, Gene Mapping
(immunology; genetics; molecular biology)
Major Laboratory Activities: Immunogenetics research.
Goals: Define genes of immunoglobulins and T cell receptors and their regulated expression.
Unique Resources/Techniques Available: Rabbits of defined genetic types including mutants and recombinants.
Unique Products/Accomplishments: Strains with mutations valuable as models for gene therapy, polyclonal antibodies to immunoglobulin allotypes of rabbits valuable for selection of rabbits for polyclonal anti-idiotype production.

Jacob V. Maizel, Jr.
NCI-FCRDC, Mathematical Biology
Chief
Fort Detrick, Building 469, Room 151
Frederick, MD 21702-1031
Phone: 301-846-5532
Fax: 301-846-5598
Molecular Biology, AIDS-HIV, Computers (molecular modeling)
(molecular biology; virology; chemistry; computation)

Eugene O. Major
NINDS, Laboratory of Viral & Molecular Pathogenesis
Chief, Section on Molecular Virology & Genetics
Building 36, Room 5C11
NIH, Bethesda, MD 20892
Phone: 301-496-2043
Fax: 301-402-0828
Cell Culture, AIDS-HIV, Central Nervous System (CNS)
(neurovirology; molecular neurobiology)
Major Laboratory Activities: Viral pathogenesis in brain, diagnostics.
Goals: Provide sufficient basic information to begin treatment protocols for patients with neurological disease.
Unique Resources/Techniques Available: Human neural cell lines, NDA probes for viral diagnosis, PCR methodology.
Unique Products/Accomplishments: SVG human fetal cell line (patent awarded); techniques for rapid in situ nucleic acid hybridization; human brain cultures from first and second trimester human tissues (brain).

Winfred F. Malone
NCI/DCPC, Chemoprevention Branch
Chief, CB
Executive Plaza North, Suite 201
NIH, Bethesda, MD 20892
Phone: 301-496-8563
Fax: 301-402-0553
Cancer, Prevention, Carcinogenesis
(chemoprevention of cancer)
Major Laboratory Activities: Identification and evaluation of compounds showing biological activities in experimental systems. Initiation of additional Phase I and Phase II clinical trials in chemoprevention. A number of short-term biochemicals are biological markers, i.e., atypical cytology, dysplasia, micronuclei, precancerous conditions, fecal mutagens, and oncogene suppression tests that are becoming available and might be used in conjunction with, and evaluated during, a clinical trial.
Goals: Cancer prevention.
Unique Products/Accomplishments: 21 IND's; 8 Material Transfer Agreements.

Charles R. Manclark
FDA/CBER, Laboratory of Pertussis
Chief
Building 29, Room 418
NIH, Bethesda, MD 20892
Phone: 301-496-5564
Fax: 301-402-2776
Pertussis, Vaccines
(pertussis; vaccines)

Vincent C. Manganiello
NHLBI, Laboratory of Cellular Metabolism
Head, Section on Biochemistry Physiology
Building 10, Room 5N307
NIH, Bethesda, MD 20892
Phone: 301-496-5194
Fax: 301-402-1610
Molecular Biology, Thrombolytics, Congestive Heart Failure
(insulin action; regulation of cyclic nucleotide metabolism; cellular signaling; cyclic nucleotide phosphodiesterases)
Major Laboratory Activities: Structure/function analysis and regulation of gene expressions of the cGMP-inhibited cyclic nucleotide phosphodiesterase gene family (cGI PDE); identification of insulin-sensitive serine kinase involved in regulation of adipocyte cGI PDE and the anti-lipolytic action of insulin.
Goals: Understanding structure/function relationships of tissue isoforms of cGI PDEs to perhaps aid in development of selective drugs useful for possible therapies for certain types of cardiovascular disease; understanding molecular mechanism involved in the anti-lipolytic action of insulin using conventional approaches as well as antisense and gene targeting methodologies.
Unique Products/Accomplishments: Cloning of the cDNA for cardiac and adipocyte members of the cGI PDE gene family.

David Margulies
NIAID, Laboratory of Immunology
Senior Investigator
Building 10, Room 11D12
NIH, Bethesda, MD 20892
Phone: 301-496-6429
Fax: 301-496-0222
DNA, Gene Expression, Transgenics
(immunology; molecular biology; structure/function of immunologic cell surface molecules; engineering soluable counterparts of membrane molecules)

Victor E. Marquez
NCI/DCT, Laboratory of Medicinal Chemistry/DTP
Supervisory Research Chemist
Building 37, Room 5C02
NIH, Bethesda, MD 20892
Phone: 301-496-3597
Fax: 301-402-2275
Tumor, Antivirals, Chemistry (medicinal), Chemistry (organic)
(anticancer and antiviral agents; nucleoside chemistry)

Brian Martin
ADAMHA/NIMH, Clinical Neuroscience Branch
Visiting Scientist
Building 10, Room 3N258
NIH, Bethesda, MD 20892
Phone: 301-496-7787
Fax: 301-402-0430
Gene Transfer, Proteins, Glucocerebrosidase, Retroviruses
(protein sequencing and carbohydrate analysis; gene transfer and expression; gene therapy; Gaucher's disease; neurogenics; protein purification; active site analysis; toxins; genetic disorders (diagnosis and treatment); RFLPs)

George R. Martin
NIA,
Scientific Director
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-558-8110
Fax: 410-558-8137
Aging, Cell Biology, Molecular Biology
(aging; cancer; connective tissue diseases)

Jackie L. Martin
NHLBI, Laboratory of Chemical Pharmacology
Visiting Scientist
Building 10, Room 8N115
NIH, Bethesda, MD 20892
Phone: 301-496-4541
Fax: 301-955-0994
Immunoassays, Antigens, Immune Modulation
(drug metabolism; immunohepatotoxicity; drug-induced hepatitis)
Major Laboratory Activities: Research on the molecular basis of drug-induced allergic drug reactions.
Goals: Development of clinically useful immunoassays for detection of serum antibodies.

Polly Matzinger
NIAID, Laboratory of Cellular & Molecular Immunology
Expert
Building 4, Room 111
NIH, Bethesda, MD 20892
Phone: 301-496-6440
Fax: 301-496-0877
Cytotoxicity, Immunology, Radiation Emitting Products
(T cell tolerance; immunological memory)

Mitchell Max
NIDR, Neurobiology & Anesthesiology Branch
Chief, Clinical Trials Unit
Building 10, Room 3C405
NIH, Bethesda, MD 20892
Phone: 301-496-6695
Fax: 301-496-2433
Pain, Analgesics, Pharmacology
(clinical trials; pain treatment)
Goals: Elucidate mechanisms and treatment of acute pain and chronic neuropathic pain.
Unique Resources/Techniques Available: Animal models of pain, clinical trials methodology, experimental pain models.

Joan C. May
FDA, DBB/Analytical Chemistry Laboratory
Chief, ACL
Building 29, Room 510
NIH, Bethesda, MD 20892
Phone: 301-496-4570
Fax: 301-496-4684
Chemistry (medicinal), Spectroscopy, Spectroscopy
(analytical chemistry and metals analysis; chromatography)
Major Laboratory Activities: Analytical research and testing.
Goals: Accurate analysis for micro constituents requiring small amounts of sample.
Unique Resources/Techniques Available: GC/MS; TG/MS.
Unique Products/Accomplishments: TG/MS interface.

Mark L. Mayer
NICHD, Laboratory of Developmental Neurobiology/UNB
Head, UNB
Building 36, Room 2A21
NIH, Bethesda, MD 20892
Phone: 301-496-9346
Fax: 301-496-9939
N-Methyl-D-Aspartale (NMDA), Glutamate, Neuropharmacology
(neurophysiology; ion channels; CNS; neurotransmitters)

Thomas F. McCutchan
NIAID, Laboratory of Malaria Research
Microbiologist/Supervisory
Building 4, Room B1-28
NIH, Bethesda, MD 20892
Phone: 301-496-6149
Fax: 301-402-0079
Infectious Diseases Diagnostics, Vaccine (Malaria)
(parasitic diseases)

John J. McGowan
NIAID, Division of Extramural Activities
Director
Solar Building, Room 4C07
Rockville, MD 20852
Phone: 301-496-7291
Fax: 301-402-0369
Microbiology, Gene Therapy, Virology
(microbiology; virology; gene therapy)

Pamela McInnes
NIAID, Division of Microbiolgy and Infectious Diseases
Bacterial Vaccines Program Officer, Respiratory Diseases Branch
Solar Building, Room 3A13
NIH, Bethesda, MD 20892
Phone: 301-496-5305
Fax: 301-496-8030
Vaccines, Infectious Diseases, Childhood Diseases
(vaccine development and clinical evaluation)
Major Laboratory Activities: Extramural management of program in vaccine development and evaluation.
Goals: Vaccines targeted to prevention of infections caused by respiratory pathogens.
Unique Resources/Techniques Available: Clinical evaluation capacity and expertise through contract mechanism.

Robert G. McLean
CDC/NCID, Medical Entomology & Ecology
Chief, Vertebrate Ecology Section
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6456
Fax: 303-221-6476
Infectious Diseases, Prevention, Tropical Diseases, Microbiology
(lyme disease; arboviruses; vertebrate pest management)
Major Laboratory Activities: Encology and surveillance of Lyme disease and arboviruses.
Goals: Develop prevention and control methodology for Lyme disease and arboviruses.
Unique Resources/Techniques Available: Laboratory capability in studing vertebrate aspects of Lyme disease and arboviruses.
Unique Products/Accomplishments: Landscape ecology of Lyme disease.

Lore Anne McNicol
NEI, Anterior Segment Diseases Branch
Chief, ASDB
Building 31, Room 6A48
NIH, Bethesda, MD
Phone: 301-496-5884
Fax: 301-402-0528
Ocular Anti-inflammatory, Ocular Drug Delivery, Ophthalmics
(corneal disease; cataract; glaucoma; extramural programs)
Major Laboratory Activities: Extramural funding of basic research.
Goals: Disease prevention and treatment.

Raymond Mejia
NHLBI, Laboratory of Kidney and Electrolyte Metabolism
Mathematician
Building 31, Room 4B54
NIH, Bethesda, MD 20892
Phone: 301-496-4325
Fax: 301-402-0535
Data Analysis Program, Modeling Software, Convection Systems, Reaction Systems, Diffusion Systems
(Mathematical biology; mathematical physiology)
Major Laboratory Activities: Mathematical modeling.
Goals: Fundamental description of biological/physiological processes.
Unique Resources/Techniques Available: Computer algorithms/programs.
Unique Products/Accomplishments: Solution of large nonlinear differential-algebraic systems of equations.

Teresa Mercado
NIAID, Parasitic Diseases
Research Physiologist
Twinbrook II, Room 24
12441 Parklawn Drive
Rockville, MD 20852
Phone: 301-496-3637
Fax: 301-480-2618
Trypanosoma cruzi, Pseudomonas Fluorescence
(physiological and cytochemical pathology of parasitic diseases; chemotherapy of Chagas' disease; pharmacology)

Glenn T. Merlino
NCI/DCBDC, Laboratory of Molecular Biology
Expert
Building 36, Room 1D28
NIH, Bethesda, MD 20892
Phone: 301-496-4270
Fax: 301-402-1344
Animal Models (transgenic inbreds), Cancer (oncogenes/receptors), Endocrinology, Hormones/Growth Factors
(growth factors; animal models of human disease; cancer; gene regulation)
Major Laboratory Activities: Generation of transgenic mice to study the role of growth and differentiation factors in normal and disease processes.
Goals: Make which will serve as useful models for diseases associated with growth factors and receptors.
Unique Resources/Techniques Available: Efficient production and analysis of transgenic mice.
Unique Products/Accomplishments: Transgenic models for liver cancer, chronic pancreatitis, Menetrier's Disease, breast cancer, male sterility, and salivary cancer.

Joseph A. Meshino
NIAID, Division of AIDS
Chief, Pharmaceutical and Regulatory Affairs Branch
Solar Building, Room 2A02
NIH, Bethesda, MD 20892
Phone: 301-496-8213
Fax: 301-480-5703
AIDS-HIV, Immunology, Virology
(AIDS research and development; AIDS clinical trials)

Dean Metcalfe
NIAID, Laboratory of Clinical Investigation
Head, Mast Cell Physiology Section
Building 10, Room 11C210
NIH, Bethesda, MD 20892
Phone: 301-496-2165
Fax: 301-480-8384
Allergy, Immunotherapy, Asthma
(mast cells; allergic diseases)
Major Laboratory Activities: Mast cell differentiation, adhesion receptors, cytokines.
Goals: Understand the mast cell in allergic/immunologic diseases.
Unique Resources/Techniques Available: Techniques to study mast cells; access to clinic and wards.
Unique Products/Accomplishments: Demonstration of the origin of human mast cells; delineation of mast cell adhesion receptors; study of mastocytosis, asthma.

Gerald H. Mickisch
NCI, Laboratory of Molecular Biology, DCBDC
Guest Researcher
Building 37, Room 2D27
NIH, Bethesda, MD 20892
Phone: 301-496-3224
Fax: 301-402-1344
Transgenics, Molecular Biology, Cancer Therapy
(preclinical pharmacology; experimental therapy)

Lucio Miele
NICHD
Visiting Associate
Building 10, Room 9S242
NIH, Bethesda, MD 20892
Phone: 301-496-6683
Fax: 301-402-0234
Expression Vectors, Plasmids, DNA

Barry R. Miller
CDC/NCID, Medical Entomology-Ecology
Supervisory Research Entomologist
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6413
Fax: 303-221-6476
Gene Mapping, Polymerase Chain Reaction (PCR), Tropical Diseases
(arbovirology; molecular genetics; epidemiology)
Major Laboratory Activities: Use PCR to facilitate gene mapping in mosquitoes.
Goals: Map and isolate genes controlling flavivirus resistance in Aedes aegypti.
Unique Resources/Techniques Available: Inbred mosquito lines, populations.
Unique Products/Accomplishments: Construction of inbred mosquito lines that manifest either a flavivirus susceptible or refractory phenotype.

Dayton Miller
CDC, Nutritional Biochemistry Branch
Chief, NBBN
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4151
Fax: 404-488-4609
Instrumentation, Trace Element Analysis
(lead measurement techniques)

Frederick W. Miller
FDA/CBER, Molecular Immunology Lab., Div. of Biochemistry Biophysics
Medical Officer
Building 29, Room 507
NIH, Bethesda, MD 20892
Phone: 301-496-6913
Fax: 301-496-4684
Autoimmune Diseases, Polymerase Chain Reaction (PCR), Rheumatoid Arthritis
(molecular immunology of autoimmunity)
Major Laboratory Activities: MHC typing by PCR and SSO probes, TCR analysis.
Goals: To understand the immunogenetic and environmental factors related to the etiology and pathogenesis of autoimmunity.
Unique Resources/Techniques Available: Large sera and cell bank of patients with autoimmune diseases; MHC PCR technology.
Unique Products/Accomplishments: Subsetting of myositis patients by serologic and immunogenetic factors into homogeneous subgroups.

J. Michael Miller
CDC, Nosocomial Infections Laboratory Branch
Chief, Clinical Bacteriology Laboratories
Building 1, Room B341 (Mail stop C-O1)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3029
Fax: 404-639-3037
Diagnostics, Microbiology, Bacterial Expression Systems
(clinical microbiology; molecular epidemiology)
Major Laboratory Activities: Molecular epidemiology; reference identification of enteric bacteria and staphylococci; diagnostic instrument evaluation.
Goals: Optimize molecular typing methods for bacteria; enhance reference identification methods; standardize instrument evaluation practices.
Unique Resources/Techniques Available: Unique stock culture collections; reference methodology; international access; direct access to epidemic-associated strains; molecular typing methods.

Louis H. Miller
NIAID, Laboratory of Malaria Research
Chief
Building 4, Room 126
NIH, Bethesda, MD 20892
Phone: 301-496-2183
Fax: 301-402-0079
Vaccines, DNA, Malaria Vaccine
(malaria)

Roger H. Miller
NIAID, Laboratory of Infectious Diseases, Hepatitis Virus Section
Senior Staff Fellow
Building 7, Room 201
NIH, Bethesda, MD 20892
Phone: 301-496-6227
Fax: 301-402-0524
Hepatitis, Diagnostics, Polymerase Chain Reaction (PCR)
(hepatitis B virus; hepatitis C virus)
Major Laboratory Activities: Molecular biology of hepatitis viruses.
Goals: Vaccine for hepatitis C virus.
Unique Resources/Techniques Available: Animal and human serum samples.
Unique Products/Accomplishments: Highly sensitive PCR assay to detect hepatitis C virus RNA.

Stephen P. Miller
NINDS, Developmental & Metabolic Neurology Branch
Special Expert
Building 10, Room 3D-11
NIH, Bethesda, MD 20892
Phone: 301-496-3285
Fax: 301-496-9480
Analytical/Medicinal Chemistry, Spectroscopy, Imaging Techniques
(synthetic chemistry; enzymology; medicinal chemistry)
Major Laboratory Activities: Synthesis of enzyme substrates and enzyme inhibitors.
Goals: New fluroescent enzyme subtractes; inhibitors of protein myristoylation (anti-HIV, anticancer).
Unique Resources/Techniques Available: Organic synthesis, enzymology, natural products chemistry.
Unique Products/Accomplishments: Have developed new fluorescent enzyme substrates which are hydrolysed by enzyme in living, intact cells. Developing new inhibitors of protein myristoylation to look for anti-HIV and anticancer activity.

Pascal G. Millet
CDC, Division of Parasitic Diseases, Malaria Branch
Immunobiologist
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4046
Fax: 404-488-4427
Parasites, Vaccines, Immunology
(parasitology; biology; immunology)
Major Laboratory Activities: Cell culture; vaccines.
Goals: Malaria vaccine; antigen characterization.

Gregory Milman
NIAID, Division of Acquired Immunodeficiency Syndrome
Chief, Pathogenesis Branch
Solar Building, Room 2B33
NIH, Bethesda, MD 20892
Phone: 301-496-8378
Fax: 301-480-5703
AIDS-HIV, Immunology, Molecular Biology
(AIDS; molecular biology; structure; immunology)
Unique Resources/Techniques Available: PCR; T cell signaling; monoclonal antibodies; quantitative PCR for HIV.

Anton A. Minassian
NCI/FCRDC, Laboratory of Tumor Cell Biology, VBS
Visiting Scientist
Fort Detrick, Building 560, Room 12-92
Frederick, MD 21701-1013
Phone: 301-846-1335
Fax: 301-846-6194
AIDS-HIV, Antibodies (monoclonal), Virus Receptors
(pathogenesis of HIV infection)

Lloyd Mitchell
ADAMHA/NIMH, Laboratory of Biochemical Genetics
Senior Staff Fellow
White Building, Room 119
2700 King Avenue, SE
Washington, DC 20037
Phone: 202-373-6076
Fax: 202-373-6087
Molecular Biology, Genetics, Polymerase Chain Reaction (PCR)
(use of PCR to identify neurologically important genes and to sequence disease-associated mutations; forensic applications of PCR)

Suresh Mohla
NCI, DCBDC, Extramural Research Program
Program Director, Basic Cancer Biology
Westwood Building, Room 804
NIH, Bethesda, MD 20892
Phone: 301-496-7028
Fax: 301-402-1037
Cancer Biology, Hormonal Therapy, Oncogenes
(endocrinology and cancer; metastasis; matrix)

Peter T. Mora
NCI/DCPCBD, Division of Cancer Biology, Diagonsis and Centers
Scientist Emeritus
Building 36, Room 1D28
NIH, Bethesda, MD 20892
Phone: 301-496-6538
Fax: 301-480-5322
AIDS-HIV, Cancer Biology, Oncogenes, P53, Carbohydrates
(cancer, AIDS)

Richard Morgan
NHLBI, Molecular Hematology Branch
Senior Investigator
Building 10, Room 7D18
NIH, Bethesda, MD 20892
Phone: 301-496-3075
Fax: 301-496-9985
AIDS-HIV, Gene Therapy, Cloning Vectors/Methods
(gene therapy; AIDS/hemophilia)
Major Laboratory Activities: Gene therapy.
Goals: Development of gene therapy treatments for AIDS and hemophilia.
Unique Resources/Techniques Available: Active involvement with ongoing NIH gene therapy protocols; access to state-of-the-art gene therapy technology.

Christine J. Morrison
CDC, Molecular Immunology Laboratories, Mycotic Diseases Branch
Chief, Molecular Immunology Laboratories
5B18, G-11 CDC
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3128
Fax: 404-639-3296
Infectious Diseases, Immunoassays, DNA/RNA Probes
(immunology; mycology; molecular biology)
Major Laboratory Activities: Development of diagnostic tests and reagents for these tests.
Goals: Develop immunoassays and DNA probes to detect Candida, Aspergillus, Cryptococcus, and Histoplasma.
Unique Resources/Techniques Available: Monoclonal antibody production; enzyme/protein immunochemistry and purification.
Unique Products/Accomplishments: Monoclonal antibodies; molecular probes.

Richard P. Morrison
NIAID, Laboratory of Intracellular Parasites
Microbiologist
Rocky Mountain Laboratories
903 S. Fourth Street
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Sexually Transmitted Diseases, Antibodies (monoclonal), Microbiology
(microbial immunology)
Major Laboratory Activities: Immune response to Chlamydia trachomatis.
Goals: To understand the pathogenetic mechanisms involved in chlamydial disease.
Unique Resources/Techniques Available: Antigen purification.
Unique Products/Accomplishments: Monclonal antibodies to chamydial HSP60. Purified HSP60 antigen. Recombinant E. coli expressing chlamydial HSP60.

Stephen A. Morse
CDC/NCID, Division of STD Laboratory Research
Division Director
Laboratory of Research
1600 Clifton Road, NE (Mail stop C-12)
Atlanta, GA 30333
Phone: 404-639-3222
Fax: 404-639-3296
Vaccines, Diagnostics, Multidrug Resistance
(sexually transmitted diseases)
Major Laboratory Activities: Development of diagnostic tests and vaccines for STD agents. Epidemiology of antibiotic-resistant STD agents.
Goals: To prevent and control STDs.
Unique Resources/Techniques Available: Recombinant libraries, serum banks, strain collection, techniques for molecular epidemiological studies.
Unique Products/Accomplishments: PCR for chancroid, monoclonals for STD agents, prototype vaccine.

Robert C. Moschel
NCI/FCRDC, ABL, Basic Research Program, Chemistry of Carcinogenesis Lab
Head, Carcinogen-Modified Nucleic Acid Chemistry Section
P.O. Box B
Frederick, MD 21702-1201
Phone: 301-846-6146
Fax: 301-846-1660
Adjunctive Therapies, Carcinogenesis, Oncogenes
(chemotherapy adjuvants; carcinogenesis)
Major Laboratory Activities: Synthesis of chemotherapy adjuvants and study of carcinogen-DNA adduct induced mutations.
Goals: To understand the mechanisms involved in chemical carcinogenesis and effective chemotherapy.
Unique Resources/Techniques Available: Techniques to efficiently deplete human tumor cells of the DNA repair protein O6-alkylguanine- DNA alkyltransferase.
Unique Products/Accomplishments: Use compounds that deplete O6-alkylguanine-DNA alkyltransferase to enhance the therapeutic effectiveness of alkylating anti-tumor drugs.

James Mosimann
DCRT, Statistical Mathematical Methodology
Supervisory Mathematical Statistician
Building 31, Room B1C39
NIH, Bethesda, MD 20892
Phone: 301-496-2624
Fax: 301-402-1773
Statistics in Medicine
(computers and engineering; biomedical research)

Bernard Moss
NIAID, Laboratory of Viral Diseases
Chief, LVD
Building 4, Room 229
NIH, Bethesda, MD 20892
Phone: 301-496-9869
Fax: 301-480-1147
Vaccines, AIDS-HIV, Virology (Antivirals), Infectious Diseases Vaccines
(molecular virology; expression vectors)
Major Laboratory Activities: Molecular virology research.
Goals: Vaccine and vector development.
Unique Resources/Techniques Available: Molecular virology.
Unique Products/Accomplishments: Expression vectors.

Joel Moss
NHLBI, Laboratory of Cellular Metabolism
Head, Section on Molecular Mechanisms
Building 10, Room 5N-307
NIH, Bethesda, MD 20892
Phone: 301-496-1254
Fax: 301-402-1610
Receptors (cell biology), Vaccines (infectious diseases), Molecular Biology (recombinant DNA)
(signal transduction in mammalian cells; guanine nucleotide-binding proteins, bacterial toxins, ADP-ribosylation)
Major Laboratory Activities: Mammalian signal transduction pathways involving guanine nucleotide-binding proteins; mechanisms of action of bacterial toxin ADP-ribosyltransferases, e.g., cholera toxin, pertussis toxin; reversible ADP-ribosylation of proteins in mammalian cells; protein trafficking and vesicular fusion.
Goals: Manipulation of signal transduction; protein trafficking and ADP-ribosylation pathways for therapeutic benefit; vaccine design.
Unique Resources/Techniques Available: Ligation-independent cloning procedures; assays for ADP-ribosylating toxin and mutant analogs.
Unique Products/Accomplishments: Purified native and recombinant guanine nucleotide-binding proteins (expressed in bacteria and insect cells); enzymes (ADP-ribosyltransferases and ADP-ribosylarginine hydrolases) involved in the reversible ADP-ribosylation of proteins.

Richard L. Mowery
NEI, Collaborative Clinical Research Branch
Chief, CCRB
Building 31, Room 6A49
NIH, Bethesda, MD 20892
Phone: 301-496-5983
Fax: 301-402-0528
Ophthalmics, Clinical Devices (lasers), AIDS-HIV (antiviral drugs)
(clinical trials; ophthalmology; AIDS)
Major Laboratory Activities: Clinical trials aimed at treatment and prevention of major ocular diseases.
Goals: To evaluate new drugs, devices, and procedures for the treatment and prevention of ocular diseases.
Unique Resources/Techniques Available: Established investigators with experience in ophthalmic clinical research.
Unique Products/Accomplishments: Support major clinical investigations in ophthalmology.

Jack Moye
NICHD, Center for Research for Mothers & Children
Medical Officer, Pediatric Adolescent & Maternal AIDS Branch
Executive Plaza South, Building 450
NIH, Bethesda, MD 20892
Phone: 301-496-7339
Fax: 301-496-8678
AIDS-HIV, Diagnostics, Immunology
(pediatric and material AIDS/HIV infection)
Goals: Evaluation of diagnostic techniques and therapeutic interventions for pediatric HIV infection.
Unique Resources/Techniques Available: Pediatric and maternal HIV clinical trials network.

Andrew Muchmore
NCI/DCBD, Metabolism
Senior Investigator
Building 10, Room 6B09
NIH, Bethesda, MD 20892
Phone: 301-496-6868
Fax: 301-496-9956
Pregnancy, Glycoproteins, Immunomodulation, Immunoregulation
(purification; biochemical characterization; in vitro and in vivo immunoregulatory properties of unique glycopeptides and glycoproteins)

Anil B. Mukherjee
NICHD, Human Genetics Branch
Chief, Section on Developmental Genetics
Building 10, Room 9S242
NIH, Bethesda, MD 20892
Phone: 301-496-7213
Fax: 301-402-0234
AIDS-HIV, Drugs (antiviral), Anti-inflammatory, Molecular Biology, Bacterial Expression Systems, Polymerase Chain Reaction (PCR)
(biochemistry; molecular biology; developmental genetics)
Major Laboratory Activities: Expression and regulation of endogenous anti-inflammatory protein UG; regulation of type II phospholipase A2 gene in relation to respiratory distress syndrome; inhibition of HIV-1 aspartyl protease by antibody-based inhibitors.
Goals: Control and therapy of inflammatory diseases such as rheumatoid arthritis; development of novel therapeutic agents for AIDS (antivirals).
Unique Resources/Techniques Available: Expertise in protein biochemistry and molecular biology of uteroglobin, phospholipase A2, and HIV-1 aspartyl protease.
Unique Products/Accomplishments: The following product patents are pending: antiflammins; anti-platelet agent; bacterial expression vector; and assay for HIV-1 protease.

James I. Mulshine
NCI, Biomarkers and Prevention Research Branch
Chief
5516 Nicholson Lane, Suite 100
Kensington, MD 20895
Phone: 301-402-3128
Fax: 301-816-2199
Prevention, Growth Factor Inhibitors, Cancer Early Detection
(early cancer detection; cancer intervention)
Major Laboratory Activities: Study of early cancer tumor biology in major epithelial systems.
Goals: Develop rational early cancer detection and intervention approaches.
Unique Resources/Techniques Available: Integrated basic/clinical research focus on problems of early cancer.
Unique Products/Accomplishments: Several patents, CRADAs relevant to mission of cancer early detection.

Brian R. Murphy
NIAID, Laboratory of Infectious Diseases
Head, Respiratory Viruses Section
Building 7, Room 106
NIH, Bethesda, MD 20892
Phone: 301-496-4205
Fax: 301-496-8312
Virology, Vaccines, Immunology
(virology; vaccines)
Major Laboratory Activities: Vaccine development for influenza viruses, parainfluenza viruses, and respiratory syncytial viruses.
Unique Resources/Techniques Available: Candidate live attenuated mutants of respiratory viruses.
Unique Products/Accomplishments: Developed live attenuated cold-adapted influenza A virus vaccine.

Dennis L. Murphy
ADAMHA/NIMH, Laboratory of Clinical Science
Chief
Building 10, Room 3D41
NIH, Bethesda, MD 20892
Phone: 301-496-2757
Fax: 301-402-0188
Neuropharmacology, Psychopharmacology
(neuropharmacology/psychopharmacology)

J. Frederic Mushinski
NCI/DCBDC, Laboratory of Genetics
Cheif, Molecular Genetics Section
Building 37, Room 2B26
NIH, Bethesda, MD 20892
Phone: 301-496-5260
Fax: 301-402-1031
Antibodies (monoclonal), Oncogenes
(molecular genetics; immunology)
Major Laboratory Activities: RNA expression studies.
Goals: Alter cells via retroviral vector-based expression constructs.
Unique Products/Accomplishments: Oncogene-expressing virus that immortalizes cells.

Bita Nakhai
ADAMHA/NIAAA, Laboratory of Neurogenetics
Visiting Fellow
Building 10, Room 3C102
NIH, Bethesda, MD 20892
Phone: 301-496-4460
Fax: 301-402-2365
Cell Biology, Neurobiology Research, AIDS-HIV, Central Nervous System (CNS), Vaccines, Baculovirus Production System
(regulation of serotonin receptor gene expression)
Major Laboratory Activities: Molecular biology techniques.
Goals: Find regulatory sequences upstream of the serotonin receptor gene.
Unique Products/Accomplishments: Cloned and expressed gonadotropin-luciferase genes in baculovirus system.

Hira Nakihasi
FDA/CBER, DBB
Research Chemist
Building 29, Room 107
NIH, Bethesda, MD 20892
Phone: 301-496-2205
Fax: 301-496-4684
Transcription, Virology, Cell Biology
(molecular virology)

Peter Nara
NCI/FCRDCF, Laboratory of Tumor Cell Biology
Chief, Virus Biology Section
Fort Detrick, Building 560, Room 12-92
Frederick, MD 21701-1013
Phone: 301-846-1335
Fax: 301-846-6194
AIDS-HIV, Vaccines, Retroviruses
(virology; comparative pathology; AIDS vaccine development)

Ven L. Narayanan
NCI/DCT, Drug Synthesis & Chemistry Branch
Chief, Drug Synthesis & Chemistry Branch
Executive Plaza North, Room 831
NIH, Bethesda, MD 20892
Phone: 301-496-8795
Fax: 301-496-8333
Cancer Chemotherapy, AIDS-HIV, Structure-activity Studies, Antivirals
(new drug discovery; cancer; AIDS)
Major Laboratory Activities: Synthesis, acquisition, drug design, structure-activity analysis.
Goals: New anticancer/anti-AIDS drug discovery.
Unique Resources/Techniques Available: Acquisition network, large repository of synthetics and natural products and large-scale unique anticancer/anti-AIDS screens.
Unique Products/Accomplishments: Discovered several unique preclinical anticancer and anti-AIDS leads.

Joseph Naughton
DCRT, Computer Center Branch
Associate Director DCRT & Branch Chief, CCB
Building 12, Room 2244
NIH, Bethesda, MD 20892
Phone: 301-496-5381
Fax: 301-480-6245
Computer Software
(computers and engineering; biomedical research)

A. J. Nazarali
NHLBI,
Visiting Associate
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NIH, Bethesda, MD 20892
Phone: 301-496-3551
Fax: 301-402-0270
Cell Detection, Gene Cloning, Gene Regulation

Elaine Neale
NICHD, Laboratory of Developmental Neurobiology
Head, Unit on Cell Biology
Building 36 Room 2A21
NIH, Bethesda, MD 20892
Phone: 301-496-6419
Fax: 301-496-9939
Neurons
(neuronal development; effects of activity on development; neuronal toxins; surface markers for living neurons)

Leonard M. Neckers
NCI, Clinical Pharmacology Branch
Section Chief, Tumor Cell Biology Section
Building 10, Room 12N22B
NIH, Bethesda, MD 20892
Phone: 301-402-3308
Fax: 301-402-1608
Antisense (Molecular Biology), Antisense (Therapeutic Methods), Cancer Biology
(antisense development; anticancer agents)
Major Laboratory Activities: Development of novel anticancer agents with focus on genetic therapy and use of natural products.
Goals: To define an in vivo pre-clinical and clinical model to test antisense efficacy.
Unique Resources/Techniques Available: Expertise in antisense design (chemistry); antisense action/cell penetration; and in vivo modeling.
Unique Products/Accomplishments: Several antisense patents; first demonstration of mechanism of cell penetration by antisense oligonucleotides; first demonstration of in vivo efficacy of anti-oncogene antisense as an anticancer agent.

David L. Nelson
NCI, Metabolism Branch
Chief, Immunophysiology Section
Building 10, Room 4N115
NIH, Bethesda, MD 20892
Phone: 301-496-3024
Fax: 301-496-9956
Cytokines, Monoclonal Antibodies, Immune Monitoring
(immunology; genetics)
Major Laboratory Activities: Measurement of soluble receptors.
Goals: Using chimeric antibodies for therapy.
Unique Resources/Techniques Available: ELISA technology, RFLP, gene cloning.
Unique Products/Accomplishments: Kits for measuring soluble growth factor receptors.

Lawrence M. Nelson
NICHD, DEB/Section of Gynecologic Research
Senior Clinical Investigator
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NIH, Bethesda, MD 20892
Phone: 301-496-4686
Fax: 301-402-0574
Gynecology Diagnostics, Fertility, Gynecology Therapeutics
(autoimmune ovarian failure; progesterone therapy)

David Neville
ADAMHA/NIMH, Laboratory of Molecular Biology
Chief, Section on Biophysical Chemistry
Building 36, Room 1B-08
NIH, Bethesda, MD 20892
Phone: 301-496-6807
Fax: 301-402-0245
Immunotherapy, Immunotoxins, Receptors
(immunotoxins; targeted drug delivery)
Major Laboratory Activities: Rational design of immunotoxins.
Goals: Treatment of autoimmune diseases with immunotoxins.
Unique Products/Accomplishments: In vivo T cell ablation with anti-CD3 immunotoxin based on a diphtheria toxin binding site mutant.

John D. Newman
NICHD, Laboratory of Comparative Ethology
Chief, Section on Neuroethology
Building 112, Room 205, Elmer School Road
Post Office Box 289, NIH Animal Center
Poolesville, MD 20837
Phone: 301-496-0835
Fax: 301-496-0630
Pediatric/Neonatal Monitoring & Diagnosi, Auditory Disorders, Affective Disorders
(neuroethology; bioacoustics and their clinical application)
Goals: Use non-human primate models to develop ethopharmacological and neuroethological approaches to the study of affective disorders and communicative disorders.
Resources/Techniques Available: Speech/infant cry analysis and synthesis.
Unique Products/Accomplishments: Developed non-human primate models for separation anxiety, panic disorder, and psychosis.

Frank J. Nice
NINDS, Clinical Neurosciences Program
Assistant Director, CNP
Building 10, Room 5N234
NIH, Bethesda, MD 20892
Phone: 301-496-9526
Fax: 301-402-1007
Antiepileptics, Pharmacology, Anticonvulsants
(epilepsy; pharmacology)
Major Laboratory Activities: Antiepileptic drug development.
Goals: Cure of epilepsy, and drugs with less side effects.
Unique Resources/Techniques Available: Antiepileptic drug development.
Unique Products/Accomplishments: Novel antiepileptic drugs.

Bruce Nisula
NICHD, Chief, Developmental Endocrinology Branch
Chief, Medical Endocrinology Section
Building 10, Room 10N262
NIH, Bethesda, MD 20892
Phone: 301-496-4686
Fax: 301-402-0574
Chorionic Gonadotropin, Cancer Diagnostics Markers
(endocrinology and glycoprotein hormones)

Ralph M. Nitkin
NICHD, Mental Retardation and Developmental Disability Branch
Health Scientist Administrator
Executive Plaza North, Room 631
NIH, Bethesda, MD 20892
Phone: 301-496-1385
Fax: 301-402-2085
Mental Retardation
(developmental neurobiology; mental retardation)

Carol Noory
FDA
Metro Park North II, Room N122
7500 Standish Place
Rockville, MD 20855
Phone: 301-295-8836
Fax: 301-295-8183

Albert A. Nordin
NIA, Laboratory of Clinical Physiology/CIS
Research Chemist
Gerontology Research Center
4940 Eastern Avenue, Room 4C10
Baltimore, MD 21224
Phone: 410-550-1754
Fax: 410-550-1888
Receptors, Immunology, Aging
(transmembrane signalling mechanisms in lymphocyte activation; age-related immunodeficiencies)

Karl D. Normington
NHLBI, Molecular Hematology Branch
Senior Staff Scientist
Building 10, Room 7D18
NIH, Bethesda, MD 20892
Phone: 301-402-2977
Fax: 301-496-9985
Cardiovascular, Gene Therapy, Genetic Diseases
(gene therapy; molecular biology)
Major Laboratory Activities: Genetic therapy applied to cardiovascular problems and liver diseases.
Goals: Development of injectable targeted vectors for delivery of genetic material to defined sites.
Unique Resources/Techniques Available: Molecular biologist for 10 years; cell biology experience.
Unique Products/Accomplishments: cDNA and genomic cloning; PCR; yeast and mammalian cell gene expression.

Thomas Nutman
NIAID, Laboratory of Parasitic Diseases
Senior Investigator
Building 4, Room B1-13
NIH, Bethesda, MD 20892
Phone: 301-496-5398
Fax: 301-480-3757
DNA, Immunology, Parasites, IgE Regulation, Tropical Diseases
(IgE regulation; immunological and molecular aspects of parasitic diseases)

Sue Ohata
OD, Office of Extramural Research
Special Assistant to the Associate Director
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Phone: 301-496-5356
Fax: 301-496-0232

Takami Oka
NIDDK, Laboratory of Molecular & Cellular Biology
Section Chief
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NIH, Bethesda, MD 20892
Phone: 301-496-1404
Fax: 301-402-0053
Hormones/Growth Factors, Wound Healing, Receptors
(endocrinology; cell growth and differentiation)
Major Laboratory Activities: Cellular and molecular biological studies of cell growth and differentiation.
Goals: Elucidation of molecular mechanisms involved in the actions of hormones and growth factors.
Unique Products/Accomplishments: Elucidation of the physiological role of EGF. Cloning of milk protein genes. Hormonal regulation of the growth and differentiation of the mammary gland.

James Omichinski
NIDDK, Laboratory of Chemical Physics
Building 2, Room B208
NIH, Bethesda, MD 20892
Phone: 301-496-0788
Fax: 301-496-0825
Recognition Peptides, Nuclear Magnetic Resonance, Peptides

Rosa C. Ong
NCI/FCRDC, Laboratory of Biochemical Physiology
Visiting Fellow
Fort Detrick, Building 560, Room 31-76
Frederick, MD 21702-1201
Phone: 301-846-5471
Fax: 301-846-1673
Molecular Biology, Immunology, Cancer
(signal transduction)
Major Laboratory Activities: Oncogene.
Goals: Role of P53 in oncogenes.

Joost J. Oppenheim
NCI/DCT/FCRDC, Laboratory of Molecular Immunoregulation
Chief, LMI
Fort Detrick, Building 560, Room 21-89A
Frederick, MD 21702-1201
Phone: 301-846-1551
Fax: 301-846-1673
Cytokines, Gene Expression, Inflammation
(cytokines; immunology)

Stephen Oroszlan
NCI/FCRDC, Laboratory of Molecular Virology & Carcinogensis
Director, LMVC
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Frederick, MD 21702
Phone: 301-846-1355
Fax: 301-846-1666
Antiviral Drugs, HTLV-1, Retroviruses
(retrovirology; viral proteins; structure; function)
Major Laboratory Activities: Viral proteinase.
Goals: Treatment of viral diseases and cancer.
Unique Resources/Techniques Available: Protein chemistry, purification, synthesis, sequencing, immunochemical techniques, viral assays, proteinase assays.
Unique Products/Accomplishements: Purified retroviral proteins; antibodies; virus-derived, synthetic, and recombinant retroviral proteases; retroviral capsid purification; anti-HIV agents.

John R. Ortaldo
NCI/FCRDC, Laboratory of Experimental Immunology
Chief, LEI
Fort Detrick, Building 560, Room 31-93
Frederick, MD 21701-1013
Phone: 301-846-1323
Fax: 301-846-1673
NK Cells, Signal Transduction, Cytokines
(tumor immunology)
Major Laboratory Activities: Studies on biological response modification and the application of these studies to cancer therapy. We perform indepth studies utilizing cellular, biochemical, and molecular approaches on cell-mediated immune effector mechanisms, lymphokines, monoclonal antibodies (mAbs), growth factors, and other host responses that may be useful for cancer treatment. We study selected biological response modifiers (BRMs) for their effects on the immune system and other aspects of host responses, particularly the therapeutic implications of such effects. Based on such information, we develop protocols for therapy of tumors in experimental animals and in cancer patients and perform studies to evaluate the therapeutic efficacy of selected BRMs at both the cellular and molecular level.

J. Scott Osborne
DRG, Epidemiology and Disease Control-1
Health Scientist Administrator/Scientific Review Administrator
Westwood Building, Room 2030
NIH, Bethesda, MD 20892
Phone: 301-496-7246
Fax: 301-402-1279
Epidemiology, Risk Analysis (cancer), Air Pollution
(epidemiology; air pollution and respiratory health; clustering; risk assessment; risk perception and risk-taking behavior)
Unique Products/Accomplishments: Identification of indoor heating with woodburning stoves as a risk to respiratory health (acute illness and chronic symptoms); development of a method for assessing reported clusters (cancer) in small populations; assessment of correspondence between perception of risk and risk-taking behavior by parents of small children.

Beverly Packard
FDA, Center for Biologic Evaluation & Research
Senior Staff Fellow
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NIH, Bethesda, MD 20892
Phone: 301-496-5110
Fax: 301-480-6123
Cytokines, Growth Factors, Immunotherapy
(cytokines; immunology)

Eduardo A. Padlan
NIDDK, Laboratory of Molecular Biology
Building 2, Room 206
NIH, Bethesda, MD 20892
Phone: 301-402-1780
Fax: 301-496-0201
3D Structural Analysis, Molecular Modeling, Humanized Antibodies
(proteins; molecular immunology)
Major Laboratory Activities: Protein crystallography, structural analysis.
Goals: Study of medically-important macromolecules, and understanding structural basis of molecular recognition.

Samuel Page
FDA, Natural Products & Instrumentation Branch
Chief, NPIB
200 C Street, SW (HHF-423)
Washington, DC 20204
Phone: 202-245-2766
Fax: 202-245-1422
Natural Products, Toxins, Instrumentation
(food composition; natural toxins; mass spectrometry; immunoassays)

Aurora K. Pajeau
NINDS, Neuroepidemiology Branch
Clinical Associate
Federal Building, Room 714
NIH, Bethesda, MD 20892
Phone: 301-496-1715
Fax: 301-496-2358
In Vivo NMR Spectroscopy, Retroviruses, Neurochemistry
(neuroepidemiology of retroviral infections; vascular dementia; cerebral and spinal blood flow and metabolism)

Mark A. Pallansch
CDC/NCID, Respiratory & Enteric Viruses Branch
Chief, Enterovirus Section
(Mail stop G-17)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2749
Fax: 404-639-1307
Diagnostics—Immunoassays, Immunology (Monoclonal Antibodies), Virology—Diagnostics
(enterovirus molecular characterization, diagnostics, and epidemiology)
Major Laboratory Activities: Studies on the molecular characteristics of enteroviral agents associated with severe acute and chronic diseases.
Goals: Improved diagnostic techniques for sensitive and rapid detection of enterovirus infections for clinical and investigational use.
Unique Resources/Techniques Available: Unique collections of specimens from outbreak investigations of enterovirus disease.
Unique Products/Accomplishments: Monoclonal antibodies to 15 of the most common enterovirus serotypes.

Greg Palumbo
NIAID, Laboratory of Viral Diseases
Intramural Research Training Award (IRTA) Fellow
Building 4, Room 236
NIH, Bethesda, MD 20892
Phone: 301-496-1370
Fax: 301-480-1147
Virology
(immunology and virology)

Takis S. Papas
NCI/DCE/FCRDC, Laboratory of Molecular Oncology
Chief, LMO
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Frederick, MD 21701-1013
Phone: 301-846-1576
Fax: 301-846-6164
AIDS-HIV, Oncogenes, Expression Vectors, Retroviruses
(probes for oncogenes and growth factors; AIDS vaccines; HIV-expression vector systems; HIV-specific antigen reagents; molecular biology of retrovirus and oncogenes)

Sang S. Park
NCI, Laboratory of Molecular Carcinogenesis
Expert
Fort Detrick, Building 538, Room 225
Frederick Cancer Research Cntr
Frederick MD 21702-1201
Phone: 301-846-1246
Fax: 301-846-5946
Carcinogenesis, Cytochrome P-450, Antibodies (monoclonal)
(chemical carcinogenesis)

Ronald C. Parker
NIDDK, Laboratory of Cellular & Developmental Biology
Senior Staff Fellow
Building 6, Room B1-38
NIH, Bethesda, MD 20892
Phone: 301-496-6967
Fax: 301-496-5239
Yeast Expression Systems, Protein Purification, Economic Development
(yeast gene expression and regulation)
Major Laboratory Activities: Design, conduct, and analyze experiments.
Goals: Understand how chromatin regulates transcription of genes.
Unique Products/Accomplishments: Purification of yeast plasmid chromatin; incremental movement of genes into a specifically positioned nucleosome located in plasmid chromatin; monitoring chromatin's capacity to regulate transciption by a RNA blot "melt-off" assay.

Alan J. Parkinson
CDC, Arctic Investigations Program
Chief, Laboratory Activity
225 Eagle Street
Anchorage, AK 99501
Phone: 907-271-4011
Fax: 907-271-4174
Infectious Disease Diagnostics, Assay Methods, Immunoassays, Vaccines
(molecular diagnostics)
Major Laboratory Activities: Development and evaluation of antigen and DNA based assay systems for the detection of invasive pneumococcal disease.
Development and standardization of immunoassays for the quantitation of pneumococcal class-specific, serotype-specific antibody.
Goals: Using conventional and new detection systems to determine the prevalance of invasive pneumococcal disease in a high-risk Alaska Native population.
Unique Resources/Techniques Available: Accessible population at high risk for invasive pneumococcal disease. Specimen bank contaning serum, urine, blood fractions on invasive bacterial diseases.
Unique Products/Accomplishments: EIA system for the detection of pneumococcal C polysaccharide.

V. Adrian Parsegian
DCRT, Physical Sciences Laboratory
Research Physicist
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Phone: 301-496-1135
Fax: 301-496-2172
Biophysics, Ion Channels, Polymers
(molecular forces; membrane transport)

Ira Pastan
NCI, Division of Cancer Biology, Diagnosis, and Centers
Chief, Laboratory of Molecular Biology
Building 37, Room 4E-16
NIH, Bethesda, MD 20892
Phone: 301-496-4797
Fax: 301-402-1344
Immunotoxins, Drug Delivery/proteins, Cancer (Antibody-Based Therapy), Cancer Diagnostics
Major Laboratory Activities: Development of new monoclonal antibodies against cancers and the use of these mAbs to make recombinant immunotoxins and for delivery of isotopes and drugs to tumors.
Goals: To develop new ways of treating and diagnosing cancer.
Unique Resources/Techniques Available: Ability to rapidly clone cDNAs encoding variable regions of antibodies and make recombinant immunotoxins.
Unique Products/Accomplishments: Several recombinant immunotoxins have been made for cancer treatment. One with antibody B3 is active against colon, lung, and breast cancer; we have isolated an antibody (K1) that binds to most ovarian cancers. Recently, a new antibody that reacts with almost all prostate cancers was isolated.

Donald Patterson, Jr.
CDC, Toxicology Branch
Supervisory Research Chemist
Center for Environmental Health & Injury
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Dioxin, Spectroscopy, Chemistry (analysis)
(dioxin/furan standards; TCDD analysis; analytical toxicology)

Steven Paul
ADAMHA/NIMH
Scientific Director
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Psychopharmacology

P. Pazzaglia
ADAMHA/NIMH, Psychobiology/Biologic Psychiatry
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Phone: 301-496-4805
Fax: 301-402-0052
Neuropharmacology, Psychopharmacology
(mechanisms in mood disorders; neuropsychopharmacology)

Philip E. Pellett
CDC/NCID, Viral Exanthems and Herpesvirus Branch
Chief, Herpesvirus Section
Building 7, Room 206, MS G18
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2186
Fax: 404-639-3163
Viral Diseases, Viral Diagnostics, Antivirals
(herpesviruses; antivirals; viral diagnostics)
Major Laboratory Activities: Study the biology and molecular biology of human herpesviruses.
Goals: Understand the mechanisms which underlie pathogenesis; devise novel diagnostic tools.
Unique Resources/Techniques Available: Access to relatively large quantities of human cord blood, allowing growth of herpesviruses 6, 7, and 8.
Unique Products/Accomplishments: Patents applied for: 1) novel baculovirus vectors and reagents for serodiagnosis of HSV-1 and HSV-2, 2) human herpesvirus 6 diagnostic reagents, and 3) human herpesvirus 7 diagnostic reagents.

Peter G. Pentchev
NINDS, Developmental & Metabolic Neurology Branch
Section Chief
Building 10, Room 3D12
NIH, Bethesda, MD 20892
Phone: 301-496-3285
Fax: 301-496-9480
Cholesterol, Neurological Disorders, Genetics
(hereditary metabolic disorders)

Robert W. Peoples
ADAMHA/NIAAA, Laboratory of Molecular & Cellular Neurobiology
National Research Council Fellow
12501 Washington Avenue
Rockville, MD 20852
Phone: 301-443-8163
Fax: 301-443-5894
Electrophysiology, Excitatory Amino Acids, Alcoholism
(mechanisms of action of ethanol and anesthetics in the central nervous system; ethanol tolerance and dependence)

Alan Peterkofsky
NHLBI, Laboratory of Biochemical Genetics
Deputy Chief
Building 36, Room 4C-11
NIH, Bethesda, MD 20892
Phone: 301-496-2408
Fax: 301-402-0270
Bacterial Expression Systems, In Vitro Mutagenesis, Recombinant DNA
(molecular biology)
Major Laboratory Activities: Research on microbial adenylcyclase.
Goals: Elucidation of mechanism and mode of regulation.

C.J. Peters
CDC, Division of Viral & Rickettsial Diseases, SPB
Chief, Special Pathogens Branch
MS G-14
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1115
Fax: 404-639-1118
Vaccines, Infectious Diseases, Diagnostics, Tropical Diseases
(virology; immunology; epidemiology; vaccines)
Major Laboratory Activities: Research in epidemiology, vaccine development, and control of viral diseases.
Goals: Control of viral hemorrhagic fevers.
Unique Resources/Techniques Available: BSL-4 laboratories. Expertise in viral diagnosis, exotic diseases.
Unique Products/Accomplishments: Vaccine candidate developed for Lassa fever. Antigen and PCR-based diagnostics for several acute infections. Conventional and recombinant antigen-based serology for several infections.

John I. Peterson
NCRR, Chemical Engineering Section, BEIP
Chemist
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-5771
Fax: 301-496-6608
Biosensors, Fiber Optic Probes, Instrumentation
(biosensor and fiber optic sensor development)
Major Laboratory Activities: Instrumentation development.
Unique Products/Accomplishments: Experience as originator of fiber optic chemical sensors for pH and PO_2.

Norman J. Pieniazek
CDC/NCID, DPD/PDB
Visiting Scientist
Mail Stop F-13
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4073
Fax: 404-488-4108
Sequencing, Image Analysis, Computer Software
(molecular epidemiology)
Major Laboratory Activities: srRNA cloning through PCR.
Goals: Identification of protozoan parasites.
Unique Resources/Techniques Available: BioImage sequencing gel reader.

Joseph Piesman
CDC/NCID, Medical Entomology-Ecology Branch
Chief, Lyme Diseases Section
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6408
Fax: 303-221-6476
Microbiology, Prevention, Tropical Diseases
(lyme disease)
Major Laboratory Activitites: Lyme disease research.
Goals: Prevention of tick-borne disease.
Unique Resources/Techniques Available: Culture for Lyme disease spirochete.
Unique Products/Accomplishments: Assay system for acaricides.

Seth Pincus
NIAID, Laboratory of Microbial Structure & Function
Expert
Rocky Mountain Laboratories
903 South Fourth Street
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Antibodies (polyclonal), Immunoglobulin, Genetic Engineering
(genetically engineered antibodies for human therapy and for immobilization)

Josef Pitha
NIA, Laboratory of Cellular & Molecular Biology
Chief, Macromolecular Chemistry
Gerontology Research Center
4940 Eastern Avenue, Room 4C10
Baltimore, MD 21224
Phone: 410-550-1810
Fax: 410-550-1938
Cyclodextrins, Drug Uptake, Chemistry (organic)
(pharmaceutical preparations; drug solubilization; cyclodextrins)

Dov H. Pluznik
FDA/CBER, Division of Cytokine Biology
Supervisory Microbiologist
Building 29A, Room 3B-19
NIH, Bethesda, MD 20892
Phone: 301-496-6968
Fax: 301-402-1659
Cytokines, Hematology, Immunology
(hematopoietic growth factors; differentiation and growth control)

Dorothy Pocurull
FDA
Staff Chief
Parklawn Building, Room 7B05
5600 Fishers Lane
Rockville, MD 20715
Phone: 301-443-0530
Fax: 301-443-9296
Bacteria, Biotechnology, Toxicity
(microbiology; food & drug law; consumer safety)

Lance R. Pohl
NHLBI, Laboratory of Chemical Pharmacology
Chief, Pharmological Chemistry Section
Building 10, Room 8N115
NIH, Bethesda, MD 20892
Phone: 301-496-4841
Fax: 301-402-0171
Animal Models, Immunology, Autoimmune Diseases, Toxicology—Mechanisms by Drugs
(drug metabolism, activity, and toxicity)
Major Laboratory Activities: Studying molecular basis of drug-induced hepatitis.
Goals: Design safer drugs.
Unique Resources/Techniques Available: Isolation and characterization of protein targets of toxic drug metabolites.
Unique Products/Accomplishments: Use of immunochemical techniques such as ELISA, immunohistochemistry, and immunoblotting to identify targets of toxic reactive metabolites.

Miriam C. Poirier
NCI, Laboratory of Cellular Carcinogenesis and Tumor Promotion
Research Chemist
Building 37, Room 3B25
NIH, Bethesda, MD 20892
Phone: 301-402-1835
Fax: 301-496-9709
Immunoassays, Chemotherapy, Carcinogenesis
(monitoring of chemicals bound or incorporated into human DNA)
Major Laboratory Activities: Human DNA adduct measurements within the context of clinical and/or epidemiological study designs.
Goals: Mechanisms of drug-DNA interactions in patients; human biomonitoring and risk assessment.
Unique Resources/Techniques Available: Immunoassays and immunohistochemistry for DNA adducts of cisplatin, hydrocarbons, aromatic amines, and AZT.
Unique Products/Accomplishments: Enzyme-linked immunosorbent assays for cisplatin, AZT, polycyclic aromatic hydrocarbons (PAHs); immunoaffinity chromatography and RIA for aromatic amines; immunohistochemistry for AZT, PAHs, and aromatic amines.

Yves G. Pommier
NCI/DCT, Laboratory of Molecular Pharmacology
Visiting Scientist
Building 37, Room 5C27
NIH, Bethesda, MD 20892
Phone: 301-496-5944
Fax: 301-402-0752
Topoisomerase Inhibitor, Antiviral Drugs, Chemotherapy
(pharmacology; cancer; viral infection)
Major Laboratory Activities: Head of topoisomerase group.
Goals: Understand the mechanism of action and design anticancer and antiviral drugs.
Unique Resources/Techniques Available: Purified topoisomerases, HIV integrases (assays).
Unique Products/Accomplishments: Patent pending for a new topoisolerase inhibitor, azatoxin.

Marcel Pons
OD/DRG, AIDS and Related Research Study Section
Westwood Building, Room A10
NIH, Bethesda, MD 20892
Phone: 301-496-7286
Fax: 301-402-1207
AIDS-HIV, Antisense, Cloning Vectors/Methods, Recombinant DNA
(AIDS; virology; molecular biology)
Major Laboratory Activities: Cloning and sequencing.
Unique Products/Accomplishments: First to show that influenza virus genome was segmented.

Victoria Pope
CDC/NCID, DSTDLR/Treponemal Pathogenesis & Immunobiology Branch
Research Microbiologist
(Mail Stop D-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3977
Fax: 404-639-3296
Sexually Transmitted Diseases, Cell Subsets, Immune Monitoring
(syphilis/HIV coinfection)
Major Laboratory Activities: Immunophenotyping, western blots.
Goals: To be able to better understand the immunology of syphilis.
Unique Resources/Techniques Available: FACScan.
Unique Products/Accomplishments: Co-developer of monoclonal Ab. to T. pallidum.

Erik Pottala
DCRT, Applied Studies
Engineer
Building 12A, Room 2041
NIH, Bethesda, MD 20892
Phone: 301-496-2959
Fax: 301-402-0007
Applied Mathematics, Computer Software, Image Analysis
(computer processing of biological signals)

John I. Powell
DCRT, Computer Systems Laboratory
Senior Engineer
Building 12A, Room 2031
NIH, Bethesda, MD 20892
Phone: 301-496-2963
Fax: 301-402-2867
Data Analysis Program, Spectroscopy, Information Systems
(laboratory automation; data analysis; computational molecular analysis)
Major Laboratory Activities: Laboratory automation, data analysis, and archival.
Goals: Application of information science technologies to problems typical to those found in the research laboratory setting.
Unique Resources/Techniques Available: Computer systems integration.
Unique Products/Accomplishments: Development of computing environment to support high-volume DNA sequencing laboratory; development of general purpose data analysis program used in flow cytometry and molecular biology laboratories.

Peter C. Preusch
OD/DRG, Drug Development & Delivery, SBIR Study Section
Scientific Review Administrator
Westwood Building, Room 2A17
NIH, Bethesda, MD 20892
Phone: 301-496-7968
Fax: 301-402-1206
Drug Delivery, Rational Drug Design, Molecular Modeling
(anti-coagulants)
Major Laboratory Activities: Review of pharmaceutical SBIR proposals.
Goals: To foster improved research and development in the small business community.

Miroslava Protic
NICHD, OSD/Section of Viruses and Cellular Biology
Visiting Scientist
Building 6, Room 1A-15
NIH, Bethesda, MD 20892
Phone: 301-496-6175
Fax: 301-480-1194
Gene Expression, Mutagenesis, Stress
(DNA repair and mutagenesis; DNA binding proteins)

Robert H. Purcell
NIAID, Laboratory of Infectious Diseases, Hepatitis Viruses Section
Section Head
Building 7, Room 202
NIH, Bethesda, MD 20892
Phone: 301-496-6227
Fax: 301-402-0524
Animal Models, Diagnostics, Vaccines
(hepatitis virology)
Major Laboratory Activities: Basic, applied virology.
Goals: Control of viral hepatitis.
Unique Resources/Techniques Available: Animal models, molecular and diagnostic probes for all recognized human hepatitis viruses.
Unique Products/Accomplishments: Contributions to development of HBV, HAV vaccines; development of inactivation procedures for viruses in blood products; development of improved diagnostics.

Tatiana Putilin
NEI, Laboratory of Retinal Cell & Molecular Biology
Visiting Scientist
Building 6, Room 305
NIH, Bethesda, MD 20892
Phone: 301-496-8299
Fax: 301-496-1759
Spectroscopy, DNA/RNA Probes, Polymerase Chain Reaction (PCR)
(DNA sequencing; fluorescent probes)
Major Laboratory Activities: Molecular biology of retina degenerations.
Goals: Identify and characterize relevant genes.

Louis A. Quatrano
NICHD, National Center for Medical Rehabilitation Research
Chief, Applied Rehabilitation Medicine Research Branch
Executive Plaza South, Room 450W
NIH, Bethesda, MD 20852
Phone: 301-402-2242
Fax: 301-496-8878
Rehabilitation Therapy & Equipment, Computer Software, Physiology
(rehabilitation)

Frederick D. Quinn
CDC/NCID, Division of Bacterial & Mycotic Diseases, MSPB
Research Microbiologist
Building 1, Room 2225
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2841
Fax: 404-639-3296
Diagnostics, Cell Culture, Molecular Biology
(development of DNA or antibody diagnostic probes based on the interaction between bacterial pathogens and cell culture or animal models)
Major Laboratory Activities: Nucleic aoid and protein analysis of virulence factors from the cat scratch disease agent, listeria and meningococcus.
Goals: Development of diagnotics probes for cat scratch disease and listeria; meningococcal virulence model development.
Unique Resources/Techniques Available: Tissue culture attachment and invasion models, isolation of the cat scratch disease agent, development of subtrative hybridization.
Unique Products/Accomplishments: Identification of antigenic differences between agar-grown and tissue-grown cat scratch, listeria, and meningococcus, identification of potential antigens for a cat scratch test, indentification of genetic differences between virulent and avirulent isolates of listeria and legionella.

Thomas C. Quinn
NIAID, Laboratory of Immunoregulation
Senior Investigator
Building 10, Room 11B13
NIH, Bethesda, MD 20892
Phone: 301-496-1124
Fax: 301-955-7889
AIDS-HIV Diagnostics, Vaccines (AIDS), Infectious Diseases Diagnostics, Sexually Transmitted Diseases, Virology Diagnostics
(HIV, HTLV, chlamydia)
Major Laboratory Activities: Clinical and laboratory-based studies on chlamydia trachomatis, chlamydia pneumoniae, HIV-1, HIV-2, HTLV-1, HTLV-2, and hepatitis C. Studies include serologic analyses, PCR identification and gene typing, gene sequencing and quantitative cultures.
Goals: To improve current diagnostic tools for better identification of infectious agents in order to better understand their pathogenesis, clinical spectrum, and epidemiology.
Unique Resources/Techniques Available: PCR, gene sequencing, gene typing, quantitative cultures.
Unique Products/Accomplishments: Assisted in development and implementation of rapid diagnostic assays for HIV, differentiation of HIV-1 and HIV-2, differentiation of HTLV-1 and HTLV-2, monoclonal antibody tests for C. trachomatis and PCR detection for chlamydia species followed by gene typing.

Marco Rabinovitz
NCI/DCT, Laboratory of Biological Chemistry
Research Chemist
Building 37, Room 5A19
NIH, Bethesda, MD 20892
Phone: 301-402-1735
Fax: 301-496-5839
Chemistry (organic), Nutrition

Stanley Rapoport
NIA, Laboratory of Neurosciences
Chief, LNS
Building 10, Room 6C103
NIH, Bethesda, MD 20892
Phone: 301-496-8970
Fax: 301-402-0074
Alzheimer's Disease, Dementia, Aging, Pharmacology
(treatment of Alzheimer's disease and pharmacology; drug development; diagnostics)

Ulf R. Rapp
NCI/DCE/CRDC, Laboratory of Cell Carcinogenesis/ VPS
Chief, VPS
Fort Detrick, Building 560, Room 21-75
Frederick, MD 21701-1013
Phone: 301-846-1316
Fax: 301-846-1909
Oncoprotein Vaccines, Raf Protein Kinase Blockers
(oncogenes; mitogenic signal transduction; converging signaling pathways; inhibition of oncogene-transformation by raf protein-kinase antagonism)

Suresh C. Rastogi
FDA/CBER, Office of Biological Product Review
Director, Biostatistics & Epidemiology Branch
8800 Rockville Pike (HFB 250)
Bethesda, MD 20892
Phone: 301-295-8422
Fax: 301-295-8528
Statistics in Medicine, Vaccines, Epidemiology
(biostatistics)

Matthew M. Rechler
NIDDK, Molecular, Cellular & Nutritional Endocrinology Branch
Chief, Growth & Development Section, MCNEB
Building 10, Room 8D08
NIH, Bethesda, MD 20892
Phone: 301-496-2433
Fax: 301-496-8276
Growth Factor Inhibitors, Hormones/Growth Factors, Endocrinology, Soft Tissue Repair
(insulin-like growth factors (IGFs))
Major Laboratory Activities: IGF binding protein: regulation of gene expression and role as biological modulators.
Goals: Understanding how IGF binding proteins determine the bioavailability of IGF-I and IGF-II and modulate their growth-promoting and other actions.
Unique Resources/Techniques Available: 15 years leadership in the IGF field.
Unique Products/Accomplishments: cDNA clones for rat IGF-II and rat IGF-binding protein-2.

Leslie Reinlib
ADAMHA/NIAAA, Laboratory of Physiologic & Pharmacologic Studies
Senior Staff Fellow
12501 Washington Avenue
Rockville, MD 20852
Phone: 301-443-5800
Fax: 301-443-5894
Calcium Mobilization, Ion Channels
(intracellular free calcium in single cells; receptor gated channels and their regulation)

Errol Reiss
CDC/NCID, Division of Bacteria Mycotic Diseases
Chief, Molecular Mycology Section
(Mail stop G-11)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3374
Fax: 404-639-3296
Diagnostics, DNA/RNA Probes, Antibodies (monoclonal)
(molecular biology; immunology of mycotic (fungal) infections)
Major Laboratory Activities: DNA strain typing, in situ colorimetric DNA/RNA hybridization for histology; antigenemia, antigenuria assays; immunohistology with monoclonal antibodies; purified antigens/enzymes antimetabolite development; rodent and rabbit models of fungal infections.
Goals: Prevention of disability and death from opportunistic (AIDS) and primary systemic mycoses. Development of technology transfer of diagnostically useful methods and reagents.
Unique Resources/Techniques Available: Staff of five Ph.D.s experienced in molecular biology and molecular immunology; well-equipped laboratories; access to new biotech core laboratory.
Unique Products/Accomplishments: Genomic DNA libraries, numerous hybridomas secreting mAbs against fungi, non-radioactive DNA and antibody probes.

I. Paul Reiter
CDC/NCID, Division of Vector-Borne Infectious Diseases, Dengue Branch
Chief, Entomology Unit & Research Entomologist
P.O. Box 364532
San Juan, Puerto Rico 00936-4532
Phone: 809-749-4400
Fax: 809-749-4450
Medical Entomology, Mosquito Populations, Arbovirus Monitoring
(medical entomology)
Major Laboratory Activities: Mosquito biology and control.
Goals: Improved control of mosquito-borne disease, especially arboviral.
Unique Resources/Techniques Available: Mosquito population monitoring.
Unique Products/Accomplishments: Culex trap, patented Aedes aegypti traps, evaluations of adulticiding methods.

Kalpana Rengarajan
NEI, Laboratory of Retina, Cell, and Molecular Biology
Visiting Fellow
Building 6, Room 338
NIH, Bethesda, MD 20892
Phone: 301-496-5809
Fax: 301-402-0750
Baculovirus Production System, Monoclonal Antibodies, Autoimmune Diseases
(immunology; biochemistry; molecular biology)
Major Laboratory Activities: Antigen presentation of a retinal protein causing uveitis and the mechanism of disease process.
Goals: Studying the mechanism of antigen presentation and the disease process.

Roy Repaske
NIAID, Laboratory of Molecular Microbiology
Research Biochemist
Building 4, Room 303
NIH, Bethesda, MD 20892
Phone: 301-496-6730
Fax: 301-402-0226
AIDS-HIV Diagnostics, Enzymes, Filtration Apparatus
Major Laboratory Activities: Molecular biological research on aspects of HIV-1.
Unique Products/Accomplishments: Developed semiautomatic microfiltration unit. Developed HIV-1 reverse transcriptase assay which has greater sensitivity than the antigen capture-P24 assay.

Michael Resnick
NIEHS, Lab of Molecular Genetics
Research Geneticist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3556
Fax: 919-541-1460
Genetics
(genetics; molecular biology and enzymology; DNA repair; meiosis; mutagenesis; recombination; aneuploidy; centrome functions)

Craig W. Reynolds
NCI-FCRDC, BRMP
Program Director & Corporate Liaison
Fort Detrick, Building 1052, Room 253
Frederick, MD 21701-1013
Phone: 301-846-1098
Fax: 301-846-5429
Biological Response Modifiers, Cancer Therapy, Immunotherapy
(use of biological response modifiers (BRMs) in the treatment of cancer)

Sue Goo Rhee
NHLBI, Laboratory of Biochemistry
Section Chief
Building 3, Room 122
NIH, Bethesda, MD 20892
Phone: 301-496-9646
Fax: 301-496-0599
Enzymes, Signal Transduction, Aging
(protein oxidation and aging)

Alan H. Rich
NCRR, Biomedical Engineering & Instrumentation Program
Master Engineer
Building 13, Room 3W44
NIH, Bethesda, MD 20892
Phone: 301-496-4657
Fax: 301-402-0187
Mechanical Engineering, Instrumentation, Lasers, Electrophoresis
(biophysics; laser ophthalmology; electrophoresis)

Jeanette Ridge
FDA, DPQC
Research Microbiologist
Building 29A, Room 1C-17
NLRC, 5516 Nicholson Lane
Kensington, MD 20895
Phone: 301-227-6505
Fax: 301-402-0438
Tumor
(in vitro testing of biological response modifiers and anti-tumor agents on human tumor cell lines in an original 3-dimensional culture system)

Joseph M. Rifkind
NIA, Laboratory of Cellular & Molecular Biology
Chief, Molecular Dynamics
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-1803
Fax: 410-550-1938
Aging, Molecular Dynamics, Spectroscopy
(oxygen transport; oxyradicals; oxidative stress; erythrocytes; membrane fluidity; aging)

William Risso
DCRT, OD
Associate Director
Building 12A, Room 3033
NIH, Bethesda, MD 20892
Phone: 301-496-8277
Fax: 301-402-1754
Electronics
(computers and engineering; biomedical research)

Neile Rives
CDC, Center for Infectious Diseases
Scientist Administrator
1600 Clifton Road, G-13
Atlanta, GA 30333
Phone: 404-639-1075
Fax: 404-639-3163
Diagnostics, Vaccines, Antimicrobials
(rabies, Rickettsia, Ehrlichia, Rochalimaea)
Major Laboratory Activities: Diagnostics and vaccines in rabies and rickettsial diseases, including Ehrlichia, Rochalimaea, and cat scratch diseases.
Goals: To improve the diagnosis and prevention of rabies and rickettsial diseases.
Unique Resources/Techniques Available: Isolation, molecular characterization, and diagnosis of rabies and rickettsial diseases.
Unique Products/Accomplishments: First CDC biotechnology patent for growing Ehrlichia in tissue culture.

Keith C. Robbins
NIDR, Labarotory of Cellular Development and Oncology
Chief, Molecular and Cellular Biology Section
Building 30, Room 211
NIH, Bethesda, MD 20892
Phone: 301-496-3303
Fax: 301-402-0823
Oncogenes, Cancer Biology, Cancer Diagnostics
(oncogenes; oncogenesis)
Major Laboratory Activities: Molecular biology, biochemistry, and cell biology.
Goals: To understand molecular basis of cancer.
Unique Resources/Techniques Available: Antibodies against oncogene proteins, polynucleotide probes, and transfected cell lines.
Unique Products/Accomplishments: Patent application entitled: "Method for screening agents for their ability to prevent cell transformation."

David Roberts
NCI, Laboratory of Pathology
Chief, Biochemical Pathology Section
Building 10, Room 2A27
NIH, Bethesda, MD 20892
Phone: 301-496-6264
Fax: 301-402-0043
Cancer Biology, Receptors, Carbohydrates, Cell Adhesion
(tumor cell biology; carbohydrate biochemistry)
Major Laboratory Activities: Investigation of the effects of thrombospondin on tumor cell behavoir, investigation of carborhybrate function in cell adhension.
Goals: Development of antitumor and antimetastatic agents.
Unique Resources/Techniques Available: Carborhydrate structure analysis and anti-carbohydrate antibody epitope analysis.
Unique Products/Accomplishments: Peptide inhibitors of thrombospondin.

Betty H. Robertson
CDC/NCID, Hepatitis Branch
Chief, Viral Genetics
(Mail stop A-33)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2335
Fax: 404-639-1563
Hepatitis, Polymerase Chain Reaction (PCR), Vaccines
(hepatitis viruses)
Major Laboratory Activities: Cloning, sequencing, surface characterization.
Goals: HAV vaccine, use of viral genetics for detection and characterization of viruses.
Unique Resources/Techniques Available: PCR amplifications and sequencing of hepatitis viruses.
Unique Products/Accomplishments: Large-scale growth and purification of HAV; PCR detection and characterization of HAV, HBV, and HCV.

Frank Robey
NIDR, Laboratory of Cellular Development
Chief, Peptide & Immunochemistry Unit
Building 30, Room 211
NIH, Bethesda, MD 20892
Phone: 301-496-4779
Fax: 301-402-0823
Peptides, Cell Attachment, Polymers
(new methods in peptide chemistry; inflammation; peptide polymers; cyclic peptides; protein/peptide immunochemistry; new immunoassays)

W. Gerald Robison
NEI, Section on Pathophysiology
Section Head
Building 10, Room 10N105
NIH, Bethesda, MD 20892
Phone: 301-496-3161
Fax: 301-402-1570
Eye, Basement Membrane, Diabetes
(diabetic retinopathy; histopathology of ocular diseases; aldose reductase in relation to diabetes; retinal circulation)

Charles H. Rodgers
NIDDK, Division of Kidney, Urologic and Hematologic Diseases
Director, Small Business Innovation Programs
Westwood Building, Room 3A-11
NIH, Bethesda, MD 20892
Phone: 301-496-7573
Fax: 301-402-0223
Analytical Instruments, Diagnostics, Clinical Devices
(kidney; urology; hematology)

John T. Roehrig
CDC/NCID, Molecular Biology Branch
Chief, Immunochemistry Section
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6442
Fax: 303-221-6476
Vaccines, Antibodies (monoclonal), Diagnostics (viral)
(viral immunology)
Major Laboratory Activities: Antigenic analysis of arboviruses.
Goals: Development of vaccines and diagnostics.
Unique Resources/Techniques Available: Monclonal antibodies, peptide synthesis, T-cell analysis, ELISA, protein chemistry, HPLC.
Unique Products/Accomplishments: Rapid dianostic assays, B/T-cell epitope maps, vaccine candidates.

Michael A. Rogawski
NINDS, Epilepsy Research Branch
Chief, Neuronal Excitability Section
Building 10, Room 5C-205
NIH, Bethesda, MD 20892
Phone: 301-496-8013
Fax: 301-402-6788
Antiepileptics, Ion Channels, Neuroreceptors
(neuroscience; neuropharmacology; neurophysiology; epilepsy)
Major Laboratory Activities: Antiepileptic drug research and evaluation.
Goals: To develop safe, more effective antiepileptic medications for the approximately one-third of epilepsy patients who are inadequately treated with presently available drugs.
Unique Resources/Techniques Available: In vivo and in vitro model systems for the mechanistic investigation and screening of novel pharmacological agents, including a wide variety of animal seizure models and also the capability to evaluate the action of drugs on neuronal ion channel systems using forefront biophysical techniques (patch clamp recording and single cell fluorescence photometry).
Unique Products/Accomplishments: Several novel NMDA antagonists with low neurological toxicity under development (patents pending and available for license).

Gustavo C. Roman
NINDS, Clinical Neurosciences Program,
Neuroepidemiology Branch
Chief, NEB
Federal Building, Room 714
NIH, Bethesda, MD 20892
Phone: 301-496-1714
Fax: 301-496-2358
Virology, Infectious Diseases, Neuroepidemiology
(vascular dementia; human retroviruses; HTLV-I; epilepsy; neurocysticercosis; pediatric neuroepidemiology; Guillain-Barre syndrome)
Major Laboratory Activities: Vaccines, neurocystericercosis, vascular dementia.
Goals: HTLV-I/II therapy.
Unique Resources/Techniques Available: International studies.

Alfredo Romano
NCI/DCE, Laboratory of Experimental Carciogenesis/ DCE
Visiting Fellow
Building 37, Room 3B07
NIH, Bethesda, MD 20892
Phone: 301-496-5688
Fax: 301-496-0734
Cancer Diagnostics, Prevention, Toxicity
(oncology; cancer)
Goals: Elucidating mechanism(s) of malignant transplantation in human and animal cells by chemical carcinogens and other cancer-causing agents.
Unique Products/Accomplishments: Analysis of the sequential changes in protein expression during chemical oncogenesis using a computer-based quantitative two-divisional electrophoresis technique.

Rachel L. Roper
NIAID, Laboratory of Viral Diseases
IRTA Postdoctoral Fellow
Building 4, Room 228
NIH, Bethesda, MD 20892
Phone: 301-496-0054
Fax: 301-480-1147
Immune Modulation, Vaccines, Infectious Diseases
(viral egress; viral-immune interaction)
Major Laboratory Activities: Recombinant DNA technology; tissue culture; viral culture.
Goals: Define proteins involved in viral assembly and egress; identify viral immunomodulatory proteins.
Unique Resources/Techniques Available: Vaccinia virus recombinant expression system.

Mary E. Ropka
NCNR, Clinical Therapeutics Laboratory
Associate Director for Intramural Research
Building 31, Room 5B-03
NIH, Bethesda, MD 20892
Phone: 301-402-3583
Fax: 301-480-4969
Nutritional Products, AIDS-HIV, Assessing Nutritional Status, Antiviral Drugs or Immunotherapy, Adjunctive Rx, Chemotherapy
(HIV; cancer)
Major Laboratory Activities: Clinical studies of symptom management (including Rx side effects), compliance with therapeutic regimens, and measuring outcomes such as quality of life, functional status, and health effected by therapeutics and new technology.
Unique Resources/Techniques Available: Expertise in clinical research in the above areas.

Patricia Rosa
NIAID,
Senior Staff
Rocky Mountain Laboratories
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Polymerase Chain Reaction (PCR), Lyme Disease
(polymerase chain reaction (PCR); application to detection of infectious organisms; diagnosis of disease)

Stephen M. Rose
NIAID, Genetics & Transplantation Branch
Chief, GTB
Solar Building, Room 4A14
NIH, Bethesda, MD 20892
Phone: 301-495-5598
Fax: 301-402-0175
Antisense (Therapeutic Methods), Immunotherapy, Monoclonal antibodies
(molecular immunology, transplantation, molecular genetics)
Major Laboratory Activities: Clinical trial of new immunosuppresives for renal transplantation.

Gary J. Rosenthal
NIEHS, Immunology/Systems Toxicology Branch
Toxicologist
P.O. Box 12233 (Mail stop C1-04)
Research Triangle Park, NC 27709
Phone: 919-541-0167
Fax: 919-541-4704
Anti-Inflammatory, Cytokines, Toxicity Management
(immunology; toxicoloty; cytokines; inflammation)
Major Laboratory Activities: Immunomodulation.
Goals: Cellular and subcellular assessments of immunomodulators and relationships to disease.
Unique Resources/Techniques Available: Full immunology/toxicology laboratory.
Unique Products/Accomplishments: Patent approved for a method for treating diseases associated with elevated levels of inflammatory cytokines based on use of diamidine compounds.

Judah L. Rosner
NIDDK, LMB
Resident Biologist
Building 2, Room 210
NIH, Bethesda, MD 20892
Phone: 301-496-5466
Fax: 301-496-0201
Antibiotics, Microbiology, Multidrug Resistance
(microbiology; bacterial and molecular biology; drug resistance)
Major Laboratory Activities: Studying relationship between salicylates and antibiotic resistance in E. coli.
Goals: Define response mechanisms responsible for antibiotic resistance pathways.

Brad Roth
NCRR, Mechanical Engineering Section
Mechanical Engineer
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4428
Fax: 301-496-6608
Electromagnetism, Molecular Modeling
(electromagnetic phenomena; electrical properties of tissues; biomagnetism; mathematical modeling)

George S. Roth
NIA, Laboratory of Cellular & Molecular Biology
Chief, Molecular Physiology Section
Gerontology Research Center
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-558-8178
Fax: 410-558-8137
Aging, Calcium Mobilization, Signal Transduction
(biology of aging; altered signal transduction during aging—particularly calcium-dependent processes)
Major Laboratory Activities: Physiological, biochemical, molecular, and behavioral studies of basic mechanisms of aging.
Goals: Elucidation of basic mechanisms of aging and design of interventions.
Unique Resources/Techniques Available: Aged rodents, primates, and their cells, tissues, and body fluids; dietary-restricted and exercised animals of various ages.
Unique Products/Accomplishments: World's first study of the effects of reduced caloric diet on aging rates of primates (under way 5 years).

Richard Rothman
ADAMHA, Addiction Research Center
Acting Chief
P.O. Box 5180
4940 Eastern Avenue
Baltimore, MD 21224
Phone: 410-550-1487
Fax: 410-550-1645
PCP, MK-801, Opioids
(opioid, PCP and cocaine pharmacology)

Maryann T. Ruda
NIDR, Neurobiology & Anesthesiology Branch
Chief, Section on Celluar Molecular Mechanisms
Building 30, Room B20
NIH, Bethesda, MD 20892
Phone: 301-496-6804
Fax: 301-402-0667
Immunochemistry, Hybridization (in situ), Nociception
(neurobiology)

Shen Rulong
NCI/FCRDC, BCDBC/Laboratory of Mathematical Biology
Visiting Fellow
Fort Detrick, Building 538, Room 124
Frederick, MD 21702-1013
Phone: 301-846-1594
Fax: 301-846-1425
Electron Microscopy, Immunopathology, Carcinogenesis (chemical)
(immunocytochemistry; freeze-fracture, ultrastructural EM; immunopathology; cancer; carcinogenesis (chemical))

James T. Russell
NICHD, Laboratory of Developmental Neurobiology
Research Chemist
Building 36, Room B316
NIH, Bethesda, MD 20892
Phone: 301-496-5493
Fax: 301-496-5493
Nerve Terminal, Toxins, G-proteins
(neuropeptide secretion; nerve terminal ionic channels and receptors; GTP-binding proteins)

Martin Ruta
FDA, Center for Biologic Evaluation & Research
Senior Staff Fellow
Building 29, Room 316
NIH, Bethesda, MD 20892
Phone: 301-496-6890
Fax: 301-402-2780
AIDS-HIV, Cytokines, Oncogenes, Growth Factors
(AIDS; growth factors; oncogenes)

Juan M. Saavedra
ADAMHA/NIMH, Laboratory of Clinical Science
Medical Officer
Building 10, Room 2D45
NIH, Bethesda, MD 20892
Phone: 301-496-0160
Fax: 301-402-0337
Neuropharmacology, Neuropeptides, Receptors, Lymphocytes, Biogenic Amines, Antigen Quantification
(neuropharmacology; neuroendocrinology; cardiovascular pharmacology; quantitative methods for analysis of neuropeptides; biogenic amines and receptors)

David L. Sacks
NIAID, Laboratory of Parasitic Diseases
Senior Investigator, Immunology and Cell Biology Section
Building 4, Room 126
NIH, Bethesda, MD 20892
Phone: 301-496-0577
Fax: 301-402-0890
Parasites, Lymphokines, Vaccines
(immunology; parasitology; cell biology)
Major Laboratory Activities: Immunology and cell biology of Leishmania.
Goals: Understand immunoregulatory events in human Leishmania infections.
Unique Resources/Techniques Available: Application of current PCR-based techniques for detection of cytokine responses in Leishmania patients.
Unique Products/Accomplishments: Characterization of a unique pattern of regulatory cytokine responses in patients with chronic, severe infections.

Brian Safer
NHLBI, Molecular Hematology Branch
Section Head
Building 10, Room 7D18
NIH, Bethesda, MD 20892
Phone: 301-496-1284
Fax: 301-496-9985
Transcription, Translation
(molecular biology)

Umberto Saffiotti
NCI/DCE, Laboratory of Experimental Pathology
Chief, LEP
Building 41, Room C-105
NIH, Bethesda, MD 20892
Phone: 301-496-2818
Fax: 301-402-1829
Carcinogenesis, Cell Culture, Growth Factors, Inhibitors
(carcinogenesis; lung cancer; pneumoconioses)
Major Laboratory Activities: Animal and cellular models for lung carcinogenesis; role of particulate materials.
Goals: Molecular mechanisms in lung carcinogenesis.
Unique Resources/Techniques Available: Animal pathology, immunohistochemistry; cell transformation; localization of particles; DNA damage; molecular markers.
Unique Products/Accomplishments: Particle characterization for biological effects; messenger/epithelial interactions.

Ronit Sagi-Eisenberg
NHLBI, Laboratory of Chemical Pharmacology
Visiting Associate
Building 10, Room 8N108
NIH, Bethesda, MD 20892
Phone: 301-496-5377
Fax: 301-402-0171
Cell Biology, Immunology, Molecular Biology
(protein traffic; exocytosis; endocytosis)
Major Laboratory Activities: Research in molecular biology.
Goals: Cloning the gene encoding p100, a novel G-protein-related protein.
Unique Resources/Techniques Available: Partial sequence of this novel protein.
Unique Products/Accomplishments: Identification, purification, and characterization of this protein.

Norman Salem
ADAMHA/NIAAA, Laboratory of Clinical Studies
Chief, Section on Analytical Chemistry
Building 10, Room 3C102
NIH, Bethesda, MD 20892
Phone: 301-496-4900
Fax: 301-402-0445
Chemistry (analysis), Arachidonic Acid, Alcoholism
(lipid and polyunsaturated fatty acid biochemistry; membrane structure; nutritional influences)

David S. Salomon
NCI/DCBD, Laboratory of Tumor Immunology & Biology
Chief, Tumor Growth Factor Section
Building 10, Room 5B39
NIH, Bethesda, MD 20892
Phone: 301-496-9536
Fax: 301-402-0711
Growth Factors, Receptors, Oncogenes
(oncogenes and growth factors in cancer)
Major Laboratory Activities: Role of epidermal growth factor-related peptides in the pathogenesis of breast and colon cancer.
Goals: Identification of novel tumor markers—for diagnosis and therapy—that are related to growth factors/growth factor receptors.
Unique Resources/Techniques Available: Use of tyrosine kinase inhibitors; use of antisense expression vectors and antisense S-oligos.
Unique Products/Accomplishments: Two patents relating to the cloning and biology of cripto-related genes.

Felipe Samaniego
NICHD, Cell Biology and Metabolism Branch
Fellow
Building 18T, Room 101
NIH, Bethesda, MD 20892
Phone: 301-496-6368
Fax: 301-402-0078
AIDS, Antisense, Oncogenes, Growth Factor Inhibitors
Goals: Understand tat cytokine growth effects on AIDS-KS lesions.

Gary N. Sanden
CDC/NCID, Division of Bacterial & Mycotic Diseases
Microbiologist
Building 1, Room 1243 (Mail stop C-02)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3514
Fax: 404-639-3256
Microbiology, Vaccines, Infectious Diseases
(laboratory science)
Major Laboratory Activities: Immunodiagnostics.
Goals: Acellular pertussis vaccines; laboratory diagnosis of pertussis.

Katherine K. Sanford
NCI/DCE, Laboratory of Cellular and Molecular Biology
Chief, In Vitro Carcinogenesis Section
Building 37, Room 2D15
NIH, Bethesda, MD 20892
Phone: 301-496-2617
Fax: 301-496-8479
Carcinogenesis, Cancer Biology, Alzheimer's Disease
(carcinogenesis; cell culture)
Major Laboratory Activities: Experimental studies on genetic predisposition to cancer and neoplasia in cultured cells.
Goals: To understand the mechanisms of neoplastic tranformation of human cells through use of cell culture techniques.
Unique Resources/Techniques Available: A test for genetic predisposition to cancer using peripheral blood lymphocytes, lymphoblastoid cell lines or skin fibroblasts. (This test is based on a deficiency in DNA repair manifest as persistent chromatid aberrations after x-irradiation of cells during G2 phase just before mitosis.)
Unique Products/Accomplishments: A patent on a process for detecting individuals with a genetic predisposition to cancer.

Nava Sarver
NIAID, Division of AIDS
Chief, Targeted Drug Discovery Section
Solar Building, Room 2C11
NIH, Bethesda, MD 20892
Phone: 301-496-8197
Fax: 301-402-3211
AIDS-HIV, Antivirals, Molecular Intervention, Drug Delivery, Liposomes, Gene Therapy
(gene therapy; AIDS-HIV; antivirals)
Goals: Gene therapy for the treatment of HIV infection.

Leonard Saslaw
FDA, Center for Veterinary Medicine
Physiologist
Metro Park North 2
7500 Standish Place
Rockville, MD 20855
Phone: 301-295-8297
Fax: 301-295-8687
Cancer Chemotherapy, Carcinogenesis, Toxicity

Sanai Sato
NEI, Laboratory of Ocular Theraputics
Visiting Scientist
Building 10, Room 10B09
NIH, Bethesda, MD 20892
Phone: 301-496-0589
Fax: 301-402-2399
Cataract, Diabetes, Aldose Reductase Inhibitors
(diabetic complications; cataracts; biochemistry of the eye)

Edward A. Sausville
NCI, Division of Cancer Treatment, Clinical Pharmacology Branch
Senior Investigator
Building 37, Room 5E-20
NIH, Bethesda, MD 20892
Phone: 301-496-9383
Fax: 301-402-2969
Antibody-based Therapy, Growth Factor Inhibitors, Receptors
(cancer)
Major Laboratory Activities: Mechanism of drug/biologic action.
Goals: New treatment for cancer.
Unique Resources/Techniques Available: Peptide synthesis, HPLC, cell culture.

Roel M. Schaaper
NIEHS, Laboratory of Molecular Genetics
Visiting Scientist
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-4043
Fax: 919-541-7593
E. Coli, Mutagenesis, Polymerase Chain Reaction (PCR)
(mutagenesis; DNA replication; DNA repair)

Alan N. Schechter
NIDDK, Laboratory of Chemical Biology
Chief, LCB
Building 10, Room 9N307
NIH, Bethesda, MD 20892
Phone: 301-496-5408
Fax: 301-402-0101
Genetic Therapy, Polymerase Chain Reaction (PCR), Gene Expression
(genetic diseases; molecular genetics)
Major Laboratory Activities: Studies of globin gene expression.
Goals: Therapy of hemaglobuopathies.
Unique Products/Accomplishments: PCR diagnostics of thalissemia; PCR analysis of gene therapy.

Saul A. Schepartz
NCI, Division of Cancer Treatment
Deputy Associate Director, Developmental Therapeutics Program
Executive Plaza North, Room 843
NIH, Bethesda, MD 20892
Phone: 301-496-8720
Fax: 301-402-0831
Cancer Chemotherapy, AIDS-HIV (Antiviral Drugs), Drug Development
(drug discovery and development)
Major Laboratory Activities: New agents screening and testing; production; formulation; pharmacology; and toxicology.
Goals: Discovery and preclinical development of new agents for treatment of cancer and AIDS.
Unique Resources/Techniques Available: All resources needed for development, from screening through IND-directed toxicology.

Jeffrey Schlom
NCI/DCBDC, Laboratory of Tumor Immunology and Biology
Chief, LTIB
Building 10, Room 8B07
NIH, Bethesda, MD 20892
Phone: 301-496-4343
Fax: 301-496-2756
Antibody-Based Therapy, Vaccines (monoclonal), Biological Response Modifiers
(monoclonal antibodies; tumor vaccines)
Major Laboratory Activities: Tumor immunology.
Goals: Cancer diagnosis and therapy.
Unique Resources/Techniques Available: Anti-tumor monoclonal antibodies, anti-tumor vaccines.
Unique Products/Accomplishments: Anti-tumor monoclonal antibodies for diagnosis and therapy.

Patricia M. Schmidt
NCRR, Veterinary Resources Program/SSB
Physiologist
Building 14G, Room 101
NIH, Bethesda, MD 20892
Phone: 301-496-0468
Fax: 301-402-0352
Cryopreservation, Reproductive Physiology
(embryo cryopreservation and reproductive physiology of laboratory animals)

Manfred Schubert
NINDS, Laboratory of Viral and Molecular Pathogenesis
Chief, Viral Replication Section
Building 36, Room 5D04
NIH, Bethesda, MD 20892
Phone: 301-496-9107
Fax: 301-496-0899
AIDS-HIV, Defective Interfering HIV Particle, Ribozymes
(antiviral therapy against AIDS)
Major Laboratory Activities: Construction and testing of novel defective interfering HIV proviral DNAs, ribozymes and chimeric glycoproteins.
Goals: Development of antiviral therapy against AIDS.
Unique Resources/Techniques Available: Broad range of state-of-the-art molecular biological and virological techniques.
Unique Products/Accomplishments: Collection of novel defective interfering HIV particles and multitarget ribosymes.

Michael Schwabe
NCI/FCRDC, Div. of Cancer Treatment, Biological Response Modifiers Program
Visiting Associate, Laboratory of Biochemical Physiology
Fort Detrick, Building 560, Room 3176
P.O. Box B
Frederick, MD 21702-1201
Phone: 301-846-5703
Fax: 301-846-1673
Cancer Biology, Receptors, Cytokines
(cancer cell biology; IL-6 receptor)
Major Laboratory Activities: Characterization of the IL-6 receptor.
Goals: Elucidation of IL-6 signal transduction.
Unique Resources/Techniques Available: All major techniques of immunology, cell biology, and molecular biology identification of a novel IL-6 receptor chain.

Paul J. Schwartz
ADAMHA/NIMH, Clinical Psychobiology Branch
Senior Clinical Investigator
Building 10, Room 4S239
NIH, Bethesda, MD 20892
Phone: 301-496-2141
Fax: 301-496-5139
Affective Disorders, Sleep Disorders
(mood disorders, chronobiology)
Major Laboratory Activities: Clinical research, cyclic mood disorders.
Goals: Enhance basic understanding of pathophysiology of mood disorders.

Elizabeth A. Sekul
NINDS, Medical Neurology Branch
Clinical Associate
Building 10, Room 4N248
NIH, Bethesda, MD 20892
Phone: 301-496-9979
Fax: 301-402-0672
Genetic Diseases/Traits, Autoimmune Diseases
(genetic neuromuscular diseases and inflammatory myopathies)

James Sellers
NHLBI
Section Chief
Building 10, Room 8N202
NIH, Bethesda, MD 20892
Phone: 301-496-5639
Fax: 301-402-1542
Myosin, Actin, Phosphorylation

Robert H. Selwitz
NIDR, Epidemiology & Oral Disease Prevention Program
Research Dentist
Westwood Building, Room 538
NIH, Bethesda, MD 20892
Phone: 301-496-8194
Fax: 301-480-6648
Dental Prevention, Biosensors, Patient Monitoring (non-surgical), Clinical Instrumentation
(clinical trials with caries preventive agents; epidemiolology of oral diseases; biotechnology applications for patient compliance/ management with drug therapy)
Goals: To enhance the understanding of the epidemiology of oral disease and identify practical methods for disease prevention and treatment.
Unique Products/Accomplishments: Experienced in the design and conduct of clinical trials for the prevention of oral disease.

Dinesh Sharma
NICHD, Center for Population Research/CDB
Health Science Administrator
Executive Plaza North, Room 600
NIH, Bethesda, MD 20892
Phone: 301-496-1661
Fax: 301-496-0962
Polymerase Chain Reaction (PCR), Contraceptives, Clinical Devices
(controlled drug delivery; implants; transdermals; microencapsulation; devices)

Opendra Sharma
NIAID, Division of AIDS, Pathogenesis Branch
Health Scientist Administrator
Solar Building, Room 2B-35
NIH, Bethesda, MD 20892
Phone: 301-496-8378
Fax: 301-480-5703
DNA/RNA Probes, PCR, Monoclonal Antibodies
(HIV pathogenesis; sexual transmission)
Major Laboratory Activities: Manage research grants, research training, and NIH AIDS Research and Reference Reagents Program.
Unique Products/Accomplishments: NIH AIDS Research and Reference Reagents Program (repository), which acquires and makes available critically needed reagents for AIDS research worldwide.

Celia M. Sharp
NIDDK, DOB
Chemist
Building 36, Room 1D04
NIH, Bethesda, MD 20892
Phone: 301-496-6945
Fax: 301-402-0245
Spectroscopy
(spectroscopy)

Stephen Shaw
NCI/DCBD, Experimental Immunology Branch
Senior Investigator
Building 10, Room 4B17
NIH, Bethesda, MD 20892
Phone: 301-496-3626
Fax: 301-496-0877
Adhesion
(genetics; structure and function of molecules involved in human T cell adhesion and activation)

Gene M. Shearer
NCI/DCBD, Experimental Immunology Branch
Senior Investigator
Building 10, Room 4B55
NIH, Bethesda, MD 20892
Phone: 301-496-5461
Fax: 301-496-0887
AIDS-HIV, Cyclosporine, Autoimmune Diseases, Immunology
(cellular immunology; AIDS; autoimmunity; cyclosporine A; graft-vs-host reactions)

Amy Sheon
NIAID, Division of AIDS
Health Specialist
Solar Building, Room 2A25
NIH, Bethesda, MD 20892
Phone: 301-496-6177
Fax: 301-402-1506
Contraceptives, Epidemiology, Risk Assessment
(AIDS)

Ching-ju Sheu
FDA, Genetic Toxicology Branch
Pharmacologist
200 C Street, SW
Washington, DC 20204
Phone: 202-245-1286
Fax: 202-426-1658
Transformation, Signal Transduction, Oncogenes
(chemical carcinogenesis; in vitro short term tests)

Ethan M. Shevach
NIAID, Laboratory of Immunology
Chief, Cellular Immunology Section
Building 10, Room 11N315
NIH, Bethesda, MD 20892
Phone: 301-496-6449
Fax: 301-496-0222
Antibodies (monoclonal), Lymphokines, Immunology
(cellular immunology)

James W. Shih
CC, Department of Transfusion Medicine
Supervisory Microbiologist
Building 10, Room 1C-711
NIH, Bethesda, MD 20892
Phone: 301-496-4506
Fax: 301-496-1360
Diagnostics, Hepatocytes, Mycoplasma
(viral hepatitis; AIDS; transfusion medicine; viral diagnostics)

Joseph Shiloach
NIDDK, Laboratory of Cellular & Developmental Biology
Head, Biotechnology Unit
Building 6, Room B1-33
NIH, Bethesda, MD 20892
Phone: 301-496-9719
Fax: 301-496-5239
Fermentation, Toxins
(bacterial exotoxins; optimization of fermentation processes (bacteria, mammalian cells); large scale fermentation and down stream processing)

Andrew Shrake
FDA/CBER, Division of Hematology
Research Chemist
Building 29, Room 300
NIH, Bethesda, MD 20892
Phone: 301-496-4833
Fax: 301-402-2780
Spectroscopy (protein interactions), Calorimetry (proteins), Proteins (unfolding & refolding)
(protein chemistry; thermodynamics of interactions with ligand and of denaturation and renaturation)
Major Laboratory Activities: Thermodynamics of protein-protein and protein-ligand interactions and equilibrium and kinetic studies of protein unfolding and refolding.
Goals: Understand ligand-mediated effects and mechanisms of protein folding.
Unique Resources/Techniques Available: Differential scanning calorimetry.
Unique Products/Accomplishments: Elucidation of mechanism of ligand-induced biphasic thermal protein denaturation.

N. Raphael Shulman
NIDDK, Clinical Hematology Branch
Chief, Clinical Hematology Branch
Building 10, Room 8C-101
NIH, Bethesda, MD 20892
Phone: 301-496-4787
Fax: 301-402-0843
Hematology, Platelets, Immunology
(immunohematology; platelet biochemistry; physiology)

David R. Sibley
NINDS, Experimental Therapeutics Branch
Chief, Molecular Neuropharmacology Section
Building 10, Room 5C108
NIH, Bethesda, MD 20892
Phone: 301-496-9316
Fax: 301-496-6609
Dopamine Receptors, Gene Cloning, Gene Expression
(molecular cloning and expression of human D-1 and D-2 dopamine receptor subtype cDNAs and genes; creation of homogeneous receptor subtype expressing cells)

Susan M. Sieber
NCI/DCE,
Deputy Director
Building 31, Room 11A03
NIH, Bethesda, MD 20892
Phone: 301-496-5946
Fax: 301-496-1297
Metastasis, Carcinogenesis (chemical)
(cancer etiology)

Sidney Siegel
NLM, Office of Hazardous Substances Information
Chief, OHSI
Building 38A, Room 4S-404
NIH, Bethesda, MD 20894
Phone: 301-496-5022
Fax: 301-480-3537
Risk Analysis, Data Bases, Information Processing
(risk analysis; extrapolation across species; mechanism of action; QSAR)

Hilary D. Sigmon
NCNR, Acute & Chronic Illness Branch
Physiologist, Nurse Scientist Administrator
5333 Westbard Avenue
NIH, Bethesda, MD 20892
Phone: 301-496-0523
Fax: 301-402-2402
Cytokines, Biological Response Modifiers, Trauma
(shock/trauma)

Jonathan Silver
NIAID, Laboratory of Molecular Microbiology
Senior Investigator
Building 4, Room 338
NIH, Bethesda, MD 20892
Phone: 301-496-3653
Fax: 301-402-0226
Genetics, Molecular Biology, Retroviruses
(retrovirology; novel applications of polymerase chain reaction in virology and genetics; gene mapping; the human genome project)

James V. Silverton
NHLBI, Laboratory of Cell Biology
Chemist
Building 10, Room 7N-307
NIH, Bethesda, MD 20892
Phone: 301-496-1515
Fax: 301-496-9985
3-D Structure Analysis, Molecular Modeling
(crystallography; computers; molecular interactions)
Major Laboratory Activities: Determination of molecular structure and interactions.
Goals: Understanding of role of molecular structure and interactions in biological activity.
Unique Resources/Techniques Available: Single crystal x-ray diffractometer; atomic scanning microscope.

Dinah S. Singer
NCI/DCBDC, Experimental Immunology Branch
Senior Investigator
Building 10, Room 4B17
NIH, Bethesda, MD 20892
Phone: 301-496-9097
Fax: 301-496-0887
Alcoholism, Molecular Biology, Immunology
(molecular mechanisms regulating gene expression, specifically in molecular immunology)

Michail V. Sitkovsky
NIAID, Laboratory of Immunology
Senior Investigator
Building 10, Room 11N-311
NIH, Bethesda, MD 20892
Phone: 301-496-5495
Fax: 301-496-0222
Lymphocytes, Cytotoxicity, Biochemistry
(biochemistry and cell biology of lymphocyte activation; molecular mechanisms of cell-mediated cytotoxicity; immunopharmacology)

Bruce M. Smith
ADAMHA/NIMH, RSB
Chief, SIC
Building 36, Room 2A03
NIH, Bethesda, MD 20892
Phone: 301-496-4957
Fax: 301-480-2492
Instrumentation, Ambulatory Patient Monitoring
(biomedical instrumentation; ambulatory patient monitoring)

Louis Sokoloff
ADAMHA/NIMH, Laboratory of Cerebral Metabolism
Chief, LCM
Building 36, Room 1A05
NIH, Bethesda, MD 20892
Phone: 301-496-1371
Fax: 301-480-1668
Biochemistry, Brain
(brain metabolism; brain imaging; brain development)

Timothy Soncrant
NIA, Laboratory of Neurosciences
Chief, Unit on Pharmacology
Building 10, Room 6C103
NIH, Bethesda, MD 20892
Phone: 301-496-8970
Fax: 301-402-0074
Alzheimer's Disease, Acetylcholine, Pharmacology
(aging; Alzheimer's disease; neurotransmission; cholinergic mechanisms; cerebral metabolism)

Dave Songco
DCRT, Personal Computing Branch
Supervisor, Electronics Engineering
Building 12A, Room 3039
NIH, Bethesda, MD 20892
Phone: 301-496-9814
Fax: 301-402-1620
Computer Software
(computers and engineering)

Barbara C. Sonies
CC, Department of Rehabilitation Medicine
Chief, Speech Language & Pathology Section
Building 10, Room 6S235
NIH, Bethesda, MD 20892
Phone: 301-496-4733
Fax: 301-402-0663
Image Analysis, Imaging (Video), Noninvasive Diagnostics, Dementia, Alzheimer's Disease
(lingual modeling for speech; normal and abnormal swallowing)

Rene Sotomayor
FDA, Center for Food Safety & Applied Nutrition/ Toxicology
200 C Street, SW (HHF-162)
Washington, DC 20204
Phone: 202-472-4695
Dosimetry, DNA, Toxicity
(molecular toxicology; DNA damage and repair; molecular dosimetry; risk assessment)

Gerald J. Spangrude
NIAID, Laboratory of Persistent Viral Diseases
Senior Staff Fellow
Rocky Mountain Laboratories
903 S. Fourth Street
Hamilton, MT 59840
Phone: 406-363-3211
Fax: 406-363-6406
Immunology—Cell Subsets, Antibodies (monoclonal), Analytical Instruments, Flow Cytometry
(immunology; hematopoiesis)
Major Laboratory Activities: Characterization of bone marrow stem cells.
Goals: Gene transfer into stem cells, viral pathogenesis in stem cells.
Unique Resources/Techniques Available: Flow isolation of stem cells.
Unique Products/Accomplishments: Monoclonal antibodies.

Novera Herbert Spector
NINDS, Division of Fundamental Neurosciences
Health Scientist Administrator
Federal Building, Room 916
NIH, Bethesda, MD 20892
Phone: 301-496-5745
Fax: 301-402-1501
Physiology, Immune Modulation, Neuroimmunomodulation
(neuroimmunomodulation; conditioning of immune responses; bioengineering; neuropharmacology; neurophysiology)
Major Laboratory Activities: Conditioning of immune responses (natural killer cells, anticancer, antiviral, adjuvants, aging).
Goals: Clinical applications of the above.
Unique Resources/Techniques Available: Collaborative research in Italy.
Unique Products/Accomplishments: Attenuation or reversal of cancer in mice by conditioning; thermode-electrodes; noninvasive continuous blood pressure monitoring.

Richard G. S. Spencer
NIA, Laboratory of Cellular and Molecular Biology
Senior Staff Fellow
4940 Eastern Avenue, Room 4-101
Gerontology Research Center
Baltimore, MD 21224
Phone: 410-558-8226
Fax: 410-558-8173
NMR, Physiology, Myocardial Ischemia
(biophysics; physiology/metabolism)
Major Laboratory Activities: NMR spectroscopy of in vivo systems; NMR of in vitro systems including proteins in solid states.
Goals: Aging studies; enzyme kinetics; protein structures.
Unique Resources/Techniques Available: NMR spectroscopy and imaging.

Robert Spirtas
NICHD, Center for Population Research, CREB
Director, Research Scientist Officer
Executive Plaza North, Room 607
NIH, Bethesda, MD 20892
Phone: 301-496-4924
Fax: 301-496-0962
Cancer Risk Analysis, Toxicology Risk Assessment, Obstetrics & Gynecology, Contraceptives
(cancer epidemiology; reproductive epidemiology)
Major Laboratory Activities: Evaluation of data from epidemiologic studies.
Goals: Continued progress in understanding cancer etiology.

Dale R. Spriggs
NIAID, Division of Microbiology & Infectious Diseases
Program Officer, Enteric Diseases Branch
Solar Building, Room 3A05
NIH, Bethesda, MD 20892
Phone: 301-496-7051
Fax: 301-402-2508
Vaccines, Adjuvant Technologies, Rotaviruses
(development of vaccines to prevent diarrhea; adjuvant technology; mucosal immunity)
Major Laboratory Activities: Responsible for preclinical evaluation of vaccines as mucosal immunogens. Manage contracts for clinical testing of vaccines and vaccine production.
Goals: Move basic research developments into more applied areas so that preventive, therapeutic, and control measures will become available to improve public health.
Unique Resources/Techniques Available: Coordinates vaccine production contract; manages IND clinical evaluation of candidate vaccines.
Unique Products/Accomplishments: Collaborative tessting of candidate vaccines and antivirals for many academic and industrial groups.

Kenneth R. Spring
NHLBI, LKEM
Chief, Transport Physiology Section
Building 10, Room 6N309
NIH, Bethesda, MD 20892
Phone: 301-496-3236
Fax: 301-402-1443
Imaging, Microscopy, Lasers
(microscopy; video; image analysis; epithelial tissues)
Major Laboratory Activities: Research on epithelia and instrument development.
Goals: Understanding transport by epithelial tissues.
Unique Resources/Techniques Available: Advanced quantitative light, microscopy facilities.
Unique Products/Accomplishments: Developed image intensifier, laser illumination system, dual-mode microscopy for combined fluorescence and DIC imaging, application of electro-optics to microscopy.

Meera Srivastava
NIDDK, Laboratory of Cell Biology & Genetics
Senior Staff Fellow
Building 8, Room 408
NIH, Bethesda, MD 20892
Phone: 301-496-3306
Fax: 301-402-0053
Gene Cloning, Prohormone Processing Enzymes, Recombinant Protein Production
(molecular biology; protein chemistry)

Earl R. Stadtman
NHLBI, Laboratory of Biochemistry
Chief, LB
Building 3, Room 222
NIH, Bethesda, MD 20892
Phone: 301-496-4096
Fax: 301-496-0599
Oxygen Radicals, Protein Turnover, Aging
(oxygen radical-mediated inactivation of enzymes: role in aging, protein turnover and disease)

Thressa C. Stadtman
NHLBI, Laboratory of Biochemistry
Section Chief, LB
Building 3, Room 108
NIH, Bethesda, MD 20892
Phone: 301-496-3002
Fax: 301-496-0599
Antibodies (monoclonal), Biochemistry, Aminoacyl Ribonucleic Acid (tRNA)
(immobilized monoclonal antibodies to AMP; used in isolation of aminoacyl ribonucleic acids (tRNAs); separation of acylated tRNAs from non-acylated species; selenocysteine incorporation into proteins)

Steven J. Stanhope
CC, Rehabilitation Medicine Department
Chief, Biomechanics Laboratory
Building 10, Room 6S235
NIH, Bethesda, MD 20892
Phone: 301-496-9890
Fax: 301-402-0663
Biomechanics, Motion Analysis
(biomechanics; motion analysis; rehabilitation medicine)
Major Laboratory Activities: Biomechanics of human movement.
Goals: Objective evaluation and modeling of human movement.
Unique Resources/Techniques Available: 3-D motion analysis.
Unique Products/Accomplishments: Patent pending for 3-D techniques; powerful analysis software.

Bret M. Steiner
CDC/NCID, DSTDLR/Treponemal Pathogenesis & Immunobiology Branch
Chief, Treponemal Pathogenesis Section
(Mailstop D-13)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-2868
Fax: 404-639-3037
Diagnostics, Recombinant DNA, Enzymes
(treponemal pathogenesis; molecular biology; biochemistry)
Major Laboratory Activities: Enzyme isolation, identification, and cloning.
Goals: Cloning of pathogenesis factors; serological testing.
Unique Resources/Techniques Available: Protein isolation, sequencing, DNA cloning.
Unique Products/Accomplishments: Development of techniques for enzyme identification and sequencing. Development of DNA probes for cloning.

Peter M. Steinert
NIAMS, Laboratory of Skin Biology
Chief, LSB
Building 6, Room 425
NIH, Bethesda, MD 20892
Phone: 301-496-1578
Fax: 301-402-3417
Gene Mapping, NMR, Genetic Therapy
Major Laboratory Activities: Molecular and cellular biology and genetics.
Goals: To solve genetics of skin diseases.

Esther M. Sternberg
NIMH, DIRP
Chief, Neuroendocrine Immunology & Behavior
Building 10, Room 3S231
NIH, Bethesda, MD 20892
Phone: 301-496-1891
Fax: 301-402-1561
Animal Models, Autoimmune Diseases, Neuropharmacology
(neuroendocrine immunology)

Alasdair C. Steven
NIAMS, Laboratory of Structural Biology Research
Chief, LSBR
Building 6, Room 114
NIH, Bethesda, MD 20892
Phone: 301-496-0131
Fax: 301-402-3417
Image Analysis, Gels, Computer Software
(macromolecular structure; physical biochemistry; computer image processing; virology; cell biology)

Henry C. Stevenson-Perez
NCI, Cancer Therapy Evaluation Program
Senior Investigator
Executive Plaza North, Room 715
NIH, Bethesda, MD 20892
Phone: 301-496-1196
Fax: 301-402-3280
Biological Response Modifiers, Cancer Devices, AIDS-HIV, Immunotherapy
(cancer biotherapy; adoptive cellular immunotherapy; activated killer monocytes)
Major Laboratory Activities: Activated killer monocytes (AKM); adoptive cellular immunotherapy (ACI).
Goals: Effective cancer biotherapy.
Unique Resources/Techniques Available: Intramural ACI programs.
Unique Products/Accomplishments: AKM patents and patents pending for cancer treatments.

Maureen Stone
CC, Department of Rehabilitation Medicine
Research Speech Scientist
Building 10, Room 6N235
NIH, Bethesda, MD 20892
Phone: 301-496-4733
Fax: 301-402-0663
Image Analysis, Imaging (video), Noninvasive Diagnostics
(lingual modeling for speech; normal and abnormal swallowing)

Gerald L. Stoner
NINDS, Laboratory of Experimental Neuropathology
Chief, Neurotoxicology Section
Building 36, Room 4A-29
NIH, Bethesda, MD 20892
Phone: 301-496-6144
Fax: 301-402-1030
Virology Diagnostics, Vaccines, Central Nervous System (CNS)
(neurovirology; immunopathology; polyomaviruses)
Major Laboratory Activities: Detection and characterization of JC virus DNA sequences in human brain.
Goals: Understanding relation of latent virus infections to chronic neurological diseases.

Allen C. Stoolmiller
NIAID, Division of Extramural Activities
Scientific Review Administrator
Solar Building, Room 4C21
NIH, Bethesda, MD 20852
Phone: 301-496-7966
Fax: 301-402-2638
AIDS-HIV, Vaccines, Infectious Diseases
(review, contract/grant)

Mary L. Stracke
NCI, Division of Cancer Biology, Diagnosis, and Centers
Senior Staff Fellow, Laboratory of Pathology
Building 10, Room B1B40
NIH, Bethesda, MD 20892
Phone: 301-496-1843
Fax: 301-402-3257
Carcinogenesis, Cancer Biology, Receptors
(tumor cell motility)
Major Laboratory Activities: Protein purification; chemotaxis assays; gene cloning.
Goals: Cloning of a tumor cell motility factor (autotoxin) and definition of its role in tumor cell motility.
Unique Resources/Techniques Available: A good model of tumor cell motility.
Unique Products/Accomplishments: Autoxoxin purified: an autocrine motility factor from melanoma cells.

Stephen E. Straus
NIAID, Laboratory of Clinical Investigation
Chief, LCI
Building 10, Room 11N-228
NIH, Bethesda, MD 20892
Phone: 301-496-5807
Fax: 301-496-7383
Virology, Antiviral Drugs, Vaccines, Herpes Virus
(medical virology)
Major Laboratory Activities: Pathogenesis, treatment and prevention of herpesvirus infections.
Unique Resources/Techniques Available: Molecular biology to the clinic.

Robert L. Strausberg
OD/HGR, National Center for Human Genome Research
Assistant to the Director, Technology Development
Building 38A, Room 612
NIH, Bethesda, MD 20892
Phone: 301-496-7531
Fax: 301-480-2770
Automated DNA Sequencing, Molecular Biology, Genetic Engineering
(human genome research)

Kenneth I. Strauss
NIMH, Laboratory of Clinical Science, Section of Histopharmacology
IRTA Fellow
Building 10, Room 3D48
NIH, Bethesda, MD 20892
Phone: 301-496-1956
Fax: 301-402-2312
Antivirals (dsRNA), Drug Delivery (oral), DNA/RNA Probes
(molecular pharmacology; neurophysiology)
Major Laboratory Activities: Assay discrete brain nuclei for mRNA expression.
Goals: Characterize calretinin gene expression in normal and diseased brains.
Unique Resources/Techniques Available: Assay development: hybridization technology, multiprobe systems, noise reduction, microassays; animal pharmacology; molecular biology.
Unique Products/Accomplishments: Solid tissue RNase protection assay without prior RNA isolation; microassay of RNA from blood and cells; synthesis and testing of RNA drugs.

Raymond A. Strikas
CDC, Division of Immunization
Medical Epidemiologist
(Mail stop E-05)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1870
Fax: 404-639-1433
Immunoprophylaxis, Prevention, Vaccines
(influenza; pneumococcal disease; adult immunization)
Goals: Promote increased vaccination coverage among adults.
Unique Products/Accomplishments: Community case—control study among Medicare beneficiaries evaluating influenza vaccine effectiveness, in progress.

Gary E. Striker
NIDDK, RCB/MDB
Senior Investigator
Building 10, Room 3N110
NIH, Bethesda, MD 20892
Phone: 301-496-6328
Fax: 301-496-2830
Cell Biology, Molecular Biology, Animal Models
(renal cell biology)
Major Laboratory Activities: Pathogenesis of glomerular scarring.
Goals: Prevention of glomerular scarring.
Unique Resources/Techniques Available: Transgenic models of kidney disease.
Unique Products/Accomplishments: Quantitative PCR for matrix molecules.

Warren Strober
NIAID, Laboratory of Clinical Investigation
Chief, Mucosal Immunity Section
Building 10, Room 11N250
NIH, Bethesda, MD 20892
Phone: 301-496-9662
Fax: 301-402-2240
Mucosal Immunity, Interleukin, Immunoregulation
(mucosal immunity; immunodeficiency)

Nancy A. Strockbine
CDC, Enteric Diseases Branch
Research Microbiologist
Mail Stop CO3
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3331
Fax: 404-639-3296
Microbiology of Infectious Diseases, Diagnostics, Molecular Biology
(infectious diseases, bacterial; microbiology; pathogenesis and diagnostic; molecular epidemiology; toxins, bacterial)
Major Laboratory Activities:Reference diagnostic microbiology; molecular epidemiologic subtyping of bacteria; diagnostic assay development and evaluation.
Goals: Identification and characterization of enteric bacterial pathogens; development of improved methods for detection and subtyping of the above pathogens; identification of pathogenic mechanisms and risk factors for enteric bacterial infections and development of methods for detecting virulence genes and risk factors.
Unique Resources/Techniques Available: DNA probes; PCR for a variety of virulence genes; strain collections of enteric bacterial pathogens.
Unique Products/Accomplishments: PCR assays for certain bacterial toxins; RFLP analysis of strains as subtyping method.

Kurt Stromberg
FDA/CBER, Laboratory of Cell Biology, Cellular Pathology Section
Building 29A, Room 2B-08
NIH, Bethesda, MD 20892
Phone: 301-496-6199
Fax: 301-402-1659
Cancer Detection, TGF-alpha, Growth Factors
(use of growth factors in monitoring human breast and ovarian carcinoma by RIA and Western blots of biofluids)

Francis J. Sullivan
NCI, Division of Cancer Treatment, Radiation Oncology Branch
Acting Head, Radiation Therapy Section
Building 10, Room B3B69
NIH, Bethesda, MD 20892
Phone: 301-496-5457
Fax: 301-480-5439
Cancer Biology
(radiation oncology, medical oncology)

Trey Sunderland
ADAMHA/NIMH, Laboratory of Psychopharmacology
Chief, LP
Building 10, Room 3D41
NIH, Bethesda, MD 20892
Phone: 301-496-3421
Fax: 301-402-0188
Alzheimer's Disease, Neuropharmacology, Monoamine Oxidase, Aging
(Alzheimer's disease; depression; geriatrics)

Cynthia Sung
NCRR, Biomedical Engineering & Instrumentation Program, CHES
Staff Fellow
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-5771
Fax: 301-496-6608
Cancer Therapy, Clinical Devices, Polymers
(controlled drug delivery; biomaterials; pharmacokinetics)

Balasubramanian Swaminathan
CDC/NCID, Meningitis & Special Pathogens Laboratory Section
Chief, Epidemic Investigations Laboratory
Building 1, Room 2243 (Mail stop D11)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3764
Fax: 404-639-3296
Infectious Diseases, Diagnostics, Molecular Biology
(microbiology; infectious diseases; rapid diagnostics; molecular subtyping; immunology)
Major Laboratory Activities: Development and evaluation of rapid diagnostic methods for the etiologic agents of bacterial meningitis and other emerging pathogens. Development, evaluation, and standardization of molecular subtyping methods for bacteria.
Goals: Improve methods for isolation and rapid detection of bacteria for which the Branch has responsibility. Develop and use best available technology for subtyping bacteria to provide laboratory support for investigation of epidemic outbreaks and for surveillance activities.
Unique Resources/Technologies Available: DNA sequencing, DNA probe development, colorimetric and chemiluminescent DNA probe assay development, polymerase chain reaction-based assay development, multilocus enzyme electrophoretic analysis, DNA fingerprinting, ribosomal DNA fingerprinting, hybridoma development, generation of murine and human monoclonal antibodies by cell fusion and recombinant DNA techniques, immunoassay development using various formats (ELISA, western blots, dot blots, particle-enhanced agglutination, etc.)
Unique Products/Accomplishments: Nonisotopic DNA probe assays for listeria monocytogenes; polymerase chain reaction-based assays for listeria monocytogenes, and the etiologic agents of cat scratch disease and epithelioid angiomatosis; and monoclonal antibodies to cell surface antigens on listeria monocytogenes and to listeriolysin O.

Tibor Szentendrei
ADAMHA/NIAAA, Laboratory of Physiology & Pharmacologic Studies
Visiting Fellow
DANAC #4, Room 4
12501 Washington Ave.
Rockville, MD 20852
Phone: 301-443-1234
Fax: 301-443-5894
Adrenergic Receptors, Cell Differentiation
(regulation of adrenergic receptors)

Edward Tabor
NCI, Division of Cancer Etiology
Associate Director for Biological Carcinogenesis
Building 41, Room A100
NIH, Bethesda, MD 20892
Phone: 301-496-4241
Fax: 301-496-8908
Hepatoma, Antivirals, Vaccines
(Hepatitis viruses; hepatocellular carcinoma)

Chris H. Takimoto
NCI, NCI-Navy Medical Oncology Branch
Medical Staff Fellow
Building 8, Room 51D1
Naval Hospital Bethesda
Bethesda, MD 20889
Phone: 301-402-1841
Fax: 301-496-0047
Chemotherapy, Pharmacology
(medical oncology; cancer chemotherapy; pharmacokinetics; drug development)
Major Laboratory Activities: Molecular pharmacology of antimetabolites; pharmacokinetics; clinical trials of new anticancer agents.

Philip R. Taylor
NCI, Cancer Prevention Studies Branch
Branch Chief
Executive Plaza North, Room 211
NIH, Bethesda, MD 20892
Phone: 301-496-8559
Fax: 301-402-0553
Cancer Prevention, Nutrition, Vitamins
(cancer prevention, clinical trials, nutrition)
Major Laboratory Activities: Epidemiologic studies relating nutrition to cancer; clinical nutrition studies; clinical trials to prevent cancer.
Goals: Identify, develop, and test cancer prevention strategies.

Nancy Smyth Templeton
NHLVI, Molecular Hematology
Staff Fellow
Building 10, Room 7D18
NIH, Bethesda, MD 20892
Phone: 301-496-1289
Fax: 301-496-9985
Gene Therapy, Cloning Vectors/Methods, Polymerase Chain Reaction (PCR)
(homologous recombination gene targeting)
Major Laboratory Activities: Gene targeting.
Goals: To increase the frequency of gene targeting.

Christina Teng
NIEHS, Laboratory of Reproductive & Developmental Toxicology
Senior Staff
P.O. Box 12233 (Mail stop MD-1301)
Research Triangle Park, NC 27709
Phone: 919-541-0344
Fax: 919-541-0696
DNA/RNA Probes, Infectious Diseases, Cancer Diagnostics
(gene regulation; lactoferrin)
Major Laboratory Activities: Study lactoferrin gene expression at molecular level.
Goals: To understand how hormone regulates gene activity.
Unique Resources/Techniques Available: Molecular cloning, expression, culture, transgenic product, mutation, etc.
Unique Products/Accomplishments: Cloning and sequencing both human and mouse lactoferrin cDNA and 5' promoter region (r3kb length).

Raymond W. Tennant
NIEHS, Division of Toxicology Research and Testing
Chief, Experimental Carcinogenesis and Mutagenesis Branch
MD E4-02
P.O. Box 12233
Research Triangle Park, NC 27709-2233
Phone: 919-541-4141
Fax: 919-541-1460
Transgenic Inbreds, Carcinogenesis, Oncogenes
(environmental carcinogenesis; genetic and epigenetic mechanisms of carcinogenesis; genetic susceptibility to carcinogens; methods of carcinogen identification)

Fred C. Tenover
CDC/NCID/HIP, Nosocomial Pathogens Laboratory Branch
Chief, NPLB
1600 CLifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3246
Fax: 404-639-3037
Infectious Diseases Multidrug Resistance, Diagnostics—DNA/RNA Probes, Infectious Diseases Diagnostics
(infectious diseases; antimicrobial resistance; rapid diagnostics [DNA/RNA probes, PCR])
Major Laboratory Activities: Identification and epidemiology of novel antimicrobial resistance genes; development of rapid identification systems for infectious agents; reference antimicrobial susceptibility testing and bacterial identification.
Goals: Develop rapid genetic-based assays for detection, identification, and antimicrobial susceptibility testing of pathogenic bacteria.
Unique Resources/Techniques Available: Reference collection of major modes of antimicrobial resistance and unusual pathogens.
Unique Products/Accomplishments: Development of probes for many antimicrobial resistance genes; development of PCR assays for direct detection of resistance genes in clinical samples.

George R. Thoma
NLM, Lister Hill National Center for Biomedical Communications
Chief, Communications Engineering Branch
Building 38A, Room 10S-1004
NIH, Bethesda, MD 20894
Phone: 301-496-4496
Fax: 301-402-0341
Imaging/Image Analysis, Information Sciences, Imaging Techniques
(image processing)
Major Laboratory Activities: Image processing for documents, x-rays.
Goals: Prototype development and evaluation.
Unique Resources/Techniques Available: In-house prototypes; SUN4/390, MP690, PCs, MACs, document scanners.
Unique Products/Accomplishments: Automated document image delivery; x-ray archive/jukebox.

S. Shonrri Thorgeirsson
NCI/DCE, Laboratory of Experimental Carcinogenesis
Chief, LEC
Building 37, Room 3C28
NIH, Bethesda, MD 20892
Phone: 301-496-5688
Fax: 301-496-0734
Cancer Recognition Peptides, Transformation, Hydropathy Index
(carcinogenesis; protein chemistry)

N. Rao Thotakura
NIDDK, Molecular, Cellular, & Nutritional Endocrinology Branch
Visiting Scientist
Building 10, Room 8D14
NIH, Bethesda, MD 20892
Phone: 301-496-8321
Fax: 301-496-1649
Hormones, Growth Factors, Carbohydrates, Agonists/Antagonists
(glycoprotein hormones)
Major Laboratory Activities: Research.
Goals: Role and modulation of carbohydrate in glycoprotein hormones.
Unique Resources/Techniques Available: Recombinant hormones.

Dietmar Tietz
NICHD, Laboratory of Theoretical & Physical Biology/SMA
Adjunct Scientist
Building 10, Room 6C101
NIH, Bethesda, MD 20892
Phone: 301-496-4878
Fax: 301-402-0263
Electrophoresis, Computer Software, Biochemistry
(electrophoresis; computer modeling)

Kenneth R. Tindall
NIEHS, Comparative Medicine Branch
Research Geneticist
(Mail stop E3-01)
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3275
Fax: 919-541-1460
Carcinogenesis, Mutagenesis, Molecular Biology
(molecular mutagenesis; somatic cell genetics; gene transfer; homologous recombination; molecular biology; retroviral vectors)

Alexander V. Titomirov
NICHD, LMGD
Visiting Associate
Building 6, Room 338
NIH, Bethesda, MD 20892
Phone: 301-496-1851
Fax: 301-402-0543
Cell Differentiation, Transfection
(gene transfer; differentiation; homologous recombination)

Glenn Daniel Todd
CDC, NCID, Division of Parasitic Diseases, Malaria Branch
Supervisory Research Pharmacologist
Mail Stop F-12
1600 Clifton Road
Atlanta, GA 30333
Phone: 404-48804540
Fax: 404-488-4427
Chemistry (analytical/medicinal), Pharmacology, Rational Drug Design
(therapeutic drug monitoring; parasitic/malaria disease; molecular mechanisms)
Major Laboratory Activities: Therapeutic drug monitoring; insecticide pyrethroid monitoring; analytical chemistry; molecular action of antimalarial drugs.
Goals: Continue to develop assays for antimalarial drug monitoring; define molecular mechanisms of action for antimalarial drugs.
Unique Resources/Techniques Available: HPLC; GLC; CE; SFC 1; analytical chemistry; molecular work; cultures of Plasmodium and drug design/testing.
Unique Products/Accomplishments: Patent applied for related to separation techniques in the laboratory; only U.S. laboratory to routinely monitor, on an "on call" basis, blood levels of antimalarial drugs.

Suzanne L. Topalian
NCI, Surgery Branch, Tumor Immunology Section
Senior Investigator
Building 10, Room 2B47
NIH, Bethesda, MD 20892
Phone: 301-496-4269
Fax: 301-402-0922
Cytokines, Immunotherapy, Biological Response Modifiers
(tumor immunology; immunotherapy)
Major Laboratory Activities: Define human antitumor immune responses.
Goals: Develop effective immunotherapies for cancer treatment.
Unique Products/Accomplishments: Description of specific antitumor immune responses by human T-cells including cytolysis and cytokine production.

Daniel Trachewsky
NHLBI, Hypertension and Endocrine Branch
CDER Staff College
Parklawn Building, Room 9B04
5600 Fishers Lane (HPD-3)
Rockville, MD 20857
Phone: 301-443-2200
Fax: 301-443-6905
Hypertension, Gene Regulation, Gene Transfer, Gene Cloning
(molecular biology; gene transfection and regulation; hypertension)

Dennis W. Trent
CDC/NCID, Molecular Biology
Chief, Molecular Biology Branch
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6420
Fax: 303-221-6476
Vaccines, Tropical Diseases, Recombinant DNA
(virology; immunology; molecular biology)
Major Laboratory Activities: Alpha-and Flavivirus vaccine development, PCR based diagnostics, molecular variation, virulence/pathogenesis.
Goals: Improve vaccines, diagnostics and virus attenuation thru molecular biology.
Unique Resources/Techniques Available: Infectious clones of Alpha-and Flaviviruses, Dengue virus collection.
Unique Products/Accomplishments: Alphavirus attenuated vaccinating Flaviviruses PCR diagnostics.

Jane Trepel
NCI/DCT, Clinical Pharmacology Branch
Senior Investigator
Building 10, Room 12N230
NIH, Bethesda, MD 20892
Phone: 301-496-1547
Fax: 301-420-0922
Cancer Biology, Growth Factor Inhibitors, Signal Transduction
(prostate cancer; growth regulation; signal transduction)
Major Laboratory Activities: Signal transduction studies of cancer cell growth regulation.
Goals: To develop a new treatment for hormone-refratory prostate cancer.
Unique Resources/Techniques Available: Single cell measurements of Ca^{2+} mobilization.
Unique Products/Accomplishments: Novel single transduction-based therapeutic approach to advanced prostate cancer.

Steve Tronick
NCI/DCE, Gene Structure Section
Chief, GSS
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Phone: 301-496-8910
Fax: 301-496-8479
Oncogenes, Growth Factors, Cancer

Benes Trus
DCRT, Computer Systems Laboratory
Research Chemist
Building 12A, Room 2053
NIH, Bethesda, MD 20892
Phone: 301-496-2250
Fax: 301-402-0007
Molecular Biology, Computer Software, Virology—Structure Determination, Image Processing, Structural Biology
(structural biology; image processing, virology, computer software)
Major Laboratory Activities: Image processing of electron micrographs.
Goals: Macromolecular structure determination.
Unique Resources/Techniques Available: Computer software, image processing techniques.

Theodore F. Tsai
CDC/NCID, Arbovirus Diseases
Chief, Arbovirus Diseases Branch
Division of Vector-Borne Infectious Diseases
P.O. Box 2087 (Foothills Campus)
Fort Collins, CO 80522-2087
Phone: 303-221-6407
Fax: 303-221-6476
Antivirals, Virology, Diagnostics
(virology)
Major Laboratory Activities: Laboratory diagnosis.
Goals: Improve diagnostics; evaluate antivirals for efficacy in animals and humans.
Unique Resources/Techniques Available: Access to patient specimens and unique viruses.
Unique Products/Accomplishments: Rapid diagnostic assays.

Wen-Po Tsai
NCI/FCRDC, Div. of Cancer Treatment, Biological Response Modifiers Program
Microbiologist, Laboratory of Biochemical Physiology
Fort Detrick, Building 560, Room 31-76
Frederick, MD 21701-1013
Phone: 301-846-5471
Fax: 301-846-5745
AIDS-HIV, Antiviral Drugs, Immunotherapy, Vaccines
Major Laboratory Activities: Research in HIV-1.
Goals: To test antiviral reagents.
Unique Products/Accomplishments: The effects of dichloroquines—a group of antimalarial drugs—on HIV-1 infectivity.

Margaret A. Tucker
NCI, Family Studies Section
Chief, FSS
Executive Plaza North, Room 439
NIH, Bethesda, MD 20892
Phone: 301-496-4375
Fax: 301-402-0916
Cancer Risk Analysis, Molecular Biology, Gene Mapping, Cancer Toxicity Management
(cancer etiology; melanoma; late effects of cancer treatment)
Major Laboratory Activities: Identifying individuals at increased risk of cancer.
Goals: Elucidate etiologies of cancer.

Paul C. Turkeltaub
FDA/CBER, Laboratory of Allergy and Immunochemistry
Medical Officer
Building 29, Room 212
NIH, Bethesda, MD 20892
Phone: 301-496-4861
Fax: 301-480-4091
Antigens, Immunotherapy, Pharmacology
(allergy; immunology; respiratory)
Major Laboratory Activities: Study of safety and efficacy of antigens for diagnosis and treatment of allergic disease.
Goals: Development of safer and more effective diagnostic and immunotherapeutic approaches to allergic disease.
Unique Resources/Techniques Available: Clinical test facilities for evaluating safety and efficacy and pharmacodynamics and pharmacokinetics of allergens.
Unique Products/Accomplishments: Developed pharmacodynamic methods with defined accuracy, precision, and sensitivity for evaluating allergenic and skin-reactive agents.

Robert Turner
NHLBI, Cardiac Energetics
Visiting Scientist
Building 10, Room B1D161
NIH, Bethesda, MD 20892
Phone: 301-496-3658
Fax: 301-402-0119
Nuclear Magnetic Resonance, Gradient Coils
(NMR imaging; gradient coil design; suitable DC high current power supplies)

Thomas W. Uhde
NIMH, Biological Psychiatry Branch
Chief, Section on Anxiety & Affective Disorders
Building 10, Room 3S239
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Phone: 301-496-6825
Fax: 301-402-0052
Animal Models, Catecholamines, Neuroendocrinology
(biochemistry and pharmacotherapy of mood and anxiety disorders)

Richard S. Ungerleider
NCI/DCT, Clinical Investigations Branch
Chief, CIB
Executive Plaza North, Room 741
NIH, Bethesda, MD 20892
Phone: 301-496-2522
Fax: 301-402-0557
Cancer, Cancer Therapy, Clinical Trials
(cancer treatment; clinical trials; pediatric oncology)

Michael Unser
NCRR, Biomedical Engineering & Instrumentation Program
Visiting Scientist
Building 13, Room 3W13
NIH, Bethesda, MD 20892
Phone: 301-496-4426
Fax: 301-496-6608
Image Processing, Image Analysis, Computer Software
(image processing, signal processing)
Major Laboratory Activities: Image processing.
Goals: Solve problems and find new techniques for signal/image processing.
Unique Resources/Techniques Available: Imaging processing software.
Unique Products/Accomplishments: Software for image analysis of one- and two-dimensional gels; new image processing techniques for image enlargement, reduction, registration, and image coding.

William C. Van Arsdel, III
FDA, Center for Biologic Evaluation and Research
Pharmacologist
Parklawn Building, Room 16B19 (HFD-110)
5600 Fishers Lane
Rockville, MD 20857
Phone: 301-443-0316
Fax: 301-443-9283
Toxins, Pharmacology, Cardiology
(electrocardiology of small laboratory animals)

Willie Vann
FDA, Center for Biologic Evaluation & Research
Research Chemist
Building 29, Room 529
NIH, Bethesda, MD 20892
Phone: 301-496-9692
Fax: 301-402-2776
Antibodies (monoclonal), Polysaccharide Biosynthesis, Metabolism
(polysaccharide biosynthesis; n-acetylneoiminil acid metabolism; immunochemistry of staphylococcol polysaccharides; chemical modification of polysaccharide)

Karoly Varga
ADAMHA/NIAAA, Laboratory of Molecular & Cellular Neurobiology
Fogarty Visiting Fellow
12501 Washington Avenue, Room 19
Rockville, MD 20852
Phone: 301-443-1234
Fax: 301-443-5894
Blood Pressure, N-methyl-D-aspartate (NMDA)
(cardiovascular regulation)

Bruno M. Vasta
NLM, Biomedical Files Implementation Branch
TOXNET Administrator/Chief, BFIB
Building 38A, Room 3S-320
NIH, Bethesda, MD 20892
Phone: 301-496-6531
Fax: 301-480-3537
Computer Software, Toxicity, Information Processing
(computer access to toxicology information)

Richard L. Veech
ADAMHA/NIAAA, Laboratory of Metabolism and Molecular Biology
Chief, LMMB
12501 Washington Avenue, Room 55A
Rockville, MD 20852
Phone: 301-443-3063
Fax: 301-443-5894
Cytokines, P-450, Blood Flow Measurement
(control of intermediary metabolism; molecular genetics; Nuclear Magentic Resonance)

C.N. Venkateshan
NINDS, Labortory of Central Nervous System Studies
Visiting Scientist
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NIH, Bethesda, MD 20892
Phone: 301-496-6321
Fax: 301-496-8275
AIDS-HIV, Virology, Immunology
(AIDS; HTLV; antiviral drugs)

David T. Vistica
NCI/DCT, Laboratory of Drug Discovery Research & Development
Pharmacologist
Fort Detrick, Building 1052, Room 121
Frederick, MD 21702-1201
Phone: 301-846-5385
Fax: 301-846-6177
Cancer Chemotherapy, Cell Biology, Drug Uptake
(cell biology; biochemistry; cellular pharmacology)

Ljubisa Vitkovic
NIAID, Molecular and Cellular Neuroscience Research Branch
Program Officer
Parklawn Building, Room 11C05
NIH, Bethesda, MD 20892
Phone: 301-443-5288
Fax: 301-443-4822
AIDS-HIV, Neurobiology Research, Cell Differentiation
(neuropathogenesis; neuroimmunology; CNS development)

Mark A. Vivino
DCRT, Computer Systems Laboratory
Computer Engineer
Building 12A, Room 2019
NIH, Bethesda, MD 20892
Phone: 301-496-9344
Fax: 301-402-2867
Clinical Devices, Computer Software, Imaging Techniques
Major Laboratory Activities: Ophthalmic imaging systems.
Goals: Development of computer-based analytical tools for analysis of cataracts and other ocular diseases.
Unique Resources/Techniques Available: Computer systems development.
Unique Products/Accomplishments: Densitometry using a Scheimpflug slit lamp.

Frederick R. Vogel
NIAID, Division of AIDS, Vaccine Research and Development Branch
Microbiologist
Solar Building, Room 2B06
NIH, Bethesda, MD 20892
Phone: 301-496-8200
Fax: 301-402-1506
Vaccines, Adjuvant Technology, AIDS-HIV
(vaccines, immunologic adjuvants)

Robert Vogt
CDC, Clinical Biochemistry Branch
Research Chemist
Natl Ctr for Environmental Health & Injury
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4151
Fax: 404-488-4831
Flow Cytometry, Immunology

Larry M. Wahl
NIDR, Laboratory of Immunolgy, Cellular Immunology Section
Senior Investigator
Building 30, Room 325
NIH, Bethesda, MD 20892
Phone: 301-496-9219
Fax: 301-402-1064
Disease Modifiers, Cytokines, Rheumatoid Arthritis
(connective tissue metabolism; signal transduction)
Major Laboratory Activities: Examination of signal transduction events leading to the production of metalloproteinases by human monocytes.
Goals: Determine if modulation or suppression of metalloproteinase production can be achieved in vivo as demonstrated in vitro.
Unique Resources/Techniques Available: Purified human monocytes and the techniques to evaluate signal transduction pathways and metalloproteinases.
Unique Products/Accomplishments: Demonstration that cytokines such as IFN-gamma and IL-4 modulate metalloproteinase production by human monocytes.

Sharon M. Wahl
NIDR, Cellular Immunology Section
Chief, CIS
Building 30, Room 326
NIH, Bethesda, MD 20892
Phone: 301-496-9218
Fax: 301-402-1064
Inflammation, Growth Factors, Animal Models
(inflammation; arthritis; wound healing; immunoregulation; growth factors; host defense)

Eli Walker
NCRR, BEIP/Applied Clinical Engineering Section
Chief
Building 10, Room B2S245
NIH, Bethesda, MD 20892
Phone: 301-496-1311
Fax: 301-402-0049
Blood Pressure, Monitoring Patients, Noninvasive Diagnostics
(development of a system that simulates the peripheral vasculature and provides for the calibration of noninvasive blood pressure monitoring devices)

Thomas Walsh
NCI, Pediatric Branch
Medical Officer
Building 10, Room 13N240
NIH, Bethesda, MD 20892
Phone: 301-496-4256
Fax: 301-402-0575
Infection, Immunomodulation
(antifungal and antibacterial therapy; immunodiagnostic techniques and microbial detection; immunodulation and host defense against infections using recombinant cytokines)

Judith R. Walters
NINDS, Experimental Therapeutics Branch
Chief, Neurophysiological Pharmacology Section
Building 10, Room 5C214
NIH, Bethesda, MD 20892
Phone: 301-496-2067
Fax: 301-496-6609
Autoreceptors, Dopamine Receptors, Parkinsonism (animal models), Animal Models
(CNS drug effects as determined by in vivo extracellular single unit recording techniques)

Emmett Ward
DCRT, Data Management Branch
Chief, DMB
Building 12A, Room 4037
NIH, Bethesda, MD 20892
Phone: 301-496-6256
Fax: 301-402-0007
Computer Programming—Applied
(computers and engineering; biomedical research)

Dennis K. Watson
NCI, Division of Cancer Etiology,Laboratory of Molecular Oncology
Microbiologist
Fort Detrick, Building 469, Room 206
Frederick, MD 21702
Phone: 301-846-5694
Fax: 301-698-1689
Molecular Biology, Cancer Diagnostics (markers), Nucleic Acid (analysis)
(oncogenes, cancer)
Major Laboratory Activities: Clone isolation; library construction; differential cloning; gene amplification; gene mapping; gene regulation.
Goals: To investigate and understand cancer progression and gene regulation.
Unique Resources/Techniques/Available: PCR amplification; SSCP analyses; protein expression/ purification.

John T. Watson
NHLBI, Devices & Technology Branch
Chief, DTB
Federal Building, Room 312
NIH, Bethesda, MD 20892
Phone: 301-496-1586
Fax: 301-480-6282
Cardiovascular, Clinical Instrumentation
(biomedical engineering)

Forrest F. Weight
ADAMHA/NIAAA, Electrophysiology Section
Chief, Electrophysiology Section
12501 Washington Avenue
Rockville, MD 20852
Phone: 301-443-2888
Fax: 301-443-5894
Ion Channels, Electrophysiology, Drug Testing
(molecular pharmacology of drug action in the nervous system)

John N. Weinstein
NCI/DCBD, Laboratory of Mathematical Biology/TIS
Chief, TIS
Building 10, Room 4B56
NIH, Bethesda, MD 20892
Phone: 301-496-9571
Fax: 301-480-2871
Cancer Therapy, Antibodies (monoclonal), AIDS-HIV, Liposomes
(cancer and AIDS therapies)

George Weiss
DCRT, Physical Science Laboratory
Chief, PSL
Building 12A, Room 2007
NIH, Bethesda, MD 20892
Phone: 301-496-1135
Fax: 301-496-2172
Applied Mathematics, Biophysics
(computers and engineering; biomedical research)

Thomas E. Wellems
NIAID, Laboratory of Malaria Research
Head, Genetics & Pharmacology Section
Building 4, Room 126
NIH, Bethesda, MD 20892
Phone: 301-496-4021
Fax: 301-402-0079
Parasites, Gene Mapping, Multidrug Resistance
(malaria; mechanisms of drug resistance; parasite transfection)
Major Laboratory Activities: Positional cloning of drug-resistance genes; RFLP linkage and physical mapping of chromosomes.
Goals: Mechanism of chloraquine resistance in malaria; new drug development.

Robert J. Wenthold
NIDCD, Laboratory of Neurochemistry
Chief, Section on Neurotransmitter Receptor Biology
Building 36, Room 5D08
NIH, Bethesda, MD 20892
Phone: 301-496-2583
Fax: 301-480-3242
Neuroreceptors, Neurotransmitters, Hearing
(neurotransmitter and receptor roles in normal and abnormal auditory systems, molecular characterization, purification; cloning and characterization of Kainate binding protein and localization of neurotransmitters and receptors in auditory system)
Major Laboratory Activities: Research on (1) neurotransmitter receptors in the auditory system, (2) molecular studies on the glutamate receptor, (3) molecular biology and function of Kainate binding protein, and (4) cloning a protease-like molecule which co-purifies with the glutamate receptor.
Goals: (1) Determine the relationship between cell type and receptor subtypes using in situ hybridization histochemistry, (2) determine the biochemical properties of the glutamate receptor subunits in cultured cells, and (3) understanding of control mechanisms regulating glial specific expression.

Rebecca L. West
CDC, Office of Health and Safety
Industrial Hygienist
Mailstop F-05
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-3417
Fax: 404-639-2294
Safety Equipment, Personnel/Product Safety, Monitoring Devices
(safety and health)
Major Laboratory Activities: Occupational safety and health.
Goals: To develop or enhance technologies or equipment that will enhance the health and/or safety of personnel.
Unique Resources/Techniques Available: Have access and training in CAD (Computer Aided Design).
Unique Products/Accomplishments: Development of a testing device for emergency eye-wash kits.

William C. Wetsel
NIEHS, Laboratory of Molecular and Integrative Neurosciences
Senior Staff Fellow
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-4088
Fax: 919-541-4737
Central Nervous System, Neuropeptides, Cell Biology, Enzymes, Receptors
(neuroendocrinology; protein processing; protein kinase C)
Major Laboratory Activities: Determining the roles of various environmental and other agents on gene expression; processing and secretion of neuropeptides.
Goals: Determine which enzymes are important in processing the LHRH precursor to LHRH; show what agents regulate the expression of LHRH and their enzymes; in particular, to determine the role that protein kinase C plays in this regulation.
Unique Resources/Techniques Available: HPLC separation and battery of antibodies to isolate different LHRH products; antibodies to recognize each of the protein kinase C subspecies.
Unique Products/Accomplishments: Description of the pre-metabolic pathway; determination of the enzymes which participate in this pathway; description of the role that protein kinase C plays in the regulation of LHRH gene expression and peptide processing; and development of antisera to the protein kinase C subtypes.

David Wheeler
NICHD, Laboratory of Theoretical & Physical Biology
Intramural Research Training Award (IRTA) Postdoctor Fellow
Building 10, Room 6C101
NIH, Bethesda, MD 20892
Phone: 301-496-4878
Fax: 301-402-0263
Electrophoresis, Image Analysis, Data Analysis Program
(electrophoresis; image analysis)
Major Laboratory Activities: Electrophoretic analysis.
Goals: To increase information obtainable through electrophoresis.
Unique Resources/Techniques Available: Dedicated electrophoresis laboratory.
Unique Products/Accomplishments: Gels in a DNA electrophoresis simulate, publication by Biosoft entitled: "An image analysis program to analyze pathogens produced by transverse gel gradient electrophoresis." Techniques for making transverse aragose gradient mini-gels for DNA electrophoresis. Entitled: "General purpose data analysis software from statistics, image printing (on Hewlett Packard Laser Jet II), pats transformation, curve-fitting and others."

Reed B. Wickner
NIDDK, Laboratory of Biochemical Pharmacology
Chief, Section on Genetics of Simple Eukaryotes
Building 8, Room 207
NIH, Bethesda, MD 20892
Phone: 301-496-3452
Fax: 301-402-0240
Drug Testing, Retroviruses, AIDS-HIV, Saccharomyces cerevisiae
(yeast virology; vector development based on RNA viruses)

Ronald L. Wilder
NIAMS, Arthritis and Rheumatism Branch
Chief, Inflammatory Joint Diseases
Building 10, Room 9N240
NIH, Bethesda, MD 20892
Phone: 301-496-3373
Fax: 301-402-0012
Autoimmune Diseases, Gene Mapping, Animal Models, Strain and Species Variables
(autoimmune diseases; neuroendocrinology; genetics; animal models)
Major Laboratory Activities: Development of a rat genetic linkage map; mapping of autoimmune disease susceptibility genes.
Goals: Dense, genetic linkage map in rat; disease gene mapping in rat.
Unique Resources/Techniques Available: Extensive genetic linkage map for rat.
Unique Products/Accomplishments: "Fingerprinting" of rats now routine; useful for genetic monitoring of inbred rat strains.

Gene Williams
NIDR, NAB
IRTA Fellow
Building 30, Room B-27
NIH, Bethesda, MD 20892
Phone: 301-496-2758
Fax: 301-402-0667
Analgesics, Pain, Business Service (Consulting)
(neuropharmacology, pain)
Major Laboratory Activities: Behavioral testing, drug/drug interaction.
Goals: Therapeutic drug development.
Unique Resources/Techniques Available: Inflammation model.

Jim C. Williams
FDA/CBER, IND/DBIND/VAB
Scientific Reviewer
Building 29, Room HFB-230
NIH, Bethesda, MD 20892
Phone: 301-295-8419
Fax: 301-295-8466
Infectious Diseases Diagnostics, Immunoprophylaxis, DNA/RNA Probes
(infectious diseases; vaccines; diagnostics; DNA probes; monoclonal antibodies)
Major Laboratory Activities: LPS and acid phosphatases of Francisella iularensis and regulation of gene expression of Coxielli burnettii.
Goals: To develop vaccines and diagnostic probes (i.e., protein, LDS, DNA probes).
Unique Products/Accomplishments: New Q fever vaccine developed; IND351-6 DNA probes identified for Coxiellii burnettii; heat shock structure gene and regulatory elements for Coxiellii burnettii.

Debra Wilson
OD, Office of Recombinant DNA Activities
Biotechnology Specialist
Building 31, Room 4B11
NIH, Bethesda, MD 20892
Phone: 301-496-9838
Fax: 301-496-9839
Recombinant DNA, Gene Therapy
(gene therapy; Recombinant DNA Advisory Committee[RAC])
Unique Resources/Techniques Available: Advise "NIH Guidelines for Research Involving Recombinant DNA Molecules," Biosafety Officers, Institutional Biosafety Committees, Principal Investigators.
Unique Products/Accomplishments: Editor: "Recombinant DNA Technical Bulletin;" provides information and coordinates the Recombinant DNA Advisory Committee (RAC) and the National Biotechnology Policy Board (NBPB).

Marianna Wilson
CDC, Parasitic Diseases Branch
Leader, Reference Immunodiagnostic Laboratory
Chamblee Building 8, Room 1009
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-488-4431
Fax: 404-488-4108
Immunodiagnosis, Parasitology, Clinical Devices
(immunodiagnosis of parasitic diseases)
Major Laboratory Activities: Immunodiagnosis of parasitic diseases.
Goals: Develop better techniques for immunodiagnosis.
Unique Resources/Techniques Available: Serum batteries from patients with various parasitic diseases.

Robert H. Wiltrout
NCI/FCRDC, BRMP, Laboratory of Experimental Immunology
Chief, Experimental Therapeutics Section
Fort Detrick, Building 560, Room 31-28
Frederick, MD 21701-1013
Phone: 301-846-5258
Fax: 301-846-1673
Biological Response Modifiers, Immunotherapy, Cytokines
(tumor immunology; experimental hematopoiesis)
Major Laboratory Activities: Study in vivo mechanisms for antitumor effects mediated by biological response mediators; chemoprotective, chemorestorative, and hematopoietic effects of cytokines; regulation of NK activity in vivo.
Goals: Development of new preclinical approaches to cancer treatment.
Unique Resources/Techniques Available: Comprehensive expertise in cellular and molecular immunology, experimental hematopoiesis, and preclinical animal modeling.

David Wink
NCI/FCRDC, Laboratory of Cellular Carcinogenesis, Chemistry Section
Staff Fellow
Fort Detrick, Building 538, Room 205E
Frederick, MD 21702-1201
Phone: 301-846-1603
Fax: 301-846-5946
Nitrosamines, Carcinogenesis, Chemistry (organic)
(mechanisms of nitrosamine formation and destruction, mechanisms of nitrosamine carcinogenesis, cancer risk reduction, nitrosamine metabolism and toxicokinetics)

Roger W. Wiseman
NIEHS, Laboratory of Molecular Carcinogenesis
Senior Staff Fellow, Chemical Carcinogenesis Section Leader
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919-541-3225
Fax: 919-541-7784
Carcinogenesis (chemical), Genetic Markers, Transgenics
(molecular carcinogenesis; mouse gene mapping; tumor suppressor genes)

Graeme J. Wistow
NEI, Laboratory of Molecular and Developmental Biology
Head, Section on Molecular Structure and Function
Building 6, Room 222
NIH, Bethesda, MD 20892
Phone: 301-496-2764
Fax: 301-496-0781
Cataract, Enzymes, Lymphokines
(molecular biology of the eye)
Major Laboratory Activities: Molecular biology of the lens.
Goals: Analysis of development, structure, and function of normal lens.
Unique Resources/Techniques Available: Clones for lymphokines from lens.
Unique Products/Accomplishments: Identification of enzymes expressed as lens crystallins. Identification of lymphokines expressed in lens.

Robert M. Wohlhueter
CDC/NCID, Scientific Resources Program
Chief, Biotechnology Core Facility Branch
Building 5, SB11 (Mail stop G-36)
1600 Clifton Road, NE
Atlanta, GA 30333
Phone: 404-639-1698
Fax: 404-639-3296
Analytical Instruments, Diagnostics, Molecular Biology
(peptide/protein chemistry)
Major Laboratory Activities: Laboratory Director.
Goals: Application of synthetic peptides and oligonucleotides to diagnosis in induced immunity.
Unique Resources/Techniques Available: Conventional and robotic peptide synthesizers.
Unique Products/Accomplishments: Systematic variation of peptide structure; synthesis of large numbers of peptides at small scale for screening purposes.

Linda Wolff
NCI, Laboratory of Genetics, DCBDC
Senior Investigator
Building 37, Room 2B04
NIH, Bethesda, MD 20892
Phone: 301-496-6763
Fax: 301-402-1031
Cancer Biology, Oncogenes, Retroviruses
(leukemia; oncogenes; retroviruses)
Goals: The overall goal of this laboratory is to understand the development of acute myeloid leukemia in mice as a model for AML in man. We have been examining the physiological development as well as molecular development of this disease with an emphasis on oncogene activation.
Unique Resources/Techniques Available: Greater than 100 transplantable leukemia cell lines of the monocytic/macrophage lineage; 50 cell lines developed from the above leukemias.
Unique Products/Accomplishments: We have developed mouse model systems for rapid and reproducible induction of acute myeloid leukemia. These induction systems depend on the unique combination of a chronic inflammatory response and retroviral infection. An examination of the multistep disease process has allowed us to begin to determine the trafficing pattern of the leukemic cells in vivo. In addition we have begun to identify oncogenes involved in leukemogenesis.

Benjamin Wolozin
NIMH, Laboratory of Clinical Science/SCN
Research Fellow
Building 10, Room 3D41
NIH, Bethesda, MD 20892
Phone: 301-496-3421
Fax: 301-402-0188
Alzheimer's Disease, Cell Lines, Animal Models
(Alzheimer's disease)

James W. Woods
NLM, Educational Technology Branch
Education Research Specialist
Building 38A, Room B1N30J
NIH, Bethesda, MD 20894
Phone: 301-496-6280
Fax: 301-480-3035
Computer Software, Risk Assessment
(educational technology; computers; optical discs; digital imaging)

Yoshihiko Yamada
NIDR, Laboratory of Developmental Biology
Chief, Molecular Biology
Building 30, Room 405
NIH, Bethesda, MD 20892
Phone: 301-496-2111
Fax: 301-402-0897
Gene Regulation, Arthritis, Basement Membrane
(extracellular matrix; receptors; gene regulation; metastasis)

Richard Yanagihara
NINDS, Laboratory of Central Nervous System Studies
Medical Director
Building 36, Room 5B-21
NIH, Bethesda, MD 20892
Phone: 301-496-3281
Fax: 301-496-8275
Neurobiology Research, HTLV-1, Diagnostics, Viral Diseases, Central Nervous System (CNS)
(virus-induced encephalomyelitides)
Major Laboratory Activities: Characterization of HTLV-I sequence variants isolated from remote populations in Melanesia.
Goals: Improved serodiagnosis of infection with HTLV-I and related retroviruses.
Unique Products/Accomplishments: Isolation of HTLV-I variants from remote Melanesian populations which diverge markedly from HTLV-I strains from Japan, the West Indies, the Americas, and Africa.

Stringner Sue Yang
NCI/DCBDC, Centers, Training, and Resources Program
Assistant to the Associate Director
Executive Plaza North, Room 308
NIH, Bethesda, MD 20892
Phone: 301-496-8537
Fax: 301-402-0181
Oncogenes, Hepatoma, Tumor, Cancer Diagnostics (Markers), Cancer
(human proto-oncogene and oncogene; tumor marker; growth factors; human hepatoma transforming DNA sequences and hepatitis B virus)

Michael Yarmolinsky
NCI/DCBD, Laboratory of Biochemistry
Chief, Microbial Genetics & Biochemistry Sec.
Building 37, Room 4D15
NIH, Bethesda, MD 20892
Phone: 301-496-5226
Fax: 301-402-3095
Microbial Genetics, E. coli, Phage, Plasmids
(bacterial plasmids; control of DNA replication and partitioning; microbial genetics)

Moon Bin Yim
NHLBI, Laboratory of Biochemistry
Senior Staff Fellow
Building 3, Room B207
NIH, Bethesda, MD 20892
Phone: 301-496-9494
Fax: 301-496-0599
Free Radical Scavengers, Metalloproteins, Spectroscopy (EPR & ENDOR)
(free radicals and metal ions in biology; metalloproteins; EPR and ENDOR spectroscopy)

Koji Yoshinaga
NICHD, Reproductive Sciences Branch
Health Scientist Administrator
Executive Plaza North, Room 603
NIH, Bethesda, MD 20892
Phone: 301-496-6515
Fax: 301-496-0962
Pregnancy, Growth Factors, Hormone Action
(reproductive endocrinology; blastocyst implantation)

Richard J. Youle
NINDS, Surgical Neurology Branch
Chief, Biochemistry Section
Building 10, Room 5D-37
NIH, Bethesda, MD 20892
Phone: 301-496-6628
Fax: 301-402-0380
Immunotoxins, Neurobiology Research, Recombinant DNA
(immunotoxins and ribonucleases; neurotoxins)
Major Laboratory Activities: Designing immunotoxins for CNS cancer, molecular biology, programmed cell death in brain.
Goals: Therapy of brain tumors.
Unique Resources/Techniques Available: Molecular biology; drug design; in situ probes of apoptosis.
Unique Products/Accomplishments: Several patents licensed; immunotoxins in clinical trials; humanized immunotoxins.

Howard Young
NCI-FCRDC, Laboratory of Experimental Immunology, BRMP
Supervisory Microbiologist
Fort Detrick, Building 560, Room 31-23
Frederick, MD 21702-1013
Phone: 301-846-5700
Fax: 301-846-1673
Gene Transfer, Immunology, Lymphokines
(gene regulation in the immune system)

W. Scott Young
ADAMHA, NIMH, Laboratory of Cell Biology
Medical Officer
Building 36, Room 2D10
NIH, Bethesda, MD 20892
Phone: 301-496-8767
Fax: 301-496-4103
Gene Expression, Neuroendocrinology, Neurology
(neuroendocrinology; neurology; neuroanatomy; hypothalamic gene expression)

Stuart H. Yuspa
NCI/DCE, Laboratory of Cellular Carcinogenesis & Tumor Promotion
Chief, LCCTP
Building 37, Room 3B25
NIH, Bethesda, MD 20892
Phone: 301-496-2162
Fax: 301-496-8709
Carcinogenesis, Hair Growth, Cancer Therapy
(skin research)
Major Laboratory Activities: Skin research, carcinogenesis.
Goals: To understand the pathogenesis of skin carcinogenesis.
Unique Resources/Techniques Available: Skin culture, hair follicle culture.
Unique Products/Accomplishments: Specific antibodies and gene probes; chemicals which inhibit pain and inflammation; chemicals which cause cancer regression.

Theodore P. Zahn
ADAMHA/NIMH, LPP
Research Psychologist
Building 10, Room 4C110
NIH, Bethesda, MD 20892
Phone: 301-496-7672
Fax: 301-402-0921
Schizophrenia, Neurobiology Research, Data Analysis Program
(psychology, psychophysiology)
Major Laboratory Activities: Psychophysiological research on major mental disorders and drug effects.
Goals: Understanding of psychological and psychophysiological mechanisms of illness and pharmacotherapy.
Unique Resources/Techniques Available: Methods for studying autonomic nervous system activity during variations in psychological state.
Unique Products/Accomplishments: Computer software for running experiments and processing data.

Loren A. Zech
NCI/DCBDC, Laboratory of Mathematical Biology
Senior Investigator
Building 10, Room 4B56
NIH, Bethesda, MD 20892
Phone: 301-496-8915
Fax: 301-480-2871
Simulations, Pharmacodynamics, Metabolism (metabolic models), Computers (metabolic modeling)
(compartmental modeling)

Constantine Zervos
FDA/CDER, DDRT/ORR
8301 Muirkirk Road
Laurel, MD 20708
Phone: 301-344-0510
Fax: 301-344-6037
Risk Assessment, Transgenics, Oncology
(use of data other than what is obtained from bioassays in cancer risk assessments)

Sandra Zink
NCI, Radiation Research Program
Program Director
Executive Plaza North, Room 800
NIH, Bethesda, MD 20892
Phone: 301-496-9360
Fax: 301-480-5785
Information Processing, Image Processing, Cancer Therapy
(medical informatics; imaging technologies; treatment planning)

Kathryn Zoon
FDA/CBER, Division of Cytokine Biology
Director, DCB
Building 29A, Room 2D20
NIH, Bethesda, MD 20892
Phone: 301-496-8245
Fax: 301-402-1659
Cytokines, Interferons, Growth Factors, Cancer, AIDS-HIV, Wound Healing
(interferons and IFN receptors; cytokines; growth factors)
Major Laboratory Activities: Interferon-alpha and receptors.
Goals: Research and review programs for cytokine and growth factors.
Unique Resources/Techniques Available: Review of cytokine and growth factors; protein sequencing, amino acid analysis; carbohydrate analysis.
Unique Products/Accomplishments: Licensing cytokines; review of cytokines and growth factors; publications in scientific journals.

SECTION 5

KEYWORDS RELATED TO PHS INVESTIGATORS' RESEARCH AND CRADA INTEREST AREAS

This section identifies PHS scientists' fields of interest by keyword. More information on how to contact the PHS scientists listed in this section can be obtained in Section 4. Sections 4 and 5 are cross-references.

SECTION 5: KEYWORDS RELATED TO PHS INVESTIGATORS' RESEARCH AND CRADA INTEREST AREAS

ABUSE DETECTION
Edward J. Cone

ABUSE PROTECTION
Ronald I. Herning

ACETYLCHOLINE
James A. Joseph, Timothy Soncrant

ACTIN
James Sellers

ACUTE RESPIRATORY DISTRESS SYNDROM
Nikki J. Holbrook

ADDICTION
Farouk Karoum

ADENOSINE
Kenneth Jacobson

ADHESION
Jack London, Stephen Shaw

ADHESION RECEPTORS
John Tim Chance

ADJUNCTIVE RX
Mary E. Ropka

ADJUNCTIVE THERAPIES
Robert C. Moschel

ADJUVANT TECHNOLOGY
Patricia E. Fast, Dale R. Spriggs, Frederick R. Vogel

ADRENERGIC AGONISTS
George T. Chen

ADRENERGIC RECEPTORS
Tibor Szentendrel

ADRENERGICS
Cyrus Robbins Creveling, John W. Daly, Fabian Gusovsky, Kenneth L. Kirk, George Kunos

AFFECTIVE DISORDERS
John D. Newman, Paul J. Schwartz

AGING
Eda T. Bloom, Byron Caughey, Peter P. Chuknyisky, Gunther L. Eichhorn, Gad Gilad, Nikki J. Holbrook, Walter E. Horton, Jr., Donald K. Ingram, James A. Joseph, George R. Martin, Albert A. Nordin, Stanley Rapoport, Sue Goo Rhee, Joseph M. Rifkind, George S. Roth, Earl R. Stadtman, Trey Sunderland

AGONISTS/ANTAGONISTS
Marvin J. Karten, N. Rao Thotakura

AIDS-HIV
Rita Anand, C. William Angus, Richard Ascione, John P. Bader, Daniel P. Bednarik, Edward A. Berger, Ira Berkower, Leslie A. Bruggeman, G. Marius Clore, Edward James Cupler, Michael Dean, Ravi Dhar, Jonathan Dinman, Nickolas Dorfman, John S. Driscoll, Lee Eiden, Indira Hewlett, Donald M. Jerina, Margaret I. Johnston, Thomas A. Kunkel, Michael J. Lenardo, Marta Leon-Monzon, Rod Levine, Melody H. Lin, Mary Anne Luzar, Jacob V. Maizel, Jr., Eugene O. Major, Joseph A. Meshino, Gregory Milman, Anton A. Minassian, Peter T. Mora, Richard Morgan, Bernard Moss, Jack Moye, Anil B. Mukherjee, Bita Nakhai, Peter Nara, Ven L. Narayanan, Takis S. Papas, Marcel Pons, Mary E. Ropka, Martin Ruta, Felipe Samaniego, Nava Sarver, Manfred Schubert, Gene M. Shearer, Henry C. Stevenson-Perez, Allen C. Stoolmiller, Wen-Po Tsai, C.N. Venkateshan, Ljubisa Vitkovic, Frederick R. Vogel, John N. Weinstein, Reed B. Wickner, Kathryn Zoon

AIDS-HIV (ANTIVIRAL DRUGS)
Richard L. Mowery, Saul A. Schepartz

AIDS-HIV (VACCINES)
John K. Inman

AIDS-HIV DIAGNOSTICS
Thomas C. Quinn, Roy Repaske

AIR POLLUTION
J. Scott Osborne

ALCOHOLISM
Markku Linnoila, Robert W. Peoples, Norman Salem, Dinah S. Singer

ALDOSE REDUCTASE INHIBITORS
Peter Kador, Sanai Sato

ALLERGY
Michael Kaliner, Dean Metcalfe

ALZHEIMER'S DISEASE
Michael Brenner, Byron Caughey, John C. Chah, James Cook, Nigel H. Greig, Gerald A. Higgins, Stanley Rapoport, Katherine K. Sanford, Timothy Soncrant, Barbara C. Sonies, Trey Sunderland, Benjamin Wolozin

AMBULATORY PATIENT MONITORING
Bruce M. Smith

AMINOACYL RIBONUCLEIC ACID (TRNA)
Thressa C. Stadtman

ANALGESICS
Raymond Dionne, Ronald Dubner, Michael J. Iadarola, Mitchell Max, Gene Williams

ANALOGS
Marvin J. Karten

ANALYTICAL INSTRUMENTS
Peter Basser, Brian P. Holloway, Charles H. Rodgers, Gerald J. Spangrude, Robert M. Wohlhueter

ANALYTICAL/MEDICINAL CHEMISTRY
Stephen P. Miller

ANESTHETICS
Nicholas M. Fleischer

ANGIOGENESIS
Hynda K. Kleinman

ANGIOPLASTY
Robert Bonner

ANIMAL MODELS
Steven R. Goldberg, Thomas Ingalls, Donald K. Ingram, Margaret I. Johnston, Catherine A. Laughlin, Allan Lock, Lance R. Pohl, Robert H. Purcell, Esther M. Sternberg, G.E. Striker, Thomas W. Uhde, Sharon M. Wahl, Judith R. Walters, Ronald L. Wilder, Benjamin Wolozin

ANIMAL MODELS (TRANSGENIC INBREDS)
Glenn T. Merlino

ANTI-INFLAMMATORY
R. Michael Blaese, R. Mark L. Buller, Anil B. Mukherjee, Gary J. Rosenthal

ANTIARRHYTHMICS
Lameh Fananapazir

ANTIBIOTICS
Hao-Chia Chen, Judah L. Rosner

ANTIBODIES (MONOCLONAL)
Michael J. Arrowood, Jack R. Bennink, Martin W. Brechbiel, Harry V. Gelboin, Arnold Greenwell, William Habig, Anton A. Minassian, Richard P. Morrison, J. Frederic Mushinski, Sang S. Park, Errol Reiss, John T. Roehrig, Ethan M. Shevach, Gerald J. Spangrude, Thressa C. Stadtman, Willie Vann, John N. Weinstein

ANTIBODIES (POLYCLONAL)
Ira Berkower, David Jacobowitz, Seth Pincus

ANTIBODY-BASED THERAPY
William LaRochelle, Edward A. Sausville, Jeffrey Schlom

ANTICONVULSANTS
James J. Cereghino, Frank J. Nice

ANTIDEPRESSANTS
Linda S. Brady, De-Maw Chuang, Lino Covi, Dale Grothe

ANTIEPILEPTICS
Frank J. Nice, Michael A. Rogawski

ANTIFUNGAL
John E. Bennett

ANTIGEN QUANTIFICATION
Juan M. Saavedra

ANTIGENS
Jack R. Bennink, Jackie L. Martin, Paul C. Turkeltaub

ANTIIDIOTYPE ANTIBODIES
Joyce L. Frey

ANTIMICROBIALS
Neile Rives

ANTINEOPLASTIC
Yoon S. Cho-Chung, David A. Cooney

ANTIPSYCHOTICS
Jacqueline N. Crawley

ANTISENSE
R. Mark L. Buller, Harold Gainer, John A. Jermano, Mary Anne Luzar, Marcel Pons, Felipe Samaniego

ANTISENSE (THERAPEUTIC METHODS)
Arnheiter Heinz, Leonard M. Neckers, Stephen M. Rose

ANTIVIRAL DRUGS
Rita Anand, John P. Bader, Hao-Chia Chen, John A. Jermano, Hsiang-Fu Kung, Mary Anne Luzar, Stephen Oroszlan, Yves G. Pommier, Mary E. Ropka, Stephen E. Straus, Wen-Po Tsai

ANTIVIRALS
Adorian Aszalos, Edward A. Berger, Salvatore T. Butera, Mark D. Challberg, David A. Cooney, Nancy J. Cox, Carole A. Heilman, Arnheiter Heinz, Leslye D. Johnson, Jerry Keith, Catherine A. Laughlin, Victor E. Marquez, Ven L. Narayanan, Philip E. Pellett, Nava Sarver, Edward Tabor, Theodore F. Tsai

ANTIVIRALS (DSRNA)
Kenneth I. Strauss

ANXIOLYTICS
Jacqueline N. Crawley

APHERSIS
Kenneth Lippel

APPLIED MATHEMATICS
Akram Aldroubi, John Fletcher, Erik Pottala, George Weiss

ARACHIDONIC ACID
Norman Salem

ARBOVIRUS MONITORING
I. Paul Reiter

ARTHRITIS
Yoshihiko Yamada

ASSAY DEVELOPMENT
William J. Bellini

ASSAY IMPROVEMENTS
Kurt Brorson

ASSAY METHODS
George M. Carlone, Howard A. Fields, Thomas M. Folks, Arnold Greenwell, Charles L. Hatheway, Sandra A. Larsen, Dennis E. Leszczynski, Alan J. Parkinson

ASSESSING NUTRITIONAL STATUS
Mary E. Ropka

ASTHMA
Michael Kaliner, Dean Metcalfe

ATHEROSCLEROSIS
Carl T. Hansen, Howard S. Kruth, Edward G. Lakatta, Kenneth Lippel

ATHOLOSCLEROSIS
David A. Dichek

AUDITORY DISORDERS
Richard S. Chadwick, Lynn E. Huerta, John D. Newman

AUTOIMMUNE DISEASES
Milan Basta, R. Michael Blaese, Richard J. Davey, Frederick W. Miller, Lance R. Pohl, Kalpana Rengarajan, Elizabeth A. Sekul, Gene M. Shearer, Esther M. Sternberg, Ronald L. Wilder

AUTOMATED DNA SEQUENCING
Robert L. Strausberg

AUTOMATED DNA SYNTHESIS
Serge Beaucage

AUTOMATION
Stephen B. Leighton

AUTORECEPTORS
Judith R. Walters

BACTERIA
Jerome Abramson, Peter Feng, Dorothy Pocurull

BACTERIAL ENDOTOXINS
Phillip J. Baker

BACTERIAL EXPRESSION SYSTEMS
Howard A. Fields, J. Michael Miller, Anil B. Mukherjee, Alan Peterkofsky

BACULOVIRUS PRODUCTION SYSTEM
Bita Nakhai, Kalpana Rengarajan

BASEMENT MEMBRANE
Derrick Shawn Grant, W. Gerald Robison, Yoshihiko Yamada

BEHAVIORS
Richard T. Conlon

BETA-ADRENERGIC RECEPTORS
George Kunos

BIOCHEMISTRY
Mark D. Challberg, P. Boon Chock, C. Craig Hyde, Michail V. Sitkovsky, Louis Sokoloff, Thressa C. Stadtman, Dietmar Tietz

BIOENGINEERING
Frank L. Buczek, Thomas Ingalls, Cal Johnson

BIOFLUIDS
Edward J. Cone

BIOGENIC AMINES
Thomas N. Chase, Juan M. Saavedra

BIOHEAT TRANSFER
Ronald Levin

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Edwin W. Ades, Craig W. Reynolds, Jeffrey Schlom, Hilary D. Sigmon, Henry C. Stevenson-Perez, Suzanne L. Topalian, Robert H. Wiltrout

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Frank L. Buczek, Steven J. Stanhope

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Robert L. Berger, V. Adrian Parsegian, George Weiss

BIOSENSORS
John I. Peterson, Robert H. Selwitz

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Akram Aldroubi, James H. Ferguson, Lawrence Hunter, Melody H. Lin, Dorothy Pocurull

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Abdu I. Alayash, Richard S. Chadwick

BLOOD FLOW MEASUREMENT
Richard L. Veech

BLOOD PRESSURE
Karoly Varga, Eli Walker

BRAIN
Nigel H. Greig, Louis Sokoloff

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Stephen A. Ficca

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Chuang Chiueh, Leslie Reinlib, George S. Roth

CALMODULIN
Randall Kincaid, Thomas Leto

CALORIMETRY (PROTEINS)
Andrew Shrake

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Eda T. Bloom, William J. Blot, John C. Chah, Nickolas Dorfman, John S. Driscoll, Peter Greenwald, Arnold Greenwell, Nigel H. Greig, Larry K. Keefer, Jorge Laborda, Winfred F. Malone, Rosa C. Ong, Steve Tronick, Richard S. Ungerleider, Stringner Sue Yang, Kathryn Zoon

CANCER (ANTIBODY-BASED THERAPY)
William E. Fogler, Robert K. Leedham, Ira Pastan

CANCER (ONCOGENES/RECEPTORS)
Glenn T. Merlino

CANCER BIOLOGY
Aaron Blair, Zi-Xing Chen, Robert Fenton, Sonia Bonita Jakowlew, Ilona Linnoila, Suresh Mohla, Peter T. Mora, Leonard M. Neckers, Keith C. Robbins, David Roberts, Katherine K. Sanford, Michael Schwabe, Mary L. Stracke, Francis J. Sullivan, Jane Trepel, Linda Wolff

CANCER CHEMOTHERAPY
Michael C. Alley, Adorian Aszalos, John P. Bader, Ven L. Narayanan, Leonard Saslaw, Saul A. Schepartz, David T. Vistica

CANCER DETECTION
Peter Greenwald, Kurt Stromberg

CANCER DEVICES
Henry C. Stevenson-Perez

CANCER DIAGNOSTICS
Ilona Linnoila, Ira Pastan, Keith C. Robbins, Alfredo Romano, Christina Teng

CANCER DIAGNOSTICS (MARKERS)
Diana Blithe, Dennis Gaines, Vincent J. Hearing, Lance Liotta, Bruce Nisula, Dennis K. Watson, Stringner Sue Yang

CANCER EARLY DETECTION
James I. Mulshine

CANCER PREVENTION
Barnett Kramer, Philip R. Taylor

CANCER RECOGNITION PEPTIDES
S. Shonrri Thorgeirsson

CANCER RISK ANALYSIS
Robert Spirtas, Margaret A. Tucker

CANCER THERAPY
Vilhelm Bohr, Lance Liotta, Gerald H. Mickisch, Craig W. Reynolds, Cynthia Sung, Richard S. Ungerleider, John N. Weinstein, Stuart H. Yuspa, Sandra Zink

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Shen Rulong, Susan M. Sieber, Roger W. Wiseman

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William C. III Van Arsdel

CARDIOVASCULAR
Nicholas M. Fleischer, Larry K. Keefer, Karl D. Normington, John T. Watson

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Bernard T. Engel, Robert J. Lutz

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Manuel B. Datiles, Peter Kador, Sanai Sato, Graeme J. Wistow

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Kenneth L. Kirk, Thomas W. Uhde

CATHETERS
Lameh Fananapazir, Theodor Kolobow

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David Roberts

CELL ATTACHMENT
Derrick Shawn Grant, Frank Robey

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James A. Dvorak, Christian C. Felder, Douglas Ferris, Joseph Fratantoni, H. Robert Guy, Wan-Ying Hou, Bechara Kachar, Jun Li, George R. Martin, Bita Nakhai, Hira Nakihasi, Ronit Sagi-Eisenberg, G.E. Striker, David T. Vistica, William C. Wetsel

CELL CULTURE
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CELL DETECTION
A. J. Nazarali

CELL DIFFERENTIATION
Yoon S. Cho-Chung, Edward M. Eddy, Derrick Shawn Grant, Curtis C. Harris, Danuta Krotoski, Tibor Szentendrel, Alexander V. Titomirov, Ljubisa Vitkovic

CELL LINES
Salvatore T. Butera, Rachel Caspi, Janice Chou, Benjamin Wolozin

CELL MATRIX INTERACTIONS
Lance Liotta

CELL SUBSETS
Steven R. Bauer, Victoria Pope

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Glenn Daniel Todd

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Henry Fales, Dale O. Kiesewetter, Victor E. Marquez, Josef Pitha, Marco Rabinovitz, David Wink

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Michael M. Gottesman, Miriam C. Poirier, Yves G. Pommier, Mary E. Ropka, Chris H. Takimoto

CHILDHOOD DISEASES
William J. Bellini, Pamela McInnes

CHLAMYDIA
Harlan D. Caldwell

CHOLESTEROL
Martin H. Kroll, Peter G. Pentchev

CHOLESTEROL MODIFIERS
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CHORIONIC GONADOTROPIN
Bruce Nisula

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Yoichiro Ito

CHRONIC VIRAL DISEASES
Thomas M. Folks

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David C. Klein

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Richard Morgan, Marcel Pons, Nancy Smyth Templeton

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Richard T. Conlon

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Emmett Ward

COMPUTER SOFTWARE
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COMPUTERS (METABOLIC MODELING)
Loren A. Zech

COMPUTERS (MOLECULAR MODELING)
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Milton W. Brightman, Seth Goldstein

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Edward G. Lakatta, Vincent C. Manganiello

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CONTRAST AGENTS
Peter Choyke

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Raymond Mejia

CORTICOTROPIN RELEASING HORMONE
George P. Chrousos

CRYOPRESERVATION
Patricia M. Schmidt

CUSHING SYNDROME
George P. Chrousos

CYCLIC AMP-REGULATED ELEMENT (CRE)
Yoon S. Cho-Chung

CYCLODEXTRINS
Josef Pitha

CYCLOSPORINE
Gene M. Shearer

CYTOCHROME P-450
Harry V. Gelboin, Sang S. Park

CYTOKINES
Roy A. Blay, Kurt Brorson, Salvatore T. Butera, J. Perren Cobb, Daniel Fowler, John Hallenbeck, Renu B. Lal, David L. Nelson, Joost J. Oppenheim, John R. Ortaldo, Beverly Packard, Dov H. Pluznik, Gary J. Rosenthal, Martin Ruta, Michael Schwabe, Hilary D. Sigmon, Suzanne L. Topalian, Richard L. Veech, Larry M. Wahl, Robert H. Wiltrout, Kathryn Zoon

CYTOTOXICITY
Polly Matzinger, Michail V. Sitkovsky

DATA ANALYSIS PROGRAM
Christopher I. Amos, John M. Karon, Jennifer Lippincott-Schwartz, Raymond Mejia, John I. Powell, David Wheeler, Theodore P. Zahn

DATA BASES
James M. DeLeo, James H. Ferguson, Lawrence Hunter, David Lipman, Sidney Siegel

DEFECTIVE INTERFERING HIV PARTICLE
Manfred Schubert

DEGENERATIVE DISEASES
Norman W. Barton, Byron Caughey, Gerald J. Chader, David S. Goldstein, Jordan Grafman, R. Krishnan Kutty

DEHYDROGENASE
Steven Li

DEMENTIA
Charles DeCarli, Jordan Grafman, Stanley Rapoport, Barbara C. Sonies

DENGUE HEMORRHAGIC FEVER
Duane J. Gubler

DENTAL PREVENTION
Robert H. Selwitz

DEPRESSION
George P. Chrousos

DETECTORS
Robert L. Berger, Daniel A. Casciano, David C. Klein

DIABETES
Leslie A. Bruggeman, Beth Ann Coonrod, Manuel B. Datiles, Peter Kador, Derek LeRoith, W. Gerald Robison, Sanai Sato

DIAGNOSTIC IMAGING (RADIOLOGY)
Matti Al-Aish

DIAGNOSTICS
Burt Anderson, Michael F. Barile, William J. Bellini, Daniel W. Bradley, Mary Frances Cotch, Nancy J. Cox, William C. Eckelman, Peter Feng, Duane J. Gubler, Charles L. Hatheway, Brian P. Holloway, Albert Z. Kapikian, Nick Karabatsos, Alan P. Kendal, Richard M. Kinney, Sandra A. Larsen, Allan Lock, J. Michael Miller, Roger H. Miller, Stephen A. Morse, Jack Moye, C.J. Peters, Robert H. Purcell, Frederick D. Quinn, Errol Reiss, Neile Rives, Charles H. Rodgers, James W. Shih, Bret M. Steiner, Nancy A. Strockbine, Balasubramanian Swaminathan, Theodore F. Tsai, Robert M. Wohlhueter, Richard Yanagihara

DIAGNOSTICS (VIRAL)
Olen M. Kew, John T. Roehrig

DIAGNOSTICS—DNA/RNA PROBES
Fred C. Tenover

DIAGNOSTICS—IMMUNOASSAYS
Mark A. Pallansch

DIAMOND COATING
Robert L. Berger

DIFFERENTIATION
Janice Chou

DIFFUSION SYSTEMS
Raymond Mejia

DIOXIN
George Lucier, Donald Patterson, Jr.

DISEASE MODIFIERS
Larry M. Wahl

DISORDERS (CNS AFFECTIVE)
Gerald J. Chader

DISPOSABLE PRODUCTS
Theodor Kolobow

DNA
Eric J. Ackerman, W. French Anderson, Vilhelm Bohr, Dhruba K. Chattoraj, Gunther L. Eichhorn, Frank J. Gonzalez, Myun Ki Han, David Margulies, Lucio Miele, Louis H. Miller, Thomas Nutman, Rene Sotomayor

DNA PROBES
Howard A. Fields, K.J. Kwon-Chung

DNA/RNA PROBES
Michael Bustin, John Tim Chance, Jorge Flores, Mark M. Garner, Olen M. Kew, Christine J. Morrison, Tatiana Putilin, Errol Reiss, Opendra Sharma, Kenneth I. Strauss, Christina Teng, Jim C. Williams

DOPAMINE RECEPTORS
James A. Joseph, Dale O. Kiesewetter, David R. Sibley, Judith R. Walters

DOSIMETRY
Rene Sotomayor

DRUG DELIVERY
Peter Basser, Stephen A. Ficca, Peter C. Preusch, Nava Sarver

DRUG DELIVERY (DRUG FORMULATION)
Lee Cummings, Robert K. Leedham

DRUG DELIVERY (ORAL)
Kenneth I. Strauss

DRUG DELIVERY/PROTEINS
Ira Pastan

DRUG DEVELOPMENT
Saul A. Schepartz

DRUG FORMULATION & DEVELOPMENT
Joseph Gallelli

DRUG TESTING
Edward J. Cone, Jonathan Dinman, Ronald I. Herning, Forrest F. Weight, Reed B. Wickner

DRUG UPTAKE
Charles H. Evans, Josef Pitha, David T. Vistica

DRUG/ALCOHOL ABUSE
Lino Covi, Lee Cummings, Steven R. Goldberg, Jack E. Henningfield, Ronald I. Herning

DRUGS
Charlotte A. Brunner, Edward J. Cone, Jeffrey A. Cutler, John S. Driscoll, Bernard T. Engel, Joseph Gallelli, Harry V. Gelboin, Frank J. Gonzalez, Dave' Harish, Donald M. Jerina, Margaret I. Johnston, Farouk Karoum

DRUGS (ANTIVIRAL)
Anil B. Mukherjee

DYES
Ronald Elin

DYNORPHIN
Michael J. Iadarola

E. COLI
Dhruba K. Chattoraj, Roel M. Schaaper, Michael Yarmolinsky

EATING DISORDERS
Marion Hetherington

ECONOMIC DEVELOPMENT
Ronald C. Parker

EGF
Akira Komoriya

ELECTROMAGNETISM
Brad Roth

ELECTRON MICROSCOPY
Milton W. Brightman, Dhruba K. Chattoraj, Wan-Ying Hou, Bechara Kachar, Richard D. Leapman, Shen Rulong

ELECTRONICS
Horace Cascio, Ching-Nien Chen, William Risso

ELECTROPHORESIS
Andreas C. Chrambach, Mark M. Garner, Mitsugu Maeno, Alan H. Rich, Dietmar Tietz, David Wheeler

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Edward J. Cone, Ronald I. Herning, Robert W. Peoples, Forrest F. Weight

ELEMENTAL MICROANALYSIS
Richard D. Leapman

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Glenn T. Merlino, Matthew M. Rechler

ENZYME REPLACEMENT THERAPY
Roscoe O. Brady

ENZYMES
P. Boon Chock, David L. Cox, Dennis M. Dwyer, Ann Ginsburg, C. Craig Hyde, David Landsman, Rod Levine, Roy Repaske, Sue Goo Rhee, Bret M. Steiner, William C. Wetsel, Graeme J. Wistow

EPIDEMIOLOGY
William J. Blot, J. Scott Osborne, Suresh C. Rastogi, Amy Sheon

ERYTHROID
Dave' Harish

ESTROGENS
J. Carl Barrett, Kenneth Korach

EUKARYOTIC
Roger Cohen

EXCITATORY AMINO ACIDS
Robert W. Peoples

EXPRESSION VECTORS
Richard Ascione, Chuck Buckler, Frank J. Gonzalez, Lucio Miele, Takis S. Papas

EYE
Jun Li, W. Gerald Robison

FERMENTATION
Joseph Shiloach

FERTILITY
Lawrence M. Nelson

FERTILIZATION
Jurrien Dean

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Gerald J. Chader

FIBER OPTIC PROBES
John I. Peterson

FILTRATION APPARATUS
Roy Repaske

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David L. Cox, James A. Dvorak, Gerald J. Spangrude, Robert Vogt

FLUORESCENCE
Milton W. Brightman

FLUORINE
George T. Chen, Cyrus Robbins Creveling, John W. Daly, Fabian Gusovsky, Kenneth L. Kirk

FLUOROCATECHOLS
George T. Chen, Cyrus Robbins Creveling, John W. Daly, Fabian Gusovsky

FLUORORACLAPRIDE
Dale O. Kiesewetter

FLUOROSUGARS
Paul Kovac

FREE RADICAL SCAVENGERS
Abdu I. Alayash, Moon Bin Yim

G-PROTEINS
James T. Russell

GELS
Alasdair C. Steven

GEMM (INTERDATABASE)
Byungkook Lee

GENE CLONING
Cathie T. Chung, Ravi Dhar, A. J. Nazarali, David R. Sibley, Meera Srivastava, Daniel Trachewsky

GENE EXPRESSION
Jeff Boyd, Peter P. Chuknyisky, Jurrien Dean, Ravi Dhar, Edward M. Eddy, Lothar Hennighausen, Ravi Kambadwv, Randall Kincaid, David Margulies, Joost J. Oppenheim, Miroslava Protic, Alan N. Schechter, David R. Sibley, W. Scott Young

GENE MAPPING
R. Daniel Camerini-Otero, Lance J. Ferrin, Jorgen Fex, Rose G. Mage, Barry R. Miller, Peter M. Steinert, Margaret A. Tucker, Thomas E. Wellems, Ronald L. Wilder

GENE REGULATION
A. Lee Burns, Thomas N. Chase, John E. Coligan, Ravi Dhar, Myun Ki Han, Anton Jetten, Keith Lampel, Warren J. Leonard, A. J. Nazarali, Daniel Trachewsky, Yoshihiko Yamada

GENE THERAPY
Roscoe O. Brady, R. Daniel Camerini-Otero, David A. Dichek, Michael M. Gottesman, John J. McGowan, Richard Morgan, Karl D. Normington, Nava Sarver, Nancy Smyth Templeton, Debra Wilson

GENE TRANSCRIPTION
Ravi Dhar

GENE TRANSFER
Edward I. Ginns, Brian Martin, Daniel Trachewsky, Howard Young

GENE TRANSLATION
Ravi Dhar

GENETIC DISEASES
Christopher I. Amos, Roscoe O. Brady, Gerald J. Chader, Lance J. Ferrin, Karl D. Normington

GENETIC DISEASES/TRAITS
Lameh Fananapazir, Elizabeth A. Sekul

GENETIC ENGINEERING
Peter Feng, Seth Pincus, Robert L. Strausberg

GENETIC MARKERS
Michael Dean, Roger W. Wiseman

GENETIC SCREENING
Christopher I. Amos, Michael Bustin, Lance J. Ferrin

GENETIC THERAPY
John F. Bishop, Rose G. Mage, Alan N. Schechter, Peter M. Steinert

GENETICS
Danuta Krotoski, Steven Li, Markku Linnoila, Lloyd Mitchell, Peter G. Pentchev, Michael Resnick, Jonathan Silver

GENETICS (VIRAL)
Maribeth Eiden

GLOBIN GENE REGULATION
Dave' Harish

GLUCOCEREBROSIDASE
Edward I. Ginns, Brian Martin

GLUCOCORTICOIDS
George P. Chrousos, George Kunos

GLUTAMATE
Mark L. Mayer

GLYCOPROTEINS
C.P.J. Glaudemans, Andrew Muchmore

GLYCOSIDES
Paul Kovac

GRADIENT COILS
Robert Turner

GRAFT-VS.-HOST DISEASE
Richard J. Davey

GROWTH FACTOR INHIBITORS
Joseph A. DiPaolo, Sonia Bonita Jakowlew, Hsiang-Fu Kung, James I. Mulshine, Matthew M. Rechler, Felipe Samaniego, Edward A. Sausville, Jane Trepel

GROWTH FACTORS
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GYNECOLOGY DIAGNOSTICS
Lawrence M. Nelson

GYNECOLOGY THERAPEUTICS
Lawrence M. Nelson

HAIR GROWTH
Stuart H. Yuspa

HARD TISSUE REPAIR
Walter E. Horton, Jr.

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Beth Ann Coonrod, John H. Ferguson, Jr., Lou Fintor, Van S. Hubbard, Alan P. Kendal

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Amy M. Donahue, Jorgen Fex, Lynn E. Huerta, Bechara Kachar, Robert J. Wenthold

HEART
Robert S. Balaban, Bernard T. Engel

HEMATOLOGY
Dov H. Pluznik, N. Raphael Shulman

HEPATITIS
Cathie T. Chung, Leslye D. Johnson, Roger H. Miller, Betty H. Robertson

HEPATOCYTES
James W. Shih

HEPATOMA
Edward Tabor, Stringner Sue Yang

HERPES VIRUS
Mark D. Challberg, Stephen E. Straus

HISTOLOGY RECONSTRUCTION
Stephen B. Leighton

HORMONAL THERAPY
Suresh Mohla

HORMONE ACTION
Kenneth Korach, Koji Yoshinaga

HORMONES
Hao-Chia Chen, N. Rao Thotakura

HORMONES/GROWTH FACTORS
Gerald A. Higgins, Dennis E. Leszczynski, C. Tony Liang, Glenn T. Merlino, Takami Oka, Matthew M. Rechler

HPLC
Ellen Anderson, Frank Joe, Rod Levine, Jun Li

HTLV-I
Marta Leon-Monzon, Stephen Oroszlan, Richard Yanagihara

HTLV-II
Marta Leon-Monzon

HUMAN PERFORMANCE
Edward J. Cone, Ronald I. Herning

HUMANIZED ANTIBODIES
Eduardo A. Padlan

HYBRIDIZATION (IN SITU)
Maryann T. Ruda

HYDROPATHY INDEX
S. Shonrri Thorgeirsson

HYPERTENSION
Jeffrey A. Cutler, Daniel Trachewsky

HYPERTHERMIA
Denis Le Bihan

IGE REGULATION
Thomas Nutman

IGF-I
Derek LeRoith

IMAGE ANALYSIS
Michael C. Alley, Peter Choyke, Margaret A. Douglas, Cal Johnson, Norman J. Pieniazek, Erik Pottala, Barbara C. Sonies, Alasdair C. Steven, Maureen Stone, Michael Unser, David Wheeler

IMAGE PROCESSING
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IMAGING
Michael A. Channing, Kenneth R. Spring

IMAGING (VIDEO)
M. A. Lesniak, Barbara C. Sonies, Maureen Stone

IMAGING TECHNIQUES
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IMAGING/IMAGE ANALYSIS
Matti Al-Aish, Julia Barsony, Charles DeCarli, Murray Eden, Mark Hallett, Jennifer Lippincott-Schwartz, George R. Thoma

IMMORTALIZATION
J. Carl Barrett

IMMUNE MODULATION
Daniel Fowler, Joyce L. Frey, John K. Inman, Jackie L. Martin, Rachel L. Roper, Novera Herbert Spector

IMMUNE MONITORING
David L. Nelson, Victoria Pope

IMMUNO FLORESCENCE
William Habig

IMMUNOASSAYS
Michael Bustin, Arnold Greenwell, Eugene G. Hayunga, Renu B. Lal, Mitsugu Maeno, Jackie L. Martin, Christine J. Morrison, Alan J. Parkinson, Miriam C. Poirier

IMMUNOCHEMISTRY
John E. Coligan, C.P.J. Glaudemans, Maryann T. Ruda

IMMUNODIAGNOSIS
Marianna Wilson

IMMUNOGLOBULIN
Seth Pincus

IMMUNOGLOBULIN THERAPY
Milan Basta

IMMUNOLOGY
Prince K. Arora, Kevin G. Becker, Eda T. Bloom, Bruce Chesebro, J. Perren Cobb, Edward James Cupler, Nickolas Dorfman, Charles H. Evans, Ronald Germain, Michael J. Lenardo, Warren J. Leonard, Stephen H. Leppla, Allan Lock, Polly Matzinger, Joseph A. Meshino, Pascal G. Millet, Gregory Milman, Jack Moye, Brian R. Murphy, Albert A. Nordin, Thomas Nutman, Rosa C. Ong, Dov H. Pluznik, Lance R. Pohl, Ronit Sagi-Eisenberg, Gene M. Shearer, Ethan M. Shevach, N. Raphael Shulman, Dinah S. Singer, C.N. Venkateshan, Robert Vogt, Howard Young

IMMUNOLOGY (CELL SUBSETS)
Gerald J. Spangrude

IMMUNOLOGY (MONOCLONAL ANTIBODIES)
Robert K. Leedham, Mark A. Pallansch

IMMUNOMODULATION
Adorian Aszalos, R. Michael Blaese, Rachel Caspi, Melody H. Lin, Andrew Muchmore, Thomas Walsh

IMMUNOPATHOLOGY
Shen Rulong

IMMUNOPROPHYLAXIS
Raymond A. Strikas, Jim C. Williams

IMMUNOREGULATION
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IMMUNOTHERAPY
Patricia E. Fast, Dean Metcalfe, David Neville, Beverly Packard, Craig W. Reynolds, Stephen M. Rose, Henry C. Stevenson-Perez, Suzanne L. Topalian, Wen-Po Tsai, Paul C. Turkeltaub, Robert H. Wiltrout

IMMUNOTHERAPY (AIDS-HIV)
Roy A. Blay

IMMUNOTOXINS
William E. Fogler, Stephen H. Leppla, David Neville, Ira Pastan, Richard J. Youle

IMPLANTABLES
Lameh Fananapazir

IN VITRO MUTAGENESIS
Alan Peterkofsky

IN VIVO NMR SPECTROSCOPY
Aurora K. Pajeau

INFECTION
Jerome Abramson, C. William Angus, Thomas Walsh

INFECTIOUS DISEASE DIAGNOSTICS
Michael J. Arrowood, Alan J. Parkinson

INFECTIOUS DISEASES
Burt Anderson, Chuck Buckler, Dennis M. Dwyer, Carl E. Frasch, Edgar E. Hanna, Charles L. Hatheway, Yasutaka Hoshino, Nick Karabatsos, Alan P. Kendal, David L. Klein, Joel S. Lewis, Pamela McInnes, Robert G. McLean, Christine J. Morrison, C.J. Peters, Gustavo C. Roman, Rachel L. Roper, Gary N. Sanden, Allen C. Stoolmiller, Balasubramanian Swaminathan, Christina Teng

INFECTIOUS DISEASES (PARASITES)
David C. Kaslow

INFECTIOUS DISEASES (PREVENTION)
Byron Caughey

INFECTIOUS DISEASES DIAGNOSTICS
Claude F. Garon, Thomas F. McCutchan, Thomas C. Quinn, Fred C. Tenover, Jim C. Williams

INFECTIOUS DISEASES MULTIDRUG RESISTANCE
Fred C. Tenover

INFECTIOUS DISEASES VACCINES
Bernard Moss, Joel Moss

INFLAMMATION
Joost J. Oppenheim, Sharon M. Wahl

INFLUENZA
Nancy J. Cox

INFORMATION PROCESSING
Ronald I. Herning, Sidney Siegel, Bruno M. Vasta, Sandra Zink

INFORMATION SCIENCES
John H. Ferguson, Jr., George R. Thoma

INFORMATION SYSTEMS
Jeffrey H. Hancock, Susanne M. Humphrey, John I. Powell

INHIBITORS
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INSTRUMENTATION
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INSULIN
Derek LeRoith

INTERFERONS
Kathryn Zoon

INTERLEUKIN
George Kunos, Warren Strober

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A. Lee Burns, John W. Daly, Gerald Ehrenstein, Christian C. Felder, H. Robert Guy, V. Adrian Parsegian, Leslie Reinlib, Michael A. Rogawski, Forrest F. Weight

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Robert Bonner, Eric R. Henry, Jay R. Knutson, Alan H. Rich, Kenneth R. Spring

LIPID-LOWERING DRUGS
Norman W. Barton, Howard S. Kruth

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LYME DISEASE
Patricia Rosa

LYMPHOCYTES
Phillip J. Baker, Ronald Germain, Ilan R. Kirsch, George Lucier, Juan M. Saavedra, Michail V. Sitkovsky

LYMPHOKINES
Rachel Caspi, Charles H. Evans, John J. Jessup, Kathleen Kelly, Shu-Mei Liang, David L. Sacks, Ethan M. Shevach, Graeme J. Wistow, Howard Young

MACROMOLECULES
Byungkook Lee

MAGNESIUM
Ronald Elin, Martin H. Kroll

MAGNETS
Ching-Nien Chen

MALARIA VACCINE
Altaf A. Lal, Louis H. Miller

MARKERS
Barnett Kramer

MAST CELLS
Michael Kaliner

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Vincent J. Hearing

MELATONIN
David C. Klein

MEMORY
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Jacqueline N. Crawley, Jordan Grafman

MENTAL RETARDATION
Ralph M. Nitkin

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P. Boon Chock, Frank J. Gonzalez, Marion Hetherington, Willie Vann

METABOLISM (METABOLIC MODELS)
Loren A. Zech

METALLOPROTEINS
Ann Ginsburg, Moon Bin Yim

METALS
Gunther L. Eichhorn

METASTASIS
Vincent J. Hearing, Susan M. Sieber

MICROBIAL GENETICS
Dhruba K. Chattoraj, Michael Yarmolinsky

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Ellen Anderson, Mary Frances Cotch, David L. Cox, Dennis M. Dwyer, Martin S. Favero, Charles L. Hatheway, K.J. Kwon-Chung, Joel S. Lewis, John J. McGowan, Robert G. McLean, J. Michael Miller, Richard P. Morrison, Joseph Piesman, Judah L. Rosner, Gary N. Sanden

MICROBIOLOGY OF INFECTIOUS DISEASES
Nancy A. Strockbine

MICROCALORIMETRY
Robert L. Berger, Ann Ginsburg

MICROCOMPUTERS
James A. Dvorak

MICROGLIA
David Jacobowitz

MICROSCOPY
Julia Barsony, Milton W. Brightman, Kenneth R. Spring

MK-801
Richard Rothman

MODELING SOFTWARE
Raymond Mejia

MOLECULAR BIOLOGY
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MOLECULAR BIOLOGY (GENE AMPLIFICATION)
Jung-Chung Lin

MOLECULAR BIOLOGY (RECOMBINANT DNA)
Joel Moss

MOLECULAR CLONING
Tom Bonner

MOLECULAR DYNAMICS
Bernard R. Brooks, James Ferretti, Eric R. Henry, Joseph M. Rifkind

MOLECULAR GRAPHICS
Byungkook Lee

MOLECULAR INTERVENTION
Nava Sarver

MOLECULAR MECHANICS
Bernard R. Brooks

MOLECULAR MODELING
Bernard R. Brooks, H. Robert Guy, Eduardo A. Padlan, Peter C. Preusch, Brad Roth, James V. Silverton

MONITORING DEVICES
Rebecca L. West

MONITORING PATIENTS
Eli Walker

MONOAMINE OXIDASE
Trey Sunderland

MONOCLONAL ANTIBODIES
Matti Al-Aish, William E. Fogler, John J. Jessup, Jorge Laborda, David L. Nelson, Kalpana Rengarajan, Stephen M. Rose, Opendra Sharma

MOSQUITO POPULATIONS
I. Paul Reiter

MOTION ANALYSIS
Steven J. Stanhope

MOUSE STRAINS
Chi Chao Chan

MUCOSAL IMMUNITY
Warren Strober

MULTIDRUG RESISTANCE
Edwin W. Ades, Zi-Xing Chen, Michael M. Gottesman, Stephen A. Morse, Judah L. Rosner, Thomas E. Wellems

MUTAGENESIS
Frank W. Kari, Thomas A. Kunkel, Miroslava Protic, Roel M. Schaaper, Kenneth R. Tindall

MUTATION
Chuck Buckler, Daniel A. Casciano

MYCOPLASMA
Michael F. Barile, James W. Shih

MYOCARDIAL ISCHEMIA
Abdu I. Alayash, Edward G. Lakatta, Richard G. S. Spencer

MYOSIN
James Sellers

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Mark L. Mayer, Karoly Varga

NATURAL PRODUCTS
Michael C. Alley, John W. Daly, Samuel Page

NEEDLE HYGIENE
Richard T. Conlon

NERVE REGENERATION
Gad Gilad

NERVE TERMINAL
James T. Russell

NEUROBIOLOGY RESEARCH
Norman W. Barton, Michael Brenner, Milton W. Brightman, Donald K. Ingram, Danuta Krotoski, Bita Nakhai, Ljubisa Vitkovic, Richard Yanagihara, Richard J. Youle, Theodore P. Zahn

NEUROCHEMISTRY
Aurora K. Pajeau

NEUROENDOCRINOLOGY
Thomas W. Uhde, W. Scott Young

NEUROEPIDEMIOLOGY
Gustavo C. Roman

NEUROIMMUNOMODULATION
Novera Herbert Spector

NEUROLOGICAL DISORDERS
Peter G. Pentchev

NEUROLOGY
James J. Cereghino, W. Scott Young

NEUROMUSCULAR DISORDERS
Edward James Cupler

NEURONS
Douglas E. Brenneman, William Habig, James Kenimer, Elaine Neale

NEUROPEPTIDES
Linda S. Brady, Harold Gainer, John Hallenbeck, Juan M. Saavedra, William C. Wetsel

NEUROPHARMACOLOGY
Dale Grothe, Mark L. Mayer, Dennis L. Murphy, P. Pazzaglia, Juan M. Saavedra, Esther M. Sternberg, Trey Sunderland

NEURORECEPTORS
Michael A. Rogawski, Robert J. Wenthold

NEUROTRANSMITTERS
Gerald Ehrenstein, Dale Grothe, John Hallenbeck, Robert J. Wenthold

NEW DELIVERY SYSTEM
Nicholas M. Fleischer

NICOTINE
Jack E. Henningfield

NITROSAMINES
David Wink

NK CELLS
John R. Ortaldo

NMR
Charles DeCarli, Stephen Freese, Richard G. S. Spencer, Peter M. Steinert

NOCICEPTION
Maryann T. Ruda

NONINVASIVE DIAGNOSTICS
Denis Le Bihan, Barbara C. Sonies, Maureen Stone, Eli Walker

NONINVASIVE OPTICAL DIAGNOSTICS
Robert Bonner

NUCLEAR MAGNETIC RESONANCE (NMR)
Tom G. Aigner, Robert S. Balaban, Ching-Nien Chen, Peter Choyke, G. Marius Clore, Gunther L. Eichhorn, James Ferretti, Denis Le Bihan, James Omichinski, Robert Turner

NUCLEAR MEDICINE
Matti Al-Aish, Michael V. Green

NUCLEIC ACID
Andreas C. Chrambach, Mark M. Garner

NUCLEIC ACID (ANALYSIS)
Dennis K. Watson

NUCLEOSIDE ANALOG
John A. Jermano

NUTRITION
Kamal M. Abdo, Ronald Elin, Peter Greenwald, Marco Rabinovitz, Philip R. Taylor

NUTRITIONAL PRODUCTS
John C. Chah, Van S. Hubbard, Mary E. Ropka

OBESITY
Van S. Hubbard

OBSTETRICS & GYNECOLOGY
Robert Spirtas

OCCUPATIONAL HEALTH
Aaron Blair

OCULAR ANTI-INFLAMMATORY
Lore Anne McNicol

OCULAR DRUG DELIVERY
Lore Anne McNicol

OLIGONUCLEOTIDE ANALOGUES
Serge Beaucage

OLIGOSACCHARIDES
Paul Kovac

ONCOGENES
Stuart A. Aaronson, Marshal W. Anderson, Richard Ascione, Robert Bassin, Steven R. Bauer, Daniel P. Bednarik, Jeff Boyd, Joseph A. DiPaolo, Robert Fenton, Curtis C. Harris, Kathleen Kelly, Hsiang-Fu Kung, William LaRochelle, Suresh Mohla, Peter T. Mora, Robert C. Moschel, J. Frederic Mushinski, Takis S. Papas, Keith C. Robbins, Martin Ruta, David S. Salomon, Felipe Samaniego, Ching-ju Sheu, Raymond W. Tennant, Steve Tronick, Linda Wolff, Stringner Sue Yang

ONCOLOGY
Charles H. Evans, Harvey R. Gralnick, Wan-Ying Hou, Ilan R. Kirsch, Constantine Zervos

ONCOPROTEIN VACCINES
Ulf R. Rapp

OOGENESIS
Jurrien Dean

OPHTHALMICS
Lore Anne McNicol, Richard L. Mowery

OPIATES
Linda S. Brady

OPIOIDS
Raymond Dionne, Ronald Dubner, Michael J. Iadarola, Richard Rothman

OPTICAL SPECTROSCOPY
Robert S. Balaban

OSTEOARTHRITIS
Walter E. Horton, Jr.

OSTEOPOROSIS
C. Tony Liang

OXYGEN RADICALS
Earl R. Stadtman

P-450
Richard L. Veech

P-53
Peter T. Mora

PAIN
Mitchell Max, Gene Williams

PARAINFLUENZA
John C. Hierholzer

PARASITES
Michael J. Arrowood, James A. Dvorak, Dennis M. Dwyer, B. F. Hall, Pascal G. Millet, Thomas Nutman, David L. Sacks, Thomas E. Wellems

PARASITIC DISEASES
Eugene G. Hayunga

PARASITOLOGY
Marianna Wilson

PARKINSON'S DISEASE
Mark Hallett

PARKINSONISM (ANIMAL MODELS)
Chuang Chiueh, Judith R. Walters

PATIENT MONITORING
Manuel B. Datiles, Christy L. Ludlow

PATIENT MONITORING (NON-SURGICAL)
Robert H. Selwitz

PCE
Opendra Sharma

PCP
Richard Rothman

PEDIATRIC/NEONATAL MONITORING & DIAGNOSTICS
John D. Newman

PEPTIDES
Lee Eiden, Michael J. Iadarola, Altaf A. Lal, James Omichinski, Frank Robey

PERSONNEL/PRODUCT SAFETY
Michele R. Evans, Rebecca L. West

PERTUSSIS
Jerry Keith, Charles R. Manclark

PET
Michael V. Green, Christy L. Ludlow

PHAGE
Dhruba K. Chattoraj, Michael Yarmolinsky

PHARMACODYNAMICS
Loren A. Zech

PHARMACOLOGY
Tom G. Aigner, Tom Bonner, Oksoon H. Choi, David A. Cooney, James Drake, William C. Eckelman, Charles H. Evans, David S. Goldstein, Nigel H. Greig, Mitchell Max, Frank J. Nice, Stanley Rapoport, Timothy Soncrant, Chris H. Takimoto, Glenn Daniel Todd, Paul C. Turkeltaub, William C. III Van Arsdel

PHENYLENEDIAMINE DYES
Frank W. Kari

PHOSPHATASE
Steven Li

PHOSPHORYLATION
Serge Beaucage, Douglas Ferris, James Sellers

PHYSIOLOGY
Peter Basser, Peter M. Bungay, David S. Goldstein, Louis A. Quatrano, Novera Herbert Spector, Richard G. S. Spencer

PINEAL GLAND
David C. Klein

PLACENTAL GENES
Janice Chou

PLAQUE-FORMING ASSAY
Ira Berkower

PLASMIDS
Dhruba K. Chattoraj, Lucio Miele, Michael Yarmolinsky

PLATELETS
Robert Bonner, Joseph Fratantoni, N. Raphael Shulman

POLYCLONAL ANTIBODIES
Rose G. Mage

POLYMERASE
Roel M. Schaaper

POLYMERASE CHAIN REACTION (PCR)
Rita Anand, Burt Anderson, Steven R. Bauer, Harold Gainer, Olen M. Kew, R. Krishnan Kutty, Marta Leon-Monzon, Frederick W. Miller, Roger H. Miller, Barry R. Miller, Lloyd Mitchell, Anil B. Mukherjee, Tatiana Putilin, Betty H. Robertson, Patricia Rosa, Alan N. Schechter, Nancy Smyth Templeton

POLYMERS
V. Adrian Parsegian, Frank Robey, Dinesh Sharma, Cynthia Sung

POLYMORPHISM
Jeff Boyd, Frank J. Gonzalez, Altaf A. Lal

POLYSACCHARIDE BIOSYNTHESIS
Willie Vann

POSITRON EMISSION
Michael A. Channing, M. A. Lesniak

PREGNANCY
Andrew Muchmore, Koji Yoshinaga

PREVENTION
Mary Frances Cotch, Lou Fintor, Sonia Bonita Jakowlew, David L. Klein, Winfred F. Malone, Robert G. McLean, James I. Mulshine, Joseph Piesman, Alfredo Romano, Raymond A. Strikas

PRIMATES
Tom G. Aigner

PROHORMONE PROCESSING ENZYMES
Yoke Peng Loh, Meera Srivastava

PROSTHETICS
Amy M. Donahue, Lynn E. Huerta, Theodor Kolobow

PROSTITUTION COUNSELING/TESTING
Richard T. Conlon

PROTEASE INHIBITORS
John J. Jessup

PROTEIN PURIFICATION
George M. Carlone, Yoichiro Ito, Ronald C. Parker

PROTEIN SYNTHESIS
Fang-Jen Scott Lee

PROTEIN TURNOVER
Earl R. Stadtman

PROTEINS
W. French Anderson, G. Marius Clore, John E. Coligan, James Cook, Myun Ki Han, C. Craig Hyde, David Jacobowitz, Thomas Leto, Jack London, Brian Martin

PROTEINS (UNFOLDING & REFOLDING)
Andrew Shrake

PROTOZOOLOGY
James A. Dvorak

PSEUDOMONAS FLUORESCENCE
Teresa Mercado

PSYCHOPHARMACOLOGY
Lino Covi, Jack E. Henningfield, Dennis L. Murphy, Steven Paul, P. Pazzaglia

PSYCHOPHARMOCOLOGY
Steven R. Goldberg

PSYCHOTROPIC DRUGS
De-Maw Chuang

RADIATION EMITTING PRODUCTS
Polly Matzinger

RADIO ENGINEERING
Horace Cascio

RADIOIMMUNODETECTION
James Cook

RADIOLIGAND
Michael A. Channing, Chuang Chiueh, M. A. Lesniak

RADIOPHARMACEUTICALS
William C. Eckelman, Dale O. Kiesewetter

RAF PROTEIN KINASE BLOCKERS
Ulf R. Rapp

RATIONAL DRUG DESIGN
Marvin J. Karten, Peter C. Preusch, Glenn Daniel Todd

REACTION SYSTEMS
Raymond Mejia

RECEPTORS
Julia Barsony, Edward A. Berger, Tom Bonner, Oksoon H. Choi, John W. Daly, Christian C. Felder, Claire Fraser, Joyce L. Frey, H. Robert Guy, Kenneth Jacobson, Anton Jetten, Marvin J. Karten, Kenneth L. Kirk, Hynda K. Kleinman, Akira Komoriya, George Kunos, Derek LeRoith, Shu-Mei Liang, Jack London, David Neville, Albert A. Nordin, Takami Oka, David Roberts, Juan M. Saavedra, David S. Salomon, Edward A. Sausville, Michael Schwabe, Mary L. Stracke, William C. Wetsel

RECEPTORS (CELL BIOLOGY)
Daniel Fowler, Joel Moss

RECEPTORS (REGULATION)
De-Maw Chuang

RECOGNITION PEPTIDES
James Omichinski

RECOMBINANT DNA
R. Daniel Camerini-Otero, May C. Chu, Claude F. Garon, Richard M. Kinney, Fang-Jen Scott Lee, Alan Peterkofsky, Marcel Pons, Bret M. Steiner, Dennis W. Trent, Debra Wilson, Richard J. Youle

RECOMBINANT PROTEIN PRODUCTION
C. William Angus, Edward I. Ginns, Lothar Hennighausen, Meera Srivastava

RECOMBINANT VACCINES
Makonnen Fekadu

RECOMBINANT VECTORS
Lothar Hennighausen

REHABILITATION THERAPY & EQUIPMENT
Louis A. Quatrano

RENAL FUNCTION
Peter Choyke

REPRODUCTIVE PHYSIOLOGY
Patricia M. Schmidt

RESPIRATORY VIRUS REAGENTS
John C. Hierholzer

RETINAL ANTIGENS
Chi Chao Chan

RETINOIDS
Anton Jetten

RETINOPATHY
Peter Kador

RETROVIRUSES
Stuart A. Aaronson, Richard Ascione, Robert Bassin, Bruce Chesebro, Jonathan Dinman, Maribeth Eiden, Leonard Evans, Thomas M. Folks, Edward I. Ginns, Renu B. Lal, Brian Martin, Peter Nara, Stephen Oroszlan, Aurora K. Pajeau, Takis S. Papas, Jonathan Silver, Reed B. Wickner, Linda Wolff

RHEUMATOID ARTHRITIS
Frederick W. Miller, Larry M. Wahl

RIBOZYMES
Manfred Schubert

RISK ANALYSIS
Lou Fintor, Sidney Siegel

RISK ANALYSIS (CANCER)
J. Scott Osborne

RISK ASSESSMENT
Mark M. Bashor, Amy Sheon, Constantine Zervos

RISK ASSESSMENT (SUICIDE)
James W. Woods

RNA
W. French Anderson, Gunther L. Eichhorn, Leonard Evans, Tsutoma Fujimura

RNA (MESSENGER EXPRESSION)
De-Maw Chuang

RNA PROBES
William J. Bellini

ROTAVIRUSES
Jorge Flores, Yasutaka Hoshino, Albert Z. Kapikian, Dale R. Spriggs

SACCHAROMYCES CEREVISIAE
Jonathan Dinman, Tsutoma Fujimura, Ravi Kambadwv, Reed B. Wickner

SAFETY EQUIPMENT
Michele R. Evans, Martin S. Favero, Rebecca L. West

SCHIZOPHRENIA
Theodore P. Zahn

SEIZURE
James J. Cereghino

SENSOR DEVELOPMENT
Robert L. Berger

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Peter M. Bungay, Andreas C. Chrambach, Yoichiro Ito

SEPSIS
Robert L. Danner

SEPTIC SHOCK
J. Perren Cobb, Robert L. Danner

SEQUENCING
Keith Lampel, Derek LeRoith, Norman J. Pieniazek

SEXUALLY TRANSMITTED DISEASES
John Tim Chance, Sandra A. Larsen, Joel S. Lewis, Richard P. Morrison, Victoria Pope, Thomas C. Quinn

SIGNAL TRANSDUCTION
Oksoon H. Choi, Douglas Ferris, Claire Fraser, Randall Kincaid, John R. Ortaldo, Sue Goo Rhee, George S. Roth, Ching-ju Sheu, Jane Trepel

SIMULATIONS
James Ferretti, Loren A. Zech

SLEEP DISORDERS
Paul J. Schwartz

SODIUM CHANNEL
Cyrus Robbins Creveling

SOFT TISSUE REPAIR
Matthew M. Rechler

SPECTRAL DECOMPOSITION
Eric R. Henry

SPECTROSCOPY
Ellen Anderson, Jay R. Knutson, Joan C. May, Stephen P. Miller, Donald Patterson, Jr., John I. Powell, Tatiana Putilin, Joseph M. Rifkind, Celia M. Sharp

SPECTROSCOPY (EPR & ENDOR)
Moon Bin Yim

SPECTROSCOPY (PROTEIN INTERACTIONS)
Andrew Shrake

STATISTICS IN MEDICINE
John Bartko, William J. Blot, James M. DeLeo, Murray Eden, Barry Graubard, James Mosimann, Suresh C. Rastogi

STERILIZATION
Michele R. Evans, Martin S. Favero

STRAIN AND SPECIES VARIABLES
Carl T. Hansen, Thomas C. Quinn, Ronald L. Wilder

STRESS
Prince K. Arora, George P. Chrousos, Raymond Dionne, Ronald Dubner, Miroslava Protic

STROKE
Mark Hallett

3D STRUCTURAL ANALYSIS
Christy L. Ludlow, Eduardo A. Padlan, James V. Silverton

STRUCTURAL BIOLOGY
Benes Trus

STRUCTURE-ACTIVITY STUDIES
Ven L. Narayanan

SUBUNIT VACCINES (ISCOM)
Makonnen Fekadu

SUPPRESSOR T CELLS
Phillip J. Baker

SYNTHETIC PEPTIDES
Makonnen Fekadu, Hynda K. Kleinman

TELEVISION ENGINEERING
Horace Cascio

TEST INTERPRETATION
Martin H. Kroll

TETANUS
William Habig

TGF-ALPHA
Akira Komoriya, Kurt Stromberg

TGF-BETA
Akira Komoriya

THROMBOLYTICS
David A. Dichek, Vincent C. Manganiello

THROMBOSIS
Harvey R. Gralnick

TISSUE REPAIR
C. Tony Liang

TOPOISOMERASE INHIBITOR
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TOXICITY
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TOXICITY MANAGEMENT
Gary J. Rosenthal

TOXICOLOGY
Mark M. Bashor, Aaron Blair

TOXICOLOGY (MECHANISMS BY DRUGS)
Lance R. Pohl

TOXICOLOGY RISK ASSESSMENT
Robert Spirtas

TOXINS
Kamal M. Abdo, Eric J. Ackerman, Carl E. Cerniglia, Thomas N. Chase, Robert L. Danner, Leonard Evans, Dennis Gaines, Edgar E. Hanna, Charles L. Hatheway, Samuel Page, James T. Russell, Joseph Shiloach, William C. III Van Arsdel

TRACE ELEMENT ANALYSIS
Dayton Miller

TRACHOMA
Harlan D. Caldwell

TRANSCRIPTION
Kurt Brorson, Peter P. Chuknyisky, Roger Cohen, Alan Hinnebush, Hira Nakihasi, Brian Safer

TRANSFECTION
Alexander V. Titomirov

TRANSFORMATION
Cathie T. Chung, Ching-ju Sheu, S. Shonrri Thorgeirsson

TRANSFUSION
Richard J. Davey

TRANSGENIC INBREDS
Michael Brenner, Carl T. Hansen, Arnheiter Heinz, Gerald A. Higgins, Raymond W. Tennant

TRANSGENICS
Ravi Kambadwv, David Margulies, Gerald H. Mickisch, Roger W. Wiseman, Constantine Zervos

TRANSLATION
Alan Hinnebush, Brian Safer

TRAUMA
Hilary D. Sigmon

TROPICAL DISEASES
May C. Chu, Dennis M. Dwyer, Duane J. Gubler, B. F. Hall, Nick Karabatsos, Robert G. McLean, Barry R. Miller, Thomas Nutman, C.J. Peters, Joseph Piesman, Dennis W. Trent

TRYPANOSOMA CRUZI
Teresa Mercado

TUMOR
David C. Klein, George Lucier, Victor E. Marquez, Jeanette Ridge, Stringner Sue Yang

TUMOR NECROSIS FACTOR
Salvatore T. Butera

UVEITIS
Chi Chao Chan

VACCINE (MALARIA)
Thomas F. McCutchan

VACCINES
Burt Anderson, Michael F. Barile, William J. Bellini, John E. Bennett, Jack R. Bennink, Roy A. Blay, Daniel W. Bradley, R. Mark L. Buller, Harlan D. Caldwell, George M. Carlone, Robert M. Chanock, May C. Chu, Nancy J. Cox, Suzanne U. Emerson, Patricia E. Fast, Robert Fenton, Jorge Flores, Stephen Freese, Claude F. Garon, B. F. Hall, Edgar E. Hanna, Carole A. Heilman, Yasutaka Hoshino, Leslye D. Johnson, Albert Z. Kapikian, Alan P. Kendal, Richard M. Kinney, David L. Klein, Wayne C. Koff, K.J. Kwon-Chung, Mary Anne Luzar, Charles R. Manclark, Pamela McInnes, Louis H. Miller, Pascal G. Millet, Stephen A. Morse, Bernard Moss, Brian R. Murphy, Bita Nakhai, Peter Nara, Alan J. Parkinson, C.J. Peters, Robert H. Purcell, Suresh C. Rastogi, Neile Rives, Betty H. Robertson, John T. Roehrig, Rachel L. Roper, David L. Sacks, Gary N. Sanden, Dale R. Spriggs, Gerald L. Stoner, Allen C. Stoolmiller, Stephen E. Straus, Raymond A. Strikas, Edward Tabor, Dennis W. Trent, Wen-Po Tsai, Frederick R. Vogel

VACCINES (AIDS)
Thomas C. Quinn

VACCINES (CHILDHOOD DISEASES)
Carl E. Frasch

VACCINES (INFECTIOUS DISEASES)
John K. Inman, Joel Moss

VACCINES (MONOCLONAL)
Jeffrey Schlom

VACCINES (TROPICAL DISEASES)
Eugene G. Hayunga, David C. Kaslow

VIDEO
Milton W. Brightman

VIOLENT BEHAVIOR
Markku Linnoila

VIRAL DIAGNOSTICS
Philip E. Pellett

VIRAL DISEASES
Philip E. Pellett, Richard Yanagihara

VIRAL GENETICS
Indira Hewlett

VIRAL RESPIRATORY PATHOGENS
Carole A. Heilman

VIROLOGY
Daniel W. Bradley, Catherine A. Laughlin, John J. McGowan, Joseph A. Meshino, Brian R. Murphy, Hira Nakihasi, Greg Palumbo, Gustavo C. Roman, Stephen E. Straus, Theodore F. Tsai, C.N. Venkateshan

VIROLOGY (ANTIVIRALS)
Jung-Chung Lin, Bernard Moss

VIROLOGY (STRUCTURE DETERMINATION)
Benes Trus

VIROLOGY DIAGNOSTICS
John C. Hierholzer, Mark A. Pallansch, Thomas C. Quinn, Gerald L. Stoner

VIRUS RECEPTORS
Maribeth Eiden, Anton A. Minassian

VIRUSES
Robert M. Chanock, Suzanne U. Emerson, Katherine Cook Jaouni

VITAMINS
Ellen Anderson, Philip R. Taylor

VON WILLEBRAND FACTOR
Harvey R. Gralnick

WESTERN BLOT
David C. Klein

WOUND HEALING
R. Krishnan Kutty, Takami Oka, Kathryn Zoon

YEAST EXPRESSION SYSTEMS
David C. Kaslow, Fang-Jen Scott Lee, Ronald C. Parker,

SECTION 6

DHHS-OWNED INVENTIONS

The Licensing Specialist to contact is listed after each invention. The Specialists are located in the NIH Office of Technology Transfer on 301-496-7735. For further information on the Licensing Specialists, refer to Section 2, Resource Personnel.

INVENTION SUMMARIES

AIDS-HIV

Test Of HIV-Specific T Lymphocyte Function That Detects Exposure To HIV Antigens And Possibly Early HIV Infection

Shearer, G.M., Berzofsky, J.A., Clerici, M. (NCI)
Filed 14 May 92
Serial No. 07/882,078 (CIP 07/751,998; CIP 07/148,692)

This new diagnostic test is designed for early detection of exposure to infectious agents, particularly HIV. The test measures activation of T helper cells following incubation of those T cells with peptides derived from antigens of the infectious agent, such as envelope glycoprotein epitopes from HIV. This assay can detect HIV exposure prior to seroconversion and is superior to standard HIV antibody tests and PCR amplification of viral DNA. The new test may be especially useful in screening the blood supply.
Licensing Contact: Todd Leonard

Method For Early Detection Of HIV Infection

Krohn, K., Ranki, A. (NCI)
Filed 20 Apr 92
Serial No. 07/870,756 (CON of 07/242,672)

Antibodies against the nonstructural regulatory proteins of the AIDS virus (HIV), especially those encoded by the *sor*, *tat*, and 3′ *orf* genes, can be used to detect HIV infection much earlier and with many fewer false positives than ELISA or Western blot assays using structural proteins such as *env*, *pol*, or *gag* or alternative assays using the core p17, and p24, and p55 proteins. The need for early identification of HIV status is well known, and this test is proposed to meet that need.
Licensing Contact: Todd Leonard

Sensitive Bioassay For Detecting Viruses And Screening Antiviral Agents

Pavlakis, G.N., Felber, B.K. (NCI)
Filed 17 Apr 92
Serial No. 07/870,108 (CON of 07/100,412)

A new test that is more sensitive and specific for HIV offers to advance the diagnosis and treatment of HIV infection. Presently, tests for HIV infection are inaccurate because they only detect whether an individual has been exposed to the virus, rather than detecting the virus itself. This new test uses a cell line that produces an indicator protein called CAT in the presence of HIV-infected cells. This method can detect as few as 10 HIV-infected lymphoid cells in a few days.
Licensing Contact: Todd Leonard

Epidermal Papillomas In HIV-1 Transgenic Mice

Notkins, A.L., Kopp, J., Rooney, J., Klotman, P. (NIDR)
Filed 2 Apr 92
Serial No. 07/862,062

The development of spontaneous epidermal papillomas in HIV-1 transgenic mice has potential applications for treating the skin disorders that develop in individuals with AIDS. The subgene that was introduced into these mice consists of a proviral HIV genome that encodes the *env* gene; the regulatory genes *tat*, *rev*, and *nef*; and the accessory genes *vif*, *vpr*, and *vpu*. Unlike normal-appearing skin surrounding the affected areas, the skin papillomas express HIV-1 RNA and protein, suggesting that HIV-1 gene products are involved in the pathogenesis of hyperkeratotic skin disorders. Administration of a single dose of ultraviolet B irradiation or a single wound stimulus causes 100% of the transgenic mice to develop the papillomas within 10 to 20 days, providing a rapid and reliable method for screening and testing various antiviral therapies.
Licensing Contact: Todd Leonard

Use Of Restriction Endonucleases As Antiviral Agents Against dsDNA Viruses And Retroviruses Including HIV

Sechler, J.M.G. (FDA)
Filed 2 Apr 92
Serial No. 07/861,938

This invention proposes a novel application of the use of restriction endonucleases, i.e., as antiviral agents. Type II restriction endonucleases are active against viruses and retroviruses that have double-stranded (ds) DNA or that act through dsDNA, including HIV. One enzyme, *Bgl*II, retards reverse transcriptase (RT) activity both during and after the adsorption phase of *in vitro* HIV infection of human peripheral blood lymphocytes without being toxic to the cells. Although two other enzymes, *Sma*I and *Kpn*I, did not interfere with the infection process, the positive results with *Bgl*II warrant exploration into whether restriction endonucleases can be developed as a new class of antiviral agents for human disease.
Licensing Contact: Todd Leonard

Calanolides, Novel Antiviral Compounds, Compositions, And Uses Thereof

Boyd, M.R., Cardellina, J.H., Gustafson, K.R., McMahon, J.B., Fuller, R.W., Cragg, G.M., Kashman, Y. (NCI)
Filed 31 Mar 92
Serial No. 07/861,249

The chemical structures of and methods for isolating and purifying eight novel coumarins from an extract of the tropical rainforest tree *Calophyllum langerum* are described. This new class of compounds and their analogs, also referred to as calanolides, strongly inhibit HIV-1 replication and cytopathicity *in vitro*. These compounds may have advantageous pharmacologic, toxicologic, and/or antiviral properties, especially in the treatment of AIDS.
Licensing Contact: Todd Leonard

Method Of Modulating CD4-MHC Class II Interaction And Compounds Therefor

Germain, R.N., Koenig, R. (NIAID)
Filed 6 Mar 92
Serial No. 07/847,744

This invention identifies the active CD4 binding site on the MHC class II molecule. Blocking or interfering with the CD4 receptor, which is critical to T cell immune responses and is the primary binding site for HIV-1, can thus be used to modulate immune response. Further, knowledge of this site can be used in the development of first-generation agents that can suppress or enhance immune response or that possess antiviral activity. Direct manipulation of the CD4 binding site overcomes problems with current technologies, which use antibodies against the CD4 or MHC class II molecules, cause undesirable side effects (e.g., blocking T cell activation and depleting T cell populations), and require repeated or prolonged treatment.
Licensing Contact: Todd Leonard

Potent Peptide For Stimulation Of Cytotoxic T Lymphocytes Specific For The HIV-1 Envelope

Berzofsky, J.A., Taskeshita, T., Shirai, M., Pendleton, C.D., Kozlowski, S., Margulies, D.H. (NCI)
Filed 6 Mar 92
Serial No. 07/847,311 (CIP of 07/148,692)

This invention describes the development of novel peptides and proteins that are potent inducers of cytotoxic T lymphocytes (CTLs), which appear to provide a primary host defense against HIV. The novel compounds induce CTLs that are specific to the HIV-1 gp160 envelope protein; these new molecules are also capable of killing cells that express this envelope protein. The synthetic peptides and viral proteins are made by recombinant DNA technology and may be useful as vaccines for the prophylaxis and/or treatment of HIV infection in humans. These formulations are preferable to live virus vaccines and killed whole or subunit virus vaccines, which have potential safety risks; in addition, these new synthetic preparations are at least 10-fold more active than previously prepared compounds, even in the presence of proteases.
Licensing Contact: Todd Leonard

Molecular Cloning Of The HIV Virus From Immortalized Cell Lines

Gallo, R.C., Fisher, A., Shaw, G.M., Wong-Staal, F., Popovic, M., Hahn, B.H. (NCI)
Filed 12 Feb 92
Serial No. 07/832,603 (CON of 07/160,827, CIP of 07/033,891, CON on 06/643,386)

Immortalized cells containing the entire HIV viral genome are useful for producing specific viral proteins for developing diagnostic procedures and vaccines. Previously, no HIV clones have been available in immortalized cell lines. These cell lines provide a reliable source of HIV virus, virus particles, proteins, and antibodies; these products can be used as probes to detect the presence of HIV, as immune stimulating agents (immunogens), or as diagnostic agents.
Licensing Contact: Todd Leonard

Method Of Inhibiting HIV Protease

Levine, R.L., Karlstrom, A.R., Shames, B.D. (NHLBI)
Filed 7 Feb 92
Serial No. 07/832,236

In this novel approach, HIV protease, which is required for the replication of HIV, is inhibited chemically with 5,5′-dithiobis(2-nitro-benzoic acid) at an active site on the surface of the protease. The site of inhibition, identified as Cys-67, was previously thought to be unrelated to the enzyme's catalytic activity. The Cys-67 surface site also appears to be accessible to water-soluble drugs — a problem with currently available HIV protease inhibitors such as peptides and peptide analogs. This invention has important therapeutic and prophylactic applications for AIDS.
Licensing Contact: Todd Leonard

A Method For Treating Kaposi's Sarcoma And Blocking Or Inhibiting Vascular Permeability

Nakamura, S., Gallo, R.C., Osada, Y., Sakurda, S., Tanaka, N.G. (NCI)
Filed 20 Dec 91
Serial No. 07/810,420

The sulfated polysaccharide drug DS-4152, which has anti-tumor activity and inhibits angiogenesis, also inhibits the growth of early-stage Kaposi's sarcoma (KS) lesions and prevents the subsequent KS-induced increase in vascular permeability and edema. Efficacy is improved with concomitant treatment with cortisone or a cortisone derivative. These findings represent two novel applications of the previously patented drug DS-4152 and a new approach to treating KS and its attendant complications. This drug may also be effective in treating other diseases and disorders in which increased vascular permeability contributes to pathology, such as inflammation, diabetic retinopathy, and tumorigenesis.
Licensing Contact: Todd Leonard

Novel Protein And Coding Sequence For Detection And Differentiation Of SIV and HIV-2 Group Of Viruses

Henderson, L.E., Benveniste, R.E., Sowder, R.C., Copeland, T.D. (NCI)
Filed 10 Oct 91
Serial No. 07/774,402 (CIP of 652,251, CON of 07/205,818)

A novel protein that is unique to the simian immunodeficiency virus (SIV) and human immunodeficiency virus type 2 (HIV-2) can be used for identification, characterization, and diagnostic studies relating to AIDS. SIV and HIV-2 are more closely related to each other than to HIV-1. Many of the presently available assays for these viruses are plagued by cross-reactivity between all three virus types. This new protein, which is common to both SIV and HIV-2 but is not found in HIV-1, can be used to detect specific

antibodies in the patient's blood using ELISA or similar techniques.
Licensing Contact: Todd Leonard

Retroviral Vectors Expressing Soluble CD4: A Gene Therapy for AIDS

Anderson, W.F., Gallo, R.C., Wong-Staal, F., Morgan, R.A., Muenchau, D. (NHLBI)
Filed 8 Oct 91
Serial No. 07/771,803 (CON of 07/395,454, CIP of 07/234,646)

Novel retroviral vectors that express a soluble CD4 gene product inhibit HIV infection in target cells. The vectors are first transduced into the patient's own cells, which are administered to the patient to block further ligand binding at CD4 sites. The retroviral vectors are constructed by truncating the CD4 gene at the *Nhe*I site, inserting this fragment into an SV40-based expression plasmid, and then transferring the SV40-CD4 into the N2 retroviral vector.
Licensing Contact: Steve Ferguson

Acid-Stable Purine Dideoxynucleosides Active Against The Cytopathic Effects Of HIV

Marquez, V.E., Driscoll, J.S., Tseng, C., Barchi, J.J. (NCI)
Filed 9 Sep 91
Serial No. 07/762,082 (CON of 07/288,652)

Novel acid-stable purine dideoxynucleosides that selectively inhibit retroviral proteases are valuable for the treatment of retroviral infections such as HIV. Presently available methods of inhibiting retroviral proteases, which are critical for viral replication, also inhibit cellular proteases and, thus, exhibit relatively high toxicities. They also are unable to withstand the acidic conditions in the stomach. These novel purine dideoxynucleosides effectively inhibit HIV proteases but have little inhibitory effect on similar cellular proteases such as renin. Because these compounds are acid stable, they can be administered orally.
Licensing Contact: Todd Leonard

Method To Induce Cytotoxic T Cells Specific For A Broad Array Of HIV-1 Isolates Using Hybrid Synthetic Peptides

Takahashi, H., Nakagawa, Y., Pendleton, C.D., Houghten, R.A., Yokomuro, K., Germain, R.N., Berzofsky, J.A. (NCI)
Filed 18 Sep 91
Serial No. 07/760,530 (CIP of 07/148,692)

Novel hybrid synthetic peptted with immune dysfunction or dysregulation. This new method directly tests helper T cell function, as based on antigen-induced interleukin-2 (IL-2) production. The system can be used to test for AIDS and other autoimmune disorders; it may also be used to determine allogenic tissue compatibility prior to organ transplant and to monitor certain types of cancers and drug-induced immune deficiencies. Other methods, particularly those used for AIDS, fail to adequately and directly detect immunological changes very early after infection.
Licensing Contact: Todd Leonard

Method For Purification Of Basic Proteins And Highly Purified Basic Proteins [Process for Manufacture of HIV-1 Reverse Transcriptase and Related Reverse Transcriptases from *E. coli*]

Mellini, M., Clark, P., Muschik, G., Hughes, S. (NCI)
Filed 31 May 90
Serial No. 07/531,311

A process has been developed for the manufacture of highly purified and stabilized HIV-1 reverse transcriptase (RT) using conventional ion exchange resins. Prior means of RT production require more time-consuming and costly monoclonal antibody production, purification, and preparation methods. Purified HIV-1 RT is expected to be useful in the screening and design of drugs that could be used to treat AIDS.
Licensing Contact: Steve Ferguson

An Antiviral Composition [Prostratin, A Novel Anti-HIV Agent]

Boyd, M.R., Cox, P., Cragg, G.M., Blumberg, P.M., Sharkey, N.A., Ishitoya, J., McMahon, J.B., Beutler, J.A., Weislow, O., Cardellina, J.H., Gustafson, K.R. (NCI)
Filed 30 May 90
Serial No. 07/530,562

Prostratin, a phorbol ester derivative, has been discovered to have significant antiviral activity for use in treating AIDS and other diseases with viral pathogenesis. Prostratin does not appear to have tumor promoting activity or other adverse toxicological properties that would preclude its use in antiviral therapy.
Licensing Contact: Todd Leonard

Selective Retroviral Proteinase Inhibitor

Copeland, T.D., Wondrak, E.M., Tozser, J., Roberts, M., Oroszlan, S. (NCI)
Filed 24 May 90
Serial No. 07/528,076

Modifications to short peptide substrates for retroviral proteinases have been shown to be inhibitors of these enzymes. The modifications are based upon replacing the amino acid, proline, with a proline homologue, L-pipecolic acid (2-S-piperidine carboxylic acid). These peptide compositions with their selective inhibition of retroviral proteases are expected to be useful therapeutic agents for the treatment of HIV infection and AIDS.
Licensing Contact: Todd Leonard

Method Of Treating Retroviral Infections In Mammals [Camptothecin As Topoisomerase Inhibitor]

Priel, E., Blair, D., Showalter, S. (NCI)
Filed 8 May 90
Serial No. 07/520,456

A new method has been found to treat retroviral infections such as HIV through the use of camptothecin and related analogs. These compounds appear to function as inhibitors of retroviral

topoisomerase I, blocking the initiation of retroviral infection and replication in target cells. Camptothecin compounds have had prior evaluation only as anticancer agents.
Licensing Contact: Todd Leonard

Monoclonal Antibody Against Human *Pneumocystis carinii*

Kovacs, J.A., Masur, H. (CC)
Filed 4 May 90
Serial No. 07/519,204

A new monoclonal antibody against human *Pneumocystis carinii* offers an important advancement in the treatment of AIDS. *P. carinii* is a major pathogen in immune compromised patients and in AIDS patients, in particular. *P. carinii* cannot be purified from human lung tissue; thus, antibodies developed from animal sera have lacked specificity for the human organism. This new human monoclonal antibody, which is specific and sensitive for *P. carinii*, can be radiolabeled and injected into the patient for imaging by standard radiographic techniques such as nuclear scanning.
Licensing Contact: Todd Leonard

Novel Infectious Clones Of HIV DNA For Easy Mutational Changes

Rabson, A.B., Leonard, J., Martin, M. (NIAID)
Filed 9 April 90
Serial No. 07/506,947

A circularly permuted single long terminal repeat (LTR) infectious molecular clone of HIV DNA has been developed. The clone allows easy introduction of mutations into the LTR of the HIV, permitting attenuated HIV strains that may be useful in vaccine development.
Licensing Contact: Todd Leonard

Method And Apparatus For Testing The Permeability Of Prophylactics

Retta, S.M., Rinaldi, H., Carey, R., Herman, W.A., Athey, T.W., Herman, B.A., Stewart, H. (FDA)
Filed 06 Apr 90
Serial No. 07/505,268

A method and apparatus for evaluating the permeability of the membranes in condoms and gloves is described. The method outlined in this invention is an improvement over prior methods because it simulates physiological conditions, provides a positive leakage control, and can be used to evaluate the permeability of a variety of materials used in producing condoms. Condoms that do not leak can be effective in reducing the risk of sexual transmission of HIV.
Licensing Contact: Todd Leonard

Chemically Modified CD4 Peptide Fragments Having Antiretroviral Properties

Lifson, J.D., Eiden, L.E. (NIMH)
Filed 3 Apr 90
Serial No. 07/503,832 (CIP of 07/346,159, CIP of 07/258,576, CIP of 07/203,285, CIP of 07/108,160)

Novel derivatized peptides having the same amino acid sequency as in the N-terminus of the human CD4 antigen may be valulable for use in vaccines for protecting against HIV infection. Cellular responses induced in cells expressing the surface antigen CD4 caused by interaction with a CD4-dependent retrovirus such as HIV can be modulated or inhibited with these novel peptides. These responses include retrovirus-induced cell fusion and virion infectivity, as well as virus transmission following infection.
Licensing Contact: Todd Leonard

Monoclonal Antibodies That Define Oncostatin M To Inhibit Growth Of Kaposi's Sarcoma

Radka, S.F., Linsley, P.S., Shoyab, M., Salahuddin, S.Z., Nakamura, S., Gallo, R.C. (NCI)
Filed 29 Mar 90
Serial No. 07/502,141 (CON of 07/144,572, CIP of 07/046,846, CIP of 06/935,283, CIP of 06/811,235)

Monoclonal antibodies against the protein oncostatin M bind to oncostatin M, thus inhibiting the protein's receptor-binding capabilities and its overall bioactivity. When incubated with an HIV-infected cell line, these new antibodies inhibit the oncostatin M-mediated growth of Kaposi's sarcoma cells. The antibodies may be useful diagnostic and therapeutic tools in detecting and treating cancer and other cell growth-related diseases, particularly AIDS-related Kaposi's sarcoma. They may also be used to detect native or denatured forms of natural or recombinant oncostatin M in serum.
Licensing Contact: Todd Leonard

Clone Of Double-Stranded RNA Virus And Applications Thereof

Wichner, R., Dinman, J., Icho, T. (NIDDK)
Filed 9 Mar 90
Serial No. 07/492,364 (CIP of 07/311,217, CIP of 07/169,486)

A cDNA clone of L-A, a double-stranded RNA virus, can be used to study ribosomal frame-shifting and other processes in retroviruses. Ribosomal frame-shifting is the process by which retroviruses such as HIV make some proteins; they cannot replicate unless they are able to make the host ribosomes to carry out this frame-shifting. Current methods to test factors affecting the -1 ribosomal frame-shifting in HIV and other retroviruses involve the use of expensive and inconvenient animal cell systems. The cDNA clone of L-A can be introduced in yeast for the study of ribosomal frame-shifting or for the

production of large amounts of a desired protein.
Licensing Contact: Steve Ferguson

Peptides Stimulating Cytotoxic T Cells Immune To HIV Reverse Transcriptase

Berzofsky, J.A., Hosmalin, A., Clerici, M., Germain, R., Shearer, G., Moss, B., Pendleton, C. (NCI, NIAID)
Filed 9 Mar 90
Serial No. 07/489,825

A relatively conserved epitope of HIV-1 reverse transcriptase (RT) that is recognized by cytotoxic T cells has been identified and characterized. Peptides of this invention elicit cytotoxic T cells that kill cells that produce HIV RT. Since HIV RT is conserved to a greater degree than other HIV proteins, this approach may provide a vaccine component that is less affected by mutations of the HIV virus and thus functional against a broad range of HIV strains.
Licensing Contact: Todd Leonard

Cloned Subgenomic Fragments Of HIV-1 *gag* Genes

Marcus-Sekura, C.J., Woerner, A.M. (FDA)
Filed 1 Mar 90
Serial No. 07/486,958

Portions of the HIV-1 *gag* gene, which codes for at least three viral core proteins (p24, p15, and p17), were cloned and expressed, resulting in the production of novel protein fragments. The presence of antibodies to p24 soon after infection has been associated with increased risk of developing AIDS and may be a useful diagnostic tool to detect AIDS and/or to monitor the progression of the disease. The clones may also be used in a vaccine and in the purification of specific HIV-1 antibodies. The HIV-1 *gag* segments described in this invention and the products of the expression of these gene fragments had not been cloned or characterized previously.
Licensing Contact: Todd Leonard

Method Of Detection Of HIV And Cell Lines Useful Therefor

Chesebro, B., Wehrly, K. (NIAID)
Filed 9 Feb 90
Serial No. 07/478,081 (CIP of 07/168,493)

A new cell line that will grow on a plastic support has been developed for use in focal immunoassay (FIA) for detection of HIV. The cell line is 10 to 33 times more sensitive than the HT4-C6 line previously cultured, and the line is more suitable than any current alternative for the purposes of FIA. Other methods that detect HIV infection by the presence of viral markers are slow, not suitable for large-scale screening, and not applicable to wild-type HIV isolates; results from these techniques are often equivocal. The assay described in this invention has application in testing for HIV in blood or other tissues; in testing for very low levels of infection; in testing wild-type HIV isolated from patients for resistance to drugs that are or may be prescribed for that patient; and in monitoring or screening therapeutics for effectiveness against HIV.
Licensing Contact: Todd Leonard

Antiviral Compounds And Their Uses

Mitsuya, H., Shirasaka, T., Broder, S., Murakami, K., Yoshioka, H., Kojima, E. (NCI)
Filed 9 Feb 90
Serial No. 07/477,406

These eight novel dideoxynucleoside purines inhibit viral replication and prevent the cytotoxic effects of HIV and the hepatitis B virus in humans. These compounds are more lipophilic than other similar drugs (e.g., AZT, ddC, ddG, ddI, ddA) and are therefore expected to more readily cross the blood-brain barrier, which HIV penetrates. They may also overcome some of the problems that occur with other therapies, such as the bone marrow suppression and drug resistance associated with long-term use of AZT. The novel nucleosides may be effective in preventing (through incorporation into a vaccine) as well as treating conditions that develop as a result of viral infection.
Licensing Contact: Todd Leonard

Inhibition Of HIV-1 Infectivity In Human Cells [Using Chloroquine And Analogs Such As Primaquine]

Oroszlan, S., Tsai, W., Nara, P.L., Kung, H. (NCI)
Filed 26 Jan 90
Serial No. 07/470,692

Chloroquine (an approved drug and the most commonly used antimalarial agent) and analogs such as primaquine have been shown to inhibit infectious HIV-1 production and thus its spread in infected individuals. Inhibition may occur via interference with the terminal glycosylation of the viral glycoproteins, which results in the production of noninfectious virus.
Licensing Contact: Todd Leonard

Treatment Of Human Retroviral Infections With 2′-3′Dideoxyinosine

Yarchoan, R., Mitsuya, H., Broder, S. (NCI)
Serial No. 07/460,490
Patent Issued 25 Jun 91
U.S. Patent No. 5,026,687

The compound 2′-3′-dideoxyinosine (ddI) offers an important new advancement for the treatment of retroviral infections such as HIV. The only antiretroviral drug previously approved for use, AZT, has potent toxicities that limit its usefulness; AZT-resistant strains of HIV have also been reported. Administration of ddI has induced weight gain, increases in energy, and an improvement in cognitive dysfunction in HIV-infected patients. Immune function has also been improved by ddI administration as measured by an increase in the ratio of $CD4^+$ to $CD8^+$ lymphocytes and a decrease in circulating p24 antigen.
Licensing Contact: Todd Leonard

Aerosol Preparation Of Glutathione And A Method For Augmenting Glutathione Level In Lungs [Anti-Infective For AIDS-Related Disorders]

Crystal, R.G. (NHLBI)
Filed 24 Nov 89
Serial No. 07/441,521

An aerosol preparation of reduced glutathione (GSH) has been found to be an effective means of augmenting the lowered levels of GSH in the lungs of individuals with HIV infections. Diminished levels of GSH are associated with all forms of lung infections as well as acute and chronic lung diseases. Other types of delivery mechanisms for GSH have been found generally ineffective.
Licensing Contact: Arthur Cohn

Construction of Non-Infectious Human Retroviral Mutants Deficient in Genomic RNA

Gorelick, R.J., Arthur, L.O., Rein, A., Henderson, L.E., Oroszlan, S. (NCI)
Filed 31 Oct 89
Serial No. 07/429,287 (CIP of 07/269,407)

The infectivity of retroviruses, including human retroviruses such as HIV, can be reduced or eliminated by the generation of mutants that lack some or all of the invariant residues required to form the viral structure. In particular, disruption of the *gag* precursor polyprotein structure leads to the formation of otherwise normal virus particles that do not contain the normal complement of viral RNA. Retrovirus mutants obtained from the invention can be used in vaccines, therapeutic agents, and diagnostic procedures.
Licensing Contact: Todd Leonard

Method For Detecting Viral Sites Giving Rise To Neutralizing Antibodies

Berkower, I., Murphy, D. (FDA)
Filed 6 Oct 89
Serial No. 07/417,768 (CIP of 07/146,249)

This sensitive plaque-forming assay allows comparison among all known isolates of a virus, and thus allows a researcher to map common, putatively nonmutating sites and to isolate an antibody that is specific to that site. The sequences of those sites for HIV, which appear to mutate so rapidly that the virus can escape from a host's neutralizing antibodies during the course of single infection, are detailed. This invention should help in the development of an effective anti-AIDS vaccine or an antibody specific to the nonmutating site that could neutralize the virus.
Licensing Contact: Todd Leonard

Method for the Sulfurization of Phosphorous Groups in Compounds

Beaucage, S.L., Regan, J.B., Iyer, R.P. (FDA)
Serial No. 07/415,710
Patent Issued 26 Mar 91
U.S. Patent No. 5,003,097

Novel sulfurization reagents that enable reliable automated preparation of specific sulfur-containing compounds such as oligonucleotides are valuable as potential therapeutics against HIV. These reagents are soluble in a variety of organic solvents, are easily handled under normal laboratory conditions, and selectively react with the phosphorous-containing function of a compound without modifying the nucleosidic residue.
Licensing Contact: Steve Ferguson

Molecular Clones Of Bovine Immunodeficiency-Like Virus And Applications Thereof

Gonda, M.A. (NCI)
Filed 18 Sep 89
Serial No. 07/408,815

This invention represents the first functional clones of bovine immunodeficiency-like virus (BIV), which causes lymphadenopathy, lymphocytosis, central nervous system lesions, progressive weakness, and emaciation in cattle. These clones may serve as models for HIV and AIDS. They will also be useful in developing diagnostic tools for veterinary medicine (e.g., antibodies, antigens, DNA probes).
Licensing Contact: Todd Leonard

Antigen And Immunoassay For HIV-2

Papas, T.S., Zuber, M.Z., Samuel, K.P. (NCI)
Filed 14 Sep 89
Serial No. 07/407,317

HIV-2-specific antigens and antibodies were produced. The antigen comprises a region of the HIV-2 gp35 envelop protein and was produced in a bacteria utilizing recombinant DNA technology. It is highly immunogenic in people infected with HIV-2 and does not crossreact with HIV-1. A limiting factor in prior studies of immune response to these viruses has been the difficulty in isolating adequate amounts of purified antigens that are specific to the HIV-2 virus. The advantages of this method are reduced cost, greater abundance, high reliability, and safety compared to obtaining antigens from purified virus or virus-infected cells.
Licensing Contact: Todd Leonard

Human T Cell Line Chronically Infected With HIV

Powell, D.M., Folks, T., Clouse, K.A. (NIAID)
Filed 28 Aug 89
Serial No. 07/399,079

A stable line of human T cells was developed in which cells infected chronically with the AIDS virus (HIV) remained nonproductive prior to exposure to phorbol esters or human cytokines. This situation mimics the latent state of HIV and the development of AIDS in humans and indicates that the full-blown disease may be triggered by cellular-derived substances (e.g., cytokines). This is the first description of such a cell line.
Licensing Contact: Todd Leonard

Antiviral Compositions Containing Sulfoquinovosyl Glycerol Derivatives And Analogs Thereof And Methods For Using Same

Boyd, M.R., Cardellina, J.H., Gustafson, K.R., Patterson, G. (NCI)
Filed 15 Aug 89
Serial No. 07/393,780

Derivatives of sulfoquinovosyl glycerol, which is isolated from blue-green algae, protect human T lymphoblastoid cells from the cytopathic effects of HIV infection and may offer an improved method of treating AIDS and other diseases with viral pathogenesis. AZT is presently the only approved drug for the treatment of HIV infection; however, its usefulness is severely limited by a number of toxic side effects. These sulfoquinovosyl glycerol derivatives may offer an alternative to AZT therapy or may be used in conjunction with AZT to provide effective antiviral treatment.
Licensing Contact: Todd Leonard

Recombinant Vaccinia Virus Expressing Human Retrovirus Gene

Moss, B., Chakrabarti, S. (NIAID)
Filed 7 Jul 89
Serial No. 07/377,750

A recombinant vaccinia virus that expresses HIV envelope proteins in their native form is valuable for developing an anti-HIV vaccine. Previously, it has been considered impractical to test even a denatured whole HIV viral preparation in human subjects because of concerns that retroviral sequences might incorporate into host DNA. This recombinant vaccinia virus expresses, processes, and glycosylates the antigenic envelope proteins of HIV but cannot reproduce any viable HIV virus or incorporate into host DNA.
Licensing Contact: Mark Hankins

Compositions Having Use As Treatment Of Neuropsychiatric Deficits

Bridge, P., Goodwin, F. (NIMH)
Serial No. 07/352,313
Patent Issued 5 Nov 91
U.S. Patent No. 5,063,206

Peptides that inhibit binding of HIV to cell receptor sites are useful as agents for the treatment of neuropsychiatric disorders and psoriasis. These peptides, which were originally formulated to block HIV infection, are effective in treating psoriasis and depression related to AIDS as well as psoriasis and depression not related to AIDS. Thus, these peptides are also believed to have mood-improving, or thymoleptic, properties. Administration of these compounds by sublingual or nasal route has proven particularly effective.
Licensing Contact: Todd Leonard

Treatment of HIV Infection with Immunotoxin and Immunotoxin for Use Therein

Pincus, S., Chesebro, B. (NIAID)
Filed 12 May 89
Serial No. 07/350,895

A new immunotoxin that interrupts the infectious cycle of HIV by selectively killing infected cells in which viral replication is occurring offers a significant advancement for treating this infection. Previously, there has been no effective means of inhibiting HIV replication within cells. This immunotoxin, which couples a monoclonal antibody specific for the HIV envelope protein gp120 to the purified ricin A chain toxin, successfully targets HIV-infected cells and inhibits protein synthesis only in the targeted cells. Thus, it suppresses growth in the targeted cells and inhibits their ability to produce and secrete infectious viruses.
Licensing Contacts: Daniel Passeri and Todd Leonard

Amphipathic Antiretroviral Agent

Lifson, J.D., Hwang, K., Eiden, L.E., Fraser, B. (NIMH)
Filed 2 May 89
Serial No. 07/346,159

Peptide derivatives of the CD4 antigen of immune T cells can be used in antiretroviral therapy, HIV in particular. Presently available anti-HIV drugs have limited success is preventing the spread of HIV particles from infected to uninfected immune cells. By mimicing important structural parts of CD4, the protein used by HIV to bind to and enter T cells, these peptide derivatives block virion infectivity and thus the cytopathic effects of CD4-dependent retroviruses.
Licensing Contact: Todd Leonard

Chemotherapeutic Composition for AIDS

Weinstein, J.N., Szebeni, J. (NCI)
Filed 5 April 89
Serial No. 07/334,089 (CIP of 07/194,171)

Inhibitors of nucleoside and nucleobase transport such as dipyridamole (DPM) or similar agents offer an imporant new tool for treating HIV infection. Currently used anti-HIV therapies such as the DNA chain-terminating agents AZT or ddI have dose-limiting toxicities. DPM has been shown to enhance the anti-HIV activity of AZT *in vitro* without potentiating its toxicity against normal human bone marrow cells.
Licensing Contact: Todd Leonard

Characterization of Replication-Competent HIV-2 Proviral Clone

Franchini, G., Wong-Staal, F., Gallo, R. (NCI)
Filed 31 March 89
Serial No. 07/331,212

A biologically active HIV-2 clone constructed using DNA from the neoplastic human cell line HUT78 freshly infected with HIV-2 isolate is valuable for the study of HIV infection in humans as well as the development of an animal model for HIV infection. Immunologically,

the HIV-2 clone is similar to the parental virus. Both are infectious and cytopathic for some human T cell lines, induce syncytia, and infect the human macrophage cell line U937 *in vitro*. Both also can infect the rhesus macaque *in vivo*.
Licensing Contact: Todd Leonard

An Animal Model For HIV-1 Infection Adaptable For Testing Of Vaccines And Therapeutic Agents

Kindt, TJ., Kulaga, H., Folks, TJ. (NIAID)
Filed 15 Mar 89
Serial No. 07/323,778 (CIP of 07/247,931)

A rabbit model is available for *in vivo* and *in vitro* testing of vaccines and therapeutic agents against HIV infection. Most of the animal models presently used for studying AIDS employ retroviruses other than HIV or endangered species such as chimpanzees. This rabbit model, which has been injected with HIV-infected human T cells, presents virus in peripheral blood cells and shows clinical symptoms similar to those observed in humans infected with the virus.
Licensing Contact: Todd Leonard

Anti-HIV Compositions Containing Native And Recombinant Peptides

Fischinger, P.J., Wong-Staal, F., Gallo, R.C., Matthews, TJ. (NCI)
Filed 23 Feb 89
Serial No. 07/314,664

A kit containing substantially pure native and recombinant HIV glycoproteins is valuable for testing anti-HIV vaccines or as diagnostic aids for detecting HIV infection. Previously, it has been difficult to obtain large, pure quantities of HIV proteins for use in vaccines or diagnostic procedures. This kit contains deglycosylated envelope proteins as well as recombinant fusion molecules containing HIV and non-HIV amino acid sequences.
Licensing Contact: Todd Leonard

Acid Stable Pyrimidine Dideoxynucleosides Active Against The Cytopathic Effect Of HIV

Marquez, V.E., Driscoll, J.S., Tseng, C. (NCI)
Filed 16 Feb 89
Serial No. 07/313,056

Novel modified pyrimidine dideoxynucleosides, which are stable at pH 1-2, are useful in anti-HIV therapy. Presently available anti-HIV drugs have limited utility because they are not stable in the acidic environment of the stomach and, thus, cannot be taken orally, or because they cease to inhibit viral replication after prolonged administration. These novel pyrimidine dideoxynucleosides, which are effective inhibitors of HIV replication, are substituted at the 2′ position with fluorine, making them stable in acidic environments.
Licensing Contact: Todd Leonard

Method For Detecting Inhibitors Of Tat Protein

Wong-Staal, F., Rappaport, J., Rusche, J.R. (NCI)
Filed 6 Feb 89
Serial No. 07/306,612

A novel assay that measures the binding of the tat protein of HIV to TAR RNA — a crucial process in the replication and continued infectivity of the virus — is valuable for developing anti-HIV therapeutic agents. Presently, there is no acceptable long-term method for inhibiting the spread of HIV infection. This assay can be used as a tool to dissect the sequence requirements for the binding of the tat protein to TAR RNA and to test agents that may inhibit the binding and, thus, inhibit viral replication.
Licensing Contact: Todd Leonard

Novel Monoclonal Antibodies And Method For Identifying Different AIDS-Related Viruses

Minassian, A.A., Popovic, M., Gallo, R.C. (NCI)
Filed 11 Jan 89
Serial No. 07/295,933

A kit containing monoclonal antibodies that can differentiate between different AIDS-related viruses and a synthetic peptide that universally recognizes such viruses offer to improve the diagnoses and treatment of AIDS. Conventional molecular genetic methods for identifying and differentiating between the various viruses associated with AIDS — HIV-1, HIV-2, and SIV — are expensive and time-consuming; available commercial tests for these often can only detect only viral forms. These monoclonal antibodies, which are secreted in large quantities by hybridoma cells, can rapidly identify and discriminate between HIV-1, HIV-2, and SIV isolates. The synthetic peptide can recognize members of all three viruses.
Licensing Contact: Todd Leonard

2,3-Epoxy Alcohols, Acids, And Derivatives As Antiretroviral Chemotherapeutic Agents

Blumenstein, J.J., Michejda, C.J., Oroszlan, S., Copeland, T. (NCI)
Filed 20 Dec 88
Serial No. 07/286,977

Novel synthetic 2′-substituted purine nucleosides offer an improved method for the treatment of HIV infection. Presently available anti-HIV drugs, which must be taken orally because of the frequency of administration, are unstable in the acid environment of the stomach. The 2′-substituted analogs of these drugs are extremely stable in acid environments and have fewer toxic side effects than their unsubstituted counterparts.
Licensing Contact: Todd Leonard

Novel Inhibitor of HIV Infection

Berger, E.A., Moss, B., Fuerst, T.R. (NIAID)
Filed 13 Dec 88
Serial No. 07/283,739

A novel recombinant polypeptide derivative of the human CD4 molecule is valuable as an anti-HIV compound. CD4 is the immune cell receptor involved in binding HIV. Previously, the specific regions of the CD4 molecule involved in binding to the HIV envelope glycoprotein gp120 had not been identified. This recombinant CD4 derivative has immunological and functional properties of an active HIV binding site and can be used to inhibit the initial infection of immune cells.
Licensing Contact: Todd Leonard

Simple, Rapid, Quantitative, Syncytium-Forming Microassay For The Detection Of HIV-Neutralizing Antibody Or Antiviral Compounds

Nara, P.L., Dunlop, N.M., Fischinger, P.J., Hatch, W.C. (NCI)
Filed 14 Nov 88
Serial No. 07/270,865

A quantitative, syncytium- (aggregate) forming microassay, which uses a line of cells that is sensitive to all six HIV-1 isolates, can accurately identify those antibodies that are effective in neutralizing the virus. Currently available methods for identifying antibodies that effectively neutralize the virus' infectivity are cumbersome, time-consuming (require 10 to 20 days), lack sensitivity, and require large quantities of sample. This syncytium-forming microassay gives results in only 4 to 5 days, is sensitive for virus-neutralizing substances, is simple to perform, and requires only small quantities of both infectious virus stock and serum volumes.
Licensing Contact: Todd Leonard

The Design And Construction Of Noninfectious Retroviral Mutants Deficient In Viral DNA

Gorelick, R.J., Hanser, J.P., Rein, A., Henderson, L.E., Oroszlan, S. (NCI)
Filed 10 Nov 88
Serial No. 07/269,407

Mutant retroviruses have been generated that appear to be structurally normal but do not contain genetic information (viral RNA) or an amino acid sequence that is critical in packaging viral RNA into an infectious viral particle. Noninfectious mutant viruses made by this method could be used in the production of vaccines (e.g., for the AIDS virus), for diagnostic reagents, or for other therapeutic agents. This invention should reduce the variability and clinical limitations associated with the use of other retroviral mutants.
Licensing Contact: Todd Leonard

Antiretroviral Agent

Lifson, J.D., Hwang, K., Eiden, L.E., Fraser, B. (NIMH)
Filed 14 Oct 88
Serial No. 07/258,576

Peptides derived from the active site of the CD4 receptor molecule are useful for blocking virion infectivity and the cytopathic effects of CD4-dependent retroviruses such as HIV. There are presently no acceptable methods for controlling the spread of intracellular retrovirus infection. These CD4-derived peptides can modulate a number of cellular and viral responses including retrovirus-induced cell fusion, virion infectivity, and post-infection antiviral activity.
Licensing Contact: Todd Leonard

Synthetic Vaccine Against AIDS Virus

Berzofsky, J.A., Hale, P.M., Hosmalin, A., Margalit, H., Spouge, J.L., Cornette, J.L. (NCI)
Serial No. 07/222,684
Patent Issued 9 Jul 1991
U.S. Patent No. 5,030,449

A series of synthetic peptide anitgens has been developed for inclusion in a vaccine against HIV envelope proteins. These antigens stimulate an immune response in mice and monkeys through proliferation of helper T cells. Because it is synthetic, this vaccine poses much less of a health and safety risk than the live virus vaccines or whole or subunit virus vaccines for AIDS that have been previously described. In addition, it is the only vaccine that attempts to elicit a helper T cell response for defense against AIDS. A test kit for determining exposure to HIV is also included with this patent.
Licensing Contact: Todd Leonard

Antiretroviral Agent

Lifson, J.D., Hwang, K., Eiden, L.E., Fraser, B. (NIMH)
Filed 6 Jun 88
Serial No. 07/203,285

A novel antiretroviral agent blocks the virion infectivity and cytopathic effects of CD4-dependent retroviruses. The CD4 molecule serves as a receptor on the surface of immune cells for retroviruses such as HIV-1. Previously, there have been no methods available for interfering with this CD4-mediated virion infection in order to prevent the destruction of immune cells. This novel antiviral agent comprises derivatized peptides that have the same amino acid sequence as critical parts of the CD4 antigen. These peptides have the ability to inhibit retrovirus-induced cell fusions.
Licensing Contact: Todd Leonard

Method Of Treating AIDS, ARC, Or Lymphoadenopathy Syndrome With Poly-ICLC Alone Or In Combination With AZT

Levy, H.B., Salazar, A.M. (NCI)
Filed 2 Jun 88
Serial No. 07/202,508

This therapy combines an antiviral medication (AZT) with treatment that increases the production of interferon and enhances the immune system (poly-ICLC). Poly-ICLC is a synthetic double-stranded RNA complex that is stabilized with polylysine and carboxymethyl-cellulose to protect the active molecule, polyIC, from hydrolysis. This treatment is preferable to AZT alone because of its immunological and interferon enhancing properties and because of AZT's high cost and toxicity. The combined therapy has also been effective in stabilizing chronic multiple sclerosis in pilot studies.
Licensing Contact: Todd Leonard

HIV-Specific Proteolytic Enzyme And A Method For Its Synthesis And Renaturation

Oroszlan, S., Copeland, T.D. (NCI)
Filed 1 Jun 88
Serial No. 07/201,654

A kit containing synthetic HIV-1- and HIV-2-specific proteases as well as assays for protease activity is valuable for developing anti-HIV therapies. Presently, there are no methods available for completely inhibiting HIV replication *in vivo*. Because HIV proteases are necessary for the complete replication of the mature virus, these synthetic proteases can be used to design protease inhibitors. The protease assays can be used to determine the effectiveness of potential inhibitors.
Licensing Contact: Todd Leonard

An Acutely Lethal Monkey HIV-Like Virus (SIV/SMM/PGj) That Causes Acute Disease

McClure, H.M., Fultz, P.N., Anderson, D.C. (CDC)
Filed 1 Jun 88
Serial No. 07/200,843

A new, virulent strain of simian immunodeficiency virus (SIV) is valuable for quickly testing drugs or vaccines for the treatment or prevention of AIDS. Previously, no strain of SIV has been identified that exactly duplicates the infectivity and clinical symptoms associated with HIV infection. This new strain of SIV (SIV/SMM/PBj) causes acute disease and death within a few days. In a macaque model, it may provide a means of quickly evaluating antiviral drugs or vaccines.
Licensing Contact: Todd Leonard

New Antiretroviral Agents And Delivery System For The Same

Weinstein, J.N. (NCI)
Filed 10 Apr 87
Serial No. 07/177,788 (CIP of 07/037,178)

Antiretroviral chain-terminator nucleosides encapsulated in liposomes are delivered *in vivo* without deleterious effects to the host. The chain-terminator nucleosides inhibit the replication of retroviruses (specifically, the AIDS virus) by inhibiting reverse transcriptase activity. The liposomes are targeted to HIV-specific sites within the body. This invention proposes a potential chemotherapeutic method of treating or preventing AIDS.
Licensing Contact: Todd Leonard

HIV-Specific Proteolytic Enzyme And A Method For Its Synthesis And Renaturation

Oroszlan, S., Copeland, T.D. (NCI)
Filed 28 March 88
Serial No. 07/174,473

A novel HIV protease is valuable for developing anti-HIV drugs or vaccines. AZT, the only approved drug for inhibiting the spread of HIV infection, loses effectiveness after long-term use and has significant toxicities toward noninfected cells. This HIV protease can be used for developing and testing chemical inhibitors that penetrate the HIV-infected cell, become incorporated into the budding HIV virus, bind with high affinity to the HIV viral protease or precursor polyproteins, prevent cleavage, and lead to the production of noninfectious but still immunogenic HIV viral progeny.
Licensing Contact: Todd Leonard

***Trans*-Activating Factor Of HTLV-III/LAV**

Wong-Staal, F., Gallo, R.C., Arya, S.K. (NCI)
Filed 23 March 88
Serial No. 07/172,152 (CIP of 06/780,925)

Clones containing sequences of the HIV genome that encode the *trans*-acting factor necessary for expression of genes linked to the HIV long terminal repeat are useful for detecting HIV infection and/or for developing anti-HIV vaccines. These clones effectively produce viral proteins useful in detecting presence of antibodies to the HTLV-III proteins and in producing such antibodies.
Licensing Contact: Todd Leonard

HIV Subunit Vaccine

Krohn, K., Ranki, A. (NCI)
Filed 11 Mar 88
Serial No. 07/168,088

A novel HIV subunit preparation offers a significant advance in the development of a vaccine against AIDS. There is currently no vaccine available to provide effective protection against AIDS. This HIV subunit preparation — epitopes from the conserved region of gp120 envelope protein — stimulates the production of neutralizing antibodies against the virus and may help prevent its spread.
Licensing Contact: Todd Leonard

Inhibitors For Replication Of Retroviruses And For The Expression Of Oncogene Products

Cohen, J.S., Neckers, L., Stein, C., Loke, S.L., Shinozuka, K. (NCI)
Filed 22 Feb 88
Serial No. 07/159,017

A novel group of phosphorothioates offers an improved method of inhibiting HIV infections. These compounds, which effectively inhibit the replication of retroviruses such as HIV as well as the proliferation of neoplastic cells, exhibit more efficient hybridization with a complementary DNA sequence than their corresponding methylphosphonate analogs, are stable to cleavage by nucleases, and have good aqueous solubility.
Licensing Contact: Arthur Cohn

Synthetic Antigen Evoking Anti-HIV Response

Berzofsky, J.A., Takahashi, H., Hosmalin, A., Germain, R.N., Moss, B. (NCI)
Filed 26 Jan 88
Serial No. 07/148,692

A synthetic peptide, designated Env-K1, offers an advancement for inhibiting the spread of HIV infection. Although HIV envelope protein has been used as an antigenic agent for generating neutralizing antibodies against extracellular viruses, these neutralizing antibodies cannot prevent direct cell-to-cell transmission of HIV. This Env-K1 peptide stimulates cytotoxic T cells to specifically attack HIV antigen-expressing cells in cultures and, thus, inhibits cell-to-cell transmission of the virus. Furthermore, this syntetic peptide eliminates the risks asociated with handling of HIV or HIV-derived products.
Licensing Contact: Todd Leonard

Pyrimidine And Purine 1,2-Butadiene-4-Ols As Antiretroviral Agents

Broder, S., Hayashi, S., Mitsuya, H., Zemlicka, J., Phadtare, S. (NCI)
Serial No. 07/140,269
Patent Issued 19 Jun 90
U.S. Patent No. 4,935,427

Novel pyrimidine and 1,2-butadiene-4-ol compounds are valuable for inhibiting of cytopathic effects of HIV against immune cells such as ATH8 cells. Adenallene and cytallene, two preferred members of this class of compounds, have demonstrated potent inhibition of infectivity and replication of HIV in H9.
Licensing Contact: Todd Leonard

***sor* Gene From HIV**

Papas, T., Lautenberger, J., Wong-Staal, F., Kan, N. (NCI)
Filed 28 Dec 87
Serial No. 07/138,530 (CIP of 06/824,783)

The *sor* sequence is unique to the HIV retrovirus, and *sor* proteins have been shown to be immunogenic *in vivo*. This method for synthesizing immunogenic *sor* proteins has the advantages of recombinant DNA antigen synthesis: the proteins can be produced rapidly and more cheaply than by extraction; antigens are not subject to mutation; and workers are not exposed to the infectious virus during production. The protein product can be used as a diagnostic tool to detect HIV or to make antibodies against HIV in an appropriate host.
Licensing Contact: Todd Leonard

Noninfectious Mutant Clone Of HIV

Martin, M.A., Willey, R. (NIAID)
Serial No. 07/095,837
Issued 5 Jun 90
U.S. Patent No. 4,931,393

A noninfectious clone of a mutant HIV and HIV proteins were produced for use as antiviral agents, diagnostic reagents, and as components of an anti-AIDS vaccine. The cloned HIV DNA contains a single amino acid mutation in the HIV env gene, which renders it noninfectious and, thus, much safer than live infectious virus. This invention is the first invariable source of noninfectious HIV that contains all the molecular components of infectious HIV except for the mutated site.
Licensing Contact: Todd Leonard

CSF-1-Facilitated Detection, Isolation And Propagation Of Monocyte-Tropic HIV In Human Monocytes

Gendelman, H.E., Meltzer, M.S. (NIAID)
Filed 29 May 87
Serial No. 07/094,618

A novel method for *in vitro* coculturing of peripheral blood macrophages and monocytes from normal, uninfected donors (N-PBM) and peripheral blood leukocytes from individuals being tested offers an improved method for early detection of HIV infection in humans. Presently available methods for detecting HIV antibodies have limited sensitivity because immune-compromised individuals do not always produce HIV-neutralizing antibodies. This new culturing method uses macrophages and monocytes from nomal individuals that have been prestimulated with colony-stimulating factor (CSF-1). Because the CSF-1 monocytes and macrophages are far more sensitive to HIV infection and tropism than normal immune cells, they can be used to rapidly enrich and detect HIV from the peripheral blood leukocytes of individuals in which HIV infection is suspected.
Licensing Contact: Todd Leonard

***In Situ* Detection Of HTLV-III Activity**

Harper, M.E., Wong-Staal, F., Gallo, R. (NCI)
Filed 27 Jul 87
Serial No. 07/077,725

A highly sensitive *in situ* hybridization method for detecting HTLV-III infection offers to significantly enhance the understanding and treatment of virally induced leukemias. Previously available methods for the detection of HTLV-III do not provide a suitable method for determining the extent of the infection or

identifying which tissues are infected. This *in situ* hybridization method uses a radiolabeled probe to detect HTLV-III viral RNA in primary cells from patients; this assay can be used to detect HTLV-III in diverse cells such as blood, bone marrow, lymph nodes, and spleen.
Licensing Contact: Todd Leonard

Antiretroviral Compounds

Tam, S., Weigle, M., Broder, S., Mitsuya, H. (NCI)
Serial No. 07/064,631
Patent Issued 6 Jun 89
U.S. Patent No. 4,837,311

These novel compounds, which are composed of two independent dideoxynucleoside radicals joined by a linking group, disrupt the retroviral life cycle without severely affecting the normal cellular processes of mammalian host cells. This invention is an improvement over other viral chemotherapeutics, which are not retrovirus-specific and therefore interfere with noninfected cells. The new compounds are proposed as therapeutic antiviral agents. They may also be effective in treating AIDS or in the development of an anti-AIDS vaccine. Methods for the synthesis of these compounds are included in this invention.
Licensing Contact: Todd Leonard

A Method For Detecting HTLV-III (HIV-I) Neutralizing Antibodies In Sera

Robert-Guroff, M., Gallo, R.C. (NCI)
Serial No. 07/040,748
Patent Issued 5 Jul 88
U.S. Patent No. 4,755,457

A kit for detecting HTLV-III (HIV-1) neutralizing antibodies in the sera of infected patients has diagnostic and therapeutic applications. Previously, there was no large-scale supply of reagents for detecting HIV-1 infection. This kit contains p24 core protein, which is purified from HIV-infected immortalized cells, to detect the presence of neutralizing antibodies in the sera of infected individuals.
Licensing Contact: Todd Leonard

Monoclonal Antibody Against Human *Pneumocystitis carinii*

Kovacs, J.A., Masur, H. (CC)
Serial No. 06/938,716
Patent Issued 15 May 90
U.S. Patent No. 4,925,800

Monoclonal antibodies specific to human *Pneumocystis carinii* can be used to detect the presence of the organism, which causes pneumonia in immunocompromised individuals, particularly those with AIDS. The use of these antibodies provides a reliable, efficient, and simple diagnostic tool for detection of this organism, which cannot be cultured from humans. Radiolabeled antibodies may also be used to localize the site of *P. carinii* infection in affected persons.
Licensing Contact: Mark Hankins

Isolation And Purification Of The Eighth Gene Of HTLV-III

Wong-Staal, F., Chanda, P.K., Ghrayeb, J. (NCI)
Filed 20 Oct 86
Serial No. 06/920,780
Patent Issued 16 Oct 90
U.S. Patent No. 4,963,497

This newly discovered gene is present in all known HTLV-III (i.e., the AIDS virus) isolates and is structurally distinct from the genetic information contained in related viruses. The invention encodes a protein that can be used to detect the presence of the AIDS virus in infected individuals. The gene and/or its products may also be suitable for antiviral therapy, molecular cloning, establishment of an immortal host cell line, diagnostic and prognostic test kits, or in the production of synthetic peptides.
Licensing Contact: Todd Leonard

5-Substituted-2′,3′-Dideoxycytidine Compounds With Anti-HTLV-III Activity

Driscoll, J.S., Marquez, V.E., Kim, C., Kelley, J.A. (NCI)
Serial No. 06/913,575
Patent Issued 29 Nov 88
U.S. Patent No. 4,788,181

The 5-substituted-2′-3′-dideoxycytidine analogs and their phosphorylated derivatives are effective inhibitors of HTLV-III/LAV (HIV) infection, especially in the brain. Although the parent compound 2′,3′-dideoxycytidine can scarcely enter the central nervous system, 2′,3′-dideoxy-5-fluorocytidine readily penetrates the blood-brain barrier and, thus, is more effective against the AIDS virus in the brain.
Licensing Contact: Todd Leonard

Recombinant HTLV-III Proteins And Uses Thereof

Gallo, R.C., Wong-Staal, F., Putney, S.D., Lynn, D. (NCI)
Filed 1 Aug 86
Serial No. 06/892,680

Expression vectors encoding HIV-1 envelope *env* proteins are valuable for the detection, diagnosis, and treatment of HIV infection. Previously, there was no simple, inexpensive method available for obtaining large amounts of these *env* proteins for use in diagnostic kits or the preparation of anti-HIV vaccines. These expression vectors overcome this hurdle by producing large amounts of these proteins, which are relatively easy and inexpensive to purify.
Licensing Contact: Todd Leonard

Cell Line Producing AIDS Viral Antigens Without Producing Infectious Virus Particles

Folks, T.M., Martin, M.A., Powell, D.M.
Serial No. 06/849 059
Patent Issued 21 Jun 88
U.S. Patent No. 4,752,635

A cell line capable of safely generating HIV-1 proteins without concomitant production of infectious viral particles

offers a safe, efficient tool for developing diagnostic assays and vaccines. Previously, HIV-1 antigens have been purified from large volumes of viruses harvested from infected cells. This cell line produces relatively large quantities of the viral antigens, which can be used to detect antibodies in infected individuals or to induce an immune response to the virus.
Licensing Contact: Todd Leonard

HTLV-III Envelope Peptides

Heimer, E.P., Reddy, P.E., Gallo, R.C., Wong-Staal, F. (NCI)
Serial No. 06/824,913
Issued 20 Sep 88
U.S. Patent 4,772,547

The peptides synthesized correspond to sequences of the HTLV-III envelope protein that are believed to be responsible for the development of AIDS. These peptides can be used as diagnostic tools for the detection of AIDS and as components in an AIDS vaccine.
Licensing Contact: Todd Leonard

HIVs Associated With AIDS, A Diagnostic Method For AIDS And Pre-AIDS, And A Kit Therefor

Montagnier, L., Popovic, M., Gallo, R., Sarngadharan, M. (NCI)
Serial No. 06/785,638
Patent Issued 24 Nov 87
U.S. Patent No. 4,708,818

This novel diagnostic kit for detecting HIV antibodies offered the first reliable and effective method for diagnosing and testing HIV infection. After a retrovirus lysate is contacted with blood or other biological fluid, immunological assay techniques (ELISA or indirect immunofluorescent assay) can be used to detect those complexes and measure their formation.
Licensing Contact: Todd Leonard

Immortalized T Lymphocyte Cell Line For Testing HTLV-III Inactivation

Mitsuya, H., Broder, S. (NCI)
Serial No. 06/781,461
Patent Issued 3 Nov 87
U.S. Patent No. 4,704,357

An new immortalized T cell clone (ATH8) is highly sensitive to the cytopathic effects of HTLV-III (HIV). ATH8 can be used in mass screening systems to rapidly and easily determine the *in vitro* capacity of new drugs to inactivate or inhibit HIV or related cytopathic retroviruses. In particular, ATH8 is useful for testing anti-HIV agents.
Licensing Contact: Todd Leonard

Competitive ELISA For The Detection Of HTLV-III Antibodies

Saxinger, W. C., Gallo, R.C. (NCI)
Serial No. 06/737,458
Patent Issued 28 Apr 87
U.S. Patent No. 4,661,445

A competitive enzyme-linked immunosorbent assay (ELISA) for the detection of antibodies using sheep HTLV antibodies is more sensitive, more specific, and more accurate than previously known ELISA techniques. This ELISA is particularly suited for detecting HTLV-III (HIV). Tests for viral markers such as reverse transcriptase, viral antigens, or nucleic acid sequences in blood cells are too slow and unsuitable for large-scale screening.
Licensing Contact: Todd Leonard

Cloning And Expression Vector Of HTLV-III DNA

Chang, N.T., Gallo, R.C., Wong-Staal, F. (NCI)
Filed 23 Jan 85
Serial No. 06/693,866

DNA encoding proteins of HIV-1 — formerly HTLV-III — is useful in the diagnosis, treatment, and prevention of AIDS. Previous methods for isolating the most diagnostically important HIV proteins often partially destroyed them during virus inactivation and purifications. This HIV-1 encoding DNA produces complete, biologically active polypeptides that are immunoreactive with serum from AIDS patients. Thus, these polypeptides can be used in diagnosing AIDS, screening blood products, and for the development of potential vaccines.
Licensing Contact: Todd Leonard

Method Of Continuous Production Of Retroviruses (HTLV-III) From Patients With AIDS And Pre-AIDS Using Permissive Cells

Gallo, R.C., Popovic, M. (NCI)
Serial No. 06/643,729
Patent Issued 24 Mar 87
U.S. Patent No. 4,652,599

A novel neoplastic aneuploid T cell line (HT) offers a convenient method for large-scale production, isolation, and detection of the virus in AIDS, pre-AIDS, and healthy carrier patients. Previously, the isolation of HIV from infected indivuals has been an expensive, time-consuming process. These HT cells, which are highly susceptible and permissive for HTLV-III (HIV), are capable of producing large quantities of the virus in a relatively short period of time.
Licensing Contact: Todd Leonard

Method Of Continuous Production Of Retroviruses (HTLV-III) From Patients With AIDS And Pre-AIDS

Gallo, R.C., Popovic, M. (NCI)
Serial No. 06/602,946
Patent Issued 3 Mar 87
U.S. Patent No. 4,647,773

A neoplastic aneuploid T cell line (HT) provides T cell populations that are highly susceptible and permissive for HTLV-III and that are convenient for purposes of large-scale production, isolation, and detection of the virus in AIDS, pre-AIDS, and healthy carrier patients. The clone may also be a mature T cell phenotype of $OKT3^+$, $OKT4^+$, and $OKT8^-$.
Licensing Contact: Todd Leonard

Serological Detection Of Antibodies To HTLV-III In Sera Of Patients With AIDS And Pre-AIDS Conditions

Gallo, R. Popovic, M., Sarngadharan, M. (NCI)
Serial No. 06/602,945
Patent Issued 28 May 85
U.S. Patent No. 4,520,113

This invention describes the isolation of the retroviral agent of AIDS, identified here as HTLV-III, and provides methods for continuous growth of HTLV-III. Assays for detecting the presence of the retrovirus are also outlined. The analytical methods used to identify the virus are described, and the use of Western blot and ELISA immunoassays in detection of the virus is also detailed.
Licensing Contact: Todd Leonard

ANALYTICAL METHODS & INSTRUMENTATION

Probe for Thermospray Mass Spectrometry

Musser, S.M. (FDA)
Filed 29 May 92
Serial No. 07/890,194

This invention provides a novel, flexible, and inexpensive means of replacing clogged probes in thermospray mass spectrometers. Currently, entire probes must be replaced; in contrast, with the new design, only the central stainless steel capillary of the probe needs to be replaced. This invention also allows for the introduction of a variety of types of capillaries, such as those made of titanium, glass-lined stainless steel, or nickel, into the same probe, an option not available with factory-designed probes.
Licensing Contact: John Fahner-Vihtelic

Separation Of Rare Earth Elements With High-Speed Countercurrent Chromatography

Kitazume, E., Ito, Y. (NHLBI)
Filed 18 May 92
Serial No. 07/885,069 (CON of 07/485,317)

A method of separating rare earth elements and compounds from mixtures containing the same by means of rotational high-speed countercurrent chromatography has been discovered. Prior separations of this type utilized droplet countercurrent chromatography or centrifugal partition chromatography. This new method produces partition efficiencies over one order of magnitude greater than those obtained from existing methods. The invention should be useful in the manufacture of new superconducting materials.
Licensing Contact: John Fahner-Vihtelic

Fabrication of Micron-Range Holes in Protective Barriers and Encapsulating Materials

Schmulker, R., Beard, R.B., Prout, F.C. (FDA)
Filed 30 Mar 92
Serial No. 07/859,778

The ability to evaluate new designs or materials and/or improve existing instruments and methodologies for the detection of manufacturing defects or holes in barrier-type products, such as condoms and rubber gloves, is dependent on calibration, or hole, standards; however, developing adequate hole standards has been difficult because of the elasticity of materials such as latex, which is commonly used in barrier products. To overcome this problem, a hole whose walls and outer surrounding surface are chemically different from the construction material was developed; the hole can be designed to have a diameter between 0.5 to 10 μm. This novel approach to hole calibration should improve not only quality control testing but also quantitative comparison of various valuative tests for barrier products.
Licensing Contact: John Fahner-Vihtelic

Catalyst For Preparing Polyacrylamide Gel Which Improves The Detection Of Biomaterials By Silver Staining

Hochstrasser, D., Merril, C.R. (NIMH)
Filed 11 Mar 92
Serial No. 07/849,344 (CON of 07/323,851)

A novel method for silver staining of polyacrylamide gels offers a quick, sensitive method of visualizing proteins, polypeptides, and nucleic acids. Present methods employ radioactive labeling of samples prior to electrophoresis or staining of the gel with various dyes after electrophoresis. Although these methods are powerful visualization tools, they are slow and complex and often cannot detect samples at low concentrations due to background interference. By adapting a histological silver tissue stain for use with polyacrylamide gels, it is possible to achieve as much as a 100-fold increase in sensitivity and obtain an image in less than 6 hours. Background contamination is significantly reduced by utilizing sample-specific cross-linking agents in the polyacrylamide gel.
Licensing Contact: Steve Ferguson

Spectroscopic Imaging Device Employing Quality Spectral Filters

Lewis, E.N., Levin, I.W., Treado, P.J. (NIDDK)
Filed 6 Mar 92
Serial No. 07/846,824

This novel imaging device, which integrates both light microscopy and spectroscopy, allows for the cost-effective development of high-resolution spatial, chemical, and spectral images. It provides a rapid means for examining and collecting large format images from vibrational and visible spectra in a three-dimensional sample. It is superior to current equipment because it has no moving parts. This device may be used as a tool for the characterization of polymers and semiconductors and has potential as a diagnostic tool for clinical analysis of histologic materials.
Licensing Contact: John Fahner-Vihtelic

High Resolution Digital Thermometer

Friauf, W.S., Clem, T.R., Berger, R.L. (NCRR)
Filed 5 Feb 92
Serial No. 07/831,603

The thermometer developed in this invention can measure temperature differences of micro-degrees centigrade. This level of accuracy is achieved by inserting a high-gain amplifier between the bridge and the analog-to-digital converter and by using a personal computer to monitor the balance of the bridge. The current invention is an improvement over other digital thermometers, which have accuracy limitations on the order of 1 to 100 milli-degrees centigrade. The new thermometer also allows for increased flexibility in selecting sampling rate, permits a larger number of samples to be taken, and provides for easy recall, display, and production of tabular and graphic test results.
Licensing Contact: John Fahner-Vihtelic

Apparatus For Countercurrent Chromatography Separations And Stable Methods For Monitoring The Effluent Thereof

Oka, H., Ito, Y. (NHLBI)
Filed 20 Nov 91
Serial No. 07/798,328 (CIP of 07/450,111)

A simple and effective method for the continuous UV-monitoring of the effluent from high-speed continuous countercurrent chromatography (HSCCC) has been developed. This new technique overcomes two classic problems that have prevented the use of UV chromatography monitors in HSCCC: turbidity of the mobile phase in the flow cell due to altered ambient temperature, and bubble formation by the effluent due to the pressure drop in the flow cell. These modifications provide a means for HSCCC to yield noiseless UV tracings comparable to those found in HPLC.
Licensing Contact: John Fahner-Vihtelic

Use Of ^{23}Na NMR In The Analysis Of Renal Function

Balaban, R.S., Wolff, S.D., Moonen, C. (NHLBI)
Filed 19 Nov 91
Serial No. 07/795,255 (CON of 07/160,993)

^{23}Na NMR offers an improved, noninvasive method of monitoring renal function. Previously available methods for monitoring renal function are extremely invasive or provide mostly morphological information on normal and diseased tissue. ^{23}Na NMR is a noninvasive technology that directly monitors renal function by providing information on the static renal sodium distribution as well as dynamic information about temporal changes in the renal sodium distribution. Consecutive ^{23}Na NMR images give functional information about the kidneys as well as allowing comparison of function between two kidneys.
Licensing Contact: John Fahner-Vihtelic

All Tantalum Stopped-Flow Microcalorimeter

Mudd, C., Berger, R. (NCRR)
Filed 6 Nov 91
Serial No. 07/793,215 (CON of 07/347,700)

A computer-controlled microcalorimeter capable of functioning in a stopped-flow manner offers a quick, highly sensitive method of determining reaction heats. Prior flow-through calorimeters have not been sufficiently sensitive to small changes in reaction heats. This computer-controlled microcalorimeter incorporates a unique mixer and flow paths for reactants and reaction mixtures, which increase the sensitivity for differential analysis of reaction heats. It also provides a method of measuring thermal properties of two or more fluids by periodically stopping the flow of the fluids through the microcalorimeter.
Licensing Contact: John Fahner-Vihtelic

Liquid Chromatographic Chiral Stationery Phase And Method For The Resolution Of Racemic Compounds Using The Same

Doyle, T.D., Bruner, C.A., Smith, E. (FDA)
Filed 20 Feb 90
Serial No. 07/774,130 (CON of 07/481,405, DIV of 07/281,778)

A novel packing material for the chromatographic resolution of racemic nonsteroidal anti-inflammatory pharmaceutical substances was produced. Chromatographic methods that use the novel packing material, which comprises a chiral stationary phase (CSP), is also described. The method is particularly effective for the liquid chromatographic resolution of racemic naproxen, ibuprofen, fenoprofen, suprofen, and other racemic acid compounds and drugs. The naproxen CSP is useful in many types of chromatography, e.g., high performance liquid chromatography (HPLC), thin-layer chromatography (TLC), and supercritical fluid chromatography.
Licensing Contact: Steve Ferguson

Portable Device For Producing Solid Carbon Dioxide

Eve, C.F. (CC)
Filed 10 Sep 91
Serial No. 07/757,316

A new portable device of producing solid carbon dioxide offers a simple, inexpensive means for making dry ice. Presently available apparati for making dry ice are relatively inefficient because they allow substantial portions of carbon dioxide gas to escape; they are also expensive, large, and heavy. This new device is light-weight, relatively inexpensive, and converts liquid carbon dioxide into frozen carbon dioxide while allowing very little gas to escape.
Licensing Contact: John Fahner-Vihtelic

Vacuum Filtration Apparatus

Repaske, R. (NIAID)
Filed 6 Sep 91
Serial No. 07/755,959

A novel apparatus for performing vacuum filtration in a semiautomatic mode offers to improve the purification of samples. Presently available gravity filtration and vacuum filtration methods are labor-intensive because elements such as filter paper must be manually positioned beneath or at the bottom of filter wells for each filtration procedure. This new vacuum filtration apparatus automatically removes and replaces filter elements from a filtration station. The filters used can then be easily removed from the filtration station.
Licensing Contact: John Fahner-Vihtelic

Switching Valve For Direct Biological Sample Injection For LC Analysis

Su, S., Shiu, G.K. (FDA)
Filed 27 Aug 91
Serial No. 07/751,009

A novel switching valve that allows for the swift removal of proteins/peptides offers to improve the analysis of biological samples using liquid chromatography (LC). Typically, LC analysis of biological samples requires the removal of various proteins and peptides using organic solvent extraction and/or precipitation methods. These methods may take from 1 to 6 hours to complete and involve tedious, complex steps. This new switching valve system allows for direct injection of biological samples into the LC system, whereby proteins and/or peptides are rapidly filtered and removed from the sample.
Licensing Contact: John Fahner-Vihtelic

Stopcock Holder

Eve, C. (CC)
Serial No. 07/749,240
Patent Issued 2 Jun 92
U.S. Patent No. 5,117,854

This novel device allows the operator to easily secure, release, and further operate a valve, such as a stopcock holder, with one hand. The valve holder includes a support block and a chamber that holds the valve; a clamp attached to the support block can be tightened or loosened with a thumb screw to hold the valve in place. The new valve holder is an improvement over other clamping devices, specifically pipe clamps, which are difficult to maneuver.
Licensing Contact: John Fahner-Vihtelic

Desk-Top Spectrum Analyzer

Fiori, C.E., Swyt, C.R. (NCRR)
Filed 9 Aug 91
Serial No. 07/743,072

This computer-based analyzer system allows for the quantitative extraction of information from experimentally acquired x-ray spectra and subsequent independent simulation of theoretical spectra from these experimental data. The generation of these theoretical spectra is achieved by a system that includes a spectra analyzer, a data interface such as a computer tape or disk for transferring spectra data from an electron microscope to the analyzer, and an output interface driven by the analyzer to print the results in graphic, tabular, or text form. Operators of this system can also select and adjust relevant parameters to generate and compare a variety of theoretical spectra. Use of this system is expected to significantly reduce the amount of electron microscope time expended on acquiring data, to enable the analyst to develop a broader understanding of the physical and statistical parameters that affect detection limits, and to allow the analyzer on the electron beam instrument to remain free for data acquisition.
Licensing Contact: Steve Ferguson

Cross-Axis Synchronous Flow-Through Coil Plant Centrifuge For Large-Scale Preparative Countercurrent Chromatography

Ito, Y., Yang, T.Y. (NHLBI)
Serial No. 07/742,500
Patent Issued 14 May 92
U.S. Patent No. 5,104,531

A new countercurrent chromatography apparatus has been developed that offers improved separations of peptides and other polar compounds in hydrophilic solvent systems. The novel system utilizes a rotating coiled tube in a centrifugal force field for sample separation. Separation of the materials of interest can be optimized by the control of the pattern of the centrifugal force field in the unit.
Licensing Contact: John Fahner-Vihtelic

System And Method For Performing Simultaneous Bilateral Measurements On A Subject In Motion

Stanhope, S.J. (CC)
Filed 30 Jul 91
Serial No. 07/737,872

A novel system for performing simultaneous bilateral measurements on a subject in motion offers to improve biomechanics analyses. Presently available motion analysis systems are "passive target" systems in which the target reflects light that is picked up by a camera hooked to a computer. A known problem associated with this passive technique is that the target may reflect too much light and the camera and the computer with which it communicates will receive information not accurately associated with the target. This new system, which uses two cameras that are sensitive to different wavelengths of light and employs variable intensity controlled wavelength illumination on opposite sides of the subject, avoids confusion caused by reflectance from the subject.
Licensing Contact: John Fahner-Vihtelic

Apparatus For Fluorescent Excitation And Detection From Potentiometric Dyes With A Single-Ended Optical Fiber

Krauthamer, V. (FDA)
Filed 18 Jul 91
Serial No. 07/732,021

A novel apparatus for exciting and detecting potentiometric dyes offers an improved method for studying biological tissues *in vivo*. The method presently used for detecting the electrical activity of cells stained with voltage-sensitive dyes is limited because it requires a clear line-of-sight path between the light source, the tissue under investigation, and the light detector. Because extensive dissection of the tissue is often required to achieve the required line-of-sight path, this method is not well suited for *in vivo* investigations of tissues. This new apparatus, which uses an optical fiber that serves as both a light source and a fluorescence excitation detector, does not require dissection of the tissue to achieve a line-of-sight path and is, thus,is well suited for *in vivo* detection of fluorescence changes that occur as the result of excitation of tissues stained with voltage-sensitive dyes.
Licensing Contact: John Fahner-Vihtelic

Thin-Layer Chromatography Direct Sample Application Manifold

Mount, D., Kirby, D.W., Seymore, D.L. (CDC)
Filed 15 Jul 91
Serial No. 07/729,960

A novel apparatus for directly applying samples to a thin-layer chromatographic (TLC) column offers to improve the chemical analysis of many compounds. With existing TLC technology, it is difficult to confine the sample to a well- defined area; it also requires that the analyte be extracted from an aqueous matrix into an immiscible organic solvent after the pH of the matrix solvent has been adjusted to the appropriate value of the analyte. This is a slow, expensive procedure that requires a number of solvents and often yields poor results. This new TLC apparatus, which allows for the direct application of a complex aqueous matrix to a TLC sheet, provides substantial savings in labor and reduces the number of reagents and equipment necessary to obtain a qualitative or quantitative result for a particular analyte.
Licensing Contact: John Fahner-Vihtelic

Radiolabeled N-Substituted-6-Iodo-3,14-Dihydroxy-4, 5α-Epoxymorphinans, Intermediates For Producing The Same, And A Process For The Preparation And Methods Of Detecting Opioid Receptors

de Costa, B.R., Ladarola, M.J., Rothman, R.B., Berman, K.F. (NIDDK)
Filed 14 Jun 91
Serial No. 07/715,762

Radiolabled derivatives of epoxymorphinans offer a simpler, less expensive method of imaging opioid receptors in brain tissue. Previously available radiolabled compounds for visualizing opioid receptors require the use of positron emission tomography (PET), which is very complicated and expensive to use. These radiolabled epoxymorphinan derivatives can be used with single proton emission computerized tomography (SPECT), which has a much simpler detection system than PET and is, thus, much less expensive to use.
Licensing Contact: Arthur Cohn

Reliable Bioassay For Evaluation Of Environmental Neurotoxins

Pollard, H.B. (NIDDK)
Filed 31 May 91
Serial No. 07/709,029

A new bioassay for determining neurotoxicity offers a reliable, inexpensive method of evaluating the safety of environmental chemicals. Previously, there has been no inexpensive and convenient system for evaluating chemical neurotoxicity, particularly in relation to humans. This new bioassay uses goldfish, which have neurologic systems similar to those of higher vertebrae, as test models. The goldfish are subjected to neurotoxins and compared biochemically to control goldfish.
Licensing Contact: John Fahner-Vihtelic

Device For Evaluating Optical Elements By Reflected Images

Ediger, M., Grossman, L. (FDA)
Filed 16 Apr 91
Serial No. 07/685,399

Current methods of evaluating optical elements that rely on images transmitted by refracting optical elements cannot provide optical quality information about individual surfaces. The method described in this invention is based on reflected images and allows the user to determine the optical effects contributed by individual surfaces of a single optical, alone or in a system. The technique is particularly useful for evaluating corneal transplants, grafts, and reshapings.
Licensing Contact: John Fahner-Vihtelic

Differential Surface Composition Analysis By Multiple-Voltage Electron Beam X-Ray Spectroscopy

Wallace, W., Keane, M. (CDC)
Filed 29 Mar 91
Serial No. 07/676,693

Epidemiological data suggest that risks from exposure to dust in the workplace may depend on the size and surface conformation of particles; current methods of measuring dust in the workplace do not appear to accurately quantify those risk factors. The novel method of particle analysis described in this invention can distinguish homogeneous composition, top surface coating, and top and bottom surface coating for particles between 0.1 and 10 micrometers. The method can be used to identify respirable particles that may be pathogenic in the lung.
Licensing Contact: John Fahner-Vihtelic

Rapid Exchange Imaging Chamber For Stop-Flow Microscopy

Zimmerberg, J.J., Sullivan, J.V., Bungay, P.M. (NIDDK)
Filed 19 Feb 91
Serial No. 07/656,326

A novel optical chamber, which allows for optimum access to fluids or sample, offers an enhanced means of examining biological specimens or reactions that undergo visually observable changes. Previously developed fluid or sample-flow optical chambers have been limited by metal elements that require cleaning between samples, long sample mixing times, or fixed chamber depths. This new optical chamber allows for rapid fluid exchange with minimal mixing times, easy exchange of elements that come in contact with the sample, and variable chamber depths.
Licensing Contact: John Fahner-Vihtelic

Type-XLL Cross-Axis Synchronous Flow-Through Coil Planet Centrifuge For Separation Of Biopolymers

Shibusawa, Y., Ito, Y. (NHLBI)
Filed 17 Jan 91
Serial No. 07/642,340

Retention of the stationary phase of viscous polar solvent systems such as butanol produces carry-over problems in countercurrent chromatography apparatus. The new design described in this invention improves the phase-retaining capacity of the X-axis coil planet centrifuge by using exclusively left-handed column coils. The improved centrifuge is capable of separating macromolecules using aqueous-aqueous two-phase solvent systems. The device is useful in separating various macromolecules, including biopolymers such as proteins, nucleic acids, polysaccharides, whole cells, and cell organelles.
Licensing Contact: John Fahner-Vihtelic

Microtome With Micro-Plane And Electric Contact Reference

Leighton, S.B. (NCRR)
Filed 9 Nov 90
Serial No. 07/610,880

This new microtome improves tissue section preparation for microscopic examination. Included in this device are means to support a sample, a section-cutting knife, and an electrical contact detection method for referencing the position of the sample. This device overcomes the problems of previous microtome designs in that thinner and more accurate tissue sections can be cut regardless of unpredictable expansion or contraction of the specimen or movement of the specimen block. This microtome can be easily automated, and the compactness of the device allows it to be incorporated within a scanning electron microscope.
Licensing Contact: John Fahner-Vihtelic

Cytotoxic T Lymphocyte Activation Assay

Sitkovsky, M.V. (NIAID)
Filed 8 Nov 90
Serial No. 07/610,332

A novel assay for cytotoxic T lymphocyte activation offers an advancement for diagnosing and monitoring the activity of immunologic diseases. Presently available methods for assaying cytotoxic T lymphocyte activation are not accurate because they rely on indirect readings or are difficult to control. This new assay directly detects cytotoxic T lymphocyte activation by measuring secreted granule-associated enzymatic activity. It can be used to screen T lymphocyte inhibiting or activating agents that may be useful in controlling immunologic diseases.
Licensing Contact: John Fahner-Vihtelic

Low-Cost Ultrasonic Nebulizer For Atomic Spectrometry

Clifford, R.H., Montaser, A., Dolan, S.P., Capar, S.G. (FDA)
Filed 3 Sep 90
Serial No. 07/592,489

A novel geyser-type ultrasonic nebulizer offers an advanced method for preparing samples for atomic spectrometry. The most commonly used nebulizers are either expensive or lose efficiency with repeated use. This low-cost geyser-type ultrasonic nebulizer can be operated in batch or continuous mode with long-term precision.
Licensing Contact: John Fahner-Vihtelic

Synthesis And Purification Of N-Bromoacetyl-3,3'5-Triiodo-L-Thyronine

Cahnmann, H.J., Ito, Y. (NIDDK)
Filed 10 Sep 90
Serial No. 07/579,630

A novel method for synthesizing highly pure N-bromoacetyl-3,3'5-triiodo-L-thyronine ($BrAcT_3$) and carrier-free labeled $BrAcT_3$ offers a more accurate and sensitive method of detecting thyroid hormone. Presently available methods of synthesizing and labeling $BrAcT_3$ are cumbersome and are often contaminated by varying amounts of $BrAcT_4$. Labeled $BrAcT_3$ is used to detect bound thyroid hormone, and any contamination affects its sensitivity and specificity as a probe. This new synthesis method uses a simple, one-step procedure to produce substantially pure $BrAcT_3$, which is easily purified by countercurrent chromatography. The purified $BrAcT_3$ is then labeled with ^{125}I or ^{14}C by a simple, one-step method.
Licensing Contact: John Fahner-Vihtelic

Method And Apparatus For Testing A Protective Barrier Material For Pinholes And Tear Strength

Schmukler, R.E., Beard, R.B., Schwan, H.P., Prout, F. (FDA)
Filed 12 Jul 90
Serial No. 07/552,284

This invention provides for the detection of micron- and submicron-sized holes in protective products such as condoms, gloves, and encapsulating or packaging materials. In this nondestructive method, alternating electric current is applied across the protective barrier material, and the resultant conductivity is used to determine the quality of the product. Stringent quality control measures, as applied to protective items, are especially critical in preventing the transmission of viruses and fluid-transferred diseases. The new method is more reliable and more sensitive than currently used methods.
Licensing Contact: John Fahner-Vihtelic

Diamond-Like Carbon Coating Of Plastic By Argon Ion Deposition

Berger, R., Mudd, C., Michel, S., McClintock, W. (NHLBI)
Filed 30 April 90
Serial No. 07/502,121

A new method has been developed to coat plastics at room temperature with diamond-like carbon coatings using the dual ion beam enhanced deposition technique. The coating obtained is chemically and biologically inert as well as impermeable to water or chemical vapors.
Licensing Contact: John Fahner-Vihtelic

Method For Estimating mRNA Content By Filter Hybridization To A Polythymidylate Probe

Hollander, C., Fornace, A.J. (NCI)
Filed 30 Mar 90
Serial No. 07/501,774

This method for quantifying the relative amounts of mRNA samples using the hybridization of a polythymidylate (poly T) probe with RNA bound to an insoluble substrate is especially applicable for normalizing numerous RNA samples to be analyzed by dot blot hybridization. The method is superior to methods such as relative hybridization to cDNA probes such as actin, where the transcript levels may vary according to cell treatment.
Licensing Contact: Steve Ferguson

Apparatus And Methods For Determining *In Vivo* Response To Thermal Stimulation In An Unrestrained Subject

Hargreaves, K.M., Dubner, R., Brown, F. (NIDR)
Filed 21 Mar 90
Serial No. 07/496,573 (DIV of 07/278,355)

A new apparatus for measuring an individual's response to thermal stimulation offers an improved method of determining the effectiveness of pain-killing drugs. Previously available methods for determining how well drugs alleviate pain do not produce a reproducible and measurable response. This new pain-determining apparatus uses a light beam to selectively apply radiant heat to a predetermined site on the subject; the subject's response to the light beam before and after administration of an analgesic drug can be accurately and reproducibly determined.
Licensing Contact: John Fahner-Vihtelic

Horizontal Flow-Through Coil Planet Centrifuge With Multilayer Plural Coils In Eccentric Synchronous Rotation, Suitable for Countercurrent Chromatography

Ito, Y. (NHLBI)
Serial No. 07/496,144
Patent Issued 18 Jun 91
U.S. Patent No. 5,024,758

A horizontal flow-through coil centrifuge provides a very long passage of connected multilayer helical tubing coils. Fluid flow through the tubing has a long dwell time in the gravitational/centrifugal force fields, enabling very sensitive chromatographic separations of constituents between two fluid phases. Gearing ensures that inflow and outflow tubing remain free of twisting. Speed and temperature controls allow use at a variety of operational speeds and fluid temperatures.
Licensing Contact: John Fahner-Vihtelic

A Method For The Fluorescent Detection Of A DNA Sequence In Real Time

Hughes, S.H., Kumar, R., Brumbaugh, J. (NCI)
Filed 26 Feb 90
Serial No. 07/484,573

A new method for the real-time fluorescent detection of a DNA sequence following amplification by PCR or other techniques has been discovered. This new technique eliminates the need to use radioactive probes to detect the DNA as well as the delay needed for autoradiographic exposure.
Licensing Contact: Steve Ferguson

Safety Pipette And Adaptor Tip

Whelan, J.P. (NIAAA)
Serial No. 07/451,689
Patent Issued 22 Oct 91
U.S. Patent No. 5,058,441

A new safety pipette and adaptor tip offer to eliminate any risk of self-contamination or exposure to personnel during the transfer of materials. All presently available pipettes have the same safety flaw: the user can mouth pipette with them. This new safety pipette is designed to prevent any mouth pipetting and, thus, any oral contamination from occurring.
Licensing Contact: John Fahner-Vihtelic

Thimble Glass Frit Nebulizer And Method

Montaser, A., Clifford, R.H., Sinex, S.A., Capar, S.G. (FDA)
Filed 14 Dec 89
Serial No. 07/450,761

A thimble glass frit nebulizer was designed that converts a liquid solution into aerosol form for use in atomic and mass spectrometry. This nebulizer is an improvement over pneumatic, Babington, ultrasonic, and other glass frit nebulizers because it is more efficient, is less likely to become clogged, can be used with a 10 percent sulfuric acid solution, and is

less expensive. A cleaning system that reduces the memory effects found in other frit-type nebulizers was also developed.
Licensing Contact: John Fahner-Vihtelic

Real-Time Monitoring Of Oxidative Products From *In Vitro* Cell-Biomaterial Interaction Using Chemiluminescence

Kaplan, D.S., Picciolo, G.L., Mueller, E.P. (FDA)
Filed 21 Sep 89
Serial No. 07/410,626

Chemiluminescence assays are valuable for accurately identifying potentially harmful oxidative products such as hydrogen peroxide and superoxide that can potentially degrade biomaterials used in implanted medical devices such as heart valves, pacemakers, and orthopedic prostheses. Presently available methods for assaying cell-biomaterial interactions are inaccurate because they first require the removal of the reactant cells; short-lived oxidative products are only partially detected by the time measurements are taken. When added to cell-biomaterials interactions, chemiluminescence probes immediately bind to oxidative products and emit a distinct wavelength. Thus, they give a real-time measurement of reaction products.
Licensing Contact: John Fahner-Vihtelic

Generic Microcomputer Interface To Walters Interlink Communications Network

Hanus, J.P. (FDA)
Filed 26 Jul 89
Serial No. 07/385,036

A new interface enables the unattended synchronous control of the Walters automatic HPLC injector. Presently, two loosely synchronized programs are used to control the Walters automatic HPLC injector; both limit the flexibility of the system because they do not adequately interface the analytical run time with the vial-positioning mechanism and do not allow for interrupting the normal analysis sequence for priority samples. This new interface allows the positioning of sample vials to be controlled by the analyst as well as the microcomputer and the interruption of the analysis sequence for priority samples.
Licensing Contact: John Fahner-Vihtelic

Device For Rotary-Seal-Free Flow-Through Coil Planet Centrifuge Equipped with Multiple Holders

Ito, Y. (NHLBI)
Filed 6 June 89
Serial No. 07/363,371

A new coil planet centrifuge (CPC) design offers an improved method of performing countercurrent chromatography on biologically important macromolecules. Previous types of CPCs, such as the Type J CPC models, are equipped with a single column holder on one side of the rotary frame with a counterweight mounted on the opposite side for balancing the system. This new CPC design provides multiple column holders in which columns on the neighboring holders are interconnected with flow tubes on the rotary frame without risk of twisting, a large column capacity in a compact apparatus, and perfect balancing of the CPC without use of a counterweight.
Licensing Contact: John Fahner-Vihtelic

Microwave-Induced Plasma Torch With Tantalum Injector Probe

Satzger, D. (FDA)
Serial No. 07/362,357
Patent Issued 24 Sep 91
U.S. Patent No. 5,051,557

This microwave-induced plasma torch offers to improve sensitivity and specificity of mass spectrophotometric analysis of trace elements in nutritional and toxicologic studies. Previously available plasma source mass spectroscopy has been limited by the amount of power required to heat the plasma and an inability to keep the sample in the "hot" part of the plasm. The microwave-induced plasma torch overcomes these limitations through the use of a tangential flow torch which incorporates a tantalum injector probe. This design enables ionization of the analyte at lower power while introducing the analyte beyond the center of the cavity, eliminating diffusion toward the periphery of the plasma.
Licensing Contact: John Fahner-Vihtelic

Sulfur-Containing Xanthine Derivatives As Adeonsine Antagonists

Jacobson, K.A., Pfleiderer, W., Daly, J.W., Neumeyer, J.L. (NIDDK)
Filed 19 Apr 89
Serial No. 07/340,351

Sulphur-containing analogs of 8-substituted xanthines have increased selectivity and affinity for adenosine receptor and, therefore, are valuable antagonists for studying the activity of these receptors in isolation. Derivatives of the naturally occurring xanthines caffeine and theophylline are the most widely used adenosine antagonists; however, they are non-selective and relatively weak. These sulfur-substituted xanthines have significantly greater affinity for adenosine receptors than their non-sulfur-substituted analogs and bind selectively to adenosine receptors over other receptors.
Licensing Contact: Arthur Cohn

Magnetization Transfer Contrast And Proton Relaxation And Use Thereof In MRI

Balaban, R.S., Hsieh, P., Wolff, S. (NHLBI)
Filed 14 Apr 89
Serial No. 07/337,980

Combining saturation transfer and NMR imaging allows the imaging of chemical exchange rates and, to some extent, exchangeable proton metabolite concentrations. This information has implications to many biological systems including those with compartments having different metabolites concentrations and/or different exchange rates. Previously, NMR studies have made no attempt to image reactions except to calculate the bulk rate of chemical exchange, without regard to compartmentation. By combining the technique of saturation transfer for both ^{31}P and ^{1}H NMR and NMR imaging, it is

possible to image and directly measure the magnetization exchange between protons in a broad immobilized proton pool and to monitor the chemical exchange rates of localized reactions.
Licensing Contact: John Fahner-Vihtelic

Pyroelectric Calorimeter

Hagins, W.A., Yoshikami, S. (NIDDK)
Serial No. 07/305,331
Patent Issued 10 Jul 90
U.S. Patent No. 4,940,896

A novel calorimeter offers a more sensitive method for measuring the heat capacity and heat conductivity of milligram samples of solids and liquids on the basis of the pyroelectric effect. This calorimeter has an improved detector assembly over previously designed models that provides electrical and thermal responses. The electronic amplifying system is capable of measuring fast temperature changes of less than 0.1°K.
Licensing Contact: John Fahner-Vihtelic

Derivatization Of Amines For Electrochemical Detection

Jacobson, K.A., Kirk, K.L., Linnoila, M.I., Miller, T., Mine, K. (NIDDK)
Serial No. 07/290,279
Patent Issued 13 Mar 90
U.S. Patent No. 4,908,322

A novel method for preparing acylated amines offers to enhance the electrochemical detection and separation of compounds in biological fluids. Presently, many components of interest in biological fluids cannot be measured by electrochemical detection because they are not sufficiently electroactive. This novel amine-acylating agent allows one to extract the neutral amine derivative into an organic solvent and to concentrate the extract by evaporation, which increases the detection range.
Licensing Contact: John Fahner-Vihtelic

Liquid Chromatographic Chiral Stationary Phase And Method For The Resolution Of Racemic Compounds Using The Same

Doyle, T.D., Brunner, C.A., Smith, E. (FDA)
Serial No. 07/281,778
Patent Issued 24 Apr 90
U.S. Patent No. 4,919,803

A liquid chromatographic packing material containing a chiral stationary phase is effective for the resolution of racemic α-methylarylacetic acids and similar nonsteroidal anti-inflammatory pharmaceutical substances. This packing material retains its efficiency and enantioselectivity for several months of continuous use. The packing material is prepared by bonding S- or R-6-methoxy-α-methyl-2-naphthaleneacetic acid to aminopropylsilanized silica.
Licensing Contact: Steve Ferguson

Pressure Sensor Element And Method To Measure Contact Stress

Basser, P.J. (NCRR)
Serial No. 07/261,303
Patent Issued 6 Nov 90
U.S. Patent No. 4,967,764

A biological implantable contact pressure sensor element permits noninvasive measuring of the NMR spectrum. This device, which consists of an impermeable membrane containing a gel hydrated with an agent that is detectable by NMR spectroscopy, can be implanted into a situs of a subject in need of such pressure measurement. The final values of contact stress applied to the sensor element at a desired time are calculated from a calibration curve relating the chemical shifts observed by the NMR spectroscopy to the normalized stress.
Licensing Contact: John Fahner-Vihtelic

Device For Rotary-Seal-Free Flow-Through Coil Planet Centrifuge Equipped With Multiple Column Holders Connected In Series

Ito, Y. (NHLBI)
Filed 6 Jun 89
Serial No. 07/234,737

A novel type of flow-through coil planet centrifuge (CPC) offers to significantly enhance countercurrent chromatography technology. Presently available flow-through CPCs are limited by only a single column holder. This newest device is equipped with multiple column holders in which neighboring columns are interconnected with flow tubes.
Licensing Contact: John Fahner-Vihtelic

Aliquot Collection Adaptor For HPLC Automatic Injector Enabling Simultaneous Sample Analysis And Sample Collection

Hanus, J.P. (FDA)
Serial No. 07/210,005
Patent Issued 28 Apr 92
U.S. Patent No. 5,108,708

This invention is designed to analyze the contents of pharmaceuticals (in particular, materials in tablet form) using HPLC while the tablet is being dissolved. More than 12 samples can be analyzed over a 12-hour period, during which time the system does not need to be monitored. This invention is an improvement over other systems, which require manual transfer of the dissolved material to the HPLC, automatically discard samples so that a re-analysis cannot be performed, or allow for sequential analysis of a very limited number of samples (less than six).
Licensing Contact: John Fahner-Vihtelic

High-Speed Adaptive Ultrasonic Phased Array Imaging System

Smith, S.W., Trahey, G.E. (FDA)
Serial No. 07/178,736
Patent Issued 1 Aug 89
U.S. Patent No. 4,852,577

A novel on-line adaptive ultrasonic pulse echo phased array imaging device corrects

for transducer phase aberrations and optimizes spatial resolution for astronomical determinations. The previous techniques of optical astronomy operated on only targets within the iso-planatic patch, whether point targets (stars) or extended sources (planets) with bright spots. This new device's image-sharpening process maximizes the average brightness of image texture (coherent speckle) within a selected region of interest by varying the phased array scan data of array elements for all image lines within the region.
Licensing Contact: John Fahner-Vihtelic

Method For Obtaining A Ratio Measurement For Correcting Common Path Variations In Intensity In Fiber Optic Sensors

Peterson, J.L. (NCRR)
Serial No. 07/129,387
Patent Issued 20 Dec 88
U.S. Patent No. 4,792,689

This method corrects for common light path variations (i.e., from fiber bending and illumination source) in fiber optic chemical sensors. It incorporates a device to separate light of different wavelengths and a combination of dyes and luminescents that permits measurement of two wavelength regions along the sensor, one that varies with the concentration of the analyte and one that is independent of the analyte concentration. The use of light emitted at two wavelengths is a novel feature that increases the precision with which analyte concentrations can be measured.
Licensing Contact: John Fahner-Vihtelic

Ultra-Fast Solid State Power Interrupter

Walchle, R.W. (NINDS)
Serial No. 07/105,335
Patent Issued 25 Apr 89
U.S. Patent No. 4,825,330

A new power interrupter nondestructively protects electronic equipment (e.g., 120-Vac equipment) that is expected or designed to develop a short circuit across the AC power line. The speed of response of 50-microsecond turn-off is significantly faster than that of ordinary line circuit breakers or fuses, both of which react in milliseconds. The device can be applied to any circuit protection problem in which speed of response is crucial.
Licensing Contact: John Fahner-Vihtelic

Multistage Mixer-Settler Centrifuge

Ito, Y. (NHLBI)
Serial No. 07/101,970
Patent Issued 15 Aug 89
U.S. Patent No. 4,857,187

A novel multistage mixer-settler centrifuge offers a number of advantages over previous technologies for separating macromolecules and cell particles. The various processes previously applied to the separation of biological compounds have encountered difficulties related to insufficient mixing of solvents or long solvent separation times. This multistage mixer-settler centrifuge employs a vibration-driven mixing device mounted inside the column that allows for efficient mixing the phases and relatively short solvent separation times.
Licensing Contact: John Fahner-Vihtelic

Thermal Fragmentation Of Methylbenzylurea Diastereomers

Brossi, A., Schonenberger, B. (NIDDK)
Serial No. 07/090,363
U.S. Patent No. 5,039,801
Issued 13 Aug 91

A novel thermal procedure for fragmenting methylbenzylurea diastereomers offers an improved method of obtaining optically active amines, carbamates, and isocyanates. A number of biologically active secondary amines occur as racemic mixtures (optical isomers). Present methods of separating these mixtures employ chromatography, which often gives poor separation and yields. This thermal method for separating optically active ureas involves refluxing the ureas in C_3 - C_7 alcohol solutions with or without catalytic amounts of alkali metals. This method gives high yields and up to 99 percent optical purity.
Licensing Contact: John Fahner-Vihtelic

Angle Rotor Coil Planet Centrifuge For Countercurrent Chromatography And Particle Separation

Ito, Y. (NHLBI)
Serial No. 07/052,209
Patent Issued 28 Jun 88
U.S. Patent No. 4,753,734

An improved coil planet centrifuge offers enhanced countercurrent chromatography and separation of polar compounds such as peptides and proteins. Previously developed coil planet centrifuges have had difficulty adapting to different polymer phase systems. This improved coil planet centrifuge includes a column whose configuration and orientation may be varied depending on the properties of the two-phase solvent system. The column holder rotates about its central longitudinal and central vertical axes at the same angular velocity and in the same direction.
Licensing Contact: John Fahner-Vihtelic

Dialectric Phantom Material

Broadhurst, M.G., Chiang, C., Davis, G.T. (FDA)
Filed 30 Apr 87
Serial No. 07/044,346

An improved phantom material that duplicates the dielectric properties of living tissues offers to improve the testing and calibration of radiation therapy devices. Presently used phantom materials for testing and calibrating devices that deliver high-frequency electromagnetic radiation to human tissues are unstable and have different thermal and electrical properties than living tissue. This improved phantom material effectively approximates the same thermal and electrical properties as biological materials; a special gelling agent prevents the movement of components in the composition and thus offers greater stability.
Licensing Contact: John Fahner-Vihtelic

Confocal Scanning Laser Microscope Having No Moving Parts

Goldstein, S.R. (NCRR)
Serial No. 07/044,021
Patent Issued 2 May 89
U.S. Patent No. 4,827,125

A new confocal scanning laser microscope which has no moving parts offers real-time video imaging of scanned objects. Previously available scanning microscopes are so mechanically complex that acquisition of the image is a relatively slow, cumbersome process. This new confocal laser microscope has no moving parts and uses an image dissector tube that is synchronized and aligned with the laser scan. This permits the specimen to be scanned at video rates and, thus, allows real-time imaging.
Licensing Contact: John Fahner-Vihtelic

Cross-Axis Synchronous Flow-Through Coil Planet Centrifuge Free Of Rotary Seals: Apparatus And Method For Performing Countercurrent Chromatography

Ito, Y. (NHLBI)
Serial No. 06/915,797
Patent Issued 22 Dec 87
U.S. Patent No. 4,714,554

In this countercurrent chromatography (CCC) apparatus, a new orientation of column holder and central vertical axis produces a mode of synchronous planetary motion that has not been applied in CCC to date. The result is a new, symmetrical force distribution. The apparatus eliminates the need for rotary seals and allows efficient mixing of solvent phases.
Licensing Contact: John Fahner-Vihtelic

Process And Apparatus For The Preparation Of Multiple Gradients

Radosevich, J.A., Barclay, S. (EM)
Serial No. 06/903,879
Patent Issued 12 June 88
U.S. Patent No. 4,756,346

A process and an apparatus that produces multiple identical serial dilutions and multiple continuous and discontinuous gradients offers an improved method for separating and analyzing biological materials. The gradients include continuous gradients of shapes ranging from linear to concave or convex, and step gradients with well-defined interfaces. Groups of syringes or vacuum pumps with valve systems are used to deliver the gradient material and initial solution volumes.
Licensing Contact: John Fahner-Vihtelic

Electrochemical Sample Probe For Use In Fast-Atom Bombardment Mass Spectrometry

Phillips, L., Bartmess, J. (FDA)
Serial No. 06/867,013
Patent Issued 12 Jan 88
U.S. Patent No. 4,719,349

This new dual-electrode sample probe will significantly enhance the use of fast atom bombardment (FAB) to determine the secondary ion mass spectra of chemical substances. FAB does not now yield useful structural information for many larger molecules of biological interest. This probe overcomes this disadvantage, producing structurally significant ions and offering a direct means to study electrochemical reactions.
Licensing Contact: John Fahner-Vihtelic

Method Of Sensing Fluid Properties Independent Of Bubble Concentrations

Leighton, S.B., Maxwell, G.M. (NCRR)
Serial No. 06/850,120
Patent Issued 26 Apr 88
U.S. Patent No. 4,740,709

A novel sensing device for measuring the properties of liquids offers to significantly improve the accuracy of determining the optical density of aerobic cell cultures. Previous devices for measuring the optical density of liquid cultures have been bothered by the presence of high concentrations of air bubbles from agitation. This new sensing device minimizes the interference from bubbles by first separating the bubbles from the liquid before taking a measurement.
Licensing Contact: John Fahner-Vihtelic

Method And Device For Quantitative Endpoint Determination In Immunofluorescence Using Microfluorophotometry

Picciolo, G.L., Kaplan, D.S. (FDA)
Serial No. 06/801,965
Patent Issued 11 Oct 88
U.S. Patent No. 4,777,133

A new microfluorophotometric device allows for the quantitative determination of immunofluorescent reaction endproduct (titer). Current immunofluorescent (IF) methods require a subjective evaluation of the titer; this is further complicated by the rapid fading of the fluorescent reaction. This new device employs a computer-controlled voltage output photometer to measure light intensity and a protective agent to reduce fading of fluorescent reaction products.
Licensing Contact: John Fahner-Vihtelic

Method for Continuous Countercurrent Foam Separation

Ito, Y. (NHLBI)
Serial No. 06/776,044
Patent Issued 7 Oct 86
U.S. Patent No. 4,615,805

A new countercurrent chromatography apparatus allows for foam separation by a gas-liquid dual countercurrent flow through a helical column subjected to planetary motion. Samples are separated according to foam affinity: materials with an affinity for the foam are eluted through one end of the column, whereas other materials are eluted through the other end. This system allows continuous extraction, enrichment, and stripping, as well as continuous separation of solutes and particles.
Licensing Contact: John Fahner-Vihtelic

Transducer Hydrophone With Filled Reservoir

Harris, G.R., DeReggi, A.S. (FDA)
Serial No. 06/663,969
Patent Issued 24 Mar 87
U.S. Patent No. 4,653,036

Improved ultrasound probing is obtained from a rugged ultrasonic hydrophone with an acoustically matched reservoir filled with material of low dielectric constant on the rear surface of a piezoelectrically active sheet. Prior devices had leads exposed to the fluid, sensitivity that depended on the dielectric constant of the medium, high lead capacitance, mutual capacitance between elements causing electrical crosstalk, degraded signal-to-noise ratio, and an undesirable side lobe response pattern.
Licensing Contact: John Fahner-Vihtelic

Method And Device For Quantitative Endpoint Determination In Immunofluorescence Using Microfluorophotometry

Picciolo, G.L., Kaplan, D.S. (FDA)
Serial No. 06/619,325
Patent Issued 11 Nov 86
U.S. Patent No. 4,622,291

The endpoints for fluorescent reaction products can be quantitated using a protective agent (sodium dithionite, dithioerythritol, dithiothreitol, or triethylenediamine) that reduces fading of the fluorescent reaction product, calibrating the photometer with a stable emitter, and recording the light intensity of the fluorescence. A process kit includes suitable mounting medium, buffer, immunofluorescent reagents, fading retardant, a photometer calibrating device, and instructions. Previous techniques to protect the sample from fading were less practical and less feasible.
Licensing Contact: John Fahner-Vihtelic

Multilayer Coil Countercurrent Chromatograph With Adjustable Revolutional Radius

Ito, Y. (NHLBI)
Serial No. 06/554,795
Patent Issued 11 Dec 84
U.S. Patent No. 4,487,693

Certain physical properties of chemical solvents reduce the ability of many two-phase chromatographic solvent systems to separate macromolecules in countercurrent chromatography (CCC) when the beta of the system is less than one. This apparatus employs a multilayer coiled helical tubular array rotating on its longitudinal axis. The design eliminates the use of a central shaft and, by reducing the radius of the revolutions of the device holding the column, provides large beta values of the coiled column.
Licensing Contact: John Fahner-Vihtelic

Acoustically Transparent Hydrophone Probe

DeReggi, A.S., Harris, G.R. (FDA)
Serial No. 06/553,387
Patent Issued 14 May 85
U.S. Patent No. 4,517,665

This miniature-sized device provides a means for probing ultrasonic fields in liquids or biological tissues. Unlike other hydrophone probes, this invention combines the piezoelectric and acoustic properties of specific semicrystalline polymers and uses large, continuous sheets of these polymers to anchor the sensitive portion of the probe. The new probe eliminates — or at least reduces — some of the problems associated with similar devices, such as alterations in the acoustic field(s) of interest and the production of undesirable or complicated responses (interference).
Licensing Contact: John Fahner-Vihtelic

Multilayer Coil Assembly Coaxially Mounted Around The Rotary Axis For Preparatory Countercurrent Chromatography

Ito, Y. (NHLBI)
Serial No. 06/475,215
Patent Issued 30 Jul 85
U.S. PAtent No. 4,532,039

A new column for use with countercurrent chromatography was designed. The novel column consists of multiple layers of coil wound around a spool. It provides a leak-free system that improves peak resolution and increases the amount of sample that can be loaded onto the chromatographic apparatus. The new column is easy to construct and is less expensive and more compact than conventional systems.
Licensing Contact: John Fahner-Vihtelic

Permeation Testing Apparatus

Garcia, D.B., Harless, J.M., Keith, L.H., Prokopetz, A.T., Sorenson, B.A., Walters, D.B. (NIEHS)
Serial No. 06/459,953
Patent Issued 4 Sep 84
U.S. Patent No. 4,468,951

An apparatus is available for determining the permeation of a chemical through a test material. The apparatus, which requires relatively small amounts of the test chemical, includes a permeation cell comprising two units, each constructed of a block of relatively chemically inert material.
Licensing Contact: John Fahner-Vihtelic

Fiber Optic P_{02} Probe

Peterson, J., Fitzgerald, R. (NCRR)
Serial No. 06/396,055
Patent Issued 16 Oct 84
U.S. Patent No. 4,476,870

Direct physiologic oxygen measurement is essential to observe oxygen transport behavior. Electrode-based measurement devices have size, calibration, drift, and specificity problems. This new device is based instead on a fiber optic probe and a

circuit that provides analog computation of P_{02} using the principle of luminescence quenching. The advantages of this device in the *in vivo* measurement of P_{02} are its small size, flexibility, low cost, avoidance of electrical hazard, and suitability for equilibrium rather than dynamic measurement.
Licensing Contact: John Fahner-Vihtelic

Ultrapurification Of Factor VIII Using Monoclonal Antibodies

Zimmerman, T.S., Fulcher, C.A. (NHLBI)
Serial No. 06/330,105
Patent Issued 30 Nov 82
U.S. Patent No. 4,361,509

Ultrapure preparations of the procoagulant protein factor VIII:C were obtained using monoclonal antibodies specific to protein VIII:RP, which binds to VII:C, and affinity chromatography. This two-step method can be used to isolate factor VIII from plasma or commercial products, but use of a commercial concentrate as the starting material yields VIII:C that is 164,000 times purer than that from plasma. The final VIII:C product is much more concentrated (up to 2,300 units/mg) and of higher purity than protein produced by other methods. The process also allows for better separation of VIII:C from VIII:RP than prior methods.
Licensing Contact: Steve Ferguson

Apparatus And Method For Continuous Countercurrent Extraction And Particle Separation

Ito, Y. (NHLBI)
Serial No. 06/315,271
Patent Issued Nov 83
U.S. Patent No. 4,414,108

A new continuous countercurrent extraction centrifuge offers an improved method of separating solutes and/or particles on the basis of partition coefficients and/or elutriation. Previously employed continuous countercurrent extraction and continuous particle separation systems are limited by a need to subject the flow tubes to revolution around a central axis. This new continuous countercurrent extraction centrifuge, which uses coiled tubes or conduits rotating in an acceleration field of either centrifugal or gravitational origin, can be used for separating blood products, cell separations, preparative-scale separation of various chemicals, and separation and purification of isotopes from nuclear wastes.
Licensing Contact: John Fahner-Vihtelic

Remotely Operated Microtome

Leighton, S.B. (NCRR)
Serial No. 06/250,269
Issued 29 Mar 83
U.S. Patent No. 4,377,958

This invention permits the user to cut thin sections of tissue via remote control while the tissue is held stationary in a vacuum chamber. The device can be used with an optical microscope or a scanning electron microscope so that the tissue can be observed at all times. The system is relatively compact; uses a piezoelectric crystal, rather than thermal expansion or mechanical means, to move the specimen; and has flexible hinges, which eliminate the need for lubrication.
Licensing Contact: John Fahner-Vihtelic

A Portable Instrument For Measurement Of Exposure From A Laser Radiation

Silberberg, J.L. (FDA)
Serial No. 06/202,727
Patent Issued 9 Aug 83
U.S. Patent No. 4,397,552

The laser meter adapted for measuring either continuous-wave or pulsed laser radiation is valuable for determining the duration of safe viewing of a source of visible laser radiation. The laser meter incorporates sophisticated detector circuitry and a dedicated microcomputer.
Licensing Contact: John Fahner-Vihtelic

Apparatus And Method For Continuous Countercurrent Extraction And Particle Separation

Ito, Y. (NHLBI)
Serial No. 06/148,491
Patent Issued 13 Apr 82
U.S. Patent No. 4,324,661

This invention represents an improved and simplified countercurrent extraction system. In previous coil planet centrifuges, the flow tubes were oriented around the central axis, limiting the applicable centrifugal force field to the column and impairing separation of solvent phases. Here, simultaneous rotation of the holder about its own axis as it revolves about the centerline of the apparatus, with the rotation and revolution at the same angular velocity and in the same direction, produces a complete separation of two immiscible solvent phases in the coil. The device offers several advantages, among them improved separation and purification of isotopes from nuclear wastes, more efficient preparative-scale separation of various chemicals, and improved cell and blood separation.
Licensing Contact: John Fahner-Vihtelic

Differential Amplifying System With Bootstrapping

Saraf, D.G., Brown, F.A. (EM)
Serial No. 06/124,551
Patent Issued 16 Mar 82
U.S. Patent No. 4,320,351

An improved differential amplifier system is suitable for low-level input signals having a high common mode rejection ratio, a high differential voltage gain, high input impedance, minimum output-offset voltage, and excellent frequency response down to extremely low frequencies, approaching direct current. Previous systems used resistor networks for connection of the amplifier inputs to ground that lowered the amplifier input impedance, thereby loading the low-level input signal to be amplified.
Licensing Contact: John Fahner-Vihtelic

Instrument For Measuring True RMS AC Voltage And AC Voltage Fluctuations

Silberberg, J.L. (FDA)
Serial No. 06/118,969
Patent Issued 24 Aug 82
U.S. Patent No. 4,346,346

A microcomputerized line voltage monitor can measure DC and RMS AC voltage, AC frequencies, and maximum and minimum RMS voltages, and can display input voltages and percent regulation from the measured maximum and minimum voltage values. It contains two 16-bit counters, the microcomputer, and display devices. Previously used equipment suffered from lack of adequate resolution and accuracy, limited voltage range, lack of means to compute percent regulation, and degradation of voltage accuracy with variation of the input frequency.
Licensing Contact: John Fahner-Vihtelic

Flow-Through Centrifuge

Ito, Y. (NHLBI)
Serial No. 05/661,114
Patent issued 10 Jan 84
U.S. Patent No. 4,425,112

A new flow-through centrifuge design offers an improved method for purifying products such as blood components. Previous flow-through centrifuge designs utilize rotating seals, which can become a source of sample-damaging leaks between the inflow and outflow lines. This new centrifuge is free of rotating seals and, thus, prevents injury to blood products such as platelets and red blood cells.
Licensing Contact: John Fahner-Vihtelic

ANTI-INFLAMMATORY

Inhibitors Of Protein Kinase C Function

Blumberg, P., Szallasi, Z. (NCI)
Filed 8 Apr 91
Serial No. 07/681,679

Protein kinase C — the major phorbol ester receptor — is thought to mediate the tumors, hyperplasias, and edemas that phorbol esters have been shown to promote in animal models. Certain phorbol-related diterpene esters lacking tumor-promoting activity possess antihyperplastic and anti-inflammatory activity. The method outlined in this invention uses those esters to block protein kinase C-mediated responses. Pharmaceutical compounds incorporating these esters may be used to treat disorders involving the protein kinase C pathway.
Licensing Contact: Daniel Passeri

Monoclonal Antibodies Directed To Activated Endothelial Cells, Medicaments and Therapeutic Methods Employing The Monoclonal Antibodies And Their Antigens, And Diagnostic Methods Employing The Monoclonal Antibodies

Newman, W., Shimuzu, Y., Shaw, J.S. (NCI)
Filed 26 Feb 91
Serial No. 07/661,047

New monoclonal antibodies specific for activated endothelial cells offer an important new method for diagnosing and treating acute and/or chronic inflammatory responses. Presently, very few diagnostic indicators or therapeutic approaches have been developed that are directed specifically against endothelial cell-associated inflammation. These new monoclonal antibodies, which specifically detect interleukin-1 (IL-1)-activated endothelial cells, can be used to diagnose inflammatory responses such as graft rejection, subclinical infection, and vasculitis or to develop methods to inhibit these inflammatory responses.
Licensing Contact: Daniel Passeri

Interleukin-2-Stimulated T Lymphocyte Cell Death For The Treatment Of Autoimmune Diseases, Allergic Disorders, And Graft Rejection

Lenardo, M.J. (NIAID
Filed 29 Aug 91
Serial No. 07/751,090

Administration of interleukin-2 (IL-2) prior to exposure to a specific antigen programs T cells that recognize the antigen to die after the antigen binds to the T cell receptor but leaves the majority of other T cell populations unaffected. This discovery may provide the basis for a novel approach to treating and preventing diseases and conditions that are due primarily to T cell immune response, i.e., autoimmune diseases, graft rejection, and some allergies.
Licensing Contact: Marjorie Hunter

Matrix Metalloproteinase Peptides: Role In Diagnosis And Therapy

Liotta, L.A., Stetler-Stevenson, W., Krutzsh, H. (NCI)
Filed 26 Feb 90
Serial No. 07/488,460

Specific peptides constituting a new class of metalloproteinase inhibitors were identified by means of functional assays. These peptides were derived from the sequence of type IV collagenase, which was purified from human melanoma cells. Antibodies that recognize these peptides may be useful diagnostic agents in detecting diseases characterized by destruction of collagen and structural protein matrices, such as rheumatoid arthritis and other autoimmune disorders, cancer/tumor cell invasion and metastasis, localized myocardial anoxia, and corneal ulceration.
Licensing Contact: Daniel Passeri

Evaluative Means For Detecting Inflammatory Reactivity

Sternberg, E.M., Wilder, R.L., Chrousos, G.P., Gold, P.W. (NIMH)
Filed 25 Sep 89
Serial No. 07/412,294 (CIP of 07/365,735, CIP of 07/277,708)

This new test is based on the finding that low responsiveness of the hypothalamic-pituitary-adrenal (HPA) axis is associated with susceptibility to inflammatory diseases. The test measures significant pituitary and adrenal response to any of a group of immune/inflammatory mediators (e.g., cytokines, tumor necrosis factor, epidermal growth factor, transforming

growth factor, interleukins, interferons, biogenic amines, their analogs and their agonists, monoamine oxidase inhibitors, biogenic amine uptake inhibitors). Reduced HAP axis responsiveness may indicate susceptibility to arthritis, uveoretinitis, pneumonitis, encephalomyelitis, multiple sclerosis, and hepatic granulomata. HPA axis stimulation may be a new therapy for inflammatory diseases, and this test may be useful in improving known therapies such as hormone replacement. There currently is no comparable test for susceptibility of mammals to inflammatory diseases.
Licensing Contact: Arthur Cohn

Peptides And Analogues Thereof Having Antithrombotic Activity

Mukherjee, A.B., Miele, L. (NICHD)
Filed 16 Jun 89
Serial No. 07/367,506

Synthetic peptides containing amino acid sequences derived from the protein uteroglobin have potent anti-inflammatory activity and are useful for reducing or eliminating inflammation. Presently available anti-inflammatory agents have limitations because they must be taken orally and can cause damage to the mucosal lining of the stomach. These peptides, which are four to eighteen amino acids in length, are readily absorbed across the mucosa and can be administered nasally as a spray or lyophilized powder.
Licensing Contact: Steve Ferguson

New Class Of Compounds Having A Variable Spectrum Of Activities For Capsaicin-Like Responses, Compositions And Uses Thereof

Blumberg, P.M. (NCI)
Serial No. 07/358,073
Patent Issued 4 Jun 91
U.S. Patent No. 5,021,450

Novel sensory neuromodulator agents may be useful for studying disorders such as arthritis, asthma, allergic reactions, and in biological processes mediated by tachykinins. Capsaicin is a neuromodulator of sensory neurons that transmit the perception of pain to the central nervous system and mediate the release of inflammatory neurotransmitters. Previously, there have not been adequate methods to study the mechanism of action of capsaicin and/or its receptors. These novel neuromodulator agents, which are derivatives of the diterpene resiniferatoxin (RTX), have a variety of potent capsaicin-like activities and should provide further tools for dissecting subclasses of capsaicin responses.
Licensing Contact: Arthur Cohn

Peptide Derivatives Of Cytochrome B558 And Their Use As Medicaments

Malech, H.L., Lomax, K.J., Rotrosen, D., Nunoi, H. (NIAID)
Filed 31 March 89
Serial No. 07/331,652

An optionally substituted peptide derivative of cytochrome B558 is an effective anti-inflammatory substance that specifically inhibits the production of toxic oxygen products by human phagocytic cells, thereby decreasing tissue damage. This substance can be used for preventing or treating gout, autoimmune disorders, myocardial infarction, adult respiratory distress syndrome, asthma, and certain dermatological disorders.
Licensing Contact: Mark Hankins

Evaluative Means For Detecting Inflammatory Reactivity

Sternberg, E., Wilder, R., Chrousos, G., Gold, P. (NIMH)
Serial No. 07/277,708
Patent Issued 9 Apr 91
U.S. Patent No. 5,006,330

The test described in this invention measures significant pituitary and adrenal response to IL-1, a stimulator of the hypothalamic-pituitary-adrenal (HPA) axis; responses below certain levels indicate susceptibility to inflammatory diseases, such as arthritis, uveoretinitis, pneumonitis, encephalomyelitis, multiple sclerosis, and hepatic granulomata. HPA axis stimulation may be a new therapy for inflammatory diseases; it may also be useful in improving known therapies such as hormone replacement. There currently is no comparable test for susceptibility of mammals to inflammatory diseases.
Licensing Contact: Arthur Cohn

Use of Resiniferatoxin And Analogues Thereof To Cause Sensory Afferent C-Fiber And Thermoregulatory Desensitization

Blumberg, P.M. (NCI)
Serial No. 07/261,627
Patent Issued 3 Jul 90
U.S. Patent No. 4,939,149

Resiniferatoxin (RTX) can be used for desensitizing an animal to neurogenic inflammation, to chemically and thermally induced pain, or to study responses involving sensory afferent pathways sensitive to capsaicin and responses involving the hypothalamic temperature control region. RTX is a potent analog of capsaicin, a potent modulator of sensory neurons that deliver the sensation of pain to the central nervous sytem and mediate the release of inflammatory agents. RTX, however, exhibits a somewhat different spectrum of action than capsaicin, thus giving it greater desensitization capabilities at a given level of systemic toxicity and greater desensitization capabilities relative to acute induction of pain.
Licensing Contact: Arthur Cohn

Anti-Inflammatory Agents

Mukherjee, A.B. (NICHD)
Filed 19 Nov 87
Serial No. 07/122,379

New synthetic oligopeptides which inhibit phospholipase A2 are potent anti-inflammatory agents. A combination of one of the compounds, called "antiflammins," with another anti-inflammatory agent such as dexamethasone or ibuprofen can be used for local or systemic treatment of inflammation. These compounds are in contrast to nonsteroidal anti-inflammatory agents, which act by inhibiting cyclo- or lipo-oxygenase enzymes.
Licensing Contact: Arthur Cohn

Uromodulin And A Process Of Purifying It

Muchmore, A.V., Decker, J.M. (NCI)
Serial No. 06/943,406
Patent Issued 11 Dec 90
U.S. Patent No. 4,977,244

A novel process for purifying uromodulin, a protein-carbohydrate complex, offers to enhance the study and treatment of autoimmune and inflammatory disorders. Uromodulin has been implicated as the primary agent in protecting the placental unit from maternal immune surveillance during pregnancy. Previously, uromodulin has been difficult and time-consuming to purify. This new purifcation method uses a simple affinity column to purify large amounts of uromodulin from the urine of pregnant women in a relatively short time.
Licensing Contact: Todd Leonard

Human-Mouse Hybrid Cell Line Expressing Monocyte-Macrophage Properties

Askamit, R.R. (NIMH)
Serial No. 06/797,440
Patent Issued 13 Nov 90
U.S. Patent No. 4,970,162

Twelve human-mouse hybrid cell lines that migrate to endotoxin-activated mouse serum (EAMS) were isolated. Four of these lines also exhibited chemotaxis to N-formylmethionine-leucine-phenylalanine (FMLP); one remained active in culture for at least 20 passages. The hybrid consists of the stable and easily manipulated mouse macrophage cell line RAW264, which lacks chemically defined attractants, and human leukocytes for which FMLP is a defined attractant. These hybrid cell lines provide a novel means of studying the mechanisms underlying the strong chemical attraction and binding of N-formyl peptides to mammalian cells. They may also be useful in studying inflammatory conditions in which macrophage chemotaxis plays an integral role.
Licensing Contact: Marjorie Hunter

BLOOD & BLOOD PRODUCTS

Recombinant Vaccinia Virus Encoding Cytochromes P-450

Gelboin, H.V., Battula, N., Gonzalez, F.J., Bernard, M. (NCI)
Filed 6 Nov 91
Serial No. 07/787,777 (CON of 07/058,387)

A vaccinia virus containing the cytochromes P-450 DNA sequence can be used for the expression of these polypeptides in mammalian cells. The cytochromes P-450 are a large family of blood proteins that metabolize biologically active compounds such as drugs, carcinogens, pollutants, fatty acids, steroids, and prostaglandins. Presently available methods for isolating cytochromes P-450 require reagents that make it difficult to differentiate the role and function of individual forms of this cytochrome. This vaccinia virus system expresses several distinct, enzymatically active cytochromes P-450 in a variety of mammalian cells and does not require the addition of reagents that might interfere with the study of the product.
Licensing Contact: Mark Hankins

Adaption Of Microtiter Plate Technology To Measurement Of Platelet Aggregation

Frantantoni, J.C., Poindexter, B.J. (FDA)
Filed 22 Apr 91
Serial No. 07/688,220 (CIP of 07/347,087)

A new spectrophotometric apparatus permits the simultaneous measurement of a large number of samples of aggregation reactions within a brief period of time and provides output data that are easily stored and immediately available for computer-assisted analysis. To date, there has not been an apparatus or method available that can take simultaneous spectrophotometric reading for a large number of aggregation reactions while maintaining the reactions at the proper conditions. This new apparatus can transmit light through as many as 96 microtiter wells while agitating the plate in a circular motion. Detectors take readings at one-minute intervals and determine the changes in optical density between readings. Any optical density change greater than 0.05 units indicates that aggregation or agglutination has occurred.
Licensing Contact: John Fahner-Vihtelic

Method For Evaluating Contributions Of Extrinsic And Intrinsic Coagulation Factors To A Factor Xa Assay

Pollard, H. (NIDDK)
Serial No. 07/685,072
Filed 15 Apr 91

The COATEST kit is currently used by many clinicians to monitor the activity of coagulation Factor VIII in hemophiliac patients via a Factor Xa assay. This test, however, cannot fully account for possible contributions by extrinsic pathway coagulation factors (Factor VII and Tissue Factor) to the chromagenic signal. This adaptation of a COATEST kit or its equivalent uses antibodies that block either the intrinsic or extrinsic reaction pathway, thereby measuring the contribution of each to the assay result. The use of this method avoids the cumbersome bioassays to calibrate the COATEST result.
Licensing Contact: Steve Ferguson

***In Vivo* DMRI Method For Determining Cerebral Blood Flow And Volume Variation**

Frank, J.A., Doudet, D., Saunders, R., Aigner, T. (CC)
Filed 26 Sep 90
Serial No. 07/589,837

This dynamic magnetic resonance imaging (DMRI) method can monitor *in vivo* changes in cerebral blood flow and volume by coupling a paramagnetic agent capable of crossing the blood-brain barrier with nuclear MRI. This invention is an improvement over previous MRI techniques, which often cannot detect a specific abnormality or which poorly characterize diseased tissue, particularly in cases of acute ischemia. The method may be used to monitor changes resulting from

neurological diseases or external sensory stimulation; it may also be used to evaluate the growth of brain tumors by determining areas of relative tissue hypoxia.
Licensing Contact: John Fahner-Vihtelic

Novel Monoclonal Antibody Against Human Platelets

Gralnick, H.R. (CC)
Serial No. 07/432,380
Filed 3 Nov 89

A unique anti-platelet monoclonal antibody, 8G8, that binds only to human platelets in the activated state has been uncovered. With its ability to enhance platelet activation, this antibody could be used as an antihemorrhagic agent to stop or reduce surgical bleeding and promote wound healing. Diagnostic uses include the identification of activated platelets as part of monitoring anti-thrombotic therapy.
Licensing Contact: Steve Ferguson

Anti-Platelet Monoclonal Antibody (5G8)

Gralnick, H.R. (CC)
Serial No. 07/432,126
Filed 3 Nov 89

A unique anti-platelet monoclonal antibody, 5G8, that binds to human platelet glycoprotein IV has been developed. With its ability to promote platelet aggregation, this antibody could be used as an antihemorrhagic agent to stop or reduce surgical bleeding and promote wound healing. Diagnostic uses include the identification of platelet defects in individuals with coagulation or hemostatic disorders.
Licensing Contact: Steve Ferguson

A Process For The Purification Of C1-Inhibitor [For Blood Disorder Studies]

Pilatte, Y.M., Hammer, C.H.,
Frank, M.M., Fries, L.F. (NIAID)
Serial No. 07/377,334
Patent Issued 9 Jul 91
U.S. Patent No. 5,030,578

A simple chromatographic procedure using Jack fruit lectin (jacalin) agarose yields a relatively pure C1-Inhibitor (C1-INH) protein from normal human plasma. Approximately 10 to 12 mg of highly purified and fully active C1-INH can be extracted from 120 ml of plasma in a single day. Present C1-INH extraction methods are extremely time-consuming and yield a poorly purified protein. The jacalin agarose method includes two fast chromatographic steps that cleanly and predictably separate the inhibitor from unwanted protein and thus negates the need for antigenic or functional assays to define the desired peaks. C1-INH is the major regulatory protein in the complement system as well as in the regulation of several other plasma proteolytic systems including the coagulation, fibrinolytic, and contact systems.
Licensing Contact: Todd Leonard

Monoclonal Antibody Against A Newly Described Complement Regulatory Protein (sgp120)

Basta, M., Hammer, C., Frank, M.
(NIAID)
Filed 14 Jun 89
Serial No. 07/365,772

A monoclonal antibody against the recently identified complement regulatory protein sgp120 provides an important tool for studying this important biological pathway. Since no monoclonal antibody against sgp120 has previously been available, this product offers a means to specifically study this protein's biochemical and biological effects in plasma.
Licensing Contact: Todd Leonard

Blood Lysis And Culture System

Zierdt, C.H. (CC)
Filed 11 Apr 89
Serial No. 07/336,518 (CIP of 07/253,428, CON of 06/708,517)

A novel system for culturing and lysing blood in the same system offers an improved method of growing micro-organisms in blood cultures. Previously, most blood culture systems treated blood lysing and blood culturing as two different steps and were, therefore, cumbersome and time-consuming to use. This new system uses a surfactant that effectively lyses both red and white blood cells at a concentration that does not inhibit bacterial growth. Because this method of culturing blood samples does not require any special equipment or any special processing, it is very simple and economical to use.
Licensing Contact: John Fahner-Vihtelic

Isolation And Characterization Of A Plasma Protein Which Binds To Activated C4 Of The Classical Complement Pathway

Hammer, C.H., Jacobs, R.M.,
Frank, M.M. (NIAID)
Filed 2 Feb 89
Serial No. 07/305,458

A previously unknown, substantially pure plasma protein that binds to activated C4 and C3 of the classical complement pathway (CCP) and inhibits lytic functional activity of the pathway at multiple steps is valuable for the study of this biologically important pathway. The 120 kD protein shares many physiochemical characteristics with the C2 protein of the CCP, yet there are several fundamental differences. A mixture of cleaved fragments of this 120 kD protein was found to be a vasodilator, and successful immunization of the protein was carried out in the rabbit.
Licensing Contact: Todd Leonard

Method And Additives For Improving The Quality And Shelf Life Of Stored Blood

Vora, S. (NIDDK)
Serial No. 06/817,189
Patent Issued 27 Sep 88
U.S. Patent No. 4,774,088

This invention increases the quality and extends the shelf life of whole blood and red blood cell preparations through the manipulation of several key red cell enzymes involved primarily with glycolysis. Compounds used to inhibit or activate these enzymes include L-amino acids, free fatty acids, free bases, and analogs of

enzyme substrates. This invention can be used with products collected under normal blood banking procedures and stored at refrigeration temperatures. When compared with other preservatives, this approach allows red cells to better maintain their oxygen transport and release capabilities without side effects (e.g., hyperuricemia).
Licensing Contact: Todd Leonard

Isolation And Culture Of Adrenal Medullary Endothelial Cells Producing Blood Clotting Factor VIII:C

Pollard, H.B., Ornberg, R., Banerjee, D., Youdim, M., Lelkes, P., Heldman, E. (NIDDK)
Serial No. 06/672,451
Patent Issued 2 Jun 87
U.S. Patent No. 4,670,394

A new line of endothelial cells of adrenal medullary origin is capable of producing blood clotting Factor VIII:C. Factor VIII:C is useful in treating hemophilia. Conventional plasma preparations of Factor VIII:C are likely to contain hepatitis and AIDS viruses, require human blood donors, and may cause the recipient to develop antibodies against Factor VIII:C.
Licensing Contact: Todd Leonard

Lysis Filtration Culture Chamber

Zierdt, C. (CC)
Serial No. 06/426,141
Patent Issued 6 Mar 84
U.S. Patent No. 4,435,505

This novel unitary culture chamber and filtration mechanism remove all the antibacterial mechanisms of whole blood — phagocytes, antibiotics, antibodies, complement, and opsonins — while preserving existing microorganisms needed for culturing. The device overcomes the common problem of contamination associated with conventional multichamber lysis, filtration, and culture of blood samples.
Licensing Contact: John Fahner-Vihtelic

Optical Sensor Of Plasma Constituents

Schultz, J.S. (EM)
Serial No. 06/144,043
Patent Issued 17 Aug 82
U.S. Patent No. 4,344,438

A device consisting of a light source, a detector, and a chamber insertable into the bloodstream offers an improved method for measuring the concentrations of plasma constituents of low molecular weight. The intensity of light emitted from or absorbed by the complexes of receptor sites and competing ligands provides a quantitative indication of the concentrations of plasma constituents. Previous electrochemical devices used for the same purpose contained a membrane separating the active electrode from the plasma that became fouled with time, making calibration of the device inaccurate.
Licensing Contact: John Fahner-Vihtelic

Polymer Alloy Blood-Compatible Surface

Pierce, W.S., Donachy, J.H. (EM)
Serial No. 06/092,102
Issued 26 Jan 82
U.S. Patent No. 4,312,920

This invention describes a process for the production of a blood-contacting layer and a blood-contacting interface composed of a segmented polyurethane-silicone rubber alloy. This new formulation is an improvement over previous materials in that it combines the flexible characteristics of polyurethane with the superior blood-contacting properties of the rubber. The proposed alloy may be used as surfaces in artificial hearts, heart assist pumps, intravenous catheters, blood oxygenators, heart-lung machine tubing, interaortic balloon pumps, and artificial blood vessel grafts.
Licensing Contact: John Fahner-Vihtelic

Blood Cell Separator

Kolobow, T., Ito, Y. (NHLBI)
Serial No. 06/090,390
Patent Issued 2 Nov 82
U.S. Patent No. 4,356,958

A novel centrifugal blood component separator consists of a spiral helically inclined rotor chamber (through which blood flows continuously) connected to a rotating bowl. At the lower end of the chamber, there are blood input and packed red blood cell output terminals; at the higher end there is a plasma terminal; intermediate terminals may be provided for white blood cells and platelets. Prior art devices are either relatively slow, damage the blood components, have limited capacity, or require the use of anticoagulants.
Licensing Contact: John Fahner-Vihtelic

Blood Cell Separator

Kolobow, T., Ito, Y. (NHLBI)
Serial No. 05/817,016
Patent Issued 6 Dec 83
U.S. Patent No. 4,419,089

Prior centrifuges for blood separation were slow; they damage the various blood components, have limited capacity, or require the use of anticoagulants. This novel centrifugal blood component separator includes a spiral, helically inclined chamber and uses continuous blood flow-through without rotating seals. It has terminators for the blood inlet and packed red blood corpuscle outlet and for plasma, white blood corpuscles, and/or platelet outlets. It allows for simple and rapid collection of large or small quantities of individual blood components with little damage to those components.
Licensing Contact: John Fahner-Vihtelic

CANCER

Use of Purinergic Agonists For The Treatment Of Prostate Cancer

Trepel, J.B., Fang, W., Pirnia, F., Myers, C. (NCI)
Filed 26 May 92
Serial No. 07/888/292 (CON of 07/509,183)

Adenosine and its derivatives have been found to be useful agents in the treatment of hormone-independent cancers, such as advanced stage prostate cancer. These compounds function by stimulating the P2 purinergic receptors newly identified solely on the plasma membrane of prostate cancer cells. Stimulation of these receptors induces a massive increase in the intracellular free Ca^{2+} concentration of these cells, which markedly inhibits their growth. Currently there is no effective treatment for hormone-independent prostate cancer.
Licensing Contact: Marjorie Hunter

Epithelial Cell-Specific Differentiation Marker HME-1

Prasad, G.L., Cooper, H.L. (NCI)
Filed 20 May 92
Serial No. 07/887,072

The discovery of a previously unknown human mammary epithelial protein, referred to as HME-1, has diagnostic, prognostic, and therapeutic applications for breast tumors. Complimentary DNA (cDNA) sequences to HME-1 can be used as a probe in Northern blots to identify the differentiation status of normal and malignant cells; in addition, because only epithelial cells express HME-1, this invention can be used to determine whether tumors are of epithelial origin (carcinomas) or not (sarcomas, carcinosarcomas, lymphomas). The low levels of HME-1 expressed by malignant versus normal mammary epithelial cells may be potentially useful in distinguishing degree of malignancy of a specimen. The antibody to HME-1 can be used in immunohistochemical screening of tissue biopsies and surgical samples.
Licensing Contact: Daniel Passeri

Anticancer Activity Of Lovastatin And Related Compounds

Myers, C., Jang, W.K., Whitsell, L., Neckers, L., Pirnia, F., Trepel, J. (NCI)
Filed 13 May 92
Serial No. 07/882,223

The antihypercholesterolemic drug lovastatin exhibits antitumor/cytotoxic activity *in vitro* and may be an effective chemotherapeutic agent for several cancers, particularly metastatic prostate and stomach cancers, which are refractory to all available cytotoxic agents. Preliminary clinical trials demonstrate that high doses of lovastatin and related compounds (i.e., inhibitors of 3-hydroxy-3-methylglutaryl coenzyme A reductase) reduce circulating levels of the tumor marker prostate-specific antigen (PSA) in patients with prostate cancer. Other cancers that may be responsive to this class of drugs are breast cancer and Ewings sarcoma. Such testing represents a novel application of 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors.
Licensing Contact: Marjorie Hunter

Phosphorothioate Derivatives Of Cyclic AMP Analogues

Cho-Chung, Y.S., Jastroff, B., Genieser, H.-C. (NCI)
Filed 1 May 92
Serial No. 07/877,523

These novel derivatives enhance the resistance of cAMP and cAMP analogs to hydrolysis which, in turn, reduces the subsequent production of toxic metabolites. The phosphorothioate derviatives described in this invention are cAMP analogs modified at either or both the C-6 and C-8 positions of the adenine moiety. Like cAMP analogs, the novel compounds act by inhibiting the growth-stimulating RI_{α} cAMP receptor and stimulating the growth-inhibitory RII_{β} cAMP receptor in tumor cells; however, the phosphorothioate derivatives appear to be substantially less toxic than the unmodified analogs. The new compounds may be useful in the development of chemotherapeutic agents.
Licensing Contact: Daniel Passeri

In Vivo Gene Transfer For The Treatment Of Cancer

Culver, K.W., Blaese, R.M. (NCI)
Filed 1 May 92
Serial No. 07/877,519

A novel technique for the *in vivo* retroviral-mediated gene transfer may provide a new approach to treating cancer. Depending on the retroviral vector employed, use of this technique can enhance either tumor immunity or tumor lethal sensitivity to subsequent exposure to a pharmacologic or physical agent. High concentrations of cells that are actively producing the retroviral vector are injected at the tumor site; the retroviral vectors then integrate genes into proliferating cells, resulting in the preferential uptake of the gene and continued production of the vector for hours to days. Host immunity may be enhanced by vectors carrying cytokines or by altering tumor expression of class I and/or class II MHC molecules, whereas tumor radiosensitivity or drug sensitivity may be enhanced by the incorporation of a "sensitivity" or "suicide" gene such as the thymidine kinase gene from HSV, CMV, or VZ viruses. This technique should be particularly useful for treating cancers at sites where the normal healthy tissue is predominantly nonproliferative, such as the brain, liver, and pancreas. This method offers a more efficient, targeted, and practical approach to treating cancers at these sites than other gene transfer techniques.
Licensing Contact: Daniel Passeri

Method Of Controlling Cell Proliferation And Pharmaceutical Composition Thereof

Maragos, C.M., Wang, J.M., Keefer, L.K., Oppenheim, J.J. (NCI)
Filed 13 Apr 92
Serial No. 07/867,759

This invention describes a method for improving the cytostatic capabilities of nitric oxide (NO) through modification of a class of prodrugs, nitric oxide-nucleophile adducts, which have been developed as synthetic NO delivery systems. The cytostatic efficacy of these drugs is enhanced by conjugation with any of a number of specific protective groups that control the release of NO, such as a molecule that is selectively cleaved by a tumor-specific enzyme. The invention builds on prior research that demonstrated the enzyme-independent release of NO by the adduct prodrugs and the cytostatic effect of NO on tumor cells.
Licensing Contact: Daniel Passeri

Recombinant Antibody-Toxin Fusion Protein

Fitzgerald, D.F., Chaudhary, V.K., Pastan, I.H., Waldmann, T.A., Queen, C.L. (NCI)
Filed 8 April 92
Serial No. 07/865,722 (CON of 07/341,361, CIP of 06/911,227)

A recombinant immunotoxin consisting of an antibody fused to a cytotoxic protein such as PE40 offers an improved method of delivering cytoxic agents to target cells such as cancers or tumors. Previously, methods for delivering cytotoxic agents often killed healthy cells as well as diseased cells. This recombinant immunotoxin only delivers the cytotoxic protein to cells with receptors or antigens to which the antibody binds. These recominant immunotoxins may be expressed in *E. coli*, other bacterial hosts, yeasts, and various higher eucaryotic cells such as the COS, CHO, HeLa, and myeloma cell lines.
Licensing Contact: Daniel Passeri

Immortalized Human Bronchial Epithelial Cell Line

Willey, J.C., Harris, C.C. (NCI)
Filed 21 Feb 92
Serial No. 07/840,625 (CON of 07/487,626)

Human bronchial epithelial cell lines permanently transformed by human papilloma viruses (HPV) have been developed. These cell lines will be useful for the study of growth and differentiation in bronchial carcinoma and the identification of chemical and biological agents useful in the therapy of human lung cancer. Cell lines such as these actively expressing HPV genes can be used to determine the role of this virus in cervical, esophageal, and other carcinomas.
Licensing Contact: Steve Ferguson

Novel Antitumor Compound, Compositions And Method Of Use

Boyd, M.R., Cardellina, J.H., Fuller, R.W., Snader, K.W., Clardy, J. (NCI)
Filed 13 Feb 92
Serial No. 07/835,637

A novel compound that exhibits broad antitumor activity *in vitro* has been isolated from red alga. Unlike currently available antitumor drugs, this new agent has demonstrated preferential antitumor activity toward human solid tumors, such as those found in the brain, kidney, and colon. Use of this compound, either alone or in combination with other drugs, may provide a new approach to treating cancers that generally are resistant to antitumor drugs.
Licensing Contact: Daniel Passeri

Composition And Methods For Immunotoxin Therapy To Carcinoma Cells

Roth, J.A., Ames, R.S., Scannon, P.S. (NCI)
Filed 31 Jan 92
Serial No. 07/830,511 (CON of 07/203,665)

Novel immunotoxins provide improved methods for inhibiting the growth of cancer cells. Presently available cytotoxic methods of treating cancers have limitations because the dosages needed to kill cancer cells also kill large amounts of healthy cells or the method of delivery of the cytotoxic agent is selective for only a few types of cancers. These novel immunotoxins employ a 74K glycoprotein that is selectively expressed in a variety of mammalian carcinoma cells to deliver the cytotoxic agent only to its intended target. With this delivery system, healthy tissues are left completely unharmed.
Licensing Contact: Daniel Passeri

Metalloproteinase Marker For Cancer Metastases

Liotta, L.L., Stetler-Stevenson, W., Krutzsch, H.C. (NCI)
Filed 31 Jan 92
Serial No. 07/830,313 (DIV of 07/488,460, CIP of 07/317,407, CIP of 07/248,420, CIP of 07/196,242)

The invention is a newly isolated metalloproteinase that can be used as a diagnostic marker for the general aggressiveness of cancer cells and for the extensive protein degradation (proteolysis) associated with arthritis, cancer, and other chronic inflammatory conditions, such as those of the lungs and eyes. This protein, which is secreted by human melanoma cells, is similar in structure to another inhibitor of tissue degradation and may, as such, be a potential therapeutic inhibitor of this process.
Licensing Contact: Daniel Passeri

SCL Gene, And A Hematopoietic Growth And Differentiation Factor Encoded Thereby

Kirsch, I.R., Begley, C.G. (NCI)
Filed 27 Jan 92
Serial No. 07/826,470 (DIV 07/826,819)

This invention describes the discovery of a new human gene, termed SCL, which is involved in normal hematopoiesis as well as in a chromosomal translocation associated with a stem cell leukemia that exhibits both myeloid and lymphoid differentiation capabilities. The cDNA sequences for the normal SCL transcript

and for an aberrant fusion transcript found in the leukemic cells are provided. Discovery of the SCL gene may provide further insight into the proliferation, differentiation, and/or commitment events that occur during hematopoiesis; the invention may also have therapeutic applications in treating leukemias.
Licensing Contact: Marjorie Hunter

DNA Binding Protein

Pastan, I., Kageyama, R. (NCI)
Filed 30 Dec 91
Serial No. 07/816,522 (CON of 07/441,912)

GC-rich sequences are ubiquitous elements found in the promoter regions of many housekeeping genes and cellular oncogenes. This novel DNA-binding protein is a negative regulator that represses transcription from the GC-rich promoter sites to which it binds. Protein, code, vector, and methods of regulating expression of a gene in a cell are all described; these products are applied in a diagnostic assay for determining the metastatic potential of a cancer cell. Several positive regulators, but no negative regulators, that bind to GC boxes have been previously identified.
Licensing Contact: Daniel Passeri

Method for Protecting Bone Marrow Against Chemotherapeutic Drugs and Radiation Therapy Using Transforming Growth Factor β1

Keller, J.R., Ruscetti, F.W., Wiltrout, R. (NCI)
Filed 7 Jan 92
Serial No. 07/815,608 (CON of 07/372,815)

Transforming growth factor β1 (TGFβ1) offers an important new tool for protecting stem cells in the bone marrow from the myelotoxic effects of chemotherapeutic drugs or radiation therapy. Previoulsy, there has been no effective therapy for preventing the destruction of healthy bone marrow cells during standard anticancer therapies. Relatively small amounts of TGFβ1 were found to inhibit baseline and IL-3-driven proliferation of progenitor cells in a time- and dose-dependent manner.
Licensing Contact: Mark Hankins

O^6-Substituted Guanine Compounds And Methods For Depleting O^6-Alkylguanine-DNA Alkyltransferase Levels

Moschel, R.C., Dolan, M.E., Pegg, A.E. (NCI)
Filed 12 Dec 91
Serial No. 07/805,634 (DIV of 07/616,913, CIP of 07/492,468)

This invention describes the discovery of O^6-benzyl-substituted guanine compounds that deplete O^6-alkylguanine-DNA alkyltransferase (AGT) activity in tumor cells. This reduction in AGT activity, in turn, increases host responsiveness to certain chemotherapeutic agents, including antineoplastic alkylating drugs (streptozotocin, procarbazine, dacarbazine) and chloroethylating agents (chloroethylnitrosoureas, chloroethyl triazenes). These novel compounds are proposed for use in combination with other chemotherapeutic drugs and are expected in particular to improve the efficacy of chloroethylating agents, which are effective against a variety of neoplasms but relatively ineffective against tumor cells.
Licensing Contact: Marjorie Hunter

Method For Quantitatively Measuring Collagenase

Stetler-Stevenson, W.G., Liotta, L. (NCI)
Filed 8 Nov 91
Serial No. 07/789,652 (DIV of 07/470,603)

An improved immunoassay was developed for the quantification of type IV collagenase, a proteolytic enzyme linked with the invasion and metastasis of tumor cells. This assay uses a natural protease substrate — rather than a metalloprotease substrate — as the solid phase to bind the collagenase. Both urine and serum samples can be used with this new method, which is proposed as a diagnostic and prognostic tool for individuals who have or who are at high risk of developing type IV collagenase-associated malignancies. The novel use of the natural protease substrate improves the sensitivity to type IV collagenase and simplifies the quantification of this enzyme.
Licensing Contact: Marjorie Hunter

Bistriazenes As Chemotherapeutic Agents

Michejda, C.J., Blumenstein, J.J. (NCI)
Filed 31 Oct 91
Serial No. 07/786,001 (CIP of 07/527,915)

Although previously synthesized bistriazenes were cytotoxic to several human tumor cell lines, causing multiple strand breaks and interstrand crosslinks, they also were very unstable. This invention describes chemical methods that increase compound stability while maintaining or enhancing reactivity. Improved stability was achieved by substituting the original methylated end-chain R groups with moieties such as phenyl and susbtituted phenyl groups and arylalkyl and arylakyl subtituted groups. DNA-targeted toxicity was enhanced by modifying the central linker in the bistriazene molecule through the addition of various aliphatic groups; substitutions produced final compounds that were at least 100 times more reactive than the original molecule.
Licensing Contact: Marjorie Hunter

Water Soluble, Antineoplastic Derivatives of Taxol

Haugwitz, R.D., Zalkow, L., Glinski, J., Suffness, M. (NCI)
Filed 31 Oct 91
Serial No. 07/784,624 (CON of 07/520,407, DIV of 07/165,173)

A new, water-soluble derivative of taxol was produced. This novel compound exhibits antineoplastic activity and may therefore be useful in treating certain cancers. The water solubility of the derivative is improved over the parent taxol compound, while the cytotoxic properties of taxol are retained. Clinical efficacy has been demonstrated against several forms of cancer, including ovarian,

breast, head and neck, colon, and lung cancer.
Licensing Contact: Marjorie Hunter

A Method For Detecting A Differentiation Marker In Normal And Malignant Carcinoma Cells And In Biological Samples And Body Fluids

Jetton, A.M., Lotan, R. (NIEHS)
Filed 23 Oct 91
Serial No. 07/783,046

Novel antibodies directed against squamous cell carcinoma (SCC) markers offer an important new method for detecting cancers in biological samples and tissue fluids. Previously, it has been difficult to detect aberrant squamous cell differentiation, which is a precursor to the development of SCC, in biological samples and tissues because the known markers were all intracellular. These novel monoclonal antibodies (mAbs) are specific for antigens that are cross-reactive with preprorelaxin, a squamous cell differentiation marker that is secreted from the cell. Therefore, these mAbs can be used to test for the presence of squamous cell carcinomas in blood, saliva, or urine.
Licensing Contact: Steve Ferguson

Selective Cytotoxic Reagents

Rybak, S.M., Youle, R.J.,
Hoogenboom, H.R. (NINDS)
Filed 22 Oct 91
Serial No. 07/779,195 (CIP of 07/510,696)

This invention describes a novel approach for fusing the gene for a human serum RNase to the gene for a chimeric mouse/human antibody against the transferrin receptor. The fused gene was coexpressed in a myeloma cell, and the gene product was subsequently shown to kill tumor cells that expressed the transferrin receptor. This system is designed to ablate specific cell types and may have useful clinical applications for therapies and treatments targeting tumor cells, immune dysfunctional cells in immune and autoimmune diseases, spermatogenic or oogenic cells (as a contraceptive), virally infected cells (in AIDS, hepatitis), or cells infected with a fungus or parasite. The invention demonstrates the first successsful production and expression of this fused gene by recombinant DNA techniques.
Licensing Contact: Daniel Passeri

Inhibition Of Malignant Cells Having G_{M1} Ganglioside Sites By Administration Of Cholera Toxin

Viallet, J., Sausville, E., Minna, J. (NCI)
Filed 30 Sep 91
Serial No. 07/767,578 (CON of 07/438,643)

Although it is known that cholera toxin (CT) inhibits the growth of some malignant cells, CT has not been used in cancer therapies, in part because it has not been possible to predict which malignancies will respond. Administration of CT, as prescribed in this invention, is based on the discovery that CT is effective against tumor cells that carry the G_{M1} protein on the cell membrane. The method incorporates a binding assay to detect the presence of G_{M1} and outlines dosage regimens and techniques for administering CT.
Licensing Contact: Mark Hankins

Recombinant Immunotoxins

Pastan, I., Willingham, M.C.,
Fitzgerald, D., Brinkman, U. (NCI)
Filed 30 Sep 91
Serial No. 07/767,331

Novel recombinant immunotoxins offer an important new therapy for human cancers, particularly adenocarcinomas and squamous cell carcinomas. Presently available cancer treatments have significant toxic side effects because they destroy large amounts of healthy cells in addition to cancerous tissues. These novel immunotoxins are much more selective because they are made up of regions of the monoclonal antibody B3, which recognizes a carbohydrate antigen on the surface of many human carcinomas, conjugated to *Pseudomonas* exotoxin. These B3-*Pseudomonas* immunotoxins have been shown to be cytotoxic specifically to carcinoma cell lines that express the B3 antigen and caused complete regression of human epidermoid cancers growing subcutaneously in immunodeficient mice.
Licensing Contact: Marjorie Hunter

Oncoimmunins

Packard, B., Komoriya, A. (FDA)
Filed 23 Sep 91
Serial No. 07/764,695 (CIP of 07/707,136)

Pharmaceutical preparations of oncoimmunin-lymphoid factor and oncoimmunin-myeloid factor offer important new tools for the treatment of cancers. Presently, the most state-of-the-art method of treating cancers is by isolating tumor-infiltrating lymphocytes (TILs) from the tumors of patients, culturing these lymphocytes in the presence of the lymphokine interleukin-2 (IL-2), and readministering the TILs to the patients; however, this is a time-consuming, expensive, and tedious process. These oncoimmunin factors, which are secreted factors from a tumor cell line, have been found to be potent mitogenic factors and have value for the stimulation of TIL mitogenisis as well as myeloid differentiation.
Licensing Contact: Marjorie Hunter

Activated Killer Monocytes: Tumoricidal Activity And Method Of Monitoring Same

Stevenson, H.C. (NCI)
Filed 29 Aug 91
Serial No. 07/751,985 (DIV of 07/209,108)

A novel method for purifying human monocytes and transforming them into activated killer monocytes (AKM) offers a significant advancement for the treatment of a number of cancers. Researchers have known for many years that mononuclear phagocytes (monocytes) are important to immune response and that, when activated by certain immune mediators, they become potent killers of tumor cells. Previously, it has not been possible to isolate large amounts of monocytes or to transform them into AKM that are suitable for administration to cancer patients. This new

purification method yields substantially pure, clinical grade, functional, monocytes which are transformed into AKM using IFNγ. Patients with peritoneal-colorectal carcinomatosis (PCC) disease have been treated with AKM prepared by this method and have remained disease-free for several years. The method also includes a protocol for measuring the tumoricidal activity of AKM.
Licensing Contact: Daniel Passeri

Antibodies To Human LINE-1 p40 Protein

Fanning, T.G. (NCI)
Filed 27 Aug 91
Serial No. 07/750,044

Antibodies to the human LINE-1 retrotransposon, offer a powerful new tool for studying tumors. In most cell lines, human LINE-1 sequences (LIHs) are defective due to truncation, internal rearrangements, or becuase they contain open reading frames interrupted by stop codons; however, LIH-specific RNA and proteins have been detected in several cell lines derived from human testicular germ cell tumors (teratocarcinomas). These LIH antibodies, which are specific for the p40 protein portion of the retrotransposon, can be used for determining LIH expression in tumor cells and determining the role this retrotransposon plays in these cells.
Licensing Contact: Marjorie Hunter

A Human CRIPTO-Related Gene

Salomon, D., Perisco, M. (NCI)
Filed 23 Aug 91
Serial No. 07/749,001

A recombinant vector encoding a human CRIPTO-related gene (CR-3) offers an important new tool for studying processes such as tumor cell proliferation and early human embryonic development. The human CRIPTO-related gene encodes a protein that has structural homology with proteins of the epidermal growth factor (EGF) protein TGFα, which is found in a variety of tumor cells as well as in some normal embryonic and adult tissues. Proteins encoded by this recombinant vector can be used to produce antibodies for measuring the amount of CR-3 in a sample and, thus, for determining whether or not it is about to undergo transformation (i.e., from an embryonic cell to a differentiated cell or from a normal cell to a tumor cell).
Licensing Contact: Marjorie Hunter

***raf* Protein Kinase Therapeutics**

Rapp, U., App, H., Storm, S.M. (NCI)
Filed 23 Aug 91
Serial No. 07/748,931

Novel *raf* protein kinases may be valuable for the treatment of cancers. *raf* protein kinases are enzymes that stimulate cell growth in a variety of cell systems and, when expressed in specifically altered forms, can initiate malignant cell growth. These novel *raf* protein kinases, which are mutant constructs or are transcribed from *raf* antisense DNA, can be used to inhibit the activity of cellular *raf* protein kinases and prevent or reverse malignant cell growth.
Licensing Contact: Marjorie Hunter

B-*raf* Protein Kinase

Rapp, U.R., Showalter, S.D. (NCI)
Filed 13 Aug 91
Serial No. 07/745,381 (CIP of 07/531,950)

A novel cDNA encoding a B-*raf* protein kinase offers an important new tool for studying the transduction of mitogenic signals in cells. *raf* protein kinases function in the transduction of mitogenic signals from the cell membrane to the nucleus. Various *raf* protein kinases have been isolated and studied; however, so far, only a partial B-*raf* kinase sequence has been established. This cDNA, which encodes the entire B-*raf* protein kinase sequence, is available in a cell host for producing large amounts of the complete, functional protein for studies. The protein itself can be used to induce the production of antibodies for diagnostic studies.
Licensing Contact: Daniel Passeri

Apparatus For Hyperthermia Treatment Of Cancer

Delannoy, J., Le Bihan, D., Chen, C., Levin, R.L. (NCI)
Filed 22 Aug 91
Serial No. 07/735,682 (CON of 07/439,661)

An apparatus that combines a hyperthermia unit/MRI probe offers an improved method of treating cancers with heat. Previously, therapies that employed the use of hyperthermia (HT) to treat cancers have not been effective due to lack of adequate temperature control and/or the ability to focus the radiant energy only on the tumor. This new apparatus uses an MRI probe to effectively localize where the radiant energy is being applied and to determine the temperature of an organ or tissue being subjected to HT.
Licensing Contact: John Fahner-Vihtelic

Transgenic Mouse Carrying Human Multidrug Resistance Gene 1 (MDR1)

Pastan, I., Gottesman, M.M. (NCI)
Filed 8 Jul 91
Serial No. 07/727,355 (CON of 07/260,827)

Transgenic mice carrying the human multidrug resistance gene 1 (MDR1) are useful for the development of novel chemotherapeutic agents against cancers. Many cancer cell lines are resistant to a number of currently available chemotherapeutic agents. MDR1, a cell membrane protein, is overexpressed in many of these cell lines and is believed to act as a pump — transporting chemotherapeutic drugs out of the cell. Transgenic MDR1 mice can be used to study the role of this protein in promoting drug resistance and can also serve as donors for various cells and tissues on which to test the efficacy of antitumor agents.
Licensing Contact: Steve Ferguson

Backbone Polysubstitutes Chelates For Forming A Metal Chelate-Protein Conjugate

Gansow, O., Brechbiel, M.W. (NCI)
Filed 22 Aug 91
Serial No. 07/718,460 (DIV 07/285,025; DIV 06/903,723)

Metal chelates and metal chelate-protein conjugates have important clinical uses and are employed for drug delivery and for diagnosing human cancers *in vivo*; however, developing conjugates with high organ or site specificity that can be delivered at nontoxic doses has been difficult. The new polysubstituted diethylenetriaminepentaacetic acid chelates and protein conjugates described in this invention overcome some of the problems with currently available agents. In particular, studies using radiolabeled material demonstrate that these new agents can be delivered to their designated tumor target sites with minimal distribution to nontargeted organs such as the kidney and bone. Methods for compound preparation and delivery are provided.
Licensing Contact: Marjorie Hunter

Monoclonal Antibody (D612) Having Selective Reactivity For Gastrointestinal Carcinomas And Methods For Employing The Same

Schlom, J. (NCI)
Filed 18 Jun 91
Serial No. 07/715,748 (CON of 07/234,130)

D612, a monoclonal antibody (mAb) that is specific for human colon cancers, can be used as a probe for tumors or as a delivery system for drugs or toxins. Presently available mAbs for colon carcinomas have a tendency to react with normal adult tissue as well as colon cancer cells. D612 reacts homogeneously to cells within a colon cancer mass and yet reacts poorly to normal cells. Unlike previously available antibody preparations, D612 can also stimulate antibody dependent cell-mediated cytotoxicity.
Licensing Contact: Daniel Passeri

Oncoimmunins

Packard, B., Komoriya, A. (FDA)
Filed 31 May 91
Serial No. 07/707,136

An oncoimmunin-lymphoid factor having the ability to stimulate human T lymphocyte mitogenesis (in serum-free medium) and an oncoimmunin-myeloid factor having the ability to induce myeloid differentiation (in serum-free medium) have both clinical and laboratory applications related to cancers. These lymphokines have not been previously identified.
Licensing Contact: Marjorie Hunter

Clone For Human Multidrug Resistance Gene

Pastan, I., Gottesman, M.M. (NCI)
Filed 14 May 91
Serial No. 07/701,576 (CON of 07/062,583)

A DNA clone containing the human multidrug resistance (MDR1) gene offers to improve the study and treatment of the resistance of certain cancers to standard chemotherapies. The acquisition of resistance to multiple drugs is a critical problem in cancer therapy. Previously, there has been no suitable model available for studying how cells become resistant to multiple cancer drugs. This new MDR1-containing clone can be used to transform drug-sensitive cells to the multidrug resistance phenotype as well as to test strategies to overcome multidrug resistance.
Licensing Contact: Marjorie Hunter

Stable Endpoint Microculture Tetrazolium Assay

Alley, M. (NCI)
Filed 17 May 91
Serial No. 07/701,157

Since *in vivo* screening of anticancer compounds was replaced with *in vitro* assays, some form of follow-up test has been required to confirm the extent of tumor-type selectivity, to define effective concentrations, and to select the most suitable cell lines for further evaluation of the drug. Formazan colorimetry methods currently used for secondary screening produce images of high optical density. An alternative, image analysis microdensitometry, is a promising but undeveloped alternative technology. The stable endpoint microculture tetrazolium (MTA) assay described in this invention can be adapted to either technology and overcomes the disadvantages of both. MTA is especially useful in determining effective drug concentrations and maximum *in vitro* drug effects.
Licensing Contact: Daniel Passeri

Sensitive Method For Locating Chromosomal Breakpoints

McGrath, I.T., Shiramitzu, B. (NCI)
Filed 6 May 91
Serial No. 07/698,233 (CON of 07/441,516)

A new technique for localizing chromosomal breakpoints offers a significant advancement in detecting genetic translocations such as those found in Burkitt's lymphoma. Present techniques for detecting chromosomal breakpoints require large amounts of tumor sample, are often insensitive, or are cumbersome and time consuming. This new technique utilizes sequence specific primers for rapid, efficient PCR amplification of a fragment containing a breakpoint. This technique is so sensitive it can be used to subdivide Burkitt's lymphomas into subtypes based on the location of chromosomal breakpoints.
Licensing Contact: Steve Ferguson

The Development And Use Of A Recombinant Vaccinia Virus Expressing Human Carcinoembryonic Antigen For Active Immunotherapy Of Human Cancer

Schlom, J., Kantor, J. (NCI)
Filed 6 Jun 91
Serial No. 07/695,024

A recombinant vaccinia virus expressing a human carcinoembryogenic antigen (CEA) offers an important new tool for the treatment of colon cancer. Presently available therapies for colon cancers are

nonspecific and, thus, have a number of toxic side effects. CEA is a highly glycosylated protein which is expressed in high concentrations on most gastrointestinal carcinomas. This recombinant vaccinia virus, which expresses CEA, can be used to stimulate a strong immune response selectively against a variety of gastrointestinal tumors that express CEA.
Licensing Contact: Marjorie Hunter

Monoclonal Antibodies Specific For Human Thymidylate Synthase

Johnston, P., Allegra, C., Chabner, B., Liang, C. (NCI)
Filed 24 Apr 91
Serial No. 07/690,841

The antibodies described in this invention detect human thymidylate synthase (TS) in small samples of preserved tissues. TS has traditionally been quantitated with biochemical assays, which have limited sensitivity, require a fair amount of fresh or fresh frozen tissue, and cannot distinguish enzyme activity in heterogeneous cell populations in human tissue. The novel TS-directed antibodies have little cross-reactivity and can be used with several different immunoassay techniques. Sensitive quantification of TS in human tissues can be used to diagnose a patient's stage of cancer, to detect certain metabolic diseases, or to monitor a patient's therapy.
Licensing Contact: Steve Ferguson

Method For Screening An Agent For Its Ability To Prevent Cell Transformation

Gutkind, J.S., Robbins, K.C. (NIDR)
Filed 12 Apr 91
Serial No. 07/683,967

New methods for reversibly transforming cells and for testing agents for their ability to prevent cell transformation have been developed. These cells should prove useful as screening agents to rapidly determine the prophylactic efficacy of such compounds in preventing cancer.
Licensing Contact: Marjorie Hunter

Screening Test That Identifies Individuals At Increased Risk For The Development Of Lymphoid Leukemia And Lymphoma

Kirsch, I., Lipkowitz, S., Stern, M.H. (NCI)
Filed 11 Apr 91
Serial No. 07/683,685

Current methods of karyotypic analysis, a commonly used measure of genomic instability, are labor-intensive, tedious, and have very limited use in screening for cancer risk. This novel assay uses a specific set of DNA primers in a PCR to measure lymphocyte-specific genomic instability accurately. The assay has value in identifying individuals at increased risk for lymphoid leukemia and/or lymphoma. Epidemiological data gathered using the assay may also be valuable in identifying carcinogenic substances.
Licensing Contact: Marjorie Hunter

Pharmaceutical Compositions And Methods For Preventing Skin Tumor Formation And Causing Regression Of Existing Tumors

Yuspa, S., Dlugosz, A., Hennings, H., Strickland, J. (NCI)
Serial No. 07/677,429
Filed 29 Mar 91

Toxic drugs used to treat epithelial cancers often kill both normal and tumorous cells, whereas retinoids used to prevent tumor formation appear to have a suppressive rather than a curative effect. The compositions and methods of administration described in this invention are based on indole carbazole, which causes terminal differentiation of tumor cells by exploiting a normal physiologic pathway. They can be used to regress as well as prevent skin tumors.
Licensing Contact: Marjorie Hunter

A Non-Mitogenic Competitive HGF Antagonist

Chan, A.M., Rubin, J.S., Bottaro, D.P., Aaronson, S.A. (NCI)
Filed 15 Feb 91
Serial No. 07/655,502 (CIP of 07/582,063)

A truncated form of a hepatocyte growth factor (HGF) offers an improved method of diagnosing and treating malignancies such as cancers. Present methods for diagnosing malignant growths are nonspecific, and treatments often kill healthy cells as well as malignant cells. Elevated levels of HGF are associated with many cancerous and noncancerous malignancies. This truncated form of HGF is an antagonist of HGF and can be used to effectively counteract its effects on malignant cells without affecting normal cells; it can also be used as a probe to detect increased levels of HGF mRNA in cells.
Licensing Contact: Marjorie Hunter

Immunotoxin With *In Vivo* T Cell Suppressant Activity

Neville, D.M., Scharff, J.E. (NIMH)
Filed 11 Feb 91
Serial No. 07/653,164

A novel immunotoxin with *in vivo* T cell suppressant activity offers an improved method of treating T cell leukemias or lymphomas, graft-versus-host diseases, and autoimmune diseases. Previously available immunotoxins have uncertain reproducibility due to the lack of cell receptor binding and membrane translocation functions. This new immunotoxin, which comprises a mutant diphtheria toxin bound to an anti-CD3 receptor antibody, is particularly effective against lymphomas or leukemias derived from CD3-expressing T cells.
Licensing Contact: Mark Hankins

Cancer Therapy Using Interleukin-2 And Flavone Compounds

Wiltrout, R.H., Hornung, R.L. (NCI)
Filed 4 Feb 90
Serial No. 07/649,182 (CON of 07/649,182)

A new therapy that combines interleukin-2 (IL-2) with flavone-8-acetic acid (FAA) compounds offers an improved method of treating malignant renal tumors. Previous attempts to treat renal tumors with adoptive immunotherapy have not been adequately effective, and the use of IL-2 alone produced toxicities at the large dosages required to inhibit tumor growth. This new therapy uses only moderate, less toxic doses of IL-2 to potentiate the anti-tumor effects of FAA. This combination therapy significantly improved long-term survival of mice with renal tumors over mice that received only IL-2 or FAA.
Licensing Contact: Marjorie Hunter

Hepatic Growth Factor Receptor Is The *met* Proto-Oncogene

Buttaro, D.P., Rubin, J.S., Faletto, D., Chan, A.M. (NCI)
Filed 18 Jan 91
Serial No. 07/642,971

A novel hepatic growth factor receptor offers an advancement for diagnoses and treatment proliferative disorders, including cancer. Previously, no method has been available for studying the *met* proto-oncogene, which is implicated in a variety of proliferative disorders such as hepatitis, hepatocarcingenesis, carcinogenesis, and defective wound healing. This hepatic growth factor binds specifically to the *met* proto-oncogene protein, and knowledge of this receptor-ligand relationship should facilitate the study of proliferative disorders in which these molecules may play an important role.
Licensing Contact: Marjorie Hunter

Therapeutic Application Of An Anti-Invasion Compound

Kohn, E.C., Liotta, L.A. (NCI)
Filed 3 Jan 91
Serial No. 07/637,145

A special class of amino-1,2,3-triazoles offers an improved method for treating solid metastatic tumors, including ovarian cancer. There are presently no effective therapies for preventing the spread, or metastasis, of certain types of solid tumor to other organs and tissues in the body. A carboxy-amino-imidazole compound has potent inhibitory effects of tumor cell attachment, motility, invasion, proliferation, and metastasis. This compound is particularly useful in the treatment of peritoneal carcinomatosis of ovarian cancer.
Licensing Contact: Marjorie Hunter

Immortalized Human Cell Lines

Reddel, R.R., Ke, Y., Rhim, J.S., Brash, D.E., Su, R.T., Lechner, J.F., Gerwin, B.I., Harris, C.C., Amstad, P. (NCI)
Filed 2 Jan 91
Serial No. 07/636,712 (CIP of 07/265,883, CIP of 07/114,508)

Human lung cell lines were established that can be used to screen for chemicals suitable for treatment of lung cancer. The cell lines, which were produced from bronchial and mesothelial cells, are both tumorigenic and non-tumorigenic and do not contain an oncogene found in naturally occurring tumors. A major advantage of these novel cell lines over other cell lines is that they are capable of growing continually without senescence when cultured in a suitable growth media. Following transfection of additional oncogenes, these cell lines can be used "as-is" or in diagnostic kits to test for the cytotoxic, growth inhibitory, and squamous differentiating potential of chemical, biological, and/or physical agents.
Licensing Contact: Steve Ferguson

A Sensitive Method For Measurement Of Chimeric Transcripts Of DNA Containing Translocations And Predicting Clinical Course Of Disease Related Thereto

Stetler-Stevenson, M. (NCI)
Filed 19 Dec 90
Serial No. 07/631,349

A novel technique that combines reverse transcription and PCR can be used to measure chimeric mRNA in certain types of cancer. Unlike other similar techniques, this new method can detect trace amounts (picograms or less) of the mRNA in biological samples, including biopsied tissue. It can be incorporated into diagnostic and prognostic kits used to detect and monitor conditions associated with chromosomal translocation of mRNA, such as follicular lymphoma and Hodgkins disease.
Licensing Contact: Daniel Passeri

Recombinant Immunotoxin Composed Of A Single-Chain Antibody Reacting With The Human Transferrin Receptor And Diphtheria Toxin

Pastan, I., Chaudhary, V., Fitzgerald, D., Batra, J. (NCI)
Filed 3 Dec 90
Serial No. 07/620,939

Novel single-chain immunotoxins directed at human cell receptors offer an important new cancer therapy. Previously, many immunotoxins have had nonspecific cytotoxicity because the toxin part of the molecule has cell receptor-binding capabilities. These novel single-chain immunotoxins use toxins that have been genetically modified to inhibit their cell-binding structures. These modified toxins are then coupled to antibodies that are specific for receptors expressed at high levels by certain tumors.
Licensing Contact: Daniel Passeri

O^6-Benzylated Guanine, Guanosine, And 2'-Deoxyguanosine Compounds Possessing O^6-Alkylguanine-DNA Alykyltransferase-Depleting Activity

Moschel, R., Dolan, M., Pegg, A. (NCI)
Filed 7 Dec 90
Serial No. 07/616,913 (CIP of 07/492,468)

O^6-alkylguanine-DNA alkyltransferase (AGT), a tumor repair protein, protects tumor cells from the antitumor effects of chloroethylating agents such as chloroethylnitrosoureas. Chemotherapy using these agents has therefore been limited, but pretreatment with O^6-alkylguanines decreases the level of AGT in human tumor cells, enhancing the sensitivity of the cells to chloroethyl cytotoxins. Other similar compounds, such as O^6-methyl- and O^6-n-butylguanine, also reduce AGT levels in human tumors, but AGT depletion by these chemicals is incomplete and slow. O^6-benzylguanine and specific related compounds have superior results; the invention describes these novel compounds and methods for administering them to a host to enhance chemotherapies.
Licensing Contact: Marjorie Hunter

Avidin And Streptavidin Modified Water-Soluble Polymers Such As Polyacrylamide, And The Use Thereof In The Construction Of Soluble Multivalent Macromolecular Conjugates

Mage, M., Nardelli, B., McHugh, L. (NCI)
Filed 20 Nov 90
Serial No. 07/616,250

Any of a variety of avidin- or streptavidin-modified water-soluble polymers can be used to construct soluble multivalent macromolecular conjugates that can specifically coat tumor cells with MHC antigens of a different haplotype. The process provided here is superior to previous processes in several ways: it prevents intermolecular crosslinking of avidin or streptavidin proteins by a carbodiimide; it uses excess avidin or streptavidin to inhibit intermolecular crosslinking of polyacrylamide; and it requires fewer steps to prepare conjugates. The process may be useful in designing or producing immunotoxins, tumor-labeling reagents, vaccines, and multivalent arrays of cell interaction molecules for studying certain low-affinity receptor interactions.
Licensing Contact: Steve Ferguson

A Method Of Preparing An Active Human Neutrophil Chemotactic Factor Polypeptide

Yamada, M., Furuta, R., Yamagishi, J., Matsushima, K. (NCI)
Filed 13 Nov 90
Serial No. 07/613,445 (CON of 07/237,741)

A recombinant vector encoding the human neutrophil chemotactic factor (NCF) gene offers an important new tool for the treatment of some cancers as well as immunodeficiency diseases such as AIDS. NCF is a potent, physiologically active peptide which has been shown to attract and activate neutrophils and lymphocytes. Thus, it is believed to be a useful immunotherapeutic agent for activating the immune system against malignant tumors or, in the case of immune-compromised individuals, against a host of infections; however, it has previously been expensive and cumbersome to produce and purify large enough quantities of active NCF for clinical trials. This recombinant vector can be used to transform *E. coli*, which produce large quanties of NCF in a relatively short amount of time; the resultant product is easily purified and is physiologically active.
Licensing Contact: Todd Leonard

An Antiproliferative Protein

Nuell, M., McClung, J. (NIA)
Filed 14 Nov 90
Serial No. 07/612,674

A novel mammalian antiproliferative protein, named prohibitin, was cloned using a new process. Mammalian negative growth control (i.e., antiproliferative) genes have been extremely difficult to clone, and the only four antiproliferative genes that have been identified prior to this invention were isolated using a different strategy, i.e., one specific to tumor suppressor genes. Sequencing of prohibitin may make it possible to design pharmaceuticals that interfere with excess cellular replication to treat diseases such as cancer. The cloned protein may also enhance insufficient cellular replication associated with conditions such as osteoporosis or impaired tissue regeneration.
Licensing Contact: Marjorie Hunter

A Monoclonal Antibody

Willingham, M.C., Chang, K., Pastan, I. (NCI)
Filed 12 Oct 90
Serial No. 07/596,291

A novel monoclonal antibody (mAb) offers an improved method for the diagnosis and treatment of several forms of cancer. Presently, there are few antibodies available that selectively bind only to tumor cells or that are not acted upon immediately by neutralizing antigens in the blood. This novel mAb, which is referred to as K1, is highly specific for ovarian, esophageal, and cervical cancers and is not acted upon by any circulating antigens. The antibody can be used to detect these types of cancers or can be coupled to a toxin in order to selectively kill these cancers.
Licensing Contact: Daniel Passeri

Mouse Monoclonal Antibodies

Pastan, I., Willingham, M.C. (NCI)
Filed 12 Oct 90
Serial No. 07/596,289

Three mouse monoclonal antibodies (B1, B3, and B5) that can be used in the treatment and diagnosis of many forms of cancer were isolated. Unlike many other current cancer therapies, these antibodies selectively bind to some human tumors, but not to many normal tissues, and thus allow efficient entry of toxic agents into cancer cells, rather than reacting simply with cell surface moieties. These three new antibodies differ in their reactivity to tumors, normal tissues, and carbohydrate epitopes.
Licensing Contact: Daniel Passeri

Novel Interleukin-2 Receptor And Applications Thereof

Waldman, T.A., Leonard, W.J. (NCI)
Filed 27 Oct 90
Serial No. 07/588,498 (CON of 07/165,302)

A novel glycoprotein produced by cells that respond to interleukin-2 (IL-2) but do not have high-affinity IL-2 receptors or express the Tac antigen (p55) was isolated. This new polypeptide, referred to as p70-75, appears to act as a receptor for IL-2 in p55-negative cells such as resting large granular lymphocytes, natural killer cells, and precursors of lymphokine-activated killer (LAK) cells. The novel protein also appears to be a component of the high-affinity IL-2 receptor. Antibodies against p70-75 are proposed for therapeutic use through conjugation with a cytotoxic agent or other toxin. Recombinant interleukins capable of binding to the new receptor are proposed as means of producing novel LAK cells.
Licensing Contact: Marjorie Hunter

Method Of Inhibiting Viral Production

Magrath, I.T., Bhatia, K.G., Goldschmidts, W.L. (NCI)
Filed 21 Sep 90
Serial No. 07/586,087

Novel antisense oligonucleotides that inhibit viral production offer an important new treatment for Epstein-Barr virus (EBV)-associated cancers. There are presently no therapies that specifically inhibit EBV replication. These antisense oligonucleotides specifically inhibit the production of latent EBV antigens, which are required for maintenance of the viral genome within the infected cells.
Licensing Contact: Todd Leonard

A Novel, Broad-Spectrum Human Lung Fibroblast-Derived Mitogen

Rubin, J.S., Chan, A., Aaronson, S.A. (NCI)
Filed 14 Sep 90
Serial No. 07/582,063

A new fibroblast-derived mitogen offers to improve the study of wound healing as well as a variety of proliferative disorders. Previously, it has been difficult to study how growth factors affect wound healing and proliferative disorders such as cancer. This new fibroblast-derived mitogen, which is called plasminogen-like growth factor, has specificity for melanocytes, endothelial cells, and epithelial cells. Thus, it can be used in tissue-regeneration and cell-proliferation studies as well as to develop anti-growth factor agents.
Licensing Contact: Marjorie Hunter

Human Esophageal Epithelial Cell Lines

Stoner, G., Reddel, R., Harris, C.
Filed 14 Sep 90
Serial No. 07/582,060 (CIP of 07/412,802)

This immortalized cell line, which is derived from human esophageal epithelial cells, should have many advantages in studying esophageal cancer and in screening for potential carcinogens. Other epithelial cell lines, derived from rat esophagus tissue, tend to undergo a spontaneous neoplastic transformation, thus compromising the results of any carcinogenicity studies using those cell lines. The use of a human tissue-derived cell line also overcomes the problems associated with the histological differences between rat and human esophageal epithelium.
Licensing Contact: Steve Ferguson

Synthetic Peptides For The Production Of Specific Keratin Proteins

Yuspa, S.H., Roop, D.R., Steinert, P.M. (NCI)
Filed 14 Aug 90
Serial No. 07/571,513

A kit containing synthetic peptides derived from keratin proteins and monoclonal antibodies (mAbs) offers an improved method of detecting and diagnosing cancers and other forms of malignancies arising from epithelial cells. Previously developed mAbs against keratins, which are components of the cytoskeletons of all epithelial cells, cannot adequately differentiate between the various types of epithelial cells (respiratory, digestive, etc.). These synthetic peptides, which are derived from unique keratin protein sequences, produce monospecific mAbs that can effectively differentiate which type of epithelial cell a particular cancer is derived from.
Licensing Contact: Marjorie Hunter

***arg*, A Human Gene Related To But Distinct From The *abl* Proto-Oncogene**

Kruh, K. and Aaronson, S.A. (NCI)
Filed 30 Jul 90
Serial No. 07/559,029 (CIP of 07/135,280)

A distinct new human gene, arg, has been isolated, cloned, and sequenced. This novel gene is related to genes encoding tyrosine kinase proteins, which have been implicated in cancer. Antibodies directed against the protein product encoded by this gene and a diagnostic kit containing antibodies for the detection of carcinomas have been developed.
Licensing Contact: Daniel Passeri

Adjuvant (TNFα)

Shepard, H.M., Talmadge, J.E. (NCI)
Serial No. 07/558,937
Patent Issued 16 Oct 90
U.S. Patent No. 4,963,354

One way to overcome the body's failure to recognize an antigen and subsequently stimulate the body's defense mechanisms is

to couple the antigen with an adjuvant known to elicit an immunologic response in the affected organism. This invention describes the immunoprotective adjuvant activity of tumor necrosis factor-α (TNFα), administered alone or with IFNγ, in mice with syngeneic or allogenic tumors. On a molar dose basis, both mouse and human TNFα were approximately 1,000 times more effective than a conventional adjuvant (FK565) in preventing regrowth of radiation-killed tumor cells. This newly described function of TNFα may provide an effective therapeutic means of treating some cancers and some growth and reproductive disorders.
Licensing Contact: Daniel Passeri

The PDQ Cancer Treatment Information System

DeVita, V.T., Hubbard, S.M. (NCI)
Registered 24 Jul 90
Serial No. 07/556,420 (Statutory Invention Registration)

The Physician Data Query (PDQ) Cancer Treatment Information System is an on-line computer data base designed by the National Cancer Institute (NCI) to provide information on state-of-the-art cancer treatments. It also serves as a directory of physicians and organizations that offer cancer care and can direct users to experimental research therapies when standard treatments are not available. The data base is updated monthly and is more comprehensive and timely than any other cancer information source. Unlike many other medical data base systems, PDQ is a user-friendly system that requires no specialized training.
Licensing Contact: Marjorie Hunter

Gossypol For The Treatment of Cancer [Adrenal Cancer]

Flack, M.R., Knazek, R., Reidenberg, M. (NICHD)
Filed 12 Jul 90
Serial No. 07/551,353

Gossypol, a natural product derived from cotton seed oil, has initially been shown to be an effective treatment of adrenal cancer in both animal models and humans. Its advantages over the usual chemotherapies, for example, mitotane or cytoxan, are that it neither causes severe side effects nor requires hospitalization.
Licensing Contact: Marjorie Hunter

Labeled Resiniferatoxin, Compositions Thereof, And Methods For Using The Same

Blumberg, P.M., Szallasi, A., Szallasi, Z. (NCI)
Filed 29 Jun 90
Serial No. 07/546,141

A method of radiolabeling resiniferatoxin, a naturally-occurring analog of capsaicin, has been developed. Such labeled compounds have utility in assays used to demonstrate and characterize specific capsaicin receptors. Resinferatoxin, like capsaicin, causes stimulation of receptors that cause desensitization to inflammation and pain. Resinferatoxin-like analogs may, in turn, have application in the treatment of arthritis, asthma, allergic responses, fever, or pain associated with cancer.
Licensing Contact: Steve Ferguson

Method Of Administering Suramin Sodium In The Treatment Of Cancers

Stein, C.A., LaRocca, R.V., Myers, C.E. (NCI)
Filed 29 May 90
Serial No. 07/539,287 (CON of 07/321,055)

A new method for administering suramin sodium offers an important new tool for treating a variety of cancers. Suramin sodium has been shown to exhibit activity against adrenocortical and other types of cancers; however, at high blood-level concentrations, it causes observable neurotoxic side effects. There has previously been no method of administering large enough quantities of suramin sodium to treat the cancer without also causing these toxic side effects. This new method of administering suramin sodium requires administering the drug slowly over a 24 hour period or over several days until a blood-level concentration of 300 μg/ml is obtained and then allowing the blood-level concentration to fall off before readministering the drug. In this way, the level that would produce toxicity is never reached.
Licensing Contact: Marjorie Hunter

A Marker For Early Detection Of Human Hydatidiform Moles And Choriocarcinomas

Chou, J. (NICHD)
Filed 8 Jun 90
Serial No. 07/536,101

A new DNA probe for the detection of human gestational trophoblastic diseases such as hydatidiform moles and choriocarcinomas has been developed. Current methods of diagnosis rely on detecting increased levels of human chorionic gonadotropin (hCG) or pregnancy-specific β1-gylcoprotein over time; however, an elevated level of these proteins does not occur in the sera of all patients. Pregnant women normally also produce high levels of both proteins. Development of a diagnostic kit may significantly increase the survival rate from these diseases due to early initiation of therapy.
Licensing Contact: Mark Hankins

DNA Segment Encoding A Natural Killer Cell Receptor

Ortaldo, J.R., Young, H., Frey-Vasconcells, J., Bino, T., Roder, J. (NCI)
Filed 8 Jun 90
Serial No. 07/535,206

A gene has been isolated that is believed to code for the NK receptor protein, which permits the specific recognition and attachment of natural killer (NK) cells to the tumor cells that the NK cells recognize and destroy. Since the NK receptor specifically recognizes tumor cells, the recombinant proteins will be useful in the design and production of various agents for immunodetection and immunotherapy of tumors.
Licensing Contact: Marjorie Hunter

Flavone-8-Acetic Acid And Interleukin-2 For Cancer Therapy

Wiltrout, R.H., Horning, R.L. (NCI)
Serial No. 07/533,442 (CON of 07/182,222)
Patent Issued 29 Oct 91
U.S. Patent No. 5,061,488

A new treatment regimen for cancer has been discovered comprising the use of a combination of interleukin-2 and flavone-8-acetic acid. This treatment method has shown to be particularly effective in the treatment of renal carcinoma.
Licensing Contact: Marjorie Hunter

Monoclonal Antibodies For Identification And Preparation Of *raf*-1 Oncoproteins

Rapp, U., Kolch, W., Weissinger, E., Mischak, H., Troppmair, J., Showalter, S., Lloyd, P., Heidecker, G. (NCI)
Filed 1 Jun 90
Serial No. 07/531,950

Monoclonal antibodies specific for the *raf*-1 oncoprotein of vertebrates have been identified and purified. The *raf* gene family encodes for protein kinases, which function in the transmission of growth signals from the cell membrane to the nucleus. These antibodies could assist in the identification of substrates useful as growth factor antagonists for cancer therapy.
Licensing Contact: Daniel Passeri

Laminin A Chain-Deduced Amino Acid Sequence, Expression Vectors, And Active Synthetic Peptides

Yamada, Y., Sasaki, M., Kleinman, H.K., Martin, G.R. (NIDR)
Filed 30 May 90
Serial No. 07/530,969 (DIV of 07/267,564)

Novel synthetic peptides derived from the laminin A chain offer to enhance the prevention of tumor metastasis. Presently, there is no method available for effectively preventing the spread of certain cancers from their original site of occurrence to other parts of the body. Laminin has many important biological activities including promoting cell adhesion, migration, growth, and tumor cell invasion. These synthetic laminin peptides can be used to produce antibodies against laminin to block tumor cell migration, adhesion, growth, and neurite outgrowth.
Licensing Contact: Steve Ferguson

Cloned Human CRIPTO Gene And Applications Thereof [New Tumor Marker For Human Colon Cancer]

Persico, M., Solomon, D. (NIDDK, NCI)
Filed 29 May 90
Serial No. 07/530,165

A new human "CRIPTO" gene that appears to be valuable as a tumor-specific marker useful in the diagnosis of colon cancers has been isolated and cloned. The gene codes for a protein that is significantly homologous to potent mitogens such as epidermal growth factor (EGF) and transforming growth factor (TGF).
Licensing Contact: Steve Ferguson

Bistriazenes as Chemotherapeutic Agents

Michejda, C., Blumenstein, J. (NCI)
Filed 24 May 90
Serial No. 07/527,915

A new class of bidentate chemotherapeutic alkylating agents with potentially greater specificity and lower toxicity has been uncovered. In general, compounds of this type act by forming lethal crosslinks in nucleic acid molecules and can often rapidly shrink tumors after intravenous administration.
Licensing Contact: Marjorie Hunter

Use Of Resiniferatoxin And Analogues Thereof To Cause Sensory Afferent C-Fiber And Thermoregulatory Desensitization

Blumberg, P., Szallasi, A., Szallasi, Z. (NCI)
Filed 21 Jun 90
Serial No. 07/515,721 (DIV of 07/261,627, CIP of 07/358,073)

Resiniferatoxin, a naturally occurring but more potent analog of capsaicin, has been discovered to have useful applications in the development of compounds to treat pain. Resiniferatoxin, like capsaicin, causes stimulation of receptors that cause desensitization to inflammation and pain. Resiniferatoxin-like analogs may be useful in the treatment of arthritis, asthma, allergic responses, fever, or pain associated with cancer.
Licensing Contact: Arthur Cohn

Selective Cytotoxic Reagents Comprising Toxic Moieties Derived From Mammalian Proteins

Rybak, S.M., Youle, R. (NINDS)
Filed 20 April 90
Serial No. 07/510,696

A protein with ribonucleolytic activity (ribonucleases or angiogenin) is coupled via a disulfide linkage to a protein that recognizes a specific receptor (human transferrin or a monoclonal antibody). These hybrid proteins formed from two non-toxic proteins appear to be potent selective cytotoxic agents for use against tumor or other disease-causing cells. As cytotoxic agents, these reagents have advantages over currently available immunotoxins in that they have better access to some tissue sites due to their smaller size, do not require the use of toxins, and can be formed from human proteins to reduce the problem of immunogenicity in some patients.
Licensing Contact: Daniel Passeri

Method And Composition For Growing Tumor Cells From Few Cells

Fridman, R., Kleinman, H., Martin, G. (NIDR)
Filed 30 Mar 90
Serial No. 07/501,798

A new method for rapidly growing tumor cells in animals from tumor cell lines and from primary tumors offers an improved method for testing drug responsiveness *in vivo* and for obtaining tumor materials that are difficult to grow in culture. Many types of tumor cells require the isolation and injection of large quantities of cells in order to produce tumors in animals within a relatively short period. This new method,

which requires mixing a relatively small number of tumor cells with basement membrane extract, can give rise to detectable tumors in nude mice within two weeks.
Licensing Contact: Steve Ferguson

O^6-Substituted Guanine Compounds And Methods For Depleting 0^6-Alkylguanine-DNA Alkyltranferase Levels

Moschel, R.C., Dolan, M.E., Pegg, A.E. (NCI)
Serial No. 07/492,468
Patent Issued 25 Feb 92
U.S. Patent No. 5,091,430

Chemotherapeutic chloroethylating agents have some clinical utility against a number of neoplasms, but have limited effectiveness in killing tumor cells because of a DNA repair protein, 0^6-alkylguanine-DNA alkyltransferase (AGT). The novel guanine compounds described in this invention overcome this problem by reducing AGT levels in tumor cells. Other compounds employed to increase the effectiveness of antitumor agents are not potent enough to be useful. Compounds and compositions containing 0^6-substituted guanine compounds were found to facilitate the antitumor effects of alkylating agents, such as chlorethylnitrosoureas, and enhance the chemotherapeutic treatment of cancer cells.
Licensing Contact: Marjorie Hunter

Metalloproteinase Inhibitors Derived From Enzyme Activation Analysis

Liotta, L.A., Stetler-Stevenson, W., Krutzsch, H.C. (NCI)
Filed 23 Sep 88
Serial No. 07/488,460 (CIP of 07/317,407, CIP of 07/248,420, CIP of 07/196,242)

Synthetic peptides corresponding to the amino terminal region of type IV collagenase have important enzyme-inhibiting properties and may lead to the development of novel antitumor agents. Type IV collagenase is a metalloproteinase that has been closely linked to the ability of tumors to metastasize. Previous methods of studying this enzyme were limited because there were no available methods for activating or inhibiting it. These synthetic peptides, which correspond to the region of latent metalloproteinase that is cleaved during activation, are potent inhibitors of this enzyme and thus constitute a potent tool for studying this and similar enzymes.
Licensing Contact: Daniel Passeri

Endogenous, Suramin-Induced, Sulfated Glycosaminoglycans As Anticancer Agents In Humans

LaRocca, R.V., Cooper, M.R., Stein, C.A., Myers, C.E. (NCI)
Filed 5 Mar 90
Serial No. 07/488,105

Elevated levels of sulfated glycosaminoglycans (GAGs) detected in cancer patients being treated with suramin were found to exhibit anticancer activity. Suramin has been used to treat illnesses caused by the human T cell leukemia virus (HTLV, HIV), but suramin-induced sulfated GAGs in humans were not previously known to possess anticancer activity. Methods for isolating suramin-induced sulfated GAGs from humans and for administering the purified compounds to treat patients with cancer were developed. The endogenous suramin-induced sulfated GAGs may be useful in treating cancers such as Hodgkin's Disease, non-Hodgkin's lymphoma, multiple myeloma and B- and T-cell malignancies, prostate cancer, breast cancer, and lung cancer.
Licensing Contact: Marjorie Hunter

The Use Of Xylan Polyhydrogensulfates For The Therapy Of Disorders Based On Cell Proliferation

LaRocca, R.V., Myers, C.E., Bu, S., Anton, W., Jorg, C., Gerhard, D., Harald, S.D. (NCI)
Filed 6 Mar 90
Serial No. 07/487,881

This new series of synthetic xylan polyhydrogensulfates may be effective in treating psoriasis, some cancers, and other conditions regulated by growth factor receptors and characterized by uncontrolled and undifferentiated cell proliferation. These compounds act by inhibiting oncogene-encoded kinases and growth factor receptor tyrosine kinases; in at least one case (i.e., with the human adrenocortical carcinoma cell line SW 13), xylan polyhydrogensulfates inhibit the binding of basic fibroblast growth factor to the cancer cell. The compounds also exhibit antiretroviral activity and may be applicable to treating AIDS.
Licensing Contact: Daniel Passeri

Branched Alkyl Esters Of 4-Bis(Chloroethyl)Aminophenyl-Alkyl Carboxylic Acids For Treatment Of Primary And Metastatic Tumors Of The Lymphatic System, And Of Cancers Of The Breast And Ovaries

Greig, N.H., Genka, S., Shetty, H.U., Soncrant, T.T., Rapoport, S.I., Ali-Osman, F., Berger, M. (NIA)
Filed 9 Feb 90
Serial No. 07/478,075

A lipophilic anticancer alkylating agent, chlorambucil-tertiary butyl ester, may be useful in the treatment of cancers in several additional organs with high lipid content. Possible target cancers include primary (Hodgkin's and non-Hodgkin's lymphomas) and metastatic tumors of the lymphatic system, and cancers of the breast and ovary.
Licensing Contacts: Arthur Cohn and Marjorie Hunter

Target-Specific, Cytotoxic Recombinant *Pseudomonas* Exotoxin

Pastan, I., Fitzgerald, D., Chaudhary, V. (NCI)
Filed 2 Jan 90
Serial No. 07/459,635

A new recombinant *Pseudomonas* exotoxin (PE) has been developed with a modified "cytotoxic sequence" resulting in increased cell-killing activity. This toxin has potential use as an anticancer agent, since specific recognition molecules (e.g., antibodies, hormones) can be placed at specific

cloning sites in domain III at the carboxyl terminus of the PE molecule. Targeted cells bearing receptors for these recognition molecules are then selectively recognized and killed.
Licensing Contact: Daniel Passeri

Diagnostic Probe For Detecting Human Stomach Cancer

Kmiecik, T.E., Vande Woude, G., Showalter, S. (NCI)
Filed 27 Dec 89
Serial No. 07/457,556

A diagnostic probe specific for the detection of human stomach cancer has been discovered. Based on the *met* proto-oncogene, this assay uses monoclonal antibodies to detect the overexpression of the oncogene protein by the stomach cancer. This *met* proto-oncogene was found to be activated in all five human stomach cancer cell lines examined.
Licensing Contact: Daniel Passeri

Tumor-Specific Molecules For Controlling Cancer

Magrath, I., McManaway, M., Neckers, L. (NCI)
Filed 13 Dec 89
Serial No. 07/450,252

The novel method described in this invention uses genetic abnormalities of targeted cells to produce a tumor-specific antisense oligomer that will not affect normal cells. Prior methods recognized that antisense molecules are capable of inhibiting gene expression, but because none of these techniques succeeded in producing a molecule that is specific to tumor cells, their use in cancer therapies was limited.
Licensing Contact: Daniel Passeri

A New Member Of The Nuclear Hormone Receptor Superfamily And A cDNA Clone Thereof

Ozato, K. (NICHD)
Filed 13 Dec 89
Serial No. 07/450,162

A cDNA clone encoding a novel member of the nuclear hormone receptor superfamily offers an important new tool for the diagnosis and prognosis of hormone treatment of certain cancers. Overexpression of genes of region II of the MHC class I regulatory element (CRE) is associated with the growth of estrogen-positive cancers such as breast cancer. Previously, is has been difficult to study the regulation of these genes because no protein has been discovered that selectively binds to region II of MHC-CRE. This cDNA clone encodes the protein H2RIIBP, which specifically binds to estrogen response genes within region II of the MHC-CRE, and can be useful for the diagnosis and prognosis of tumors or conditions which result from abnormal levels of H2RIIBP in the cell or tissue.
Licensing Contact: Steve Ferguson

DNA Segment Encoding A Gene For A Receptor Related To The Epidermal Growth Factor Receptor

Kraus, M.H., Aaronson, S.A. (NCI)
Filed 1 Dec 89
Serial No. 07/444,406

A new gene designated erbB-3, identified by cDNA cloning as associated with a 148 kD transmembrane polypeptide, is expressed as a 6.2 kb transcript in certain normal epithelial tissues. Elevated erbB-3 mRNA levels are demonstrated to occur in certain human mammary tumor cell lines. Therefore, in the treatment of appropriate tumors, therapeutic drugs obtained from antibodies for erbB-3 can be targeted to cells having high levels of erbB-3 receptors.
Licensing Contact: Daniel Passeri

SCL Gene, And A Hematopoietic Growth And Differentiation Factor Encoded Thereby

Kirsch, I.R., Begley, G. (NCI)
Filed 17 Nov 89
Serial No. 07/437,819

Newly discovered normal and aberrant human SCL genes offer an important new tool for studying normal stem cell differentiation (hematopoiesis) as well as stem cell leukemias. Previously, studies of the critical events that occur during hematopoiesis have been limited because the genes involved in these events had not been identified. These newly discovered SCL genes — one which encodes the normal SCL transcript and the other encoding an aberrant fusion transcript produced in leukemic cells — can be used to measure their corresponding mRNAs and/or proteins during the critical stages of hematopoiesis or the development of leukemia.
Licensing Contact: Marjorie Hunter

Oligonucleotides Complementary To A Specific Region Of Ribosomal RNA Stop Cellular Protein Synthesis

Ackerman, E.J., Saxena, S. (NIDDK)
Filed 13 Nov 89
Serial No. 07/435,022

Oligonucleotides complementary to the α-sarcin recognition loop of 28S RNA have been found to be effective inhibitors of protein synthesis. Delivery of these oligonucleotides to tumors or infected cells represents a novel way of destroying these types of cells in an organism. Oligonucleotides may be more practical than toxins for immunotherapy, since oligonucleotides are much less likely to provoke an undesired antigenic response in the host.
Licensing Contact: Steve Ferguson

Type 1 Transglutaminase DNA

Jetten, A.M., Floyd, E.E. (NIEHS)
Filed 24 Oct 89
Serial No. 07/425,887

A DNA segment encoding the enzyme type 1 transglutaminase offers an important new tool for the detection of transglutaminase gene expression and/or detection and identification of cancers derived from squamous cells. Type 1 ("epidermal") transglutaminase activity is a marker for squamous cell differentiation, which in tracheobronchial epithelium is an abnormal pathway that can lead to cancer. Previously, there has been no accurate, sensitive method for detecting type 1 transglutaminase activity. This transglutaminase-encoding DNA can be used as a probe to detect type 1 transglutaminase mRNA or for screening tissues such as lung tissue for potential squamous cell carcinoma.
Licensing Contact: Daniel Passeri

Immunotoxins For Treatment Of Intracranial Lesions And As Adjunct To Chemotherapy

Johnson, V.G., Youle, R.J. (NINDS)
Filed 1 Sep 89
Serial No. 07/401,412 (CIP of 07/301,376, DIV of 07/236,225, CIP of 07/105,172)

Immunotoxins offer a valuable new approach to the effective treatment of intracranial tumors. These immunotoxins combine specificity, potency, and rapid killing ability to effectively control the growth and spread of metastatic lesions. This method is a significant advance over the use of systemic chemotherapy and radiation therapy, which do not effectively reach malignant growths in the central nervous system and often kill healthy cells along with tumor cells.
Licensing Contact: Daniel Passeri

Tumor Infiltrating Lymphocytes As A Treatment Modality For Human Cancer

Rosenberg, S.A. (NCI)
Serial No. 07/396,528
Patent Issued 30 Jun 92
U.S. Patent No. 5,126,132

Lymphocytes removed from tumors of cancer patients were regrown in culture to large numbers and then readministered along with IL-2 to eliminate or reduce cancer. Animal studies demonstrated that this treatment is specific to the tumor site, and a small pilot study of patients with advanced melanoma demonstrated regression of the cancer in up to 60% of the subjects (patient populations based on prior therapies). This treatment represents a new therapy for malignant, metastatic cancers.
Licensing Contact: Marjorie Hunter

Antigen-Specific Composition And *In Vivo* Methods For Detecting And Localizing An Antigenic Site And For Radiotherapy

Larson, S.M., Finn, R., Carrasquillo, J.A., Reynolds, J.C., Neumann, R.D. (CC)
Filed 28 Jul 89
Serial No. 07/386,095

A positron-emitting radionuclide label conjugated to an antigen-specific antibody or fragment offers an improved method for diagnosing diseases such as cancer. In particular, radionuclides such as ^{124}I bound to antibodies results in improved dosimetry and detection of tumors as well as normal tissue. These compounds are used with positron emission tomography (PET) for identifying the localizing sites because of its superior imaging characteristics.
Licensing Contact: Steve Ferguson

Diagnostic Test For Pineal Cell Tumors

Klein, D.C., Korf, H., Bruce, J.N. (NICHD)
Filed 19 June 89
Serial No. 07/368,270

A novel test that can detect the presence of S antigen in human cerebrospinal fluid is valuable for diagnosing pineal cell tumors. This test obviates the necessity of performing stereotaxic biopsy and is valuable in deciding on a course of therapy.
Licensing Contact: Daniel Passeri

Platinum Complexes Derived From B-Silyamines [For Anticancer, Antibacterial Therapies]

Haugwitz, R.D., Anderson, W.K. (NCI)
Filed 2 Jun 89
Serial No. 07/360,363

Platinum complexes derived from novel amines offer an important new therapy for treating solid tumors and certain bacteria and fungi. Solid tumors, which have densely packed cells, do not allow ready access to presently available therapies that are more effective in the treatment of the more widely separated cells of the leukemic blood cancers. The unique structure of these *cis* diamino platinum structures allows them to better penetrate a broad range of solid tumors and to effectively kill cancer cells at significantly lower doses than standard chemotherapy treatments. These compounds may also be used as antiseptics, disinfectants, antimicrobial medicines, or preservatives.
Licensing Contact: Marjorie Hunter

Human Cell Lines Of Epithelial Lung Adenocarcinoma Origin, Human Proteins And Methods

Whitsett, J.A., Gazdar, A.F. (NCI)
Filed 26 May 89
Serial No. 07/358,517

Novel continuous human adenocarcinoma cell lines of epithelial lung tissue origin produce fully processed (or semiprocessed) surfactant-associated proteins such as SAP-35 and SPL(Phe). These proteins, which confer biological activity to pulmonary surfactant phospholipids, are useful for diagnosis and therapy of human diseases associated with surfactant deficiency. (Pulmonary surfactant is critically necessary for efficient breathing.) The cell lines can also be used to screen

for tumor cells of pulmonary epithelial origin.
Licensing Contact: Todd Leonard

Method Of Detecting Cancer

Liotta, L. A., Schiffmann, E. (NCI)
Filed 10 Apr 89
Serial No. 07/336,557

An ELISA for the detection of a tumor cytokine in urine is a sensitive detection method for certain cancers. It is currently difficult to detect the recurrence or spread of a localized cancer until the latter stages. This ELISA detects the presence of autocrine motility factor (AMF) — which has been implicated in tumor cell metastasis — in urine and may be used as a predictor of tumor recurrence or progression.
Licensing Contact: Marjorie Hunter

Antiplatelet Monoclonal Antibody

Gralnick, H.R. (CC)
Filed 6 April 89
Serial No. 07/334,708

Antiplatelet monoclonal antibodies that recognize a specific heterodimer antigen are useful for the detection and treatment of various cancers. These antibodies recognize the heterodimer antigen on cells of breast cancer, lung cancer, melanoma, colon cancer, and bladder cancer. These antibodies also inhibit the spreading and migration of cancer cells on a collagen surface.
Licensing Contact: Steve Ferguson

Chemical-Differentiating Agents

Driscoll, J.S., Haces, A., Breitman, T. (NCI)
Serial No. 07/330,509
Patent Issued 12 Feb 91
U.S. Patent No. 4,992,472

Compounds of the form R-(CH2)n-R, where n is 5 or 6 and R is an amide, imide, or hydrazine group, have greater differentiating activity in cancer cells, with less toxicity than previously known compounds. These compounds, which can be administered orally or intravenously, have reduced toxicity relative to conventional chemotherapeutic agents as a result of their lack of cytotoxicity.
Licensing Contact: Marjorie Hunter

Antitumor Antibiotic

Golik, J., Beutler, J.A., Clark, P., Ross, J. (NCI)
Filed 15 Mar 89
Serial No. 07/323,648

A complex of antibiotics isolated from *A. verrucosospora* has potent antitumor activity. Presently available antitumor drugs are limited by a number of toxic side effects. When these antibiotics were given to leukemic mice, there was a significant increase in lifespan over controls; there were no apparent toxic side effects, even at the highest administered doses.
Licensing Contact: Daniel Passeri

Metalloproteinase Peptides: Role In Diagnosis And Therapy

Liotta, L., Stetler-Stevenson, W., Krutzsch, H. (NCI)
Filed 1 Mar 89
Serial No. 07/317,407 (CIP of 07/248,420, CIP of 07/196,242)

A series of peptides and peptide inhibitors was prepared based on a complete sequence analysis of type IV procollagenase, an enzyme (i.e., a metalloproteinase) that has been closely linked to the metastatic potential of tumors in murine tumor models. The products of this invention may be used to identify and block this metalloproteinase and therefore to treat patients suffering from tissue destruction caused by the presence of type IV procollagenase.
Licensing Contact: Daniel Passeri

Pharmaceutical Compositions For The Treatment of Cancers Susceptible To Treatment With The Copper Complex Of S-(Methylthio)-DL-Homocysteine

Rabinovitz, M., Fisher, J.M. (NCI)
Serial No. 07/315,911
Patent Issued 23 Jun 92
U.S. Patent No. 5,124,351

S-(methylthio)-DL-homocysteine (L-SMETH) inhibits the growth of L-1210 leukemia cells in culture at micromolar concentrations. The inhibition is promoted by addition of cupric ions (but not by ions of other metals), is stereospecific, and is competitive with glutamine. The method may be effective for many types of cancers, including the treatment of ovarian cancer that has spread within the peritoneum.
Licensing Contact: Marjorie Hunter

Type A Platelet-Derived Growth Factor Receptor Gene

Matsui, T., Aaronson, S.A., Pierce, J.H. (NCI)
Filed 9 Feb 89
Serial No. 07/308,282

Novel DNA segments that encode platelet-derived growth factor (PDGF) receptors may be used in therapies for conditions involving abnormal processes involving PDGF and its receptors. In particular, bioassay methods for detecting the expression of genes related to these DNA segments are effective in the identification of various classes of tumor cells, genetic defects in connective tissue growth, or in the healing response.
Licensing Contact: Steve Ferguson

Antiviral and Anticancer Cyclopentenyl Cytosine

Marquez, V.E., Driscoll, J.S., Lim, M., Tseng, C.K., Haces, A., Glazer, R.I. (NCI)
Serial No. 07/307,115
Patent Issued 4 Dec 90
U.S. Patent No. 4,975,434

Cyclopentenyl pyrimidine compounds have potent antiviral, antitumor, and differentiating activity. These compounds

are potent inhibitors of AdoHyc hydrolase without the toxicity of neplanocin A. These compounds are produced by functionalizing an alcohol, then conducting a direct displacement reaction; after further manipulation, the protective groups are removed to yield the biologically active compounds.
Licensing Contact: Marjorie Hunter

Immunotoxins [For Cancer Therapy]

Johnson, V.G., Greenfield, L., Youle, R.J., Laird, W. (NINDS)
Filed 25 Jan 89
Serial No. 07/301,376 (DIV of 07/236,225, CIP of 07/105,172)

Novel immunotoxins derived from diphtheria toxin mutants offer an improved method for treating a variety of tumors, in particular human medulloblastoma or glioblastoma cells. Previously developed immunotoxins have limited value due to nonspecific cell killing or less toxicity to tumor cells than is necessary to be effective. These diphtheria toxin mutants, which effectively inhibit protein synthesis in target cells, may be conjugated to tumor-specific monoclonal antibodies, transferrin receptors, or epidermal growth factors.
Licensing Contact: Daniel Passeri

Novel Serine Protease Inhibitors And Genes Encoding Same

Kotwal, G.J., Moss, B. (NIAID)
Filed 16 Dec 88
Serial No. 07/285,510

Novel proteins having a substantial degree of homology to the serine protease inhibitor superfamily are valuble for treating conditions such as emphysema, cirrhosis, and liver cancer. Serine protease activity has been associated with the accelerated failure of certain diseased organs and tissues. There have previously been no known synthetic or microbial proteins capable of specifically inhibiting serine proteases. These newly identified proteins have significant serine protease-inhibiting activity.
Licensing Contact: Mark Hankins

Monoclonal Antibody Specific For Bombesin

Cuttitta, F.F., Minna, J.D. (NCI)
Filed 5 Dec 88
Serial No. 07/281,951

A novel monoclonal antibody (mAb) specific for the peptide hormone bombesin offers to enhance the detection and treatment of small-cell lung cancer (SCLC). Bombesin is the most frequently produced peptide hormone associated with SCLC. Previously, no method existed for proving whether bombesin-like peptides could function as an autocrine growth factor for SCLC. This new antibombesin mAb blocks the interaction between bombesin and its corresponding receptor on SCLC and inhibits SCLC tumor growth.
Licensing Contact: Marjorie Hunter

Use Of Heterocyclic Amides To Inhibit Tumor Metastasis

Martin, G.R., Reich, R., Fuller, G.C., Mueller, R.A. (NIDR)
Serial No. 07/279,584
Patent Issued 23 Apr 91
U.S. Patent No. 5,010,080

Heterocyclic amides offer an improved method for treating metastatic cancers. Presently, there are no available methods for successfully preventing or halting the metastasis of many tumors. Certain heterocyclic amides, which inhibit the activity of 5-lipoxygenase, successfully prevent the metastasis of tumors in animals and thereby decrease tumor burden.
Licensing Contact: Marjorie Hunter

Acylaminoalkylpyridineamides As Inhibitors Of Metastasis

Fuller, G.C., Reich, R., Martin, G.R., Mueller, R.A. (NIDR)
Serial No. 07/279,186
Patent Issued 9 Jul 91
U.S. Patent No. 5,030,642

Novel acylaminoalkylpyridineamides offer a significant advancement for the treatment of metastatic cancers. Presently, there are no effective methods for successfully preventing or halting the spread of many types of cancers from their original site of occurance. These novel compounds, which inhibit the activity of 5-lipoxygenase, successfully prevent the metastasis of tumors in animals and, thereby, decrease tumor burden.
Licensing Contact: Marjorie Hunter

DNA Clone Encoding A Chimeric Toxin Composed Of IL-6 And A Portion Of *Pseudomonas* Exotoxin

Pastan, I.H., Fitzgerald, D.J., Adhya, S. (NCI)
Filed 1 Dec 88
Serial No. 07/278,601

This DNA clone encodes a protein containing IL-6, which will be recognized by cells with IL-6 receptors, and an active portion of the bacterial toxin *Pseudomonas* exotoxin A (PE40), which can enter a cell and arrest protein synthesis, thus leading to cell death. The protein kills cells bearing IL-6 receptors — which are present in large numbers on several tumor cell lines, including human myelomas, histiocytomas, and certain leukemias — without killing normal cells and cells without IL-6 receptors. The clone and the fusion product are unique in their expression and function and can be used primarily as pharmaceutical agents in the treatment of specific cancers. This treatment may be preferable to other cancer therapies because of its potency and selectivity.
Licensing Contact: Marjorie Hunter

Process For Detecting Genetic Susceptibility To Cancer

Sanford, K.K., Parshad, R., Jones, G.M. (NCI)
Serial No. 07/270,030
Patent Issued 12 Jun 90
U.S. Patent No. 4,933,274

A novel method for calculating the frequency of chromatid breaks and gaps in the chromosomes offers an important new tool for detecting genetic susceptibility to

cancer. Previously there has been no accurate and reproducible method for determinine who in the general population is more susceptible to developing cancer if exposed to certain environmental conditions. This new method exposes metaphase skin fibroblasts or stimulated peripheral blood lymphocytes to x-ray irradiation or fluorescent light. If the frequency of breaks and gaps in the cell sample is two- to three-fold higher than those occurring in comparable cells from controls, the patient is deemed genetically susceptible to developing cancer.
Licensing Contact: Daniel Passeri

Kaposi's Sarcoma Endothelial Cells And Growth Factor

Salahuddin, S.Z., Nakamura, S., Gallo, R.C. (NCI)
Serial No. 07/261,014
Patent Issued 21 Apr 91
U.S. Patent No. 5,106,731

Kaposi's sarcoma (KS) endothelial cells and a growth factor that supports their growth are valuable tools for developing strategies to treat this disease. Previously, no methods have been available for testing therapies for KS *in vitro*. These KS endothelial cells, which induce the disease in laboratory mice, can be maintained indefinitely and used to test potential therapeutic drugs. The growth factor and antibody to the factor may be used in diagnositic assays for KS.
Licensing Contact: Todd Leonard

Antitumor Vaccine

Rapp, U.R. (NCI)
Filed 26 Aug 88
Serial No. 07/236,947

A novel antitumor vaccine that utilizes oncoproteins offers an advancement in the treatment of cancer. Presently available cancer therapies have limitations because they have a nonspecific mode of action or the function of the antigen they are targeting is unknown. This novel antitumor vaccine uses purified oncoproteins, which are responsible for continual growth of cancer cells, to stimulate the patient's immune system into selectively attacking oncoprotein-producing tumor cells.
Licensing Contact: Marjorie Hunter

***In Vivo* Method For Determining And Imaging Temperature Of An Object/Subject From Diffusion Coefficients Obtained By Nuclear Magnetic Resonance**

LeBihan, D., Delannoy, J., Levin, R.L. (CC)
Serial No. 07/234,101
Patent Issued 3 Apr 90
U.S. Patent No. 4,914,608

This invention describes a novel, noninvasive method for measuring the temperature of and monitoring site-specific temperature changes in animals and humans. The technique can be used during clinical hyperthermia therapy in patients with cancer, which requires accurate temperature readings throughout the treated area. The use of temperature monitoring via NMR is preferable to other similar techniques, which lack temperature control, are invasive, or measure only surface temperatures.
Licensing Contact: Steve Ferguson

Activated Killer Monocytes: Tumoricidal Activity And Method Of Monitoring Same

Stevenson, H.C. (NCI)
Serial No. 07/209,108
Patent Issued 3 Mar 92
U.S. Patent No. 5,093,115

Purified, inteferon-activated white blood cells (monocytes) from individuals with colorectal cancer kill colon cancer cells *in vitro* and appear to help normalize at least some of the affected tissue when administered to these patients. This invention provides the first known serum-free formulation of activated killer monocytes that is suitable for cancer therapy and that produces few side effects.
Licensing Contact: Daniel Passeri

Retrovirus Vector Carrying MDR1 cDNA Which Transmits Multidrug Resistance To Infected Cells

Pastan, I., Gottesman, M. (NCI)
Filed 3 Jun 88
Serial No. 07/202,782

A retroviral vector that confers multidrug resistance on infected cells is valuable for testing cancer therapies. Previously, there has been no available method for studying the phenomenon of multidrug resistance in cancer *in vitro*. This retrovirus, which contains the human multidrug resistance gene (MDR1), can be used to infect drug-sensitive cancer cells in order to make them drug resistant. Thus, methods can be tested for restoring the cell's drug sensitivity.
Licensing Contact: Marjorie Hunter

Derivatives Of Cyclic AMP As Treatment For Cancer

Cho-chung, Y.S. (NCI)
Filed 23 May 88
Serial No. 07/198,489

Cyclic AMP (cAMP) derivatives offer an improvement in the treatment of cancer. Presently available cancer therapies have a number of toxic side effects that limit their dosage and effectiveness. Site 1- and Site 2-selective derivatives of cAMP inhibit the growth of a variety of cancer and leukemic cells. When these compounds are used together, they are found to have a synergistic effect. Because cAMP is a naturally occurring compound, it has few side effects at higher doses compared to other cancer therapies.
Licensing Contact: Marjorie Hunter

Cloned Gene For Expression Of Antibodies Reacting With Human Ovarian Cancer

Pastan, I., Fitzgerald, D.J., Willingham, M.C. (NCI)
Filed 23 May 88
Serial No. 07/197,703

A cloned gene that expresses an antibody specific for human ovarian cancer cells

along with a potent exotoxin offers a significant improvement in the preparation of therapies for this disease. Presently, immunotoxins are prepared by chemical coupling of the toxins to antibodies; such methods are inherently elaborate, relatively expensive, and require stringent safety precautions. This clone sequence, which includes an ovarian cancer-specific antibody (OVB3) fused to *Pseudomonas* exotoxin (PE), expresses large quantities of the relatively easy to purify fusion product. OVB3-PE is specific and lethal to ovarian cancer cells in culture.
Licensing Contact: Daniel Passeri

Flavone-8-Acetic Acid And IL-2 For Cancer Therapy

Wiltrout, R.H., Hornung, R.L. (NCI)
Serial No. 07/182,222
Patent Issued 17 Mar 92
U.S. Patent No. 5,096,707

The combination of flavone-8-acetic acid and IL-2 offers a significant advance in the treatment of cancer. The adoptive transfer of immune cells or the administration of IL-2 has many potential advantages for treating cancers; however, they are complicated and expensive to administer and, in the case of IL-2, have toxic side effects at high doses. A regimen combining flavone-8-acetic acid with IL-2 potently augments natural killer cell activity while significantly reducing the amount of IL-2 needed to be effective. In studies, this combination increased long-term patient survival by 80 percent, while neither drug used alone significantly increased survival.
Licensing Contact: Marjorie Hunter

New, Water-Soluble, Antineoplastic Derivatives of Taxol

Haugwitz, R.D., Zalkow, L., Glinski, J., Suffness, M., Deutsch, H.M., Narayanan, V. (NCI)
Serial No. 07/165,173
Patent Issued 17 Jul 90
U.S. Patent No. 4,942,184

A new class of taxol derivatives offers an improved method for treating certain cancers. The use of taxol as an antineoplastic agent has been limited due to poor solubility in aqueous solutions. These new taxol derivatives have improved water solubility while retaining the cytotoxic properties of the parent compounds. Their method of synthesis and use in treating cancer patients are provided.
Licensing Contact: Mark Hankins

Treatment Or Diagnosis By Endoscopic Administration Into The Lymphatics

Mulshine, J.L., Weinstein, J. (NCI)
Serial No. 07/133,978
Patent Issued 27 Mar 90
U.S. Patent No. 4,714,460

A fiber optic endoscope equipped with an aspiration cytology needle provides a highly effective means of delivering therapeutic or diagnostic reagents such as labeled monoclonal antibodies to the pulmonary lymph system. This novel delivery system may be used as a diagnostic tool for the detection of cells antigenic to the antibodies administered or as a therapeutic device for the delivery of antibodies linked to cytotoxic agents. The new system offers an alternative to surgery in making a differential diagnosis of cancer. Administration via the lymphatic system also offers several advantages over intravenous injection: a lower effective dose may be used; generalized systemic toxic reactions to the reagents are reduced, as are circulating blood levels of the reagents; and the rate of uptake of radiolabeled reagents with a short half-life is increased.
Licensing Contact: Todd Leonard

Immortalized Human Bronchial Epithelial Mesothelial Cell Lines

Reddel, R.R., Rhim, J.S., Yang, K., Gerwin, B.I. (NCI)
Serial No. 07/114,508
Patent Issued 5 Dec 89
U.S. Patent No. 4,885,238

Newly developed immortalized bronchial and mesothelial cells offer an important advancement for studying how lung cancers develop and for testing anticancer therapies. Previously, normal human bronchial and mesothelial cells could be cultured *in vitro* only for a limited period of time before cellular replication ceased. These immortalized cells, which can be cultured continuously *in vitro* in suitable medium, do not possess an oncogene and, thus, are suitable for testing potential carcinogenic as well as antineoplastic agents.
Licensing Contact: Steve Ferguson

Human Gene Related To But Distinct From EGF Receptor Gene

King, C.R., Kraus, M.H., Aaronson, S.A. (NCI)
Filed 21 Oct 87
Serial No. 07/110,791 (CIP of 06/836,414)

A previously unidentified retroviral oncogene expressed in human breast cancer was isolated, cloned, and partially characterized. This gene is distinct from but is related to the v-*erb*B tyrosine kinase-encoding family as well as to the epidermal growth factor (EGF) receptor gene. Proteins encoded by this gene and antibodies against those proteins are proposed for use as diagnostic tools and therapeutic agents in the detection and treatment of cancers.
Licensing Contact: Daniel Passeri

Kit For Diagnosing Cancer Metastatic Potential

Steeg, P., Liotta, L.A., Sobel, M.E., Bevilacqua, G. (NCI)
Serial No. 07/107,098
Patent Issued 17 Sep 91
U.S. Patent No. 5,049,662

A diagnostic kit containing recombinant cDNA encoding a gene whose expression correlates well with tumor metastasis is valuable for determining the prognosis of cancer patients and developing therapies. Previously, no method has been available for accurately predicting whether a particular localized cancer has the potential for spreading to other parts of the body. This cDNA can be used to detect a complementary cellular RNA that is found in particularly low levels in

metastatic cancers and in high levels in cells and tumors of low metastatic potential.
Licensing Contact: Daniel Passeri

Water-Soluble Prodrugs Of Camptothecin

Vishnuvajjala, B.R., Garzon-Aburbeh, A. (NCI)
Serial No. 07/104,894
Patent Issued 24 Jul 90
U.S. Patent No. 4,943,579

The insoluble antitumor drug camptothecin was chemically modified to water-soluble derivatives (prodrugs) without loss of functional activity. Once introduced to the bloodstream, the prodrugs are rapidly converted to the parent drug (camptothecin) and distributed throughout the body. The process of chemically modifying a compound to increase its solubility is a common technique, but has not been applied previously to camptothecin.
Licensing Contact: Marjorie Hunter

Long-Acting Androgenic Compounds And Pharmaceutical Compositions Thereof

Archer, S., Bialy, G., Blye, R.P., Crabbe, P., Diczfalusy, E.R., Djerassi, C., Fried, J., Kim, H.K. (NICHD)
Serial No. 07/089,391
Patent Issued 14 Aug 90
U.S. Patent No. 4,948,790

These cycloalkyl carboxylic acid esters of testosterone, when suspended or dissolved in a suitable carrier and injected or administered parenterally, eliminate the need for the continual or daily dosing associated with other synthetic androgens. In addition, unlike other similar preparations, administration of these new drugs produces relatively constant blood testosterone levels. This series of testosterone esters can be used in any medical condition requiring androgen therapy (e.g., hypogonadism, growth retardation, recurrent and metastatic breast cancer). They may also be effective as contraceptive agents in men.
Licensing Contact: Arthur Cohn

Ovarian Cancer Immunotoxins And Methods of Use Thereof

Bjorn, M., Fitzgerald, D,. Frankel, A., Laird, W., Ring, D., Willingham, M., Winkelhake, J. (NCI)
Serial No. 07/069,867
Patent Issued 18 Sep 90
U.S. Patent No. 4,958,009

Antibodies and immunotoxins conjugated with a cytotoxic moiety retarded the growth of human ovarian tumor cells *in vivo* and extended the survival time of mammals bearing human ovarian tumor cells. Described are monoclonal antibodies (mAbs) that are active against human ovarian cancer, clones of these mAbs, immunochemicals made from those antibodies, and diagnostic and therapeutic methods using those immunochemicals. This invention offers a novel antibody formulation against ovarian cancer.
Licensing Contact: Marjorie Hunter

Chemical-Differentiating Agents

Driscoll, J.S., Haces, A., Breitman, T. (NCI)
Serial No. 07/062,422
Patent Issued 21 Nov 89
U.S. Patent No. 4,882,346

Novel compounds that induce cell differentiation are valuable for developing anticancer therapies. Previously available cell differentiation compounds have not been sufficiently potent to be clinically practical or have had significant toxicity. Several analogues of the compound hexamethylene bis[acetamide] are effective for inducing malignant cells to differentiate to a less malignant phenotype and do not have significant toxicity *in vivo*.
Licensing Contact: Marjorie Hunter

Substituted N-Methyl Derivatives Of Mitindomide

Haugwitz, R.D., Naratanan, V., Zalkow, L.H., Deutsch, H.M., Gelbaum, L. (NCI)
Serial No. 07/025,062
Patent Issued 7 Feb 89
U.S. Patent No. 4,803,202

Derivatives of diimidestatin (mitindomide) offer an improved treatment for certain cancers. Previously, the effectiveness of mitindomide, which exhibits inhibitory activity against certain tumor systems, was limited by poor solubility in aqueous solutions. The increased water solubility of these mitindomide derivatives allows intraperitoneal and subcutaneous administration of these compounds as antineoplastic agents in mammals.
Licensing Contact: Todd Leonard

Use Of Tumor Necrosis Factor As An Adjuvant

Shepard, H., Talmadge, J. (NCI)
Serial No. 07/007,075
Patent Issued 16 Oct 90
U.S. Patent No. 4,963,354

This invention demonstrates that tumor necrosis factors α and γ, alone or together with cytokines such as IL-1 or IFNγ, enhance the titer and duration of the mammalian immune response, both humoral and cellular, without toxic reactions associated with many adjuvants currently used in cancer therapies. These novel adjuvants may also be useful in gaining an understanding of the mechanisms by which immune adjuvants work.
Licensing Contact: Daniel Passeri

Monoclonal Antibody Against Ovarian Cancer Cells (OVB-3)

Pastan, I., Fitzgerald, D.J., Willingham, M. (NCI)
Serial No. 06/888,960
Patent Issued 21 Feb 89
U.S. Patent No. 4,806,494

A novel monoclonal antibody, OVB-3, that specifically binds to ovarian cancer cells offers a significant advancement for the treatment of this disease. There has previously been no effective treatment for ovarian cancer. OVB-3 can be bonded to *Pseudomonas* exotoxin (PE), which is preferable to other toxins because large amounts are easily prepared and because humans do not usually have neutralizing antibodies against it, to selectively kill ovarian cancer cells.
Licensing Contact: Daniel Passeri

Oxymorpholinyl Dimer And Rescue Of Anthracycline And Mitomycin C Damage

Averbach, S.D., Gaudiano, G., Bachur, N.R., Koch, T.H. (NCI)
Serial No. 06/791,120
Patent Issued 30 Dec 86
U.S. Patent No. 4,632,922

A novel class of oxymorpholinyl dimers offers an effective method of protecting normal tissues from damage by antitumor drugs. Anthracycline and mitomycin C, two effective anticancer therapies, cause toxic side effects such as necrosis to healthy organs and tissues. Previously, there has been no effective method of protecting healthy tissues and organs from these side effects. These novel oxymorpholinyl dimers effectively inactivate anthracycline or mitomycin C *in vivo* and can be used to treat or prevent skin necrosis during cancer therapy.
Licensing Contact: Marjorie Hunter

Immunometric Assay For High Molecular Weight Carcinoembryonic Antigen

Schlom, J., Brock, P., Brennan, S., Schoemaker, H. (NCI)
Filed 22 Oct 85
Serial No. 06/790,261

An improved immunometric assay that utilizes a unique combination of two monoclonal antibodies has been developed for quantitative determination of high molecular weight carcinoembryonic (CEA) antigen useful in the early detection of colon cancer. Previous assays have insufficient sensitivity to detect subclinical cancer, fail to distinguish between malignant and nonmalignant disease, and exhibit cross-reactivity with normal low molecular weight substances, which limits their usefulness in detecting cancer in healthy individuals. These new immunoassays are very sensitive, have a low false positive rate, and thus have diagnostic value for colorectal cancer. Commercial diagnostic kits containing the reagents for performing the assay can be used to detect and quantify CEA in biological fluids, such as blood, serum, and urine.
Licensing Contact: Daniel Passeri

Method Of Preparing 1,2-Diaminocyclohexane Tetrachloro Platinum (IV) Isomers

Vishnuvajjala, B.R. (NCI)
Serial No. 06/780,932
Patent Issued 14 Apr 87
U.S. Patent No. 4,658,047

A novel method for preparing isomers of tetrachlorodiamine cyclohexane platinum (IV) offers an important new tool for the treatment of a variety of cancers. Previously, platinum compounds have proved useful as anticancer agents; however, simple amino complexes with platinum termed cisplatin have been found to produce greater inhibition of tumor cell growth.
Licensing Contact: Marjorie Hunter

Adoptive Immunotherapy As A Treatment Modality In Humans

Rosenberg, S.A. (NCI)
Patent Issued 1 Sep 87
Serial No. 06/763,657
U.S. Patent No. 4,690,915

A novel method for isolating lymphokine-activated killer (LAK) cells from peripheral blood mononuclear cells offers to improve the treatment of certain forms of cancer. Previous efforts to develop immunotherapies for the treatment of cancer were based on stimulating the host's immune response to the tumor, but the responses were not strong enough and the cancer-bearing hosts were generally immunoincompetent. These LAK cells, which are isolated from the patient to be treated and administered along with IL-2, acheived regression of established metastatic cancer in 6 out of 12 patients.
Licensing Contact: Marjorie Hunter

Monoclonal Antibodies Reactive With Human Breast Cancer

Schlom, J., Colcher, D., Nuti, M., Hand, P.H., Austin, F. (NCI)
Serial No. 06/707,400
Patent Issued 16 Sep 86
U.S. Patent No. 4,612,282

A novel group of monoclonal antibodies produced from splenic lymphocytes from carcinoma-immunized mice fused with the NS-1 murine myeloma cell line may be useful in the management of human breast cancer, as follows: a) in diagnosis of primary and metastatic lesions by blood or body fluid assay, b) in detection of lesions by coupling with a radioactive tracer, c) in treatment of breast cancer by combining with toxic drugs or radioactive isotopes, d) in evaluating degree of malignancy of cancer cell populations, and e) in detection of microlesions containing only a few tumor cells.
Licensing Contact: Daniel Passeri

Synthetic Peptides For The Production Of Specific Keratin Protein Antibodies

Yuspa, S.H., Steinert, P.M., Roop, D.R. (NCI)
Serial No. 06/654,213
Patent Issued 2 Feb 88
U.S. Patent No. 4,722,895

Synthetic peptides derived from keratin protein sequences offer an improved method of diagnosing and classifying tumors derived from epithelial cells. Previously, antibodies developed for differentiating epithelial cells have not been specific for individual types of keratins. Epithelial cells have keratin-containing cytoskeletons; the type differs between various epithelial cell lines. These synthetic peptides can be used to generate monoclonal antibodies that are specific for individual keratin protein sequences. Thus, they are useful for detecting and identifying specific types of carcinomas, mesotheliomas, adenocarcinomas, and other forms of keratin-containing cancers.
Licensing Contact: Marjorie Hunter

Substantially Purified Tumor Growth Inhibitory Factor

Iwata, K., Todaro, G., Fryling, C. (NCI)
Serial No. 06/602,520
Patent Issued 24 Nov 87
U.S. Patent No. 4,708,948

Unlike previously isolated tumor growth inhibiting factors (TIFs) (other than interferon), these new TIFs exhibit antitumor activity without adversely affecting the functioning of normal human cells. The new TIFs are also available in a highly purified form, compared with prior TIFs, which are only partially purified. The new TIFs also possess novel mitogenic and human cell growth stimulating properties. The TIFs may be used therapeutically as antitumor or antineoplastic agents, as indices of tumorigenic activity, and as wound and burn therapies.
Licensing Contact: Marjorie Hunter

Formaldehyde Derivatives Of Mitindomide

Haugwitz, R.D., Narayanan, V.L., Zalkow, L.H., Deutsch, H.M. (NCI)
Serial No. 06/604,136
Patent Issued 2 Jun 87
U.S. Patent No. 4,670,461

Substituted N-methyl derivatives of mitindomide that are water soluble are prepared by reacting mitindomide with formaldehyde. Mitindomide, which has been reported to show strong inhibitory activity against certain experimental tumor systems, is itself virtually insoluble in water; ordinary organic solvents used to dissolve it are hazardous to human health and toxic to mammalian tissue. Malignant murine tumors can be treated by parenteral administration of the Mannich base congeners of mitindomide.
Licensing Contact: Todd Leonard

Deoxyribonucleic Acid Molecules Useful As Probes For Detecting Oncogenes Incorporated Into Chromosomal DNA

Groffen, J., Heisterkamp, N., Stephenson, J.R. (NIAID)
Serial No. 06/571,911
Patent Issued 21 Jul 87
U.S. Patent No. 4,681,840

A novel single-stranded DNA molecule that is specific for the sites of incorporation into a chromosome of a deleterious gene is valuable for detecting specific oncogenes. This DNA is specific for the oncogene C-ABL, which is derived from human chromosome 9. This DNA sequence has been used to detect the abnormal Philadelphia chromosome and chronic myelocytic leukemia.
Licensing Contact: Daniel Passeri

Indium-Bleomycin Complex

Hou, D.-Y. (CC)
Serial No. 06/564,411
Patent Issued 4 Nov 86
U.S. Patent No. 4,620,971

A new complex of Indium 111 and Bleomycin, an antitumor antibiotic, has clinical application as a radiopharmaceutical for combining radiotherapy and chemotherapy and as a tumor-imaging agent for diagnosis. Previously known bleomycin chelates of Indium 111 bind to serum transferrin, exposing healthy as well as cancerous cells to radiation. The new complex is characterized by inability to bind to serum transferrin, has high selective affinity for viable tumor tissue, *in vivo* stability, improved activity ratios of tumor to tissues, tumor imaging flexibility and distinctness, and rapid clearance from the body.
Licensing Contact: Marjorie Hunter

Monoclonal Antibodies Against Non-Small Cell Lung Cancer

Mulshine, J., Minna, J. (NCI)
Serial No. 06/495,725
Patent Issued 11 Feb 86
U.S. Patent No. 4,569,788

Important treatment decisions depend on initial diagnosis of lung cancer type (small cell lung cancer [SCLC] or non-SCLC). Light microscopy, the current diagnostic method, often yields controversial pathological results with regard to lung cancers. The monoclonal antibodies included in this kit permit detection of human lung cancer, and differentiation of type, with greater ease and precision than light microscopic techniques.
Licensing Contact: Daniel Passeri

3′-Amino-2′ Halo-Anthracycline Antibiotics

Horton, D., Priebe, W.A. (NIGMS)
Serial No. 06/487,841
Patent Issued 31 Dec 85
U.S. Patent No. 4,562,177

A novel group of anthracycline derivatives is useful as antitumor agents, especially for treating leukemia. In particular, these compounds exhibit high antileukemic activity against P388 murine leukemia. These compounds are less toxic than the previously used anthracycline compounds, including doxorubicin (Adriamycin), dannorubicin, and carminomycin.
Licensing Contact: Daniel Passeri

Cell Matrix Receptor System And Use In Cancer Diagnosis And Management

Liotta, L., Nageswara, C., Terranova, V. (NCI)
Serial No. 06/481,934
Patent Issued 21 Jan 86
U.S. Patent No. 4,565,789

Metastasizing tumor cells must traverse the basement membrane to move from one tissue to another; this interaction is mediated by the glycoprotein laminin. A laminin matrix receptor that is characteristic of human cancer cells allows researchers to isolate fragments of the laminin molecule with specific binding capacities. Fragments and receptors based on this laminin may be used to block attachment of tumor cells, to reduce formation of metastases, to treat burns, and to bind to chemical agents in chemotherapy and drug evaluation.
Licensing Contact: Daniel Passeri

2′,5′-Riboadenylate-Morpholinoadenylate Nucleotides

Torrence, P.F., Johnston, M.I., Imai, J. (NIDDK)
Serial No. 06/468,950
Patent Issued 7 May 85
U.S. Patent No. 4,515,781

These novel nucleotides were formed via chemical modification of 2′-5′-linked oligoriboadenylates (2,5A), which appear to mediate the antiviral and antitumor action of interferon. The modified nucleotides are 5 to 10 times more potent than unmodified nucleotides with respect to inhibition of protein synthesis and activation of 2,5A-dependent endoribonuclease; they are also highly resistant to degradation by L cell extracts treated with interferon. The modified nucleotides may represent a new class of chemotherapeutic agents.
Licensing Contact: Marjorie Hunter

Method For The Identification And Purification Of Human Lung Tumor-Associated Antigens (hLTAA) And Clinical Detection And Determination Of These Antigens

Braatz, J.A., McIntire, K.R., Princler, G.L. (NCI)
Serial No. 06/462,022
Patent Issued 30 Apr 85
U.S. Patent No. 4,514,506

A series of hLTAAs specific to a variety of human lung tumors (small cell carcinomas, large cell undifferentiated carcinomas, squamous cell carcinomas, and adenocarcinomas) was isolated and characterized. Serum levels of these hLTAAs correlate with lung tumor incidence; these levels can also be used to evaluate the progression and stage of malignancy. This invention includes an immunoassay that can be used as a diagnostic tool for lung cancer. It is an improvement over other screening and diagnostic tests, which require highly purified antigen and/or tend to be nonspecific.
Licensing Contact: Daniel Passeri

2′-Halo Derivatives Of Duanomycin, Desmethoxy Duanomycin, Adriamycin, And Carminomycin

Horton, D., Priebe, W. (NIGMS, NCI)
Serial No. 06/408,942
Patent Issued 24 Jan 84
U.S. Patent No. 4,427,664

The antitumor activity of several natural anthracycline antibiotics was significantly increased following chemical modification. The new compounds exhibit potent *in vivo* activity against P388 mouse leukemia without the severe toxicity associated with the parent drugs (i.e., cardiotoxicity, bone-marrow damage, stomatitis, alopecia). The compounds can also be used as antibiotics. A method for the synthesis of these compounds is described in this invention.
Licensing Contact: Marjorie Hunter

Bisulfite Stabilization Of 5-Azacytidine

Chatterji, D.C., Gallelli, J.F. (CC)
Serial No. 06/331,989
Patent Issued 20 Sep 83
U.S. Patent No. 4,405,611

In this novel method, bisulfite is added under acidic conditions (pH 2.5) to the experimental anticancer drug 5-azacytidine to form a stable prodrug. The 5-azacytidine in bisulfite (i.e., the prodrug) is approximately 10 times more stable than prior formulations that used water or lactated Ringer injection to solubilize the drug. Animal studies demonstrate that the prodrug is readily converted to the parent drug following administration.
Licensing Contact: Marjorie Hunter

Process For Producing Monoclonal Antibodies Reactive With Human Breast Cancer

Schlom, J., Colcher, D., Nuti, M., Hand, P.H., Austin, F. (NCI)
Serial No. 06/330,959
Patent Issued 11 Jun 85
U.S. Patent No. 4,522,918

Eleven monoclonal antibodies were found that were activated by human breast tumor cells but not by cells from normal, healthy human tissue. These antibodies can be used for the diagnosis, prognosis, and treatment of breast cancer. They may also be used to monitor conventional treatments.
Licensing Contact: Daniel Passeri

Nontransformed Thymidine Kinaseless Cell Line And Its Use For Testing Tumorigenic Potential Of Genes

Hampar, B., Showalter, S.D. (NCI)
Serial No. 06/329,870
Patent Issued 14 Aug 84
U.S. Patent No. 4,465,769

Thymidine kinase (TK) is required for the incorporation of extracellular thymidine (or its analogs) into DNA which, in turn, controls cell survival and cell growth. In this invention, a nontransformed cell line devoid of thymidine kinase (TK-negative

cells) was biochemically transformed to a TK-positive cell line following infection with the herpes simplex virus (HSV) TK gene. Both the TK-negative cells and the HSV TK gene were found to be nontumorigenic. Thus, the tumorigenic transforming potential of any gene or cell can be determined by using the viral TK gene as a vehicle to introduce the foreign gene into the cloned TK-negative cell line (Cl B2-1).
Licensing Contact: Steve Ferguson

Prodrug Derivatives Of 9-β-D-Arabinofuranosyl-2-Fluoroadenine (F-ara-A)

Montgomery, J.A., Shortnacy, A.T. (NCI)
Serial No. 06/237,617
Patent Issued 2 Nov 82
U.S. Patent No. 4,357,324

Two water-soluble derivatives (the 5′-formate and the 5′-phosphate) of the anticancer agent F-ara-A were synthesized. These new compounds act as prodrugs of the parent drug F-ara-A. They are readily converted *in vivo* to the triphosphate of F-ara-A (the active form of the drug), which was found in high concentrations in L1210 leukemia cells following administration to mice. The compounds are equally or more potent than other similar chemicals, including 9-β-arabino-furanosyladenine (ara-A) and 2′-deoxycoformycin (2′-dCF).
Licensing Contact: Todd Leonard

Low Molecular Weight Complex Of Polyriboinosinic-Polyribocytidylic Acid And Method Of Inducing Interferon

Lerner, A.M., Levy, H.B. (NCI, NIAID)
Serial No. 06/233,881
Patent Issued 21 Jun 83
U.S. Patent No. 4,389,395

The core of this hydrophilic complex consists of low molecular weight (25,000/nucleotide polymer) polyribosinosinic-polyribo-cytidylic acid nucleotides stabilized with poly-l-lysine and carboxymethylcellulose. The complex can induce *in vivo* synthesis of interferon, which has been shown to have antiviral and anticancer activity. The complex is resistant to nuclease activity — a common problem with other similar compounds. The use of smaller, shorter-chain constituents also appears to ameliorate the toxicity (i.e., hyperpyrexia, hypotension, shock) observed with prior formulations. This invention may be used as an antitumor therapy; it may also be used prophylactically and therapeutically in the prevention and treatment of viral infections.
Licensing Contact: Daniel Passeri

Anti-Thy 1.2 Monoclonal Antibody-Ricin Hybrid Utilized As A Tumor Suppressant

Neville, D.M., Youle, R.J. (NIMH)
Serial No. 06/186,735
Patent Issued 16 Nov 82
U.S. Patent No. 4,359,457

The receptor specificity of the toxin ricin was modified by coupling it with a monoclonal antibody directed against murine lymphomas in a hyperosmotic lactose solution. The resultant hybrid, which was designed to selectively kill tumor cells without affecting normal cells, suppressed tumor growth when injected into mice 20 to 25 days after *in vivo* introduction of a lymphoma. This design is superior to previous hybrids, which lacked specificity or were not adequately toxic.
Licensing Contact: Daniel Passeri

Water-Soluble Forms Of Retinoids

Pitha, J. (NIA)
Serial No. 06/170,570
Patent Issued 1 Feb 83
U.S. Patent No. 4,371,673

Two classes of water-insoluble retinoids — retinoid polymers and free retinoids — were rendered water soluble by complexing with cyclodextrins. The new retinoid complexes retain their vitamin A-like activity, i.e., they can protect against vitamin A deficiency *in vivo* and inhibit cancer cell growth and proliferation *in vitro*, without exhibiting the toxicity of the noncomplexed, insoluble compounds. This invention overcomes problems with prior formulations, such as poor absorption, uneven distribution in the body, and systemic toxicity. These compounds have applications in nutrition, vision, and cancer studies and therapies.
Licensing Contact: Marjorie Hunter

CARDIOVASCULAR

***In Vivo* Angiogenesis Assay**

Passaniti, A., Martin, G.R. (NIA)
Filed 31 Mar 92
Serial No. 07/862,622

This invention describes a novel means of inducing new blood vessel formation and increasing blood flow to any tissue site *in vivo* and a simple, rapid, quantitative assay to detect inducers and inhibitors of angiogenesis. The new method employs a solid gel composed of basement membrane proteins implanted subcutaneously in a mouse; angiogenic and angiostatic factors can be readily introduced into the gel, making it ideal for testing the regulation of other factors. This novel approach overcomes several problems associated with currently available methods, which are often difficult to reproduce, result in inactivation of inhibitors and inducers, are costly and tedious, and are conducted using *in vitro* rather than *in vivo* systems. This invention has several potential clinical applications, including the development and testing of antitumor drugs, the delivery of healing factors to wound sites, and the isolation of biological factors that regulate angiogenesis and tumor growth.
Licensing Contact: Todd Leonard

Mixed Ligand Metal Complexes Of Nitric Oxide Nucleophile Adducts Useful as Cardiovascular Agents

Christodoulou, D.D., Wink, D.A., Keefer, L.K. (NCI)
Filed 27 Mar 92
Serial No. 07/858,885

Release of nitric oxide from endothelial cells is thought to be at least partially responsible for the relaxation of vascular

smooth muscle and the consequent control of blood pressure. The methods described in this invention offer improved stability and potency of the prodrugs, nitric oxide-nucleophile adducts, which have been developed as synthetic nitric oxide delivery systems. Coordination of these prodrugs with metals involved in specific metabolic (redox) pathways allows for tissue-targeted delivery of nitric oxide by redox reactions controlled by the metal center and/or by interaction of the metal center with proteins via vacant coordination sites.
Licensing Contact: Todd Leonard

Coiled Stent And Use Thereof

Kolobow, T. (NHLBI)
Filed 19 Mar 92
Serial No. 07/853,848 (CON of 07/424,030, CIP of 07/190,607)

A novel coiled/spring-like device that can be used to assist an ailing left heart or to repair blood vessels affected by atherosclerosis or other conditions has been developed. The new device, or stent, is contained within a narrow catheter that can be threaded to the desired location in a blood vessel, thus bypassing the need for surgical insertion through the chest. Unlike earlier devices, this new stent can be constructed using nonbiodegradable materials, which subsequently provide a supporting matrix for newly repaired vessel walls; the new device also overcomes problems such as overexpansion of the coil after insertion and inability to effectively reach small blood vessels.
Licensing Contact: John Fahner-Vihtelic

Irreversible Inhibitors Of Adenosine Receptors

Jacobson, K.A., Stiles, G. (NIDDK)
Filed 18 Feb 92
Serial No. 07/837,105 (CON of 07/221,413)

Novel ligands that bind irreversibly (form covalent bonds) with adenosine receptors are valuable for studying of a number of important physiological systems such as heart and kidney. To date, only photoaffinity labels have been developed for adenosine receptors; however, these labels do not bind strongly to adenosine receptors and tend to give nonspecific results. These novel ligands are derived from adenosine agonists and antagonists; therefore, they are extremely specific. They also contain electrophilic acylating and akylating groups that form covalent bonds at nucleophilic residues in the receptors.
Licensing Contact: Arthur Cohn

Inhibition of Cell Proliferation Using Antisense Oligonucleotides

Epstein, S.E., Speir, E.H., Unger, E.F. (NHLBI)
Filed 14 Jan 92
Serial No. 07/821,415

A novel strategy that uses antisense oligonucleotides to prevent the renarrowing of heart valves or peripheral vessels (i.e., restenosis) following coronary balloon angioplasty has been developed. The antisense oligonucleotides employed inhibit the proliferation of the smooth muscle cells (SMCs) that cause restenosis by targeting three specific mRNAs: c-myc, proliferating cell nuclear antigen (PCNA), and cyclin-B_1; the oligonucleotides are delivered locally via the slow biodegradation of polymers that have been saturated with the antiproliferative compounds. Previously tested pharmacologic agents have failed to prevent SMC-induced restenosis, which occurs in up to 50 percent of patients undergoing successful coronary angioplasty.
Licensing Contact: Todd Leonard

Method To Foster Myocardial Blood Vessel Growth And Improve Blood Flow To The Heart

Unger, E., Epstein, S. (NHLBI)
Filed 27 Nov 91
Serial No. 07/799,830

Basic fibroblast growth factor (bFGF) is an angiogenic peptide that promotes the growth of new cardiac blood vessels and improves cardiac blood flow in a dog model of single coronary occlusion. Previous attempts to develop proteins that promote the growth of blood vessels have failed, and the closest known technologies that improve cardiac blood flow include coronary artery bypass surgey and coronary angioplasty. This novel therapy could potentially be used to treat the millions of individuals who have partially or completely blocked coronary vessels.
Licensing Contact: Todd Leonard

Prodrug Derivatives Of Nucleophile-Nitric Oxide Adducts As Agents For The Treatment Of Cardiovascular Disorders

Keefer, L.K., Dunams, T.M., Saavedra, J.E. (NCI)
Filed 24 Sep 91
Serial No. 07/764,908

A novel class of compounds that release nitric oxide *in vivo* offer to improve the treatment of cardiovascular disorders. Endothelium-derived relaxing factor (EDRG), which is involved in the relaxation of vascular smooth muscle, has been shown to be identical to the simple molecule nitric oxide. Presently available methods for introducing nitric oxide into the blood stream have limited utility because they are not stable in acidic enviroments and, thus, must be administerd intraveneously. This new class of compounds is highly stable to acidic conditions of the stomach and can continue to release nitric oxide after metabolism. Thus, they are long-acting and can be advantageously administered orally for chronic conditions.
Licensing Contact: Todd Leonard

Therapeutic Inhibition Of Platelet Aggregation By Nucleophile-Nitric Oxide Complexes And Derivatives Thereof

Diodati, J.G., Keefer, L.K. (NHLBI)
Filed 24 Sep 91
Serial No. 07/764,906

Nucleophile-nitric acid complexes offer a novel method for inhibiting platelet aggregation. Aspirin is currently the most widely used agent for inhibiting platelet aggregation; however, aspirin has a number of disadvantages such as its propensity to aggravate the effects of peptic ulcers. Recently, nitric oxide has

been identified as a natural messenger molecule in the inhibition of platelet aggregation. These nucleophile-nitric acid complexes, which have been shown to release nitric oxide *in vivo* in a stable and controlled fashion, were equally as effective as aspirin in inhibiting platelet aggregation.
Licensing Contact: Todd Leonard

Antihypertensive Compositions Of Secondary Amine-Nitric Oxide Adducts And Use Thereof

Keefer, L.K., Wink, D.A., Dunams, T.M., Hrabie, J.A. (NCI)
Filed 12 Aug 91
Serial No. 07/743,892 (CIP of 07/409,552)

Novel secondary amine-nitric oxide compounds offer to improve the treatment of hypertension and other blood pressure-associated problems. Endothelium-derived relaxing factor (EDRF), which is involved in the relaxation of vascular smooth muscle and is improtant for the control of blood pressure, has been shown to be identical to nitric oxide (NO). These secondary amine-nitric oxide compounds stably release nitric oxide into the blood and can be used for the treatment of chronic hypertension, hypertensive crisis, acute congestive heart failure, angina, acute myocardial infarction, left ventricular failure, cerebrovascular insufficiency, and intracranial hemorrhage.
Licensing Contact: Todd Leonard

Treatment Of Vascular Injury

Casscells, W., Lappi, D.A., Baird, J.A. (NHLBI)
Filed 3 Jan 91
Serial No. 07/637,074

Basic fibroblast growth factor (bFGF) conjugated to cytotoxic agents offers an important new treatment for artherosclerosis as well as vascular injury. The standard treatments for atherosclerosis, such as balloon catheterization (angioplasty) or other such treatments where the plaque is either compressed against or scraped away from the interior surface of the artery, often cause vascular trauma. This leads to the rapid proliferation of endothelial cells at the site of the injury, which has been linked to a repeat narrowing of the artery soon after the treatment. Cytotoxins conjugated to bFGF can be used to selectively inhibit the proliferation of endothelial cells, which express functional high-affinity bFGF receptors, and thus prevent the undesirable growth and clogging of the artery which occurs after vascular injury.
Licensing Contact: Mark Hankins

Identification Of A Suppressor Of Atherogenic Apolipoprotein

Ross, R.S., Li, A.C., Hoeg, J.M., Brewer, H.B. (NHLBI)
Filed 23 Oct 90
Serial No. 07/601,931

This invention provides the first description of the genetic sequence responsible for the production of the apolipoprotein B, the primary cholesterol-associated protein in human blood that is linked with cardiovascular disease. Agents that suppress the transcription of this genetic sequence and thus, the synthesis of apolipoprotein B could, in turn, be used as novel therapeutic or prophylactic agents in the treatment and prevention of heart disease.
Licensing Contact: Todd Leonard

Complexes Of Nitric Oxide With Polyamines

Keefer, L.K., Hrabie, J.A. (NCI)
Filed 20 Sep 90
Serial No. 07/585,793

Novel complexes of nitric oxide and polyamines are useful in treating vascular disorders, including hypertension. Nitric oxide-amine complexes that were previously developed as vasodilators have typically been unstable and had unpredictable and short-lived effects. These nitric oxide and polyamine complexes release nitric oxide under physiological conditions in a sustained and controllable fashion and possess long-lived vasodilating effects.
Licensing Contact: Todd Leonard

Trifunctional Agents Useful As Irreversible Inhibitors Of A1-Adenosine Receptors

Jacobson, K.A., Stiles, G.L., Boring, D.C. (NIDDK)
Filed 24 Aug 90
Serial No. 07/572,410

These new agents consist of a central linking unit (a 1,3,5-substituted benzene) with three reactive sites: one for the A1-adenosine receptor, one for the linking site, and one for a marker (e.g., spin labels, fluorescent probes, and radioisotopes). Other similar agents exhibit, at best, a moderate affinity for A1-adenosine receptors, thus limiting their usefulness in histochemical and biochemical (equilibrium) studies. This invention also overcomes the solubility problem associated with prior agents. The agents can be administered by any route (oral, intravenous, inhalation) when formulated with an appropriate vehicle. They may be most useful in treating cardiac disorders.
Licensing Contact: Arthur Cohn

Phantom For Evaluation Of Prosthetic Valves And Cardiac Ultrasound Procedures

Carey, R.F., Herman, B.A., Robinson, R.A., Stewart, H.F., Hoops, R.G., Douglas, G.H. (FDA)
Serial No. 07/513,269
Patent Issued 1 Oct 91
U.S. Patent No. 5,052,934

A left-heart simulator suitable for clinical ultrasound examination of prosthetic heart valves was developed. This multi-chambered, multiported, anthropomorphic phantom device can be filled with a blood-mimicking fluid for evaluation of prosthetic heart valves and cardiac ultrasound procedures. Unlike other prior devices, the apparatus described in this invention is suitable for clinical ultrasound examination of prosthetic heart valves and for measurement of simulated blood flow

velocity profiles. The new device may also be used for the calibration of Doppler ultrasound parameters related to blood flow characteristics, which can be helpful in the diagnosis of complications related to blood flow through the valves. The device can be used to compare the performance of a variety of cardiovascular devices and systems.
Licensing Contact: John Fahner-Vihtelic

Anthropomorphic Cardiac Ultrasound Phantom

Smith, S.W., Rinaldi, J.E. (FDA)
Serial No. 07/432,433
Patent Issued 4 Dec 90
U.S. Patent No. 4,974,461

The novel apparatus that simulates the human cardiac anatomy offers to improve the testing of ultrasonic imaging, ultrasonic Doppler, or color-flow Doppler imaging devices. This model allows ultrasound readings to be made for simulated blood flow through a left ventricle or larger portion of the human heart. An ultrasonic contrast medium is circulated within a circulatory loop to simulate human cardiac blood circulation that can be subjected to ultrasonic viewing with minimal reverberation.
Licensing Contact: Todd Leonard

Antihypertensive Compositions and Use Thereof

Keefer, L.K. (NCI)
Filed 18 Oct 89
Serial No. 07/423,279

Compounds containing the N-oxy-N-nitrosoamine group that decompose under physiological conditions to release NO are potent antihypertensives useful in treating cardiovascular disorders such as chronic hypertension, hypertensive crises, acute congestive heart failure, angina, acute myocardial infarction, left ventricular failure, cerebrovascular insufficiency, or intracranial hemorrhage, for which lowering of blood pressure has a beneficial result. These compounds have not previously been found to have these uses.
Licensing Contact: Todd Leonard

Antihypertensive Compositions Of Secondary Amine-Nitric Oxide Adducts And Use Thereof

Keefer, L.K., Anderson, D., Dunams, T.M., Hrabie, J. (NCI)
Serial No. 07/409,552
Patent Issued 13 Aug 91
U.S. Patent No. 5,039,705

Newly developed secondary amine-nitric oxide complexes are a novel method of treating hypertension in mammals. Earlier available secondary amine-nitric oxide complexes have a limited use because they do not release pure nitric oxide (NO) into the bloodstream. NO is believed to relieve hypertension by mimicing the effects of endothelium-derived relaxing factor, which is involved in the relaxation of vascular smooth muscle. The components of this invention are superior to previously available secondary amine-nitric oxide complexes because they are more stable in aqueous solutions and thus release NO over a longer period of time.
Licensing Contact: Todd Leonard

D-Propanolol As A Selective Adenosine Antagonist

Klein, D.C., Nikodijevic, O. (NICHD)
Serial No. 07/373,863
Patent Issued 26 May 92
U.S. Patent No. 5,116,867

D-propanolol is a highly selective adenosine antagonist and may have use in the treatment of cardiovascular illnesses. The most widely used adenosine receptor antagonists — derivatives of caffeine and theophylline — are neither highly selective nor potent. D-propanolol blocks the effects of adenosine at concentrations that do not inhibit adrenergic systems. Thus, it can be used to therapeutically block the effects of adenosine without blocking the effects of epinephrine or norepinephrine.
Licensing Contact: Arthur Cohn

Adenosine Functionalized Congeners As Cardiovascular Treating Agents For Animals

Jacobson, K.A., Kerk, K.L., Daly, J.W. (NIDDK)
Filed 1 May 89
Serial No. 07/346,257

Certain functionalized ligands having spacer arms extending from an N6-phenyl group have enhanced activity on vascular A2 receptors and, thus, are effective antihypertensive agents. Presently available antihypertensive agents have activity for A1 receptors as well as A2 receptors and, thus, have unwanted side effects. These functionalized ligands cause coronary vasodilation in dogs with minimal side effects. The highest A2 potency is observed for two methylamides, a primary amino congener, and a biotin conjugate.
Licensing Contact: Arthur Cohn

Stabilized Nitric Oxide-Primary Amine Complexes Useful As Cardiovascular Agents

Keefer, L.K., Wink, D.A., Dunams, T.M., Hrabie, J.A. (NCI)
Serial No. 07/316,958
Patent Issued 4 Sep 90
U.S. Patent No. 4,954,526

Novel stabilized nitric oxide-primary complexes offer an imporant new method of treating hypertension in mammals. Nitric oxide (NO) is believed to relieve hypertension by mimicing the effects of endothelium-derived relaxing factor, which is involved in the relaxation of vascular smooth muscle. Previously available secondary amine-nitric oxide complexes have a limited use because they do not release pure NO into the bloodstream. The components of this invention are superior to previously available nitric oxide complexes because they are more stable in aqueous solutions and, thus, release NO over a longer period of time.
Licensing Contact: Todd Leonard

Molecular Probes For Adenosine

Jacobson, K.A., Daly, J.W., Kirk, K.L. (NIDDK)
Filed 19 Dec 88
Serial No. 07/287,539 (CON of 06/874,143, CIP of 06/717,616, CIP of 06/664,953)

Novel molecular probes, which are functionalized congeners of N6-phenyl-adenosine or of 1,3-dialkyl-8-phenyl-xanthine, offer an improved method of quantitating and characterizing the A1 and A2 adenosine receptors located on the surface of cell membranes in the mammalian heart, brain, and circulatory system. Previously developed probes for these receptors have been hampered by poor binding and imaging. These adenosine and xanthine congeners can be conjugated to fluorescence labels, tritium, NMR labels, heavy metal complexes with chelating agents, radioiodine, and radiofluorine, which not only enhance imaging but allow for more potent receptor binding.
Licensing Contact: Arthur Cohn

Anthropomorphic Cardiac Ultrasound Phantom

Smith, Stephen W., Rinaldi, Jean E. (FDA)
Serial No. 07/257,174
Patent Issued 16 Jan 90
U.S. Patent No. 4,894,013

An apparatus that simulates the human cardiac anatomy is valuable for medical applications such as the testing of ultrasonic imaging, including ultrasonic Doppler and color-flow Doppler imaging devices. In this apparatus, an ultrasonic contrast medium is circulated within a loop that can be subject to viewing with minimal reverberation. A flexible portion of the human heart is simulated by means of valves, pressurizing chambers, reservoirs, and hydraulic flows.
Licensing Contact: Todd Leonard

Prozarin Analog With Increased Selectivity And Duration

Pitha, J., Kusiak, J.M. (NIA)
Filed 31 Dec 87
Serial No. 07/140,744

A new prozarin analog that is more selective and durable than prozarin itself offers to significantly advance the treatment of hypertension. Prozarin, the most widely used drug in the treatment of hypertension and for studies of α_1-adrenoreceptors, has a number of unpleasant side effects; these side effects are associated with its lack of specificity. This prozarin analog binds strongly and persistently to α_1-adrenoreceptors but, even at high doses, does not occupy all the receptors that bind prozarin.
Licensing Contact: Mark Hankins

Catheter With Oxyhydrogen Catalytic Thermal Tip

Lu, D.Y., Bowman, R.L. (NHLBI)
Serial No. 07/026,540
Patent Issued 10 Jan 89
U.S. Patent No. 4,796,622

A newly developed catalytic thermal tip offers to significantly advance the treatment of cardiovascular disease using angioplasty. Thermal tips presently used in angioplasty have disadvantages because they are expensive and expose the patient's blood vessels to unnecessary injury. This catalytic thermal tip uses heat generated by reaction of oxygen and hydrogen gases catalyzed by a small piece of palladium. The reaction is relatively inexpensive to generate; the temperature of the reaction is precisely controlled via a temperature monitor, so it is less likely to cause unwanted damage to surrounding tissue.
Licensing Contact: Todd Leonard

Adenosine Receptor Prodrugs

Jacobson, K.A., Kirk, K.L., Daly, J.W. (NIDDK)
Serial No. 07/000,229
Patent Issued 6 Nov 90
U.S. Patent No. 4,968,672

A functionalized congener approach to preparing prodrugs of adenosine and xanthine derivatives offer an improved means for treating hypertension. Adenosine and xanthine derivatives have previously been used for the treatment of hypertension but have been limited by potent side effects such as headaches, disabling cardiac depression, and/or sedation. These prodrug cogeners of adenosine and xanthine are more selective for A1 or A2 receptors and associated with fewer side effects than the parent drugs, because of the increased concentration of the drug at the target site.
Licensing Contact: Arthur Cohn

Method And Apparatus For Traversing Blood Vessels

Goldstein, S.R., Jones, R. (NCRR)
Serial No. 06/530,067
Patent Issued 23 Jul 85
U.S. Patent No. 4,530,698

This invention provides access to relatively inaccessible regions of blood vessels through the use of a catheter-within-a-catheter system. The leading end of the primary catheter is inserted into the vascular system distal to the region of interest and is moved closer to the remote vessel; the secondary catheter is then everted from the leading end of the primary tube. The pressure used to move both catheters, as well as any fluids to be delivered to the remote site, are provided through two syringes connected indirectly to a pressure gauge. The system, which can be used for diagnostic or therapeutic purposes, can reach much narrower vessels than conventional catheters; it is also more reliable and produces less friction along vessel walls.
Licensing Contact: John Fahner-Vihtelic

Blood Pressure Cuff Calibration System

Walker, E.C. (NCRR)
Filed 3 Sept 82
Serial No. 06/414,904
Issued 18 Sep 84
U.S. Patent No. 4,471,646

This invention indicates whether an inflatable cuff used to measure arterial blood pressure is operating properly. The device can detect defects (e.g., leakage, clogging, excessive stiffness) in the cuff that may cause inaccurate blood pressure readings. The system can also be used to calibrate the pressure transmission characteristics of the cuff, independently of the patient's blood pressure. No other device satisfactorily measures the pressure-transmitting characteristics of blood pressure cuffs.
Licensing Contact: John Fahner-Vihtelic

Mannose-6-Phosphate Low-Density Protein Reagent Effective Against Hypercholesterolemia

Neville, D.M., Youle, R.J., Murray, G.J. (NIMH)
Serial No. 06/341,572
Patent Issued 9 Aug 83
U.S. Patent No. 4,397,843

A novel mannose-6-phosphate low-density lipoprotein may offer an important new tool for the treatment of hypercholesterolemia. This compound is effective in inhibiting cholesterol synthesis by 75 percent in human fibroblasts derived from patients suffering from familial hypercholesterolemia. It works by modifying the receptor specificity of a protein (or a toxin) so that it enters cells that were previously impermeable and exerts new effects or reverses a pathological condition.
Licensing Contact: Marjorie Hunter

Method And Apparatus For Measuring Density Profiles In Microscopic Tube Flow

Corbet, A., Holliger, C., Strul, B. (EM)
Serial No. 06/390,876
Patent Issued 18 Mar 86
U.S. Patent No. 4,576,477

Blood rheology studies generally nonbiological materials or techniques that cannot be employed with normal blood. As a result, the data acquired from these studies have been limited; data processing has been tedious; and it is not certain how far some results apply to actual vascular functioning. This apparatus, which uses a photodiode array and a light source, overcomes some of these problems by allowing for the *in vitro* measurement of particle distribution in flowing whole blood and in other optically dense fluids.
Licensing Contact: John Fahner-Vihtelic

CELL BIOLOGY

Production Of Isolated Proteinaceous Material Using Recombinant Avipox Virus Vectors

Faulkner, F.G., Moss, B.,
Dorner, F., Bodener, W. (NIAID)
Filed 11 May 92
Serial No. 07/882,768 (CON of 07/734,741, CON of 07/339,738)

Avipox virus vectors have been constructed that can successfully express foreign eukaryotic genes in infected cells. The use of viral vectors for the expression of eukaryotic genes has previously been limited because the viruses do not express foreign genes well or because they are pathogenic to humans. The recombinant avipox virus vector is produced by combining an avipox virus with a recombinant plasmid the contains a strong promoter. This promoter ensures that adequate amounts of the foreign gene are expressed, and since avipox is only infectious for birds, it is also safe to handle.
Licensing Contact: Mark Hankins

Efficient Method For Identifiable Expression Of Non-Selectable Genes

Kane, S., Pastan, I., Gottesman, M. (NCI)
Filed 20 Apr 92
Serial No. 07/871,608 (CON of 07/370,619)

A unique plasmid construction allows the expression of non-selectable genes in a variety of cell lines. Previously, there has been no method of selectively expressing genes that have no selectable phenotype. This plasmid construction links the desired non-selectable gene with the dominant multidrug resistance (*MDR*1) gene; selection for *MDR*1 reliably and simultaneously allows the amplification and overexpression of the non-selectable gene.
Licensing Contact: Marjorie Hunter

Isolation, Characterization, and Use of the Human B Subunit of the High-Affinity Receptor for Immunoglobulin E

Kinet, J.-P. (NIAID)
Filed 16 Apr 92
Serial No. 07/869,933

The high-affinity receptor for immunoglobulin E (IgE), which is responsible for initiating allergic response, can be produced in a host cell carrying the DNA that encodes for the α, β, and γ subunits of the receptor. This invention represents the first successful isolation and characterization of the human β and γ subunits, and the first successful expression of IgE binding by transfected cells. The ability to express the IgE receptor demonstrated that all three subunits were required for receptor expression in human mast cells and basophils, whereas only the α and γ units were needed in fibroblasts. The invention has a variety of clinical applications, including the development of pharmaceutical agents that can be used to prevent and/or treat allergic diseases.
Licensing Contact: Steve Ferguson

Method For Identifying And Expressing Proteins That Recognize And Adhere To Specific Surfaces

Brown, S., Court, D. (NCI)
Filed 15 Apr 92
Serial No. 07/869,912

A novel genetically engineered protein found on the outer surface of mutant *Escherichia coli* permits the bacteria to adhere to iron oxide but not to chromium or cobalt oxide. This new protein was produced following transfection of *E. coli* with a portion of the plasmid-borne *lamB* gene that had been interrupted with various oligonucleotides. Unlike previous methods, the techniques used to generate this protein do not require that the adherent surface be immunogenic. The ability to produce proteins that recognize a single material can be used to develop new "smart" glues and coatings, to model binding sites on proteins, and to design assays that can easily distinguish materials based on their protein-binding specificity.
Licensing Contact: Steve Ferguson

Immortalized Human Bronchial Cell Lines And Methods Of Use

Harris, C.C., Gelboin, H.V., Gonzales, F.J., Pfeifer, A.M.A. (FDA)
Filed 13 Apr 92
Serial No. 07/869,818

Recombinant vectors containing DNA sequences that encode and express enzymatically active cytochrome P450s (i.e., functionally intact P1-450 and P3-450 pure polypeptides) without requiring the addition of NADPH cytochrome P450 reductase have been developed. The incorporation of these vectors into mammalian cells has led to the establishment of immortal nontumorigenic human cell lines of bronchial epithelial cell origin. These nontumorigenic cell lines, which have unlimited proliferative potential, can be used to test the mutagenicity, cytotoxicity, or carcinogenicity of an agent; the chemotherapeutic activity of an agent may also be evaluated using this and other similarly immortalized cell lines.
Licensing Contact: Steve Ferguson

Cloning And Functional Expression Of The Cholecystokinin Receptor-Encoding DNA

Wank, S. (NIDDK)
Filed 1 Apr 92
Serial No. 07/861,769 (CIP of 07/831,248)

A novel approach to purifying, sequencing, and expressing cholecystokinin A (CCK_A) receptor protein has been developed and can be used to obtain and sequence CCK receptor protein from a variety of sources. This method can be used to distinguish between CCK receptor subtype distribution and function, particularly for subtypes A and B. This invention may be useful in the production of large quantities of pure receptor for immunization and in the transfection of mammalian cells to facilitate the screening of potent and selective agonists and antagonists of CCK for a variety of sites, including the pancreas, other tissues in the gastrointestinal tract, and the nervous system.
Licensing Contact: Steve Ferguson

Cell Culture Medium For Human Liver Epithelial Cell Line

Cole, K.H., Lechner, J.F., Harris, C.C. (NCI)
Filed 3 Mar 92
Serial No. 07/844,873 (CON of 07/284,331)

This aqueous, serum-less medium consists of chemically denatured serum contains no active TGF-β. It allows for the growth of continuous and noncontinuous cell lines and was specifically designed to extend the life of cultured human liver epithelial cells, which has been difficult to achieve with other media. The new medium may be used in experiments that require large numbers of homogenous (identical, cloned) cells, e.g., drug metabolism studies; studies of chemicals and drugs that require hepatic activation; studies to screen for and evaluate chemical carcinogens and anticancer drugs; growth of hepatitis virus or human parasites in replicating hepatocytes; and the effects of transfection of oncogenes on cultured cells. The use of this novel medium to establish continuous human hepatocyte cultures, rather than cultures derived from other animal species, represents a marked improvement over current media.
Licensing Contact: Steve Ferguson

Methods For Purifying And Detecting IgM Antibodies

Dorward, D.W., Garon, C.F. (NIDDK)
Filed 20 Feb 92
Serial No. 07/837,392

The discovery that two *Borrelia burgdorferi* proteins, OspA and OspB, interact with mammalian serum immunoglobulin M (IgM) provides the first evidence for the existence of proteins that bind specifically to IgM antibodies. As such, these OspB proteins may be useful reagents for the purification and/or detection of IgM, which typically is the first antibody produced in response to a primary infection. Currently, no such agents are available.
Licensing Contact: Steve Ferguson

Mammalian hnRNP Complex A1 and Method for Large-Scale Overproduction in *E. coli*

Wilson, Samuel H. (NCI)
Filed 5 Feb 92
Serial No. 07/830,446 (CON of 07/250,405)

A novel plasmid system for overexpressing a rat single-stranded DNA binding protein, A1, in *E. coli* offers an important new tool for studying the binding mechanism of this protein and other eukaryotic DNA/RNA binding proteins that share a simular structure. Nucleic acid helix destabilizing proteins (HDPs), to which A1 is structurally related, have long been considered to be involved in DNA replication. Previously, there has been no economically acceptable source for producing large amounts of purified mammalian HDPs. This new plasmid system can be used to produce milligram

quantities of A1, which is easily purified by standard methods.
Licensing Contact: Steve Ferguson

Azido-Substituted Aromatic Amino Acids

Kirk, K., Hebel, D., Phillips, D. (NIDDK)
Filed 16 Jan 92
Serial No. 07/821,056

A new azido-substituted amino acid, 2-azido-(l)-tyrosine, may be incorporated enzymatically or nonenzymatically into peptides for use as photoaffinity labels for peptide hormone receptors. Further processing of this novel compound by tyrosine-metabolizing enzymes results in inorganic azide, suggesting that azidotyrosine may be an effective antimelanoma drug. The relatively simple methods used to produce this compound are provided.
Licensing Contact: Steve Ferguson

Cytoplasmic Tail Of CD3ϵ

Klausner, R. (NICHD)
Filed 2 Jan 92
Serial No. 07/815,749

A recombinant DNA vector encoding a portion of the CD3∈ subunit of the T cell antigen receptor offers a valuable new tool for studying immune cell activation. The T cell antigen receptor (TCR) mediates activation of T lymphocytes and the subsequent production of the lymphokine IL-2. This T cell activation is thought to occur via the intermediate activation of one or more tyrosine kinases. At least two subunits of eight chain TCR complex are believed to be independently capable of signaling transduction leading to both tyrosine kinase activation and IL-2 production. One subunit, ζ, has already been isolated and characterized. This new subunit, ϵ, can also independently transduce signals and will aid in determining the functioning of the intact receptor as well as in identifying the pathways and kinases involved in T cell signaling.
Licensing Contact: Steve Ferguson

Myocardial cGMP-Inhibited cAMP Phosphodiesterase

Manganiello, V.C. (NHLBI)
Filed 3 Dec 91
Serial No. 07/801,167

Several clones that encode the entire or partial forms of the enzyme human cardiac phosphodiesterase have been isolated. The nucleic acid sequence of cDNA clones for this enzyme can be altered by *in vitro* mutagenesis, and expression of both normal and mutated clones in experimental biological systems and analysis of the protein structure of these clones could facilitate the design of drugs to treat heart failure. No other similar cDNA clones are currently available.
Licensing Contact: Steve Ferguson

Recombinant Vaccinia Virus Encoding Cytochromes P-450

Gelboin, H.V., Battula, N., Gonzalez, F.J., Moss, B. (NCI, NIAID)
Filed 6 Nov 91
Serial No. 07/787,777 (CON of 07/058,387)

This invention describes the construction and uses of recombinant vaccinia viruses containing DNA sequences that express enzymatically active cytochromes P1-450 and P3-450 in mammalian cells without requiring the extraneous addition of NADPH cytochrome P450 reductase or cell fractions for catalytic activity. This novel recombinant virus can be used to evaluate the cytochrome P-450-mediated metabolism and mutagenicity of xenobiotic or endobiotic compounds and chemical agents. The invention represents the first expression of cytochrome P-450 in a variety of mammalian systems using infectious viruses.
Licensing Contact: Mark Hankins

DNA Encoding A Growth Factor Specific For Epithelial Cells

Rubin, J.S., Finch, P.W., Aaronson, S.A. (NCI)
Filed 23 Oct 91
Serial No. 07/780,847 (CON of 07/304,281)

A new cell-specific epithelial growth factor, keratinocyte growth factor (KGF), was identified and sequenced, and a DNA clone (cDNA) encoding KGF was prepared. This invention augments data on epithelial cell proliferation, from which many human malignancies arise, and provides specific assays to investigate the factors that regulate epithelial cell proliferation. The KGF-related cDNA clones can also be used as a diagnostic tool to determine whether abnormal production of this growth factor is involved in conditions such as psoriasis or malignant or benign epithelial tumors.
Licensing Contact: Todd Leonard

Method Of Identifying Ligands And Antagonists Of Ligands

Konig, M., Marsh, J., Mahan, L.C., Brownstein, M.J., Fink, J.S. (NIMH)
Filed 1 Oct 91
Serial No. 07/768,053

This invention describes a rapid and cost-effective method for screening compounds for their ability to act as G protein-coupled receptor agonists or antagonists. The method uses enzyme activity, as measured by simple colorimetric assays, to test ligand-binding capability. Induction of β-galactosidase occurs if a specific agonist binds to a Gs-linked receptor, whereas Gi-coupled receptor agonists inhibit forskolin-induced expression of β-galactosidase. These tests employ a genetically engineered cell line with a cAMP-sensitive reporter construct (i.e., increases in cAMP in this cell line cause increased β-galactosidase activity). Currently available products, including stable cell lines transfected with specific receptor cDNAs, are expensive and difficult to use.
Licensing Contact: Arthur Cohn

Cloning Of cDNA Encoding A Functional Human Interleukin-8 Receptor

Murphy, P.M. (NIAID)
Filed 12 Sep 91
Serial No. 07/759,568

A cDNA clone encoding a low-affinity IL-8 receptor offers an important new tool for studying the role of IL-8 in inflammation and immune response. IL-8 is an inflammatory cytokine that activates neutrophils, which are important in host defenses. Previously, there has been no direct method of studying the action of IL-8 on neutrophils. This IL-8 receptor-encoding cDNA clone can be used to produce IL-8 cRNA which, when injected into oocytes, causes them to express the IL-8 receptor. These IL-8 receptor-expressing oocytes can be used as a model for studying the interactions between IL-8 and other cytokines and this receptor.
Licensing Contact: Steve Ferguson

Adeno-Associated Virus-Based Eucaryotic Vectors

Chatterjee, S., Wong, K.K., Jr. (NIAID)
Filed 26 Aug 91
Serial No. 07/752,899 (CON of 07/527,195)

A new adeno-associated virus (AAV)-based eucaryotic vector has been engineered capable of expressing protein or down-regulating targeted genes. Versions of this vector have been used to confer intracellular resistance to HIV and herpes simplex infections. AAV-based eucaryotic vectors offer several advantages in stability and lack of cytopathogenicity over retroviral vectors currently utilized in antisense modulation of gene expression.
Licensing Contact: Steve Ferguson

Use Of Bovine Adrenal Medullary Endothelial Cells As A Source Of Connective Tissue Proteins

Pollard, H., Heldman, E. (NIDDK)
Filed 3 Jun 91
Serial No. 07/709,794 (CON of 07/364,542, CON of 06/739,208)

Most endothelial cells grow very slowly *in vitro*, are relatively short-lived, and have little value in laboratory research. The cell line described in this invention is derived from endothelial cells of medullary origin and is capable of more than 30 cycles of division. A method for using the cell line to culture collagen III is described.
Licensing Contact: Steve Ferguson

Immortalization Of Endothelial Cells

Ades, E., Lawley, T., Candal, F. (CDC)
Filed 4 Apr 91
Serial No. 07/679,674

An immortalized microvascular endothelial cell line was established by introducing DNA that encodes SV40 large T antigen to human skin cells. The functional, metabolic, and structural adaptations of this epithelial cell line are applicable to studies of vascular injury, wound healing, and inflammation and immune reactions associated with graft rejection and tumor metastasis.
Licensing Contact: Mark Hankins

Synthetic Oligonucleotides For Translational Control Of Eukaryotic Genes

Klausner, R.D., Hentze, M.W., Caughman, S.W., Rousault, T.A. (NICHD)
Filed 25 Mar 91
Serial No. 07/675,105 (CON of 07/131,391)

Synthetic oligonucleotides encoding a novel iron-responsive element (IRE) offer an important new tool for studying the translational control levels of genes. Previously, the study of genetic control processes in human and other eukaryotic cells has been limited because no easily manipulated control element has been discovered. This novel IRE, which can be easily and reversibly manipulated by intracellular levels of iron, confers specific regulation on the level of certain mRNAs and, thus, the expression of certain genes.
Licensing Contact: Steve Ferguson

A Chimeric Protein That Has A Human Rho Motif And Deoxyribonuclease Activity

Resnick, M., Chow, T., Perkins, E. (NIEHS)
Filed 26 Mar 91
Serial No. 07/674,801

Several deoxyribonucleases have been shown to play a role in recombinational repair processes. For example, an endo-exonuclease, RhoNUC, isolated from *S. cerevisia*, appears to function in both repair and recombination. This invention describes a novel method of cloning and using a protein with an amino acid corresponding to RhoNUC. A method of controlling cell development by exploiting deoxyribonuclease activity is also described.
Licensing Contact: Steve Ferguson

Bombesin Receptors

Battey, J., Wada, E. (NINDS)
Filed 15 Mar 91
Serial No. 07/670,603

A recombinant DNA vector has been produced that encodes a neuromedin-B-preferring bombesin receptor. Mammalian bombesin-like peptides exhibit a wide range of biological and pharmacological activities, including regulation of smooth muscle contraction and secretion of other gastrointestinal peptide hormones. Bombesins can function as growth factors in some human cancers, such as small cell lung cancer.
Licensing Contact: Mark Hankins

RNA Template-Specific Polymerase Chain Reaction (PCR)

Shuldiner, A., Roth, J. (NIDDK)
Filed 15 Mar 91
Serial No. 07/669,731 (CIP of 07/504,591)

A modification of the polymerase chain reaction (PCR) for detecting an RNA sequence has been devised that dramatically reduces the problem of contamination by extraneous DNA material. The RNA sequence of interest is tagged by a unique random nucleotide sequence during reverse transcription, which is then used to selectively amplify the resulting cDNA without also increasing the amount of any extraneous contaminating DNA into detectable quantities.
Licensing Contact: Steve Ferguson

Monoclonal Antibodies To Cytochrome b5

Park, S.S., Gelboin, H.V. (NCI)
Filed 15 Mar 91
Serial No. 07/669,090

Five new groups of mouse monoclonal antibodies (mAbs) to cytochrome b5 were produced. These mAbs recognize homologous cytochrome b5 from rat, rabbit, and human liver and from homogenates of TK^- cells infected with recombinant vaccina virus encoding human cytochrome b5. Two of the mAbs also inhibit cytochrome b5-mediated NADH cytochrome c reductase in rat liver microsomes. All five types of mAbs can be used to identify, quantify, and purify cytochrome b5 from animal and human tissues. They may also be used to investigate the role of cytochrome b5 in cytochrome P-450-mediated drug metabolism and carcinogen activation and to diagnose conditions that result from a cytochrome b5 deficiency (e.g., some types of cyanosis).
Licensing Contact: Steve Ferguson

A Method For Constructing Antigens

Pastan, I., Gottesman, M., Bruggeman, E., Chaudhary, V. (NCI)
Filed 4 Jan 91
Serial No. 07/635,889

A method of producing antibodies against eukaryotic proteins normally difficult to prepare in large quantity has been discovered. The desired antigen is made as a fusion product of *Pseudomonas* exotoxin and a specific epitope of another protein. These fusion proteins result from cloning the DNA sequence of a protein region in question into a new expression vector that includes the gene for the inactivated endotoxin. Large amounts of these fusion proteins may be subsequently produced easily and quickly in *E. coli*.
Licensing Contact: Steve Ferguson

Cell Stress Transcriptional Factors

Wu, C., Clos, J., Westwood, J., Rabindran, S. (NCI)
Filed 26 Nov 90
Serial No. 07/617,910

Activation of heat shock proteins in an organism indicates elevated or environmental temperatures or a variety of other environmental stresses. Activation involves binding of a protein (i.e., heat shock factor [HSF]) to heat shock elements (HSE) and consequent transcription of heat shock genes. This method for detecting the accumulation of HSF in the nucleus of stressed cells involves novel activators for *Drosophila* and human HSF, polynucleotides encoding those activators, and antibodies to natural and recombinant DNA. The method may be used to monitor and diagnose the effects of abnormal stresses, including disease, on cells.
Licensing Contact: Steve Ferguson

Use Of Arsenite To Reversibly Block Steroid Binding To Glucocorticoid Receptors In The Presence Of Other Steroid Receptors

Simons, S.S. (NIDDK)
Filed 19 Sep 90
Serial No. 07/584,758 (CIP of 07/468,929)

A novel method for selectively blocking steroid binding to glucocorticoid receptors offers to enhance the study of these receptors. The methods presently used to study glucocorticoid receptors are expensive, unreliable, and/or plagued by cross-reactivity to other steroid receptors. This new method uses low concentrations of methyl methanethiosulfonate and arsenate to specifically and reversibly inactivate all of the steroid binding activity of glucocorticoid receptors. This method is relatively inexpensive and simple to use.
Licensing Contact: Steve Ferguson

Synthetic Peptides As Modulators Of Functional Responses Of Intact Cells

Sitkovsky, M.V. (NIAID)
Filed 22 Dec 89
Serial No. 07/454,827

These novel synthetic peptides contain amino acid sequences of substrates, pseudosubstrates, and inhibitors of certain protein kinases. They can enter intact, unpermeabilized cells; compete with natural substrates and bind to DNA binding proteins; and block gene transcription/translation and protein synthesis-dependent processes. These peptides can be used in basic research to study cellular functional responses. They may also be useful pharmaceutical agents to treat certain conditions, including some cancers, that are mediated by protein kinase activity. Prior technologies have failed to demonstrate that peptides can enter unpermeabilized cells in amounts sufficient to influence intracellular functions.
Licensing Contact: Todd Leonard

Eukaryotic Expression Vector System

Giri, C.P., Ogawa, H., Harris, C. (NCI)
Filed 18 Jun 90
Serial No. 07/539,812

A new mammalian phagemid cDNA cloning vector and cDNA subtraction system has been developed as a means of rapidly building subtraction libraries when hybridization or immunological probes are not available. With the use of *in vitro* generated RNA subtraction probes, an average 98 percent subtraction can be generated by this system in only two hybridization cycles. Other applications of this expression system include the stable replication of rare cDNA clones and a means of developing sense and antisense subtraction libraries based on a given cell phenotype in human cells.
Licensing Contact: Steve Ferguson

Feeder Cells For Monoclonal Antibody Production

Mischak, H., Kolch, W., Hofer, F., Rapp, U. (NCI)
Filed 17 Apr 90
Serial No. 07/510,213

A method of producing a feeder cell layer that efficiently supports and stimulates the growth of cells producing monoclonal antibodies has been discovered. The feeder cell layer is formed by transforming a primary cell line by the use of a viral vector containing oncogenes such that the transformed cell line produces one or more growth factors (such as IL-6) utilized by B cells and B cell hybridomas.
Licensing Contact: Steve Ferguson

Fluorogenic Substrates For Measurement Of Lysosomal Enzyme Activities Within Intact Cells

Miller, S.P.F., Brady, R.O. (NINDS)
Serial No. 07/501,797
Patent Issued 18 Feb 92
U.S. Patent No. 5,089,392

These novel fluorogenic substrates (derivatives of 2,3-dicyano-hydroquinone [DHC]) can be used to detect the *in situ* activity of enzymes (specifically, within intact cells). They exhibit lysosomotropic properties and are highly fluorescent at both physiological pH and lysosomal pH. This invention attempts to overcome two major problems associated with similar *in situ* methods: pH dependence and the tendency of fluorescent products to diffuse out of cells. The new substrates are of particular importance in biochemical investigations of human inborn errors of metabolism and human metabolic storage disorders. They may also be useful in the identification of gene transfer recombinants.
Licensing Contact: Steve Ferguson

Antiplatelet Monoclonal Antibody

Gralnick, H.R. (CC)
Filed 3 Nov 89
Serial No. 07/432,126

A unique monoclonal antibody designated 5G8 recognizes a human platelet glycoprotein (GP) IV surface protein of about 88 kD and binds to about 11,000 sites per platelet. This antibody induces the binding of fibrinogen, von Willebrand factor, and fibronectin to platelets. It can also be used to prepare pure GPIV, to detect GPIV deficiency or abnormality in a patient, and to activate and aggregate human platelets.
Licensing Contact: Steve Ferguson

Cell Attachment Peptides Derived From Amyloid P Component

Dhawan, S., Robey, F.A. (NIDR)
Serial No. 07/400,870
Patent Issued 3 Mar 92
U.S. Patent No. 5,092,876

Amyloid P component, a 125 kD glycoprotein found in serum and in all types of amyloid deposits, can be used for attaching cells such as fibroblasts, osteoblasts, fibrosarcoma, melanoma, and neuroblastoma cells to a variety of substrates and/or for immobilizing cells and coating surfaces of prosthetic devices. Examples of surfaces of prosthetic devices useful for cell attachment are portions of vascular grafts, synthetic resin fibers (e.g., nitrocellulose, polyesters, and polyethylene terephthalate), and percutaneous devices.
Licensing Contact: Arthur Cohn

Human Liver Epithelial Cell Line And Culture Media Therefor

Cole, K.H., Lechner, J.F., Reddel, R., Harris, C.C., Pfeifer, A.M. (NCI)
Filed 11 July 89
Serial No. 07/377,967

A human liver epithelial cell line is valuable for experiments that require large numbers of homogeneous liver cells. These cells can be used for drug metabolism studies; evaluating chemical compounds requiring liver metabolism for functional activation; screening compounds with human carcinogenic and tumor-promoting potential; investigation of controls of differentiation for use with liver anticancer drugs; growth of hepatitis virus in replicating hepatocytes; growth of human parasites; and transfection of additional oncogenes to evaluate their effects on these cells.
Licensing Contact: Steve Ferguson

Rapid, Versatile, And Simple System For Expressing Genes In Eukaryotic Cells

Moss, B., Fuerst, T., Elroy-Stein, O. (NIAID)
Filed 7 Jul 89
Serial No. 07/376,687

A newly modified gene expression system provides an efficient method for cap-independent translation of mRNAs into protein products in eukaryotic cells. Present gene expression systems use a vaccinia virus with a T7 promoter system to generate mRNA transcripts that are translated by host cells into protein products; however, these T7 transcripts are largely uncapped, and uncapped mRNAs are not well translated into protein products by the host cell. To improve the translatability of uncapped mRNAs, the untranslated region (UTR) of the encephalomyocarditis virus (ECMV) was inserted between the T7 promoter and the chloramphenicol transferase (CAT) gene in a recombinant vaccinia virus. Cells

infected with the ECMV UTR-modified vaccinia virus have a 4- to 7-fold increase in total CAT activity over cells infected with the unmodified vaccinia virus. With the new system, CAT is the predominant protein synthesized by infected cells, and within 24 hours, CAT accounts for more than 10 percent of the total cell protein.
Licensing Contact: Mark Hankins

Novel Oligodeoxynucleotides with 5′-Linked Chemical Groups, Methods For Production Thereof And Use Thereof

Cohen, J.S., Mori, K., Matsukura, M. (NCI)
Filed 18 Apr 89
Serial No. 07/340,073

Phosphate-modified oligodeoxynucleotides 5′-linked covalently to chemotherapeutic agents can be used to attenuate or destroy mammalian gene expression or viral activity. Presently available chemotherapeutic or antiviral agents have limitations because they are inefficiently delivered to their intended site. These oligodeoxynucleotides are synthesized to be complementary to specific disease gene or viral DNA or RNA sequences and can, therefore, deliver chemotherapeutic or antiviral compounds to their intended biological site with precision. The phosphate-modified oligodeoxynucleotides are also more soluble in aqueous solutions than unmodified oligodeoxynucleotides and more resistant to nucleases as well.
Licensing Contact: Arthur Cohn

Genes For Human Chromosomal Proteins HMG-14 And HMG-17

Bustin, M., Landsman, D. (NCI)
Filed 17 Feb 89
Serial No. 07/312,001

A genomic clone comprising the entire functional gene for a human "High Motility Group" 17 (HMG-17) protein, including the entire transcribed sequence and flanking sequences, can be used to study normal and pathological processes associated with the regulation of developmental genes. Presently, methods of studying HMG-17 and HMG-14, which are closely related and both associated with the regulation of gene transcription, use hybridization probes derived from cDNA sequences; however, the human genome contains multiple sequences called pseudogenes that are homologous to the cDNA coding for HMG proteins. This genomic clone contains unique HMG sequences that are not contained in cDNA probes and is, therefore, specific only for HMG-17 and HMG-14.
Licensing Contact: Steve Ferguson

Purified Transforming Growth Factor β

Sporn, M., Roberts, A. (NCI)
Serial No. 07/308,948
Patent Issued 14 Apr 92
U.S. Patent No. 5,104,977

Studies described in this invention indicate that platelets are a major storage site for transforming growth factor (TGF), specifically TGF-β, suggesting that TGF-β is involved in tissue repair and regeneration. Prior studies have detected several TGFs in non-neoplastic tissues but have failed to identify the major storage sites for these factors. Purified platelet TGF-β can be used to investigate its biological properties and mechanisms.
Licensing Contact: Mark Hankins

Transduction And Stable Expression Of Enzymatically Active Cytochromes P-450 In Animal Cells

Battula, N. (NCI)
Filed 30 Jan 89
Serial No. 07/303,898

Infectious recombinant retroviruses containing cytochrome P-450 DNA sequences are valuable for testing drug and carcinogen metabolism and for designing new drugs. Previous methods for measuring the activity of cytochromes P-450 have had limited value because the expressing cells typically died within a few days or activities were obtained for all the forms of the enzyme rather than an individual form. These recombinant retroviruses are able to infect cells without killing them and to constitutively express individual forms of the cytochrome P-450.
Licensing Contact: Steve Ferguson

Chromatographic Assay Of Protein Kinases With Peptide Substrates

Egan, J.J., Londos, C. (NIDDK)
Filed 12 Dec 88
Serial No. 07/282,562

A newly developed chromatographic procedure for separating phosphopeptides from ATP offers an enhanced method of detecting protein kinase activity. Previously available methods for measuring protein kinase activity failed to completely separate out radioactively labeled ATP and, therefore, produced high background radioactivity; they were also quite expensive and tedious to perform. This new chromatographic method employs a simple cation/anion exchange procedure that completely removes the substrates from the radiolabeled ATP, producing a high signal-to-noise ration. It also requires less radioactive ATP, thus reducing expenses.
Licensing Contact: Steve Ferguson

Human Neutrophilic Granulocyte End-Stage Maturation Factor And Its Preparation And Use

Evans, W.H., Wilson, S.M. (NCI)
Serial No. 07/273,569
Patent Issued 25 Jun 91
U.S. Patent No. 5,026,826

Purified granulocyte maturation factor (GMF) is valuable for studying the development of certain bone marrow cells. Previously, there has been no method available for accurately differentiating between the factors that regulate the maturation of recognizable granulocyte precursor cells. This purified GMF induces the production of granulocyte alkaline phosphatase, a specific biochemical marker for granulocyte end-stage maturation. Purified human transferrin potentiates the effect of this GMF, which promotes maturation of neutrophilic granulocyte precursors to form end-stage neutrophilic granulocytes.
Licensing Contact: Marjorie Hunter

Laminin A Chain Deduced Amino Acid Sequence, Expression Vectors, And Active Synthetic Peptides

Yamada, Y., Sasaki, M., Kleinman, H.K., Martin, G.R. (NIDR)
Filed 7 Nov 88
Serial No. 07/267,564

A cDNA clone coding for the entire A chain of mouse laminin and associated expression vectors and synthetic peptides may be useful for the study of such phenomena as cell adhesion, migration, growth, cell differentiation, phagocytosis, collagenase production, tumor cell invasion, and nerve growth. Presently, the nucleotide sequence of the human laminin gene is unknown. This mouse laminin cDNA clone is useful for screening a human cDNA library to identify the human laminin gene. The expression vectors can be used to produce large amounts of the mouse laminin in order to raise antibodies against laminin to determine its exact biological activity. Small synthetic peptides, which contain laminin activity but do not stimulate the production of antibodies, may have important clinical applications such as stimulating nerve growth.
Licensing Contact: Steve Ferguson

Cell Lines Secreting Uteroglobin *In Vitro*

Mukherjee, A.B., Chou, J.Y. (NICHD)
Filed 3 May 88
Serial No. 07/189,828

An immortalized cell line that produced uteroglobin *in vitro* is valuable for testing the activity of synthetic steroid hormones. Presently, the only known method of testing response to synthetic ovarian steroid hormones requires large numbers of animals, is very non-quantitative, and does not allow for accurate measurement of biological effects. These immortalized cells secrete large quantities of uteroglobin *in vitro* when stimulated by steroid hormones and are, thus, an inexpensive, sensitive, and effective method for screening the steroid- stimulating properties of a compound.
Licensing Contact: Todd Leonard

Cloned cDNA for Human Procathepsin L

Gottesman, M.M., Gal, S., Smith, S. (NCI)
Filed 11 Feb 88
Serial No. 07/154,692

A novel kit containing cloned cDNA encoding the complete sequence for the expression of the precursor to human procathepsin L, a broadly specific cysteine protease, can be used for detecting the mRNA level of human procathepsin L. The protein product can also be used to induce the production of monoclonal antibodies having specific binding affinity for human procathepsin L.
Licensing Contact: Mark Hankins

Preparation Of Human Monoclonal Antibodies Of Selected Specificity And Isotypes

Casali, P., Notkins, A.L. (NIDR)
Filed 9 Jul 87
Serial No. 07/071,356

A novel method for preparing human monoclonal antibodies (mAbs) of predetermined specificity offers to improve the diagnosis and treatment of many diseases. The Kohler-Milstein technique for producing human mAbs — which uses myeloma cells fused to spleen cells (B lymphocytes) from immunized individuals—has limited value because many humans cannot be immunized with certain antigens, as well as the fact that spleen and myeloma cells are difficult to isolate. This new method overcomes these problems by using fluorescence-activated cell sorting (FACS) to isolate and enrich from unimmunized individuals B lymphocytes from peripheral blood with specific antigen-binding affinities. These antigen-specific B lymphocytes, which are immunized with Epstein-Barr virus rather than myeloma cells, produce large quantities of human mAbs to a predetermined antigen.
Licensing Contact: Steve Ferguson

One-Step Tray Test For Release Of Soluble Mediators And Apparatus Therefore

Caspi, R.R. (NEI)
Filed 19 May 87
Serial No. 07/051,313

This novel method of monitoring intercellular communication includes a multiwell tray in which adjacent pairs of wells are connected to each other so that the supernatant-carrying mediators can flow freely between the wells while the cultured cells (or nonmotile microorganism) remain anchored. Results can be obtained within 1 to 2 days (rather than several days as with standard techniques), and short-lived mediators such as prostaglandi — which normally would deteriorate because of the time requirements of many other methods — can be readily measured. Unlike prior systems, this method allows for the use of standard labeling and harvesting techniques. This invention also eliminates the problems associated with membrane-bound mediators, which are common to systems that use semi-permeable membranes.
Licensing Contact: Marjorie Hunter

Cultivation Of Functionally Intact Hair Follicles

Yuspa, S.H., Steinert, P., Roop, D.R. (NCI)
Filed 6 May 87
Serial No. 07/048,537

A novel process for cultivating functionally intact hair follicles in a collagen matrix offers to significantly advance the treatment of baldness as well as the study of both cell and developmental biology. There have previously been no methods for culturing large numbers of intact hair follicles; individual human hair follicle cell cultures have not been able to maintain follicle structure and function. This collagen matrix culturing method allows for the isolation and culturing of intact hair follicles that can be grafted onto nude skin sites to provide for hair growth. The cultured follicles can also be used to study

the growth and development of hair as well as to screen drugs that may stimulate hair growth.
Licensing Contact: Steve Ferguson

Recombinant DNA Clone Encoding Laminin Receptor

Sobel, M.E., Liotta, L.A., Wewer, U.M., Jaye, M.C., Drohan, W.N. (NCI)
Serial No. 06/911,863
Patent Issued 29 Aug 89
U.S. Patent No. 4,861,710

A recombinant DNA clone that encodes high-affinity cell surface receptors for laminin, a glycoprotein component of basement membranes, offers an important new tool for studying a variety of normal and abnormal cell processes including tumor matastases. These laminin receptors have been shown to inhibit metastases. These recombinant receptors can be used in diagnostic methods, to assess the content of laminin receptor mRNA, and to determine the pattern of laminin receptor genes in different tissue and tumor cell populations.
Licensing Contact: Marjorie Hunter

Vinca Alkaloid Photoactive Analogs and Their Uses

Safa, A.R., Felsted, R.L. (NCI)
Serial No. 06/847,714
Patent Issued 23 Aug 88
U.S. Patent No. 4,765,972

Pharmacologically active, radioactive, and photoactive vinblastine analogs can be used to bind covalently to cellular polypeptides that have high affinity for Vinca alkaloids. The compounds can be used to identify cellular Vinca alkaloid receptors that may be involved in antineoplastic, cytotoxic, and drug-resistant mechanisms of action. In addition to specific interaction with tubulin, these compounds specifically bind to a 150-180 kD surface membrane glycoprotein that is overexpressed in multidrug-resistant cells.
Licensing Contact: Marjorie Hunter

Adeno-Associated Virus As Eukaryotic Expression Vector

Carter, B.J., Tratschin, J.D. (NIDDK)
Serial No. 06/712,236
Patent Issued 10 Jan 89
U.S. Patent No. 4,797,368

A novel expression vector based on the parvovirus, adeno-associated virus (AAV), is valuable for the stable maintenance or expression of DNA sequences or genes in eukaryotic cells. The use of previously available virus-based eukaryotic expression vectors has been limited because they do not integrate foreign DNA into the host genome at high frequency and are not easily rescuable from their host. This AAV-based expression vector is easily rescuable from the host and allows the host to express the foreign DNA or genes at high frequency.
Licensing Contact: Steve Ferguson

Radiohalogenation Method

Kabalka, G.W. (EM)
Serial No. 06/273,858
Issued 22 May 84
U.S. Patent No. 4,450,149

This invention provides two novel methods for introducing radiolabeled halogens (^{121}I, ^{123}I, ^{75}Br, and ^{77}Br) into organic compounds of biological interest, such as organoiodide and organobromide products, steroids, and fatty acids. Both processes are rapid and give high yields; in some cases, stable intermediates can be prepared and stored for up to 1 year. These methods greatly simplify the production of carrier-free materials (i.e., materials free of nonradiolabeled carriers), which can reduce the amount of radioactive material administered and increase receptor-site affinity of a drug. They can also be used to label labile molecules.
Licensing Contact: Steve Ferguson

Specific, Irreversible Antagonism Of Histamine Receptors By Photoaffinity Actuated Compounds

Fedan, J., O'Donnell, J., Hogaboom, G. (CDC)
Serial No. 06/266,462
Patent Issued 2 Nov 82
U.S. Patent No. 4,357,341

This nonequilibrium competitive antagonist is specific to the histamine receptor, especially the H_1 receptor, and comprises arylazido histamine (AAH), a photoaffinity analog of histamine. The compound irreversibly blocks H_1 receptors of histamine in isolated tissue, antagonizing histamine-induced contractions of smooth muscle when irradiated with light in the visible spectrum. The compound has application as a label in isolating and characterizing histamine receptors in isolated, complex tissues.
Licensing Contact: Arthur Cohn

Chemical Modifications Of Proteins Which Induce New Receptor Specificities And Therefore Elicit New Effects in Cells

Neville, D.M., Youle, R.J., Murray, J. (NIMH)
Serial No. 06/199,781
Patent Issued 26 Oct 82
U.S. Patent No. 4,356,117

A novel mannose-6-phosphate-modeccin hybrid reagent is a cytotoxic composition that is specific for normal human fibroblasts. Man6P-ricin and Man6P-low density lipoprotein are prepared in a similar manner. These compounds modify the receptor specificity of the toxin with the objective that the toxin will now bind, enter, and kill a specific population of cells while leaving other cells unaffected. For example, the presently achievable selectivity between cell types is between 30- and 700-fold for man6P-ricin.
Licensing Contact: Marjorie Hunter

CENTRAL NERVOUS SYSTEM

Method For The Treatment Of Dopaminergic Neurodegenerative Disorders

Weber, R.J., Plunkett, R.J., Ewing, S.E. (NIDDK)
Filed 3 Jun 92
Serial No. 07/892,485 (CON of 07/401,141)

A novel surgical implantation method — which comprises implanting into the brain suitable histocompatible leukocytes activated by such agents as plant mitogens, lymphokines, and cytokines — offers an improved method of treating Parkinson's disease and other diseases that affect the dopaminergic system. This therapy may reduce or totally eliminate L-Dopa therapy, which has significant toxic side effects, and also may present an alternative to fetal implantation therapy. Use of the patient's own autologous leukocytes is also convenient and may reduce the chances of host rejection.
Licensing Contact: Arthur Cohn

***trk* Family Receptors As Assay System For Compounds Affecting The Differentiation Of Neurons**

Kaplan, D., Martin-Zanca, D., Parada, L.F. (NCI)
Filed 19 May 92
Serial No. 07/885,731 (CIP of 07/668,298)

This invention describes the discovery that tryosinse kinase proto-oncogene (*trk*) protein receptors are primary targets of phosphorylation in response to the neurotrophic factor, nerve growth factor (NGF). The identification of *trk* receptors as physiologic receptors for NGF will allow for detailed study of nerve growth and regeneration. To date, only one putative receptor for NGF has been isolated; however, unlike the present invention, this molecule offers no information about the biochemical or physiologic mechanisms and implications of NGF binding.
Licensing Contact: Arthur Cohn

A Predictable Assay For Suicidal Behavior

Nielson, D.A., Goldman, D., Linnoila, M., Virkkunen, M., Tokola, R., Rawlings, R. (NIAAA)
Filed 24 Apr 92
Serial No. 07/873,913

A genetic marker that may prove useful in psychiatric diagnostic evaluation and subsequent treatment or prevention has been discovered. Detailed psychiatric and psychological evaluations are not reliable for predicting suicidal, impulsive, and criminal behaviors; in contrast, concentrations of cerebral spinal fluid 5-hydroxyindole acetic acid (CSF 5-HIAA), a metabolite of serotonin, are good predictors of these behaviors but are impractical to measure. This invention describes the isolation, characterization, and clinical application of tryptophan hydroxylase (TPH) genes, which code for the rate-limiting enzyme in the production of serotonin. Specific allelic forms of the TPH genes, which can be isolated from hair roots or blood, were strongly associated with impulsive and suicidal behaviors in a cohort of more than 60 individuals. TPH typing is suggested as a noninvasive, practical, and reliable method for identifying persons at high risk for impulsive behaviors. Typing may also be predictive for other serotonin-related conditions, such as eating disorders and sleep disorders.
Licensing Contact: Arthur Cohn

cDNA Clone Encoding Brain Amyloid Of Alzheimer's Disease

Goldgaber, D.Y., Gajdusek, D.C., Lerman, M. (NINDS)
Filed 27 Mar 92
Serial No. 07/858,959

Four clones have been isolated from an adult brain cDNA library using an oligonucleotide probe corresponding to the first 20 amino acids of the brain β-amyloid polypeptide of Alzheimer's disease. The isolation and cloning of a DNA sequence encoding this polypeptide has important implications for studying the origin of the neuropathological changes associated with Alzheimer's disease as well as other disorders that are characterized by β-amyloid-containing plaques, such as adult Down's syndrome and amyotrophic lateral scerlosis/ Parkinsonism dementia. The normal aging brain also appears to contain this amyloid protein.
Licensing Contact: Arthur Cohn

Molecular Cloning And Expression Of A Rat V1a Arginine Vasopressin Receptor

Morel, A., O'Carroll, A-M., Brownstein, M.J., Lolait, S.J. (NIMH)
Filed 5 Mar 92
Serial No. 07/846,388

An assay for arginine vasopressin (AVP) responses associated with the V1a receptor has been developed following the discovery of the DNA and amino acid sequences of the rat hepatic V1a AVP receptor. This assay can be used to study a variety of vasopressor and hepatic actions of AVP, such as control of glomerular filtration rate, medullary blood flow, prostaglandin synthesis, general vasoconstriction, and liver regeneration and glycogenolysis. This invention represents the first successful cloning of a vasopressin receptor.
Licensing Contact: Arthur Cohn

cDNA Clone Of A Rat Serotonin Transporter And Protein Encoded Thereby

Hoffman, B.J., Mezey, E., Brownstein, M.J. (NIMH)
Filed 24 Oct 91
Serial No. 07/782,298

A novel cDNA encoding the rat serotonin transporter protein (5HHT) is valuable for studies of the central nervous system and for screening therapeutic drugs. 5HHTs are responsible for removing serotonin from the synoptic cleft of neurons, for storing serotonin in platelets, and are the site of action for antidepressant drugs such as amphetamines and cocaine. There has previously been no method available for studying the activity of these proteins in isolation. This 5HHT-encoding cDNA has been used to create a permanent cell line that expresses this receptor and can be used for screening drugs that affect the activity of 5HHT. The purified 5HHT can

also be used for producing anti-5HHT antibodies for use in diagnostic studies.
Licensing Contact: Arthur Cohn

cDNA Encoding The Cocaine- Sensitive Bovine Dopamine Transporter

Usden, T.B., Hoffman, B.J., Brownstein, M.J. (NIMH)
Filed 24 Oct 91
Serial No. 07/782,054

A cDNA encoding a bovine dopamine (DA) transporter protein is valuable for studying the central nervous system (CNS) as well as for testing therapeutic drugs for the CNS. Brain dopamine systems play a central role in the control of movement, hormone release, and many complex behaviors, and drugs that affect dopamine transmission are valuable for treating CNS disorders such as schizophrenia and Parkinson's disease. The dopamine transporter appears to be the site most related to the effects of amphetamines and cocaine. There has previously been no method available for studying the activity of this protein in isolation. This DA transporter encoding cDNA has been used to create a cell line that expresses this receptor. The DA transporter-expressing cell line can be used to test drugs that have greater specificity for this receptor and, thus, are more clinically useful.
Licensing Contact: Arthur Cohn

cDNA Encoding A Dopamine Transporter And Protein Encoded Thereby

Uhl, G.R., Kuhar, M.J., Shimada, S., Kitayama, S., Patel, A., Lin, C. (NIDA)
Filed 20 Sep 91
Serial No. 07/762,132

A novel cDNA encoding a dopamine transporter (DAT) is valuable for studying therapeutic drugs for the treatment of cocaine addiction. Cocaine and related drugs bind to DAT in a fashion that correlates well with their behavioral reinforcing and psychomotor stimulant properties; thus, DATs are the principal brain "cocaine receptors" related to drug abuse. Previously, there has been no method available for studying the activity of these receptors in isolation. This cDNA has been used to create a homogeneous cell line that expresses DAT on their surface. The cell line can be used for screening compounds that influence the binding and/or transport of dopamine or cocaine into the cells. The purified protein can also be used for developing anti-DAT antibodies for diagnostic studies.
Licensing Contact: Arthur Cohn

Phenylcycloalkylamine Compounds As Antiepileptics

Rogawski, M.A., Rice, K.C., Jacobson, A.E., Thurkof, A., DeCosta, B. (NINDS)
Filed 16 Sep 91
Serial No. 07/760,415 (DIV of 07/409,557, CIP 07/172,922)

Although several drugs are currently available for prophylactic treatment against epilepsy, most are limited in at least some patients because of adverse side effects and/or inability to control seizures; however, as described in this invention, structural modifications to a potent anticonvulsant, 1-phenylcyclohexylamine (PCA), produce agents that provide protection from seizures with little or no depression of the central nervous system, as measured by a motor toxicity test. A variety of pharmaceutically acceptable formulations may be prepared from this novel compound, wherein the alkyl, alkoxy, or akylthio R groups may be substituted with one or more halogens, or phenyl, hydroxy, or thiol groups; geometrical isomers, stereoisomers, or mixtures thereof are also effective.
Licensing Contact: Arthur Cohn

Muscarinic Antagonists

Jacobson, K.A., Bradbury, B.J., Karton, Y. (NIDDK)
Filed 3 Jul 91
Serial No. 07/725,066

Novel analogues of the muscarinic antagonists pirenzepine and telenzepine may be valuable for the treatment of a number of disorders. Muscarinic cholinergic receptors (mAChRs) mediate the actions of the neurotransmitter acetylcholine in the central and peripheral nervous systems, gastrointestinal system, heart, endocrine glands, lungs, and other tissues. Stimulation of these receptors has been linked to a number of disorders in these tissues. These analogues of the muscarinic antagonists pirenzepine and telenzepine can be used for treating disorders in these tissues by blocking the activation of these receptors or for synthesizing potential affinity probes or affinity columns for muscarinic receptor purification.
Licensing Contact: Arthur Cohn

Transfected Mammalian Cell Lines Expressing The A_1 Adenosine Receptor

Sibley, D.R., Mahan, L.C., Smyk-Randall, E.M., Monsma, F.J. (NINDS)
Filed 5 Jun 91
Serial No. 07/710,180

Novel cell lines that express the A_1 adenosine receptor may be valuable for screening drugs for a number of cardiovascular and nervous system disorders. Adenosine receptors are a ubiquitous modulator of numerous physiological activities, particularly within the cardiovascular and nervous systems. A number of drugs with adenosine agonist or antagonist activity are currently being used or tested in conditions such as Alzheimer's disease, epilepsy, and hypertension; however, these drugs have many side effects due to their lack of receptor specificity. These cell lines, which express a substantially pure A_1 adenosine, can be used to test the relative specificity of potential therapeutic drugs for the A_1 receptor and, thus, determine how well the drugs will achieve their desired effects.
Licensing Contact: Arthur Cohn

Activity-Dependent Neurothrophic Factor

Brenneman, D., Gozes, I. (NICHD)
Filed 22 Apr 91
Serial No. 07/688,087

A new protein that supports neuronal growth has been isolated. This growth factor, referred to as ADNF, differs

structurally from earlier isolates and, unlike prior neuronal growth factors, is specific to a target population (neural cells that are dependent on electrical activity, for example, spinal cord neurons and hippocampal neural cells). It is releasable by vasoactive intestinal peptide, a neuropeptide released during electrical activity. ADNF increases the growth and survival of developing spinal cord neurons and prevents neuronal cell death resulting from HIV infection. It may have extensive use in treating various neurological deficiencies.
Licensing Contact: Arthur Cohn

Octopamine Receptor

Venter, J.C., Fraser, C.M., McCombie, W.R. (NINDS)
Filed 28 Mar 91
Serial No. 07/676,174

Receptors for octopamine — a transmitter, hormone, and neuromodulator in invertebrates such as arthropods and mollusks — are selectively blocked by mammalian α-adrenergic antagonists and agonists. A segment of the DNA molecule that encodes an octopamine receptor protein was isolated. The octopamine receptor is a member of the adrenergic/muscarinic/opsin family. Expression of the novel octopamine receptor cDNA in mammalian cells can be used to study the isolated receptor. The octopamine receptor may also be useful in screening, designing, and testing pharmaceuticals and insecticides targeted to the receptor. This invention reduces the need for animals in early phases of related drug research and provides a cost-effective, selective alternative to current drug-screening methods.
Licensing Contact: Arthur Cohn

Muscarinic Receptor Fusion Proteins And Subtype-Specific Antisera

Levey, A.I., Stormann, T., Brann, M.R. (NINDS)
Filed 14 Feb 91
Serial No. 07/654,971

Recombinant proteins and protein-generated antibodies directed against the five human muscarinic receptors were developed. These receptors mediate acetylcholine function in the normal nervous system and are believed to be critical in the pathogenesis and/or treatment of many neurological and psychiatric disorders. The novel antibodies selectively react with the five receptors *in vitro* and may therefore be useful in localizing and measuring muscarinic receptors in cells and tissues. Prior technologies include short, synthetic oligopeptides that are limited in their ability to recognize native proteins and receptors. The new recombinant proteins and antibodies are proposed for use as diagnostic tools and in drug development.
Licensing Contact: Arthur Cohn

Human Olfactory Neuron Cultures

Wolozin, B.L., Coon, H.G. (NIMH)
Filed 30 Oct 90
Serial No. 07/605,788 (CIP of 07/487,894)

Cultures of human olfactory neurons offer an improved method of screening agents for treating neurologic diseases and disorders. Previously, rat and fetal neurons have been successfully cultured; however, rats do not develop human neurologic diseases, and neither rat or fetal neurons replicate in culture so they die within a few months. These human olfactory neurons, which replicate in culture, can be used for screening drugs that reverse or eliminate central nervous system diseases or for testing drugs for neurotoxicity.
Licensing Contact: Arthur Cohn

Tissue Transplantation System

Wyatt, R.J., Freed, W.J., Staub, R.A. (NIMH)
Serial No. 07/588,242 (CIP of 07/278,821)
Patent Issued 9 Apr 91
U.S. Patent No. 5,006,122

A novel apparatus for inserting brain tissue into the mammalian brain offers to improve neural tissue transplantation. Presently available methods for implanting tissue into the brain are cumbersome to use and often injure the transplanted tissue. This new apparatus uses a stereotaxic instrument to easily guide the tisse to the target site and two cannulas engaged in stylets, which apply minimal pressure to the transplanted tissue. Tissue can be placed in multiple sites along a single tract or along multiple tracts. The apparatus can be used not only for fibrous tissue that holds together well but also for fragile embryonic brain tissue.
Licensing Contact: Arthur Cohn

Use Of S-Adenosyl-L-Methionine (SAME) To Reverse And/Or Prevent Supersensitivity, Tolerance, And Extrapyramidal Side Effects Induced By Neuroleptic Treatment

Kask, A.M., Marin, C. (NINDS)
Filed 31 Aug 90
Serial No. 07/575,808

S-adenosyl-L-methionine (SAME) can reverse and/or prevent the onset of tolerance to neuroleptic drugs in patients undergoing prolonged therapy for psychiatric disorders. SAME also helps normalize drug-receptor binding in these individuals. Utilizing SAME in combination with neuroleptic drugs minimizes the dosage of the drug, while retaining its efficacy and reducing the potential for the development of neuroleptic-induced side effects. No other agents are effective in preventing or reversing tolerance or normalizing receptor binding in patients undergoing prolonged neuroleptic treatment.
Licensing Contact: Marjorie Hunter

Human Olfactory Neuron Cultures

Wolozin, B., Coon, H.G. (NIMH)
Filed 6 Mar 90
Serial No. 07/487,894

A process of maintaining cultures of human nerve cells has been developed. The cells exist in two forms: as clonal colonies of proliferating neurons and as transformed and immortalized cells (achieved via use of a retroviral vector). These cultures can be used to test the response of nerve cells to potential neurotoxins as well as to relevant drugs. They may also be useful in demonstrating the pathology associated with diseases of the central nervous systems, such as Alzheimer's disease, Parkinson's disease, and Tay-Sachs. These cultures provide an alternative to live animals and, because they are derived from human tissue, are superior to animal cultures. Human neurons have not been maintained in culture prior to this invention, and animal nerve tissue cannot always be manipulated to imitate human cells.
Licensing Contact: Arthur Cohn

cDNA Encoding The Long Isoform Of The D2 Dopamine Receptor

Sibley, D.R., Monsma, F.J.,
McVittie, L.D., Mahan, L.C. (NINDS)
Filed 1 Nov 89
Serial No. 07/430,049

A DNA segment encoding a functional, long isoform of the human D2 dopamine receptor was sequenced, cloned, and expressed following transfection in eukaryotic cells. Both isolated receptors and receptors incorporated into cell membranes may be used to screen and develop drugs for selective activity at the D2 dopamine receptor site. Prior to this invention, only a nonfunctional clone of the rat dopamine D2 receptor was available.
Licensing Contact: Arthur Cohn

Phencyclidine Analogs Having Anticonvulsant Activity

Rogawski, M.A., Rice, K.C.,
Jacobsen, A.E., Thurkauf, A. (NINDS)
Filed 15 Sep 89
Serial No. 07/409,557

Analogs (stereoisomers) of the compound phencyclidine may be an effective treatment for epileptic seizures in humans. They protect laboratory animals from seizures with few adverse reactions at effective doses. This treatment is superior to the presently available antiepileptic drugs, which can cause unsteadiness, drowsiness, fatigue, nausea, or motor and cognitive impairment at doses required to control seizures.
Licensing Contacts: Arthur Cohn and Marjorie Hunter

Partial Agonists Of The Strychnine-Insensitive Glycine Modulatory Site Of The N-Methyl-D-Aspartate Receptor Complex As Neuropsychopharmacological Agents

Skolnick, P., Lewin, A., Marvizon, J.,
Monn, J. (NIDDK)
Filed 8 Aug 89
Serial No. 07/390,745

A novel compound that has partial activity as N-methyl-D-aspartate (NMDA) receptor complex agonist, may have value as a treatment of neuropsychopharmacological disorders. The NMDA glutamate receptor is part of a larger "supramolecular complex" which, when excessively activated, is linked to brain disorders such as seizures, ischemic brain damage, and other neuropathies. Present treatment methods for such disorders use NMDA antagonists that also posses potent neurotoxic side effects. The novel compound, 1-aminocyclopropanecarboxylic acid (ACPC), is a potent but partial NMDA agonist that possesses a greater therapeutic index than competitive or noncompetitive antagonists of the NMDA receptor, with significantly fewer toxic side effects.
Licensing Contact: Arthur Cohn

Cloning And Expression Of Biologically Active Fragment C Of Tetanus Toxin

Stibitz, E.S., Halpern, J.L. (FDA)
Filed 30 June 89
Serial No. 07/373,862

A clone expressing a functionally active Fragment C of tetanus toxin is valable as a diagnostic and therapeutic agent. Tetanus toxin is a potent neurotoxin which intoxicates neuronal cells exclusively. This Fragment C, which is also specific for neuronal cells but lacks neurotoxin activity, can be conjugated to a label for identifying neuronal cells or it can be used as an immunogen to protect subjects against tetanus toxin.
Licensing Contact: Mark Hankins

Novel Muscarinic Agents

Jacobson, K.A., Bradbury, B.J.,
Baumgold, J. (NIDDK)
Filed 15 Feb 89
Serial No. 07/310,954

Novel N,N′-substituted-1,4-diamino-2-butyamines are specific for muscarinic receptors in the parasympathetic nervous system and have potential value for the study and treatment of senile dementia associated with Alzheimer's disease. Currently available therapeutic agents for Alzheimer's, which are believed to act upon muscarinic receptors, have serious side effects and a narrow therapeutic window. These novel compounds may act as muscarinic agonists and antagonists and may be devoid of many of the side effects of the presently available compounds.
Licensing Contact: Arthur Cohn

Tissue Transplantation System

Wyatt, R. J., Freed, W. J., Staub, R.A.
(NIMH)
Serial No. 07/278,821
Patent Issued 2 Apr 91
U.S. Patent No. 5,004,457

Brain tissue can be inserted into the mammalian brain with minimal pressure and minimal disruption of the transplanted tissue using a new apparatus with two

interacting cannulas. The apparatus is easily guided to the site with a stereotaxic instrument. Tissue can be placed in multiple sites along a single tract or along multiple tracts. The apparatus is capable of manufacture in various sizes and can be used not only for fibrous tissue that holds together well but also for embryonic brain tissue that is fragile.
Licensing Contact: Arthur Cohn

Apparatus And Method For Transmitting Prosthetic Information To The Brain

Richmond, B.J., Optician, L.M. (NIMH)
Filed 22 Jul 88
Serial No. 07/222,882

A novel apparatus for transmitting visual, audile, or tactile information to the brain offers a means to significantly improve the utility of prosthetic devices. There is presently no prosthetic device that can transmit a meaningful sensory message to the brain. This new apparatus contains an array of sensory elements that receive energy from an external stimulus and process those signals via neural filters and neural waveforms to produce a pulse or "spike" train. When applied to an appropriate area of the brain, these simulated spike trains allow the subject to discriminate between various external stimuli.
Licensing Contact: Arthur Cohn

N-(1-thienylcycloalkyl) Alkenylamines For Treatment Of Neurotoxic Injury

Rice, K.C., Gray, N.M., Contreras, P.C. (NIDDK)
Filed 24 Nov 87
Serial No. 07/125,025

A novel antiexcitotoxic compound of a class of N-(1-thienylcycloalkyl) alkenylamines is valuable for controlling the neuropathological processes and the neurodegenerative consequences associated with neurotoxic injury. Agents that selectively block or antagonize the action of glutamate at the excitatory amino acid synaptic receptors of central neurons can prevent neurotoxic injury associated with anoxia, hypoxia, or ischemia caused by stroke, cardiac arrest, or perinatal asphyxia. One of these alkenylamine derivatives, in particular, was superior to the presently used compounds phencyclidine and metaphit in the specific antagonism of glutamate receptors; glutamate receptor antagonism reduces the sensitivity of central neurons to hypoxia and ischemia.
Licensing Contact: Arthur Cohn

Synthesis And Utilization Of 17-Methyl And 17-Cylcopropylmethyl-3,14-Dihydroxy-4,5-α-Epoxy 6-β-Fluoromorphinans (Foxy And Cyclofoxy) As (18F)-Labeled Opioid Ligands For Position Emission Transaxial Tomography (PETT)

Rice, K.C., Pert, C.B., Burke, T.R., Larson, S.M., Eckelman, W.C., Channing, M.A. (NIDDK, NIMH)
Serial No. 06/675,276
Patent Issued 4 Oct 88
U.S. Patent No. 4,775,759

These newly synthesized compounds have a high binding affinity and specificity for the opioid receptor system in mammals; they also exhibit very low levels of nonspecific binding. Animal studies indicated that, unlike other synthetic opioid receptor ligands, radiolabeled foxy and cyclofoxy, when combined with PETT, could be used *in vivo* to visualize opiate receptors in the living human brain. This invention provides a noninvasive means to study the structure, function, and location of opiate receptors in the brain and to investigate factors involved in the regulation of pain, pleasure, and mood.
Licensing Contact: Arthur Cohn

Dimeric Enkephalins

Rodbard, D., Shimohigashi, Y., Chen, H.-C., Costa, T. (NICHD)
Serial No. 06/427,857
Patent Issued 28 Aug 84
U.S. Patent No. 4,468,383

These new compounds, comprising two symmetrical enkephalin polypeptides linked together via a difunctional amino bridge, can bind simultaneously to two opiate receptors in the brain. Binding of these linked compounds is more rapid and more specific than that of individual enkephalin polypeptides, opiates, and other similar compounds. In addition, unlike most other enkephalins, the linked molecules are resistant to enzymatic degradation. These new enkephalins can be used to investigate opiate receptor membranes. They may also be particularly useful as nonaddictive narcotic and/or analgesic agents.
Licensing Contact: Arthur Cohn

Aminonaphthalimide Dyes For Intracellular Labeling

Stewart, W.W. (NIAMS)
Serial No. 05/931,273
Patent Issued 25 Sep 84
U.S. Patent No. 4,473,693

These yellow fluorescent dyes (Lucifer Yellow CH, Lucifer Yellow VS) can be viewed in both living and fixed tissues. The dyes are particularly useful for obtaining a detailed three-dimensional view of neurons following electrical stimulation. The dyes also appear to dye-couple to retina cells where electrical coupling is not observed. Unlike other stains, these novel fluorescent dyes are covalently bound to the tissue or cell of interest, thereby reducing leakage of the dye from the tissue. In addition, the new dyes are much more sensitive and cell-specific than other similar compounds.
Licensing Contact: Steve Ferguson

CLINICAL DEVICES & INSTRUMENTATION

Device For Measuring Incident Light In A Body Cavity

McClellan, M.W., DeLaney, T.F., Harrington, F., Smith, P.D., Friauf, W.S. (NCI)
Filed 14 May 92
Serial No. 07/883,013

A method and apparatus for accurately monitoring the amount of light delivered to a specific part of the body during phototherapy have been developed. The

novel device used to measure incident light in a remote site, such as a body cavity, includes a central tube that delivers the light and one or more auxiliary tubes through which the incident light in the remote site is transmitted to a light detector. Other methods, which monitor the output of light at the light source rather than the site of delivery, lack the accuracy needed for phototherapy. This invention has already been successfully used in phototherapy treatment of superficial bladder cancer.
Licensing Contact: John Fahner-Vihtelic

Handheld Spirometry With Improved Accuracy

Hankinson, J., Viola, J.O., Ebeling, T.R. (NIOSH)
Filed 31 Mar 92
Serial No. 07/862,625

A novel portable spirometer that can be used during a work shift, including during an asthmatic attack, has been designed. The new device comprises three separate components: a pneumotach, which monitors respiratory flow; a data collector, which collects and stores flow data; and a personal computer, which is used to retrieve and analyze the data collected. This new device, which is a totally self-contained unit, is more accurate, can store more data, and is more suitable for remote and long-term data collection than currently available portable spirometers.
Licensing Contact: John Fahner-Vihtelic

Device For Removal Of Intraluminal Occlusions

Flugelman, M.Y., Sher, A. (NHLBI)
Filed 25 Mar 92
Serial No. 07/857,556

A new surgical instrument that can cut through partially or totally occluded passageways such as arteries and veins and then remove the residual debris has been designed. The device comprises a catheter equipped with a cutting head and a piston that creates pulses; the pulses, in turn, are transmitted via the catheter to the cutting head, causing the cutting head to move. Tissue debris generated by this action is removed from the site of occlusion by aspiration through the catheter or by collection into a chamber adjacent to the cutting head. A guide wire is used to steer the device through the occluded or narrowed region. The multiple functions and features of this invention distinguish it from other devices.
Licensing Contact: John Fahner-Vihtelic

Method To Enhance The Sensitivity Of MRI For Magnetic Susceptibility Effects

Moonen, C. (NCRR)
Filed 28 Feb 92
Serial No. 07/841,994

A novel fast-imaging method resulting in enhanced sensitivity to T2* changes was developed. This new technique is similar to other methods in that it is based on gradient-recalled echoes of spins whose excitation and echo formation are separated by more than one TR period; however, unlike currently used methods, it does not require chemical shift refocusing and, thus. bypasses the T2* insensitivity that can result from time-resolution in conventional methods. The new method improves the ability of MRI to measure blood flow and blood volume.
Licensing Contact: John Fahner-Vihtelic

Optical Method For Monitoring Arterial Blood Hematocrit

Schmitt, J.M. (NCRR)
Filed 17 Jan 92
Serial No. 07/822,018

This noninvasive method allows for simultaneous measurement of blood hemoglobin concentration and blood oxygen saturation. Similar to pulse oximetry, this novel method uses two, rather than one, light sources that emit close to the wavelengths of oxy/deoxyhemaglobin in the near-infrared band; hematocrit and hemoglobin oxygen saturation are related to the pulsatile and nonpulsatile components transmitted through blood-perfused tissue (e.g., skin) at these wavelengths. Unlike the present invention, all currently available methods are invasive, requiring either blood sampling or catheterizations. This new noninvasive optical method should be particularly useful in monitoring chronic anemia in dialysis patients.
Licensing Contact: John Fahner-Vihtelic

Two- And Three-Dimensional Autoradiographic Imaging Utilizing Charge Coupled Devices

Leighton, S.B., Olds, J.L. (NCRR)
Filed 17 Sep 91
Serial No. 07/761,157

A novel two- and three-dimensional autoradiographic device offers to improve the imaging of body tissues. Numerous methods and apparati have been proposed to a produce a three-dimensional map or image of a distribution of radioactively tagged tissues or chemical substances; however, many of these devices merely detect the radiation, not image it. This new device uses a charged coupling device (CCD) in combination with a microtome to produce numerous two-dimensional images of the radioactively tagged tissue. These two-dimensional images are then reconstructed into three-dimensional images. The device can also be used to produce realtime imaging of metabolic or physiological parameters of the brain and for monitoring radioactively labeled or tagged substances during electrophoresis.
Licensing Contact: John Fahner-Vihtelic

Apparatus For Hyperthermia Treatment Of Cancer

Delannoy, J., Bihan, D.L., Chen, C., Levin, R.L., Turner, R. (NCI)
Filed 29 Jul 91
Serial No. 07/735,682 (CON of 07/439,661)

A novel MRI apparatus that utilizes a combination hyperthermia unit/MRI probe is valuable for the treatment of cancer. Many clinical studies have shown the effectiveness of heat, or hyperthermia, as an adjunctive treatment for malignancies when used in combination with radiotherapy or chemotherapy; however, it is necessary to control the temperature throughout the heated volume to better

than 1°C. Previously available hyperthermia devices have lacked adequate temperature control and, thus, have had limited usefulness. This new MRI device can effectively monitor and control the amount of radiant energy transmitted by the hyperthermia applicator to maintain the temperature of the body part being treated within about ± 0.5°C.
Licensing Contact: John Fahner-Vihtelic

Method And Apparatus For Imaging A Physical Parameter In Turbid Media Using Diffuse Waves

Knuttel, A., Knutson, J.R. (NHLBI)
Filed 28 Jun 91
Serial No. 07/722,823

A new device for imaging structure in biological tissues offers to improve the diagnosis and treatment of a number of diseases. Previously available techniques and devices for imaging structures within opaque or turbid media, such as in biological tissues, use harmful electromagnetic radiation or require scanning of the object or are subject to significant errors due to poor resolution. This new device, which uses electromagnetic radiation with wavelengths outside the harmful range, does not require mechanical scanning of the object and has improved resolution over previous methods.
Licensing Contact: John Fahner-Vihtelic

Method And Device For Reversible Sterilization

Waynant, R.W. (FDA)
Filed 26 Jun 91
Serial No. 07/721,784

A simple, nonsurgically implanted device offers a valuable new method for reversably sterilizing men and women. Presently available methods for sterilizing men and women frequently require surgery and are often irreversible. When reversal is surgically attempted, reestablishment of sperm or ova flow is not always successful. This new device is nonsurgically inserted into the duct of the reproductive system and effectively blocks the flow of sperm or ova. Reversal is accomplished by insertion of a fiber optic device into the duct and ablation of the blocking device with a laser.
Licensing Contact: John Fahner-Vihtelic

Fiber Optic Devices

Waynant, R.W., Fink, M. (FDA)
Filed 21 Jun 91
Serial No. 07/718,666

This newly developed multi-fiber illumination system greatly improves the viewing field used by surgeons performing intraocular surgery. Unlike currently available structures, which use single fibers, this novel approach couples several fibers to a main delivery fiber, resulting in a composite illumination angle equivalent to the number of auxiliary fibers (e.g., if the head of the main delivery fiber is constructed to be used with six additional fibers whose individual angles are 30°, the resultant illumination would cover an angle of 180°). Thus, a system using six secondary fibers would produce a final illumination area that is six times greater than that of a single fiber. A method for producing this new device is provided.
Licensing Contact: John Fahner-Vihtelic

Catheter Tip For Intratracheal Ventilation And Intratracheal Pulmonary Ventilation

Kolobow, T. (NHLBI)
Filed 20 May 90
Serial No. 07/702,479 (CIP of 07/606,967)

A new catheter tip for delivering fresh air and oxygen to the lungs offers an improved technology for treatment of congenital diaphragmatic hernia (CDH) in infants. Conventional mechanical pulmonary ventilation, which is presently used to treat CDH, is not effective at high respiratory rates because of unnecessary ventilation of dead space in the trachea. By positioning this new catheter tip at the carina of the trachea, the dead space of the trachea is bypassed. The apparatus also allows for better control of intratracheal airway pressures and, thus, prevents overinflation of the lungs.
Licensing Contact: John Fahner-Vihtelic

Adaptation Of Microtiter Plate Technology To Measurement Of Platelet Aggregation

Fratantoni, J., Poindexter, B. (FDA)
Filed 22 Apr 91
Serial No. 07/688,220 (CIP of 07/347,087)

Aggregation in a sample is often detected by changes in light absorbance, measured by a spectrophotometer. Simultaneous readings from many samples have not been possible using spectrophotometric methods, and, as a result, certain kinds of statistical analysis of aggregation data cannot be performed, thus limiting the usefulness of the data. This invention describes disposable microtiter plastic plates with 96 wells, which are positioned in a 12-well-by-8-well grid. Samples in each of the wells are subjected to spectrophotometer analysis, thus allowing for simultaneous measurement of a large number of samples. It has particular application in determining platelet aggregation by a variety of agents.
Licensing Contact: John Fahner-Vihtelic

Surface Fluorescent Monitor

Friauf, W., Smith, P., Cole, J., Fessler, J., Solomon, R., Bernstein, E. (NCRR)
Serial No. 07/676,581
Filed 29 Mar 91

The effectiveness of therapies involving photodynamic tissue destruction depends in part on the amount of photosensitizer [e.g., formulations containing dihematoporphyrin ethers/esters (DHE)] present in tissues. Current techniques, which extrapolate tissue/tumor DHE content from the amount of DHE administered, are inaccurate and can lead to decreased tumoricidal effect or unacceptable destruction of normal tissues. The noninvasive method and apparatus described in this invention use transcutaneous fluorescent measurements to determine relative amounts of tissue DHE content accurately. The device may be used to maximize the value of photodynamic therapy to treat certain diseases, including some cancers.
Licensing Contact: John Fahner-Vihtelic

Metal-Based Formulations With High Microbicidal Efficiency Valuable For Disinfection And Sterilization

Sagripanti, J. (FDA)
Filed 26 Feb 91
Serial No. 07/661,005

New metal-based formulations are an advancement over previously available methods of disinfecting medical equipment, tissues, and organs for transplant, and for inactivating viruses for vaccines. Presently available disinfecting and inactivating agents are unsatisfactory because they are corrosive, mutagenic, or carcinogenic. These new metal-based formulations are as much as 50 times more efficient antimicrobial and antiviral agents as presently recommended sterilizing substances while having substantially fewer unwanted side effects.
Licensing Contact: Todd Leonard

Safety Pipette And Adaptor Tip

Whelan, J. (NIAAA)
Filed 18 Dec 90
Serial No. 07/628,902 (CIP of 07/451,689)

A new safety pipette and adaptor tip that do not permit mouth pipetting were developed. These devices reduce the risk of self-contamination or exposure of personnel from substances transferred by pipetting. All currently available pipettes have the same inherent flaw, i.e., that the user can mouth pipette with them. The availability of a pipette that cannot be used for mouth pipetting reduces the possibility of accidents as well as the liability of the manufacturer.
Licensing Contact: John Fahner-Vihtelic

Device For Intratracheal Ventilation And Intratracheal Pulmonary Ventilation

Kolobow, T. (NHLBI)
Filed 31 Oct 90
Serial No. 07/606,967

A novel method and apparatus for intratracheal ventilation (IV) and intratracheal pulmonary ventilation (IPV) offer a significant advancement for the treatment of congenital diaphragmatic hernia (CDH). Mechanical pulmonary ventilation, which is presently used to treat CDH, is not effective at high respiratory rates because of unavoidable dead-space ventilation. This new apparatus continuously flushes anatomical dead space with a fresh supply of air, allowing for low peak airway pressures and respiratory rates beyond what is presently considered practical.
Licensing Contact: John Fahner-Vihtelic

NMR Glomerular Filtration Test And Kit

Choyke, P.L., Frank, J.L., Austin, H.A. (CC)
Serial No. 07/557,038
Patent Issued 31 Mar 92
U.S. Patent No. 5,100,646

Glomerular filtration rates (GFR) can be accurately measured by this new method without the use of radioactive material. A nonradioactive compound detectable by NMR, gadolinium-DTPA, is employed instead, and GFR measurements based on changes in serum and urine T1 relaxation rates, rather than elimination of radiolabeled test material, are made. This protocol eliminates risk of exposure to radioactivity for both patients and health personnel and removes the need for special handling of contaminated waste and specimens. It is more rapid than the conventional creatinine clearance test (2 versus 24 hours) and can be performed in an outpatient environment.
Licensing Contact: John Fahner-Vihtelic

Intra-Urethral Valve with Integral Spring

Leighton, S. (NCRR)
Serial No. 07/530,585
Patent Issued 18 Feb 92
U.S. Patent No. 5,088,980

A new prosthetic urethral valve has been developed for controlling urinary incontinence in patients. The prosthetic valve, which is installed totally within a patient's urethra without surgery, functions with a nonlinear spring characteristic that permits its control by the patient's voluntary elevation of bladder pressure substantially in a normal matter. The valve avoids false openings at unintended times and does not require undue exertion during urination.
Licensing Contact: John Fahner-Vihtelic

Method And Apparatus For Heating Cryogenically Stored Organs

Ruf, H.J., Smith, S.W., Herman, B.A., Ruggera, P.S. (FDA)
Filed 25 May 90
Serial No. 07/528,388

An apparatus for thawing cryogenically vitrified human organs offers to significantly enhance the preservation, storage, and shipment of organs for transplantation. To date, while human organs can be successfully cryopreserved without the formation of damaging ice crystals, no method has been developed to prevent the formation of ice crystals during the subsequent thawing process. This new apparatus uses ultrasonic vibrations to inhibit the formation of ice crystals while the tissue or organ is uniformly heated.
Licensing Contact: John Fahner-Vihtelic

Absorption System For Scavenging Anesthetic Agents From Waste Gas Released During Surgical Activity

Burkhart, J.E. (CDC)
Serial No. 07/528,080
Patent Issued 3 Sep 91
U.S. Patent No. 5,044,363

A device was developed for capturing waste anesthetic gases generated during surgery. This device may be especially useful in small clinics where an adequate means of ventilation and recapture of these gases is not feasible. Systems for large facilities are too expensive for small clinics to install and maintain. The device is a compact, inexpensive, efficient, and easy-to-maintain mobile unit designed to prevent the release of anesthetic substances into the air. Use of this device will help prevent human exposure to anesthetic substances, which has been linked to liver and kidney diseases, CNS

effects, spontaneous abortions, and congenital abnormalities.
Licensing Contact: John Fahner-Vihtelic

Universal Collector Of Submandibular/Sublingual Saliva

Wolff, A., Davis, R.L. (NIDR, NCRR)
Serial No. 07/493,538
Patent Issued 24 Sep 91
U.S. Patent No. 5,050,616

A method and apparatus for collecting samples of both submandibular and sublingual saliva have been developed. As a noninvasive means to assess the activity of a variety of diseases and the level of certain drugs and hormones, saliva collection is a procedure with increasing clinical importance. With its ability to efficiently collect and store the secreted saliva without contamination, this device is superior to existing equipment.
Licensing Contact: John Fahner-Vihtelic

Array-Type Multiple Cell Injector

Leighton, S.B., Brownstein, M.J. (NCRR)
Filed 23 Oct 89
Serial No. 07/425,254

With this mechanized device, any medium, solution, or substance can be delivered simultaneously to a large number of individual, living cells held in a microminiature egg-crate-type plate. Needles aligned above the plate are capable of introducing a substance directly into the cytoplasm or nucleus of a cell. This invention is less expensive, less labor-intensive, and more efficient than other similar devices. It does not require special reagents and can be used with either adherent or suspended cells.
Licensing Contact: John Fahner-Vihtelic

High-Speed Texture Discriminator For Ultrasonic Imaging

Insana, M.F., Smith, S.W., Brown, D.G., Wagner, R.F. (FDA)
Serial No. 07/298,022
Patent Issued 1 Jan 91
U.S. Patent No. 4,982,339

A new ultrasonic imaging system offers to improve the detection of abnormal tissues using this technology. Presently used ultrasonic imaging systems require subjective decisions as to whether tissues are normal or not. This new system uses a texture discriminator to obtain tissue signatures from first- and second-order statistics of an image in order to discriminate between different normal tissues and to detect abnormal conditions. These signatures describe intrinsic backscattering properties of the tissue imaged.
Licensing Contact: John Fahner-Vihtelic

Apparatus And Methods For Determining *In Vivo* Response to Thermal Stimulation In An Unrestrained Subject

Hargreaves, K.M., Dubner, R., Brown, F. (NIDR)
Serial No. 07/278,355
Patent Issued 25 Jun 91
U.S. Patent No. 5,025,796

New equipment has been developed utilizing radiant heat for the measurement of *in vivo* hyperalgesia. The apparatus works by the automated detection of a behavioral endpoint. This unit can be used to quantify thermal nociception in animal models of hyperalgesia. Based on the well-known "hot plate" test, this equipment permits the attainment of a greater bioassay sensitivity than other methods while allowing for the measurement of other behavioral parameters in addition to a nociceptive threshold.
Licensing Contact: John Fahner-Vihtelic

Flexible Holder For A Cystoscope Or The Like

Harrington, F.S., Manyak, M.J. (NCI)
Serial No. 07/197,096
Patent Issued 19 Sep 89
U.S. Patent No. 4,867,404

A novel flexible holder offers an improved method for holding cystoscopes or other endoscopic instruments and retractors adjacent to examination tables or the like. The clamping assembly permits the holding of various-sized instrument shafts. The devices may be attached readily and locked or anchored in place after positioning relative to the patient.
Licensing Contact: John Fahner-Vihtelic

Diathermy Coil

Ruggera, P.S. (FDA)
Serial No. 07/037,203
Patent Issued 1 Oct 91
U.S. Patent No. 5,052,997

A novel diathermy coil for depositing uniform heat in biological materials offers to make the use of radiofrequency (RF) therapy safer and easier to use. Previous coil designs were limited because they produced excessive surface heating with minimal deep heating and were so large that the patient's entire body as well as the operation staff were exposed to heat. This new coil design produces uniform deep heating in biological tissues without excessively heating the surface of the body or fat within the body. It is also small, so that only individual parts of the body need be exposed; special shielding protects operating personnel.
Licensing Contact: John Fahner-Vihtelic

Medical Apparatus [Endoscope]

Lyddy, J.E., Penland, W.Z., Sugarbaker, P.H. (NCI)
Serial No. 06/862,111
Patent Issued 1 Sep 87
U.S. Patent No. 4,690,131

An improved endoscope is capable of extending flexibly into the lumen of tubular body parts such as the large

intestine. Its sheath is provided with inflatable, movable cuffs that can be used to grip the interior surfaces of the lumen at particular sites. A flexible fiber optic bundle inside the endoscope allows examination of these surfaces. This device requires less skill to manipulate and is more comfortable to the patient than previous endoscopic devices.
Licensing Contact: John Fahner-Vihtelic

High-Speed Texture Discriminator For Ultrasonic Imaging

Insana, M.F., Smith, S.W., Brown, D.G., Wagner, R.F. (FDA)
Serial No. 06/798,930
Patent Issued 28 Mar 89
U.S. Patent No. 4,817,015

A novel device for classifying the image of ultrasound B-scans offers to significantly advance the detection of diseased tissue using this technology. Previously, ultrasonic scans have been visually interpreted by the operator, which introduces a degree of subjectivity into identifying potential abnormal scans. This high-speed texture discriminator measures tissue signatures from first- and second-order signals in order to detect subtle changes in texture that might indicate the presence of disease.
Licensing Contact: John Fahner-Vihtelic

Cold Plate For Laboratory Use

Juncos, J.L., Smith, P., Wellner, E. (NINDS)
Serial No. 06/748,207
Patent Issued 7 Oct 86
U.S. Patent No. 4,615,183

A cold plate for maintaining specimens at desired cooled temperatures offers an improved method for dissecting tissues. This device includes a metal plate with an aperture covered by a removable dark frosted piece of glass. The metal plate is equipped with an integrally embedded hollow matrix of tubing to circulate a cooling medium and a remotely operated lighting system to illuminated the dark frosted glass piece as well as the surrounding regions.
Licensing Contact: John Fahner-Vihtelic

Toposcopic Catheter And Method Of Fabrication

Shook, D.R. (NCRR)
Serial No. 06/647,728
Patent Issued 5 Aug 86
U.S. Patent No. 4,604,094

An novel everting catheter assembly that includes a tube inside which a toposcopic element is secured is valuable for removing nonsterile fluid from the leading end of the annular region as the pressurized sterile media enters. Previously, no apparatus was able to remove the pre-existing nonsterile fluid from the leading end of the annular region as the pressurized sterile media entered. This new catheter design, in which the tail end of the catheter is secured to a seal tube, introduces pressurized sterile eversion fluid media into the annular cylindrical region region by means of a bleed tube.
Licensing Contact: John Fahner-Vihtelic

Monolithic Integrated Flow Circuit

Kolobow, T., Ito, Y. (NHLBI)
Serial No. 06/587,682
Patent Issued 5 Nov 85
U.S. Patent No. 4,551,251

The circuits currently used in countercurrent chromatography (CCC), especially droplet CCC and locular CCC, and in cell elutriation, have several disadvantages. They need to be assembled, their multiple-tubular columns leak and fail; perforated tubular columns are tedious to prepare; and helical columns are not always satisfactory in viscous polymer phase mixing or in separation during cell elutriation. This monolithic, multi-channel, integrated flow circuit (MIFC) overcomes those disadvantages. The MIFC, which is embossed on a thin-gauge metal or plastic support sheet that is bonded to a support sheet, eliminates the adaptors, transfer tubing, joints, and other discrete elements that could threaten the structural integrity of earlier circuits.
Licensing Contact: John Fahner-Vihtelic

Intra-Urethral Prosthetic Sphincter Valve

Leighton, S.B. (NCRR)
Serial No. 06/550,040
Patent Issued 19 Nov 85
U.S. Patent No. 4,553,533

A prosthetic urethral sphincter valve containing a collapsible flexible thin-walled, spring-guided annular bag and a rigid casing with flexible retaining petals offers an improved method for treating incontinent bladders. When the patient exerts sustained bladder pressure, the bag drops, opening the central tube for the passage of urine; after urination, the spring returns the bag to its collapsed state and the valve is shut off. Most of the previous urethral valve devices are operated externally and depend on manual intervention.
Licensing Contact: John Fahner-Vihtelic.

Optical Coupling Device For Biomicroscope

Rich, A., Gaasterland, D., Tedder, T. (NEI)
Serial No. 06/494,378
Patent Issued 4 Mar 86
U.S. Patent No. 4,573,467

High-power pulsed laser energy is valuable in treating a number of diseases, but the laser beam must be focused very accurately to avoid damage to adjacent tissue. A biomicroscope allows its user adequate observation of the area to be treated; to date, no method has combined the biomicroscope and the focus of a laser beam. This apparatus permits a user to focus high-power laser pulses in the center of the field of observation of a biomicroscope. A synchronized shutter mechanism protects the user's eyes. This device is portable, thus making it easily transportable in a medical facility.
Licensing Contact: John Fahner-Vihtelic

Helical Coil For Diathermy Apparatus

Ruggera, P.S., Kantor, G. (FDA)
Serial No. 06/461,954
Patent Issued 9 Jul 85
U.S. Patent No. 4,527,550

This deep-heating machine contains a hollow tube that can be adapted to encase the part of the body (or any other material) to be treated. Heating coils wound around the tube provide uniform, deep heat to the enclosed tissue without discomfort to the patient. The invention can be used for any type of deep-heat treatment (e.g., hyperthermia in cancer therapy, bone healing) or for industrial processes. It is an improvement over other systems, which may produce excessive stray radiation, do not provide uniform cross-sectional and surface heating, and do not include self-supporting enclosures.
Licensing Contact: John Fahner-Vihtelic

Ultrasonic Therapy Applicator That Measures Dosage

Christman, C. (FDA)
Serial No. 06/446,408
Patent Issued 26 Feb 85
U.S. Patent No. 4,501,151

Currently used microwave diathermy and ultrasonic devices for therapeutic heating do not allow the practitioner to measure or specify the actual energy absorbed by the tissue undergoing treatment or to measure increases in tissue temperature. The novel device described in this invention suspends the specimen in a diffuse ultrasonic field and uses the total power absorbed within the tank and the acoustic decay rate function to measure the total energy absorbed by the specimen. This improved technology provides a reliable measurement of exposure and allows prediction of the expected temperature rise of the specimen.
Licensing Contact: John Fahner-Vihtelic

Process And Device For X-Ray System Quality Assurance

Van Pelt, W., Peterson, R. (NCRR)
Serial No. 06/440,728
Patent Issued 29 Oct 85
U.S. Patent No. 4,550,422

Better quality control of x-ray systems allows facilities to reduce unnecessary patient exposure to radiation. The sensitometer/densitometer method often used for evaluating x-ray system performance produces excellent results, but is expensive, labor-intensive, and bulky. A cheaper, simpler method — visual analysis of step wedge images — has particular drawbacks in dental radiology because the optical density of dental exposures is incompatible with common film exposures and because dental film is very small. The new device described in this invention overcomes these problems by filtering the x-ray beam used at normal patient use settings to the density range of most film. An adjustment device on this novel apparatus allows the viewer to compare density of a test film against one control density at a time, screening the eye against other confusing densities.
Licensing Contact: John Fahner-Vihtelic

Analytically Controlled Blood Perfusion System

Lee, Albert K. (NCRR)
Serial No. 06/421,344
Patent Issued 5 Jan 88
U.S. Patent No. 4,717,548

This blood perfusion system is used during open heart surgery and other situations requiring extracorporeal bloodflow. It can detect alterations in blood gas and other critical physiological parameters; activates an alarm when blood gas levels are abnormal; and changes pump speed to maintain correct levels. Earlier methods of maintaining blood gases rely on off-line tests of blood samples; these technologies are delicate, expensive, time-consuming, labor-intensive, and subject to human error. This system monitors in real time and makes necessary corrections automatically.
Licensing Contact: John Fahner-Vihtelic

Roller Infusion Apparatus

Dore, C., Chambers, G. (NIDDK)
Serial No. 06/271,271
Patent Issued 22 Nov 83
U.S. Patent No. 4,416,662

In previous motor-driven devices designed for continuous drug infusion, backlash in the drive mechanism interrupted the continuity of drug administration. This mechanical difficulty presented severe risks to patients, particularly when the drug being administered was concentrated. The drive mechanism of this novel assembly includes a roller that is engageable with the side of a syringe plunger. This arrangement eliminates backlash, allows for construction of a compact apparatus, and reduces the need for adjustment of the syringe barrel.
Licensing Contact: John Fahner-Vihtelic

Ultrasonic Therapy Applicator That Measures Dosage

Christman, C.L. (FDA)
Serial No. 06/266,379
Patent Issued 28 Jun 83
U.S. Patent No. 4,390,026

A novel ultrasonic apparatus by which therapeutic heating can be applied to living tissue in a tank of liquid consists of a reverberation chamber, a transducer, a hydrophone, a specimen holder, and a stirrer. Measuring the differential temperature signal that results when a sphere is irradiated enables determination and control of the acoustic energy density. A serious problem associated with previous ultrasonic heating devices is the poor control provided of the exposure conditions (dosage).
Licensing Contact: John Fahner-Vihtelic

Jet-Controlled Catheter

Boretos, J.W. (NCRR)
Serial No. 06/262,806
Patent Issued 13 Sep 83
U.S. Patent No. 4,403,985

This novel catheter moves via forces generated by a pressurized fluid released

at the end (jet openings) of the catheter. The streaming or pulsatile liquid allows the catheter to bend, turn, retract, and propel, as determined by the shape and location of the jet openings. The pressure used to push the fluid is controlled by an external source. The catheter is made from soft thermoplastic or elastomeric tubing and contains a bellowed/pleated section that facilitates movement. This new design eliminates the need for stiff, abrasive guides, wires, and other mechanical devices normally used to advance a catheter to branching vessels.
Licensing Contact: John Fahner-Vihtelic

Cross-Slice Data Acquisition System For PET Scanner

Friauf, W., Brooks, R., Cascio, H., Sank, V. (NCRR)
Serial No. 06/250,840
Patent Issued 15 Nov 83
U.S. Patent No. 4,415,807

Cross-slice event data handling in early diagnostic positron emission tomography (PET) was generally complex, expensive, and difficult to detect. In this invention, a prior data handling system devised to simplify extraction of cross-slice data was improved upon by permitting the same circuitry to be used for both cross-slice and intraslice event processing.
Licensing Contact: John Fahner-Vihtelic

Four-Input Coincidence Detector

Friauf, W.S. (NCRR)
Serial No. 06/222,936
Patent Issued 9 Aug 83
U.S. Patent No. 4,398,101

This gamma-ray scintillation coincidence detection circuit has four inputs that are connected to two gating units. The use of four inputs, rather than the conventional two inputs, allows for better discrimination between the effect of true radioactivity in a sample and other factors, such as background noise, that are independent of the detected radioactivity. This device can also be used to simultaneously detect two gamma rays produced by the annihilation of a positron. Its most direct application is with positron imaging systems.
Licensing Contact: John Fahner-Vihtelic

Everting Tube Device With Relative Advance Control

Leighton, S.B., Boyd, W.H. (NCRR)
Serial No. 06/217,143
Patent Issued 30 Mar 82
U.S. Patent No. 4,321,915

The housing of an everting tube device contains a folded, evertable, flexible tube through which an elongated tool, such as a fiber optic bundle, can be extended. The tool can be retracted by applying vacuum to the housing interior in a precise and controlled manner. Use of a fiber optic bundle provides a means of continuously viewing the path of travel immediately ahead of the advancing tube, a capability not provided by previously available technologies.
Licensing Contact: John Fahner-Vihtelic

Nuclear Pulse Discriminator

Friauf, W.S., Brooks, R.A. (NCRR)
Serial No. 06/209,305
issued 20 Dec 83
U.S. Patent No. 4,421,986

This device can be coupled with a scintillation detector for the detection of gamma (or other) rays. The invention is preferable to other discriminators because it allows for rapid energy-level verification and can eliminate background noise (timing pulses caused by low-energy spurious signals) that often saturates the counting system of the detector. It may be particularly useful in positron emission tomography.
Licensing Contact: John Fahner-Vihtelic

Illuminated Surgical Instrument [Speculum]

Petrassevich, C.H. (EM)
Serial No. 06/141,764
Patent Issued 6 Jul 82
U.S. Patent No. 4,337,763

A novel double-blade speculum or single-blade retractor with a projecting light fixture on the interior of the upper blade of the speculum or on the concave surface of the retractor offers an improved surgical instrument. The light illumines the body cavity created by the instrument or by a wound, and a shade screens the bulb from the physician's eye. Prior devices were unable to provide the correct location of the light source so that the light beam would not be obscured during use of the instrument.
Licensing Contact: John Fahner-Vihtelic

Steel Wire Pressure Aesthesiometer

Kanatani, F.N. (EM)
Serial No. 06/129,982
Patent Issued 2 Feb 82
U.S. Patent No. 4,313,446

This self-contained device is designed to be used in the assessment of sensory patterns associated with neurological diseases such as leprosy neuritis. It employs steel wire filaments that can be adjusted and used to repeatedly test the impression of pressure on the skin of an individual. Prior to this invention, several aethesiometers — rather than one — were needed to evaluate sensory perception. This invention is also more durable and easier to calibrate that earlier designs.
Licensing Contact: John Fahner-Vihtelic

Ethiodized Oil Emulsion For Intravenous Hepatography

Vermess, M., Chatterji, D.C., Grimes, G.J., Gallelli, J.F. (CC)
Serial No. 06/110,293
Patent Issued 13 Sep 83
U.S. Patent No. 4,404,182

Ethiodized oil emulsified with lecithin can be used with computerized tomography and x-rays for imaging of the liver and spleen. The optimum emulsion for these radiographic procedures contains 30 to 35 percent oil particles that are about 2 to 3 microns in size. Emulsion dosages as low as 0.2 and 2 ml/kg body weight can be used with computerized tomography and conventional x-rays, respectively. Development of an acceptable, injectable, iodinated oil emulsion for imaging;

determination of optimum particle size/particle size distribution; and quantification of the lowest effective dose of this emulsion had not been previously described.
Licensing Contact: John Fahner-Vihtelic

Method And Apparatus For Traversing Blood Vessels

Goldstein, S., Jones, R. (NCRR)
Serial No. 06/022,219
Patent Issued 20 Mar 84
U.S. Patent No. 4,437,857

Conventional catheters are difficult to use in some narrow, twisted blood vessels, precluding some valuable catheter-based therapies. Standard catheters may be too large, too rigid, or too flexible, limited by wall friction, complex, and/or expensive. This new technique everts a small catheter from a standard catheter tube to approach an inaccessible area. Because there is no bodily movement of the outer wall of the tube, there is little friction and no need to make the usual design compromises between rigidity, for ease of advance through the vessel, and flexibility, to negotiate sharp turns.
Licensing Contact: John Fahner-Vihtelic

Activity Monitor For Ambulatory Subjects

Colburn, T.R., Smith B.M. (NIMH)
Serial No. 05/790,988
Patent Issued 12 Oct 82
U.S. Patent No. 4,353,375

This self-contained device, which resembles a wristwatch, is used to monitor activity levels during predetermined, sequential time intervals. It can be used alone or in conjunction with a drug treatment program for disorders characterized by abnormal activity or movement (e.g., Parkinson's disease, Huntington's chorea, hyperactivity, manic-depressive illness). This invention can be worn at all times, for up to 10 days at a time. It gives a more accurate evaluation of a person's daily physical activities than other similar devices, which require that the individual remain in a specific area.
Licensing Contact: John Fahner-Vihtelic

DENTAL

Plaque-Inhibiting Protein From *Bacteroides loeschi* And Methods For Using The Same

London, J. (NIDR)
Filed 30 April 90
Serial No. 07/516,463

A new bacterial surface protein capable of preventing or retarding the formation of dental plaque has been characterized. This protein is an adhesin that inhibits intergeneric bacterial coaggregation, thought to be the primary cause of dental plaque. Use of this adhesin is advantageous over traditional detergents or abrasives, in that unwanted microorganisms can be cleared from the mouth without disturbing the normal flora that actually protect tooth surfaces.
Licensing Contact: Steve Ferguson

Pulse Oximeter For Diagnosis Of Dental Pulp Pathology

Schmitt, J.M., Webber, R., Walker, E.C. (NCRR)
Serial No. 07/350,908
Patent Issued 20 Aug 91
U.S. Patent No. 5,040,539

Pulse oximeter technology offers a significant improvement in the diagnosis of dental pulp pathology. The techniques presently employed to detect pulp disease use subjective evaluation of a patient's response to thermal, mechanical, or electrical stimuli. These methods are often unreliable because nerves can still respond even when blood circulation to the pulp is impaired, and stimulating an individual tooth is also difficult. The pulse oximeter allows the clinician to definitively distinguish among various conditions that can lead to degeneration of the tooth by determining whether an individual tooth is perfused with blood and estimating the oxygen saturation (So_2) of the hemoglobin in the pulp.
Licensing Contact: John Fahner-Vihtelic

Plaque-Inhibiting Oligosaccharide

Cassels, F.J., London, J. (NIDR)
Serial No. 07/349,772
Patent Issued 10 Dec 91
U.S. Patent No. 5,071,977

A novel cell wall polysaccharide antigen from *Streptococcus sanguis* 34 offers an improved method of inhibiting plaque. Previously available technology for combating dental plaque works in a nonspecific fashion, primarily by means of detergents and abrasives. This cell wall polysaccharide antigen, which specifically inhibits intergeneric coaggregation between bacteria that cause plaque and contains saccharide components that are effective inhibitors of the adhesin interaction, can be applied to human teeth by conventional methods including toothpaste, tooth powder, chewing gum, ointment, and chewable tablet, or it may also be mixed with confectionaries such as candies and cakes.
Licensing Contact: Steve Ferguson

Calcium Metaphospate-Filled Compositions

Antonucci, J.M., Fowler, B.O., Venz, S. (NIDR)
Filed 27 Feb 89
Serial No. 07/316,372

Resins filled with particles of crystalline calcium metaphosphate are suitable for dental and other applications. Presently available dental resins are either too soft or are so hard they are difficult to polish and thus irritate oral tissue. The calcium metaphosphate-filled resins have a low abrasion to opposing dentition but possess good polishability. This invention can also be used for fire retardant, insulation, coating, and structural applications.
Licensing Contact: Steve Ferguson

Method And Device For Determining Viability Of Intact Teeth

Maxwell, G.M., Webber, R.L. (NIDR)
Serial No. 07/019,185
Patent Issued 6 Jun 89
U.S. Patent No. 4,836,206

An optical device that assesses the relative amount of blood circulating in intact teeth offers a significant advancement in the diagnosis of tooth disorders. Present methods for assessing tooth viability require the patient to identify exactly where a stimulus is being applied or only detect abnormalities on the surface of the tooth. This new optical device is much more sensitive and precise because it detects the relative absence of light absorbed by hemoglobin in circulating blood inside a tooth. By taking the ratio of intensities of two wavelengths of light, one of which is more absorbed by hemoglobin than the other, the relative amount of oxygenated blood in the tooth and, hence, tooth vitality can be determined.
Licensing Contact: Steve Ferguson

Systematic Method For Matching Existing Radiographic Projections With Radiographs To Be Produced From A Specified Region Of Interest In Cancellous Bone

Webber, R., Ruttimann, U.,
Van Der Stelt, P., Edholm, P. (NIDR)
Serial No. 06/894,251
Patent Issued 6 Sep 88
U.S. Patent No. 4,769,756

With this invention, an x-ray showing adjacent teeth can be taken without moving the patient or the x-ray machine. It allows for early detection of cavities, periodontal disease, and small lesions in the jaw bone and teeth. This method is an improvement over conventional x-rays in that multiple images at slightly different angles within the mouth can be generated in a very short period of time without discomfort to the patient. It is also less expensive and safer (i.e., lower radiation) than a single conventional dental x-ray.
Licensing Contact: Steve Ferguson

Nonaqueous Dental Cements Based On Dimer And Trimer Acids

Antonucci, J.M. (NIST)
Serial No. 06/922,811
Patent Issued 23 May 89
U.S. Patent No. 4,832,745

Nonaqueous polycarboxylic dimer and trimer acids react with a variety of polyvalent metal bases to yield a versatile class of cements with unique energy-absorbing properties and excellent dimensional stability. Because they do not inhibit the polymerization of resin-based dental materials, resin-composite-cement hybrid materials can be formulated. The new cements are low shrinking, hydrolytically resistant, biocompatible, and mechanically tough and ductile.
Licensing Contact: Steve Ferguson

Biocompatible Cementitious Dental Compositions

Brauer, G., Stansbury, J. (NIST, NIDR)
Serial No. 06/582,759
Patent Issued 4 Dec 84
U.S. Patent No. 4,486,179

Incorporation of syringic acid esters into dental compositions, such as those based on zinc oxide, in place of vanillic esters overcomes the drawbacks of several previous cements, such as weakness, lack of adhesiveness, and inability to inhibit caries. The novel process and materials described in this invention yield rapid setting of insoluble cements that have high strength, do not inhibit free radical polymerization, adhere strongly to metal, and reduce caries. Addition of silanized glass to the powder and monomer to the liquid gives an even stronger cement.
Licensing Contact: Steve Ferguson

Dental Composite Formulation From Acrylate Monomer And Polythiol Accelerator

Antonucci, J.M. (NIST)
Serial No. 06/565,212
Patent Issued 20 Aug 85
U.S. Patent No. 4,536,523

A dental composite containing two pastes — one of which includes a polymerizable monomer and a stable organic hydroperoxide initiator and the other of which includes a polymerizable monomer and a polythiol accelerator — offers an improved dental repair compound. The hydroperoxide has a 10-hour half-life at temperatures above 100°C, and the polythiol is capable of accelerating the decomposition of the hydroperoxide into polymerization. The resulting dental composite formulations are storage stable, esthetic, and color stable.
Licensing Contact: Steve Ferguson

Hydrophobic Dental Composites Based On A Polyfluorinated Dental Resin

Antonucci, J.M. (NIST)
Serial No. 06/639,673
Patent Issued 7 Oct 86
U.S. Patent No. 4,616,073

A new dental resin made of bulky, highly polyfluorinated methacrylate monomers has reduced water sorption and polymeric shrinkage characteristics, while retaining adequate strength. Dental system composites may be constructed from a base dental resin prepared from a polyfluorinated methacrylate prepolymer containing at least two reactive methacrylate groups and a diluent monomer plus a fluorosilanized glass filler material.
Licensing Contact: Steve Ferguson

Cementitious Dental Compositions Which Do Not Inhibit Polymerization

Brauer, G.M., Argentar, H.,
Stansbury, J.W. (NIST)
Serial No. 06/329,590
Patent Issued 7 Dec 82
U.S. Patent No. 4,362,510

This invention describes the preparation and application of high-strength, low-solubility materials to be used as dental adhesives and restoratives. Unlike most other similar dental compositions, these novel materials are free of eugenol, which inhibits polymerization. The new compositions contain at least one metal-oxide chelating agent (specifically, an ester of vanillic acid or one of its isomers), which facilitate polymerization. The cementitious materials provided through this invention are compatible with other dental materials and can be used as luting agents, sedative and insulating bases, temporary and long-term restoratives, endodontic sealants, pulp capping materials, tissue packs, impression pastes, and adhesives for dental composites and hard tissues.
Licensing Contact: Steve Ferguson

DIAGNOSTICS

A Sensitive Yeast Genetic System For Identifying Agents Causing Double-Stranded DNA Damage

Resnick, M.A., Nillson-Tillgren, T.
(NIEHS)
Filed 11 Jun 92
Serial No. 07/897,577 (CON of 07/328,168)

A diploid strain of *Saccharomyces cerevisiae* that contains at least a single artificial chromosome or a DNA divergent pair (homeologous) of chromosomes offers a significant advancement for the detection of DNA damage. Previously, there has been no simple and sensitive genetic system for the detection of double-stranded DNA (primary or secondary) damage. This new, yeast-based genetic system contains markers that easily detect any double-stranded damage that leads to the loss of a chromosome due to failure to undergo recombinational repair with a homolog.
Licensing Contact: Steve Ferguson

Sensitive Diagnostic Test For Lyme Disease

Rosa, P.A., Schwan, T.G. (NIAID)
Filed 18 May 92
Serial No. 07/885,077 (CON of 07/361,850)

DNA probes specific and sensitive for multiple-copy DNA sequences in *B. burgdorferi*, the causative agent of Lyme disease, may serve as an important diagnostic tool. Previously developed probes for this organism rely on identifying a sequence that occurs only once in the organism; however, since the organism often loses DNA sequences during cultivation, these probe have limited sensitivity. These newer probes have improved sensitivity because they are specific for sequences that occur at different locations on numerous plasmid molecules within the organism.
Licensing Contact: Mark Hankins

Isolation Of Diagnostic Glycoproteins To *Taenia solium*, Immunublot Assay, And Method For The Detection Of Human Cysticercosis

Tsang, V.C.W., Brand, J.A., Boyer, A.E.,
Wilson, M. (CDC)
Filed 2 Apr 92
Serial No. 07/863,486 (CON of 07/292,393)

A novel immunoblot enzyme immunotransferable (EITB) assay signicantly improves the diagnoses of human cysticercosis. Previously available methods for detecting the presence of *Taenia solium*, the causative agent of cysticercosis, lack either sensitivity or specificity or both. This EITB assay uses glycoproteins isolated from *T. solium* to detect the presence of antibodies against the organism in infected individuals. This assay is 98 percent sensitive and 100 percent specific.
Licensing Contact: Mark Hankins

Method For Identifying Humans With A Genetic Defect In Drug Metabolism

Gonzalez, F.J., Hardwick, J.P.,
Gelboin, H.V., Meyer, U.A. (NCI)
Filed 27 Feb 92
Serial No. 07/845,507 (CON of 07/292,815)

A cDNA encoding the debrisoquine 4-hydoxylase gene can be used as a probe for identifying individuals who cannot metabolize debrisoquine-based drugs. Debrisoquine is an adrenergic neuron-blocking agent used to control blood pressure in hypertensive patients. Previously, there has been no method available for screening patients who may not be able to metabolize this drug. This cDNA can be used to genetically identify individuals who lack functional debrisoquine 4-hydroxylases and, thus, are poor metabolizers of debrisoquine-type drugs.
Licensing Contact: Arthur Cohn

Cloning cDNAs For The Interleukin-2 Receptor

Leonard, W., Greene, W. (NICHD)
Filed 18 Feb 92
Serial No. 07/837,563 (CON of 07/373,676, CIP of 06/634,380)

This invention describes a novel process and a clone designed to produced purified IL-2 receptor protein. The method and clone may be used to diagnose adult T cell leukemia and to differentiate adult T cell leukemias from other T cell leukemias and malignancies.
Licensing Contact: Todd Leonard

Species-Specific Identification Of *Borrelia Burgodorferi* With 16S rRNA-Directed Oligonucleotides

Marconi, R.T., Garon, C.F. (NIAID)
Filed 18 Feb 92
Serial No. 07/836,590

A rapid, reliable, and cost-effective method for diagnosing Lyme disease and other similar tick-borne diseases has been developed. The new method uses probes directed against 16S rRNA sequences

derived from *Borrelia Burgodorferi*, the causative agent in Lyme disease, and other *Borrelia* strains. The use of 16S rRNA-directed probes, rather than DNA-directed probes or the more commonly used monoclonal antibody targets, improves test specificity and stability; currently, no reliable test is available to type different pathogenic spirochetes that produce similar clinical symptoms. A diagnostic kit that gives results within 36 hours has also been developed.
Licensing Contact: Mark Hankins

A Sensitive Yeast System For Detection Of Aneuploidy And Identification Of Targets

Resnick, M., Fogel, S., Zimmerman, F. (NIEHS)
Filed 30 Dec 91
Serial No. 07/818,450 (CON of 07/311,613)

Systems for detecting aneuploidy have several disadvantages: lack of sensitivity, difficulty in identifying events for aneuploidy induction, difficulty in identifying events at the genetic level, difficulty in distinguishing chromosome gains from chromosome loss, difficulty in analyzing meiotic aneuploidy, difficulty of genetic manipulation, and relative slowness. By exploiting a yeast strain that is sensitive to a wide spectrum of chemicals, the novel method described in this invention provides an improved means of assessing aneuploidy events and chemically induced chromosomal changes.
Licensing Contact: Steve Ferguson

Detection Method For c-*raf*-1 Genes

Rapp, U.R., Storm, S.M. (NCI)
Filed 16 Sep 91
Serial No. 07/759,738 (CIP of 07/236,947)

By applying PCR to specific regions of the c-*raf*-1 oncogene, this novel detection method can detect whether a tissue carries tumor-specific point mutations. This novel method has diagnostic, prognostic, and therapeutic applications in oncology, particularly for lung cancer patients, and can be used to identify individuals at increased risk for developing cancer; to determine a patient's prognosis; and to evaluate the proper course of treatment for the cancer patient. Previous systems have used PCR to determine mutant *ras* oncogenes.
Licensing Contact: Daniel Passeri

A Method Of Identifying An Individual Homozygous Or Heterozygous For Lactate Dehydrogenase-A Deficiency

Li, S.S., Maekawa, M., Kanno, T., Sudo, K. (NIEHS)
Filed 30 Apr 91
Serial No. 07/692,923

A novel kit for identifying an individual who is homozygous or heterozygous for lactate dehydrogenase-A (LDH-A) deficiency offers an improved method for diagnosing this genetic disease. Previously, diagnoses of indivials with LDH-A deficiency required cumbersome, time-consuming genetic analyses which could not easily distinguish between heterozygous (carriers) or homozygous (symptomatic) indivuduals. This new kit contains primers that allow for rapid PCR amplification of DNA segments of exon 6, the LDH-A gene, to detect mutations in this exon; homozygous individuals are easily distinguishable from heterozygous individuals.
Licensing Contact: Steve Ferguson

Detection Of The Common Cystic Fibrosis Mutation

Dean, M. (NCI)
Filed 13 Mar 91
Serial No. 07/668,309

This novel method exploits the phenomenon known as heteroduplex formation and provides a rapid, reliable, and accurate means of detecting small deletions in human DNA. Although originally designed for the detection of the major cystic fibrosis mutation, this assay can also be used to detect small insertions or deletions in any nucleic acid. Its many applications include evaluating other human genetic diseases, forensic or paternity testing, detecting sample or cell line contamination, and identifying strains of animals and viruses (e.g., HIV mutants). The assay may also be useful in cancer research to detect mutations in tumors and to screen for possible mutagens and genotoxins.
Licensing Contact: Steve Ferguson

Thionated Analogues Of Thyrotropin-Releasing Hormone

Spatola, A.F., Lankiewicz, L., Labroo, V.M., Vonhof, S. (NIDDK)
Filed 6 Jul 90
Serial No. 07/549,172

Thionated analogues of thyrotropin-releasing hormone (TRH) that selectively bind with a high affinity to TRH receptor sites were synthesized. These compounds are superior to prior analogues, which are active but do not exhibit the high selectively and affinity of the present invention. The new compounds may be used to treat a variety of conditions, including depression, circulatory shock, amyotrophic lateral sclerosis, spinal cord injuries, and hypertension. The TRH analogues may also be effective in diagnosing hyper- and hypothyroidism. A basic research application of these compounds involves locating TRH receptor sites in animals.
Licensing Contact: Arthur Cohn

Platelet Fibrinogen-Specific Monoclonal Antibody

Gralnick, H.R. (CC)
Filed 2 Jul 90
Serial No. 07/547,832

A unique monoclonal antibody F26 that binds only to human platelet fibrinogen or other surface-associated fibrinogen has been found. With its specificity for surface-bound fibrinogen only, it could be used as a novel antibody to identify *in vivo* areas of fibrin clot formation, especially prevalent in venous thrombosis. This diagnostic would function through the detection of activated platelets (which have fibrinogen on their surface) or fibrin clots which are primarily composed of fibrinogen and fibrin.
Licensing Contact: Steve Ferguson

Nucleotide, Deduced Amino Acid Sequence, Isolation, And Purification Of Heat-Shock Chlamydial Proteins

Morrison, R., Caldwell, H. (NIAID)
Serial No. 07/531,317
Patent Issued 10 Dec 91
U.S. Patent No. 5,071,962

Stress-response protein and polynucleotides encoding such factors as HypB (aka: chlamydial GRO EL, chlamydial 57 kD antigen, chlamydial HSP60) have been isolated from *Chlamydia psittaci* and *Chlamydia trachomatis*. This protein is expressed throughout the chlamydial growth cycle and is thus contained in both the infectious and replicative forms. The abundance, solubility, and immunogenicity of the 57 kD protein make it a good choice for an antigen to be used in the development of methodologies for the diagnosis of a chlamydial infection.
Licensing Contact: Mark Hankins

Diagnosis Of Thalassemia Using cDNA Amplification Of Globin mRNA With PCR

Schechter, A., Huang, S., Rodgers, G. (NIDDK)
Filed 11 April 90
Serial No. 07/507,645

A new technique for the rapid and reliable diagnosis of thalassemia has been developed. The new method involves PCR amplification of cDNA prepared from human reticulocytes RNA and its quantitation by electrophoresis. Traditional hematological diagnostic methods have been shown to be not as reliable for screening for the various thalassemia disorders, believed to be among the most common genetic diseases in the world.
Licensing Contact: Arthur Cohn

Novel Restriction Endonuclease

Leonard, W., Wolf, J., Halden, N. (NICHD)
Serial No. 07/504,306 (DIV of 07/260,829, CIP of 07/169,487)
Patent Issued 17 Dec 91
U.S. Patent No. 5,073,486

This new endonuclease, designated *Mfe*I, recognizes the nucleotide sequence CAATG and cleaves between the C and the first A of this sequence. No other restriction enzyme is known to perform this specific function. A diagnostic kit based on this novel endonuclease uses an artificially synthesized double-stranded oligonucleotide of the CAATG sequence to test for the presence of mycoplasma in a sample.
Licensing Contact: Steve Ferguson

A Rapid, Sensitive, And Specific Test For Detecting Pathogenic Bacterium, *Vibrio vulnificus*

Tamplin, M.L. (FDA)
Filed 29 Mar 90
Serial No. 07/502,035

A new monoclonal antibody (mAb) for detecting *Vibrio vulnificus* offers a significant advancement for the detection of this pathogen in food, water, and clinical specimens. Previously, methods for detecting *V. vulnificus* have been either time-consuming, cumbersome, expensive, or have been plagued by cross-reactivity with other related species. This new mAb, which is particularly sensitive to a single *V. vulnificus* antigen, is rapid, sensitive, and extremely efficient.
Licensing Contact: Mark Hankins

cDNA And Protein Sequences Of Human Bone Matrix Proteins

Termine, J., Young, M., Fisher, L., Robey, P. (NIDR)
Filed 3 Nov 89
Serial No. 07/432,044

Altered concentrations of certain macromolecules in the blood indicate bone and connective tissue diseases, but only a limited number of those macromolecules have been identified. The cDNA sequences described in this invention can be used to identify normal bone metabolism and thus detect skeletal or connective tissue diseases. The proteins are derived entirely from normal human bone cell cDNA libraries and will have value in diagnosis of such diseases as osteoporosis, osteo/rheumatoid arthritis, Paget's disease, atherosclerosis, and periodontal disease.
Licensing Contact: Steve Ferguson

Diagnostic Kit And Diagnostic Method Utilizing Carbohydrate Receptors

Ginsburg, V., Krivan, H.C., Roberts, D.D. (NIDDK)
Filed 5 Oct 89
Serial No. 07/417,691 (CIP of 07/277,634, CIP of 07/226,445)

A diagnostic device consisting of a carbohydrate bound to an insoluble substrate and a reagent labeled with an enzyme, radioactive material, or fluorescent material is valuable for testing for microorganisms such as *Streptococcus, Staphylococcus, Mycoplasma, Pseudomonas, Escherichia*, and *Cryptococcus*. The substrate may be glass, silica gel, or plastic in the form of flat plates, glass beads, latex beads, thin layers, microtiter plates, Petri dishes, etc. Previous test methods such as the Tandem Icon Strep A kit have a shorter shelf-life, are more expensive, and are less versatile.
Licensing Contact: Mark Hankins

Method Of Releasing And Testing Oligonucleotides As Means Of Identifying Infectious Organisms

McCutchan, T.F., Waters, A.F. (NIAID)
Filed 20 Jul 89
Serial No. 07/382,126

Oligonucleotide probes make possible the definitive diagnosis of diseases by assaying the DNA and RNA of cell lysates. Several strains of *Plasmodium* (malaria) can presently be detected and differentiated. Present histochemical identification methods require training and supplies that

are often scarce in regions of the world where diseases such as malaria are most prevalent. This oligonucleotide assay method employs a simple, one-step method for lysing the cells wherein the cellular DNA and RNA are adhered to a membrane. The membrane is then easily transported to a distant laboratory for exposure to the oligonucleotide probes under standard hybridizing conditions.
Licensing Contact: Mark Hankins

Epithelial Cell Line Expressing A Cystic Fibrosis Phenotype

Jetten, A.M., Yankaskas, J.R. (NIEHS)
Filed 21 Jun 89
Serial No. 07/368,725

A distinctive airway epithelial cell line (CF/T43) was developed to test for cystic fibrosis (CF) genes. The limited availability of these cells prior to establishment of this line restricted research on CF. Cultured CF airway epithelial cells were infected with a SV40T retrovirus, and clones were selected for Genetian resistance and ion transport properties. The new cell line has specific, differentiated properties and can be used to evaluate the molecular mechanisms responsible for the abnormal regulatory CF phenotype and for developing and testing innovative therapies.
Licensing Contact: Mark Hankins

Neutralizing Monoclonal Antibody To Human Platelet-Derived Growth Factor Hetero- And Homodimers

LaRochelle, W.J., Robbins, K.C., Aaronson, S.A. (NCI)
Filed 14 June 89
Serial No. 07/365,715

Neutralizing monoclonal antibodies to human platelet-derived growth factor (PDGF) are useful for detecting and treating a number of pathological disorders including cancers. PDGF, a major serum mitogen for cells of mesenchymal origin, is pathologically implicated in neoplasia, arthritis, arteriosclerosis, and bone marrow fibrosis. These anti-PDGF antibodies can be used to detect this mitogen or to neutralize it.
Licensing Contact: Steve Ferguson

ELISA Methods For The Determination Of Human Platelet- Derived Growth Factor (PDGF) Dimer Forms Present In Human Tissues And Fluids

Reed-Gitomer, B.Y. (NIAAA)
Filed 24 Apr 89
Serial No. 07/341,949

A new ELISA method offers a more sensitive and less expensive assay for detecting human platelet-derived growth factor (PDGF) in bodily fluids, tissue cultures, or fluid contacting human cells in culture. The three currently available methods for detecting this compound rely on the nonspecific ability of PDGF to stimulate radioactive thymidine incorporation into fibroblasts cells, radioreceptor assays using ^{125}I-labeled PDGF, or enzyme immunoassays. The ELISA assay is more sensitive than any of these methods because it can differentiate between the two dimeric forms of PDGF. It also does not create an expensive disposal problem, as it does not require the use of radioactive labels.
Licensing Contact: Steve Ferguson

Hybridomas And Resulting Monoclonal Antibodies Directed Against Antigens Of *Bordetella pertussis*

Brennan, M.J., Manclark, C.R., Li, Z.M. (FDA)
Filed 17 Feb 89
Serial No. 07/312,097

Monoclonal antibodies (mAbs) are available to quickly and accurately detect *Bordetella pertussis* in cultures from patients with clinical symptoms of whooping cough. Presently, the only widely available diagnostic probe to detect *B. pertussis* is a crude polyclonal antiserum that typically gives high cross-reactivity with other bacteria in routine assays. These mAbs, which are specific for the outer membrane antigens of *B. pertussis*, show no cross-reactivity with other bacteria except two closely related species.
Licensing Contact: Mark Hankins

Deletion Mutants And Monoclonal Antibodies Against RAS Proteins

Lacal, J.C., Aaronson, S.A. (NCI)
Filed 23 Jan 89
Serial No. 07/300,214

A novel kit that can detect RAS p21 proteins in body tissue or body fluid can be used as an indicator of the presence of malignancy. Previously, only a limited number of monoclonal antibodies (mAbs) had been generated against p21, and their recognition sites on the p21 molecule had only been mapped in a few cases. This kit contains new anti-p21 mAbs that can accurately differentiate the structural and functional properties of the oncogenic RAS p21 protein.
Licensing Contact: Daniel Passeri

Novel Lymphokine/Cytokine Genes

Siebenlist, U.K., Leonard, W.J., Zipfel, P.F., Irving, S.G., Kelly, K., Napolitano, M. (NIAID)
Filed 16 Dec 88
Serial No. 07/285,489

DNA segments that encode novel lymphokine-like or cytokine-like proteins that are inducible in T cells are valuable for detecting activation of the immune system *in vivo*. Immune system activation is often an indicator of an impending change in the clinical status of a previously asymptomatic individual. Previously, there have been no definitive bioassays for detecting immune system activation. These novel proteins share some critical amino acid sequence similarity with a newly emerging family of secreted factors associated with the inflammatory response and have mitogenic activities.
Licensing Contact: Arthur Cohn

Screening For Tay-Sachs Disease With Cloned DNA For β-Hexosaminidase

Myerowitz, R. (NIDDK)
Filed 31 Oct 88
Serial No. 07/264,976

A cDNA clone containing the entire coding sequence for the α chain of β-hexosaminidase offers an improved method for prenatal or adult screening for Tay-Sachs disease. Previously, probes for this disease did not contain the entire DNA sequence for the α chain of β-hexosaminidase and, therefore, could not detect a number of mutations in this gene. This full-length cDNA clone can detect either the splice junction mutation or the insertion mutation that is responsible for Tay-Sachs disease in the Ashkenazi Jewish population.
Licensing Contact: Arthur Cohn

Detection Of Non-A, Non-B Hepatitis [Hepatitis C]

Seto, B., Coleman, W.G. (NIDDK)
Filed 24 Aug 88
Serial No. 07/234,641

Clones are available for testing blood products for the presence of non-A, non-B hepatitis (hepatitis C). Previously, there has been no available method for screening blood products for hepatitis C, which accounts for 90 percent of post-transfusion hepatitis in the United States. These clones have sequences specific for hepatitis C that can be used as hybridization probes for screening blood samples or liver biopsies.
Licensing Contact: Mark Hankins

Process For Introducing Fluorine Into Biologically Active Materials

Jacobson, K.A., Kirk, K.L., Furland, D.C., Shai, Y. (NIDDK)
Serial No. 07/168,494
Patent Issued 24 March 92
U.S. Patent No. 5,098,996

A chemical method for introducing radiolabeled fluorine into biological materials offers to significantly enhance diagnostic nuclear medicine. Presently, available compounds for diagnostic imaging of the brain have limited utility because they are unstable, do not bind well to their intended targets, or are unable to effectively cross the blood-brain barrier. ^{18}Fluorine bound to small peptides or functional drugs can effectively penetrate the blood barrier; has a half-life of 110 minutes, making it ideal for imaging studies; and has been shown to add stability to a number of biological compounds and to increase their affinity for their intended targets.
Licensing Contact: Arthur Cohn

Kit For Assaying Activation of Terminal Complement Cascade

Sanders, M.E., Joiner, K.A., Frank, M.M., Hammer, C.H. (NIAID)
Serial No. 07/079,925
Patent Issued 11 Apr 89
U.S. Patent No. 4,820,635

An new enzyme-linked immunosorbent assay (ELISA) offers an improved method for the quantitative determination of terminal complement cascade activation using human body fluid. The terminal complement cascade is activated in a variety of human diseases including glomerulonephritis, cutaneous lesion of systemic lupus erythematosus, bullous pemphigoid, dermatitis herpetiformis, and demyelinating diseases. In particular, an ELISA is provided for C9 neoantigen that allows quantitation of about 100 ng or less of SC5b-9 per milliliter of body fluid.
Licensing Contact: John Fahner-Vihtelic

Diagnostic Test For Creutzfeldt-Jakob Disease

Harrington, M.G., Asher, D.M., Merril, C.R., Gajdusek, D.C. (NIMH)
Serial No. 07/067,420
Patent Issued 9 Jan 90
U.S. Patent No. 4,892,814

A novel assay for distinguishing Creutzfeldt-Jakob disease from other causes of human dementia offers to significantly improve the early detection of this disorder. Previously available methods of detecting this disease have had limited utility because they require a biopsy of live brain tissue; because this is such an invasive procedure, it is typically done late in the course of the disease. This new assay can detect the presence of two distinctive proteins in the cerebral spinal fluid of patients infected with the Creutzfeldt-Jakob prion and, therefore, can be done as soon as the disease is suspected.
Licensing Contact: Arthur Cohn

Method For Detecting Antibodies Against Neuropeptides And Drugs In Human Body Fluid

Roy, B. (NIMH)
Serial No. 06/932,084
Patent Issued 19 Sep 89
U.S. Patent No. 4,868,107

A novel immunochemical assay for detecting the presence of antibodies against certain neuropeptides or drugs offers a significant advancement for the diagnosis of psychobiological disorders related to the alteration in normal levels of neuropeptides and their receptors. Previously, there has been no method available for detecting the presence of antibodies against neuropeptides or drugs in human blood or body fluids. This immunochemical assay kit detects antibodies directed against neuropeptides such as B-endorphin, methionine-enkephalin, melanocyte-stimulating hormone, and substance P. Neuropeptide levels, as reflected by blood levels of corresponding antibodies, provide a method of correlating any discernable psychobiological disorder.
Licensing Contact: Arthur Cohn

A Soluble Interleukin-2 Receptor As A Disease Indicator And A Method Of Assaying The Same

Nelson, D., Biddison, W., Rubin, L., Greene, W., Leonard, W., Yarchoan, R. (NCI)
Serial No. 06/724,897
Patent Issued 17 Nov 87
U.S. Patent No. 4,707,443

A new kit for detecting soluble IL-2 receptors offers an improved method of detecting infections or disease. The release of soluble IL-2 receptors is associated with immune activation or malignant conditions. Previously available methods for quantitatively measuring IL-2 receptors require the use of radiolabeled monoclonal antibodies; these methods are tedious and expensive to use. This new method uses an ELISA which is quantitative, rapid, sensitive, and inexpensive to use.
Licensing Contact: Todd Leonard

DRUG/ALCOHOL ABUSE

Epibatidine, A Novel Chloropyridyl Azabicycloheptane With Potent Analgesic Activity

Daly, J.W., Spande, T.F., Garraffo, H.M. (NIDDK)
Filed 3 Mar 92
Serial No. 07/845,042

This invention describes the methods used to synthesize epibatidine and structurally related compounds, a set of novel agents that exhibit strong analgesic activity in animals. These drugs appear to alleviate pain through a mechanism that is distinctly different from that of morphine, a prototypic opioid. Because of their apparent non-opioid activity, these drugs may provide a potent alternative to opioids, which produce serious adverse side effects, tolerance, addiction, and withdrawal. These novel agents are proposed as potential non-opioid analgesics for the treatment of acute and chronic pain.
Licensing Contact: Arthur Cohn

Attenuation Of Opioid Withdrawal Syndrome By Inhibitors Of Nitric Oxide Synthase

London, E.D., Kimes, A. S. (NIDA)
Filed 13 Sep 91
Serial No. 07/759,999

A group of novel compounds that inhibit the enzyme nitric oxide synthase offer an improved treatment for symptoms associated with withdrawal from opoiod dependence. Recent studies have shown that activation of NMDA receptors of the brain are involved in the symptoms associated with withdrawal from opoiods and that acivation of this class of receptors is mediated through nitric oxide. Presently, compounds used to inhibit nitric oxide sythase (NOS), the enzyme that produces nitric oxide, have limited utility because they cause low blood pressure or locomoter dysfunction. This new class of compound effectively inhibits NOS in animals without producing low blood pressure or affecting locomotor acitivity.
Licensing Contact: Arthur Cohn

Treatment Of Alcohol Withdrawal Symptoms

Rogawski, M.A., Grant, K.A., Tabakoff, B. (NINDS)
Filed 9 May 91
Serial No. 07/697,395

Novel compounds offer an enhanced method for the treatment of alcohol withdrawal symptoms. Presently available drugs for the treatment of alcohol withdrawal cause unwanted side effects such as drowsiness or motor impairment. These new compounds, which are low- affinity antagonists of excitatory amino acid receptors, are effective in treating seizures and tremors in laboratory animals with minimal side effects.
Licensing Contact: Arthur Cohn

Cocaine Receptor-Binding Ligands

Kuhar, M.J., Carroll, F.I., Boja, J.W. Lewin, A.H., Abraham, P. (NIDA)
Filed 09 Aug 90
Serial No. 07/564,755

A novel compound (RT155) that acts as a binding ligand for cocaine and other neurotransmitter receptors in the brain was produced. This ligand has a higher affinity for dopamine and serotonin transporters than other compounds, which makes it more useful as a radiodetectable imaging agent for SPECT and CAT scans in determining neurotoxin damage in the brain. RT155 may be used for diagnosis of Parkinson's disease and has potential as a therapeutic substitute for cocaine in the treatment of drug abuse.
Licensing Contact: Mark Hankins

Cannabinoid Receptor

Matsuda, L., Brownstein, M.J., Bonner, T.I. (NIMH)
Filed 8 Aug 90
Serial No. 07/564,075

The receptor for the active compound in marijuana (δ9-tetrahydrocannabinol) has been cloned and expressed in a human cell line (L). This invention provides a means of testing for cannabinoid agonists and antagonists as well as a method for testing alternative drugs for cannabinoid-treatable conditions, such as glaucoma, the side effects of chemotherapy, and bronchial asthma. This invention may be a way to separate medicinal effects of cannabinoid-like compounds from their psychoactive effects.
Licensing Contact: Arthur Cohn

Attenuation of Ethyl Alcohol Intoxication With α2 Adrenoceptor Antagonists

Linnoila, M., Lister, R., Durcan, M. (NIAAA)
Serial No. 07/521,835 (DIV of 07/294,119)
Patent Issued 28 Apr 92
U.S. Patent No. 5,109,007

A new method of treating ethyl alcohol intoxication through the use of antagonists for the α2 adrenoceptor has been discovered. Drugs based on these antagonists may have

for the α2 adrenoceptor has been discovered. Drugs based on these antagonists may have none of the potentially harmful sedative effects of the tranquilizers currently used.
α2 adrenoceptor agonists believed useful for this purpose include: atipamexole, idazoxan, imiloxan, yohimbine, Wyeth WY26703, Chinoin CH38083, Glaxo GR50360A, and Daiichi Seiyaku DG5128.
Licensing Contact: Arthur Cohn

Use Of Calcium Channel Blocker To Prevent Cocaine-Induced Craving And Reinforcement

Jaffe, J.H., Kumor, K. (NIDA)
Serial No. 07/372,607
Patent Issued 23 Jun 92
U.S. Patent No. 5,124,340

Calcium channel blockers offer an important new tool in the treatment of cocaine addiction. Standard psychotherapeutic methods for treating cocaine addiction have a significant relapse rate because of the lack of a suitable follow-up therapy. The calcium channel blocker nifedipine negates the subjective effects of cocaine in drug abusers. Administered 4 times a day or once a day in a long-acting preparation, nifedipine may be used as an adjunct to psychotherapy to significantly decrease the patient's craving for cocaine.
Licensing Contact: Arthur Cohn

Treatment for Cocaine Addiction

Weiss, S.R., Post, R.M., Aigner, T.G. (NIMH)
Serial No. 07/317,405
Patent Issued 17 Jul 90
U.S. Patent No. 4,942,182

Carbamazepine, a known anticonvulsant, offers an important new tool for the treatment of cocaine addiction, for which there are presently no adequately effective therapies. Carbamazepine blocks the reinforcing properties of cocaine and relieves certain responses from its use such as panic attacks. The drug must be given when the patient is drug free, because carbamazepine worsens seizures and increases lethal effects when given with cocaine.
Licensing Contact: Arthur Cohn

Attenuation Of Ethyl Alcohol Intoxication With α2 Adrenoceptor Antagonists

Linnoila, M., Lister, R.G., Durcan, M.J. (NIAAA)
Serial No. 07/294,119
Patent Issued 6 Nov 90
U.S. Patent No. 4,968,692

A novel class of α2 adrenoceptor antagonists offers an improved method of inhibiting the intoxicating effects of ethyl alcohol in human patients. Currently, when intoxicated individuals are brought into a hospital emergency room, they are sometimes given valium, a sedating tranquilizer that adds to the depressant effects of alcohol. These adrenoceptor antagonists have minimal side effects and can be administered by a variety of means.
Licensing Contact: Arthur Cohn

Metaphit And Related Compounds As Acylating Agents For The [^{3}H] Phencyclidine Receptors

Rice, K.C., Raffery, M.F., Jacobson, A.E., Contreras, P., O'Donohue, T.L., Lessor, R.A., Mattson, M.V. (NIAID)
Serial No. 06/824,848
Patent Issued 9 Aug 88
U.S. PAtent No. 4,762,846

Metaphit offers an imporant new tool for studying the action and effects of phencyclidine (PCP), a major drug of abuse that alters perception. Previously, there has been no method of studying PCP receptors in isolation from other drug receptors. Metaphit, which is an analog of PCP, specifically acylates PCP receptors but not opioid, muscarinic, or benzodiazepine receptors.
Licensing Contact: Arthur Cohn

Metaphit, A Specific Acylating Agent For The [^{3}H] Phenylcyclidine Receptors

Rice, K.C., Jacobson, A.E., Rafferty, M.F., Contreras, P. (NIAID)
Serial No. 06/683,428
Patent Issued 1 July 86
U.S. Patent No. 4,598,153

A novel derivative of phenylcyclidine (PCP) is valuable for treating PCP overdoses as well as for studying the effects of this drug on the central nervous system. PCP is currently a major drug of abuse in the United States. Previously, there has not been a selective PCP receptor antagonist available to determine whether binding to PCP receptors is necessary for pharmacologic activity. This novel PCP derivative is a specific, site-directed acylating agent of the [^{3}H] phenylcyclidine binding site, which effectively inhibits PCP binding in rat brain homogenates.
Licensing Contact: Arthur Cohn

DRUG DELIVERY

Molecular Encapsulation And Delivery Of Alkanes To Living Mammalian Cells For Risk Assessment And Pharmaceutical Applications

Janz, S., Shacter, E. (NCI)
Filed 28 Jun 91
Serial No. 07/723,240

A new method of encapsulating and delivering alkanes to living cells offers an important tool for studying the toxic, genotoxic, and mitogenic effects of these compounds. The alkane components of mineral paraffin oils are implicated in a number of inflammatory or pathologic conditions, including cancers such as plasmacytomas. To date, it has been difficult to study the effects of mineral oil alkanes, such as pristane, on cells because they are difficult to solubilize and, thus, to deliver to cells. This new technique uses cyclodextrins to solubilize and deliver

alkanes to cells, tissue, and organs *in vitro* and *in vivo*.
Licensing Contact: Mark Hankins

Preparation Of Specifically Substituted Cyclodextrins

Pitha, J., Roa, C.T., Khapatnam, V., Lindberg, B. (NIA)
Filed 28 Jun 90
Serial No. 07/544,546 (CIP of 07/332,606)

A simple method of preparing specifically substituted cyclodextrins offers to improve the treatment of diseases such as cancer. A number of substituted cyclodextrins have been shown effective in inhibiting undesired or pathological cell or tissue growth; however, it has been difficult to obtain large enough quantities of some cyclodextrin derivatives for testing because they require extremely expensive reagents and complex fractionation procedures to synthesize and purify. This new method yields a mixture of cyclodextrin derivatives with unique substitution patterns using standard reagents and reaction conditions.
Licensing Contact: Mark Hankins

Lipophilic, Aminohydrolase-Activated Prodrugs

Marquez, V., Driscoll, J., Ford, H., Kelley, J., Barchi, J., Mitsuya, H., Tseng, C., Johns, D., Tomaszewski, J. (NCI)
Filed 10 Apr 91
Serial No. 07/683,432 (CIP of 07/313,056, CIP of 07/288,652 and CIP of 07/039,402)

Treatment of viral diseases and cancers that have taken refuge in the central nervous system (CNS) and certain organs (e.g., eyes, testes) is hindered by the difficulty associated with active drug transport. The purine and pyrimidine nucleoside prodrugs described in this invention are designed to enhance *in vivo* transport properties, especially with regard to the CNS. These prodrugs can be transported after administration to nondisease sites, where they are then converted by endogenous aminohydrolases to active anti-HIV, anti-herpes, or anticancer drugs such as activated antiretroviral inosine and guanosine compounds.
Licensing Contact: Marjorie Hunter

Recombinant Chimeric Proteins Deliverable Across Cellular Membranes In Cytosol Of Target Cells

Pastan, I.H., Trevor, P., Debinski, W., Siegall, C. (NCI)
Filed 4 Mar 91
Serial No. 07/663,455

Novel chimeric proteins that have more than one enzymatic activity offer an effective means of transporting cytotoxic or therapeutic agents into the cytosol of target cells. Presently available methods for selectively delivering compounds to cells are often ineffective in delivering the desired compound across the cell membrane. These chimeric proteins, which are composed of toxic or therapeutic proteins fused to the cell recognition part of *Pseudomonas* exotoxin A (PE), allow for the efficient translocation of active foreign protein sequences to the cytosol of target cells.
Licensing Contact: Daniel Passeri

Preparation Of Lipophile:Hydroxypropylcyclodextrin Complexes By A Method Using Co-Solubilizers

Pitha, J., Torres-Labandeira, J.J., Irie, T. (NIA)
Filed 20 Sep 90
Serial No. 07/585,792

In this invention, hydroxypropylcyclodextrin — rather than underivatized cyclodextrins or crystalline derivatives of cyclodextrins, which are present in similar formulations — is used to improve the aqueous solubility of lipophilic compounds. As a result, physically stable, solubilized lipophilic-complexed compounds can be produced. The methods described in this invention can be readily converted to large-scale manufacturing processes, e.g., in the production of pharmaceuticals.
Licensing Contact: Mark Hankins

Avidin And Streptavidin Modified Water-Soluble Polymers Such As Polyacrylamide, And The Use Thereof In The Construction Of Soluble Multivalent Macromolecular Conjugates

Mage, M., Nardelli, B., McHugh, L. (NCI)
Serial No. 07/351,042
Patent Issued 25 Jun 91
U.S. Patent No. 5,026,785

This general method for the binding of biotinylated proteins to soluble polyacrylamide-streptavidin (PASA) or polyacrylamide-avidin (PAA) simplifies the preparation of water-soluble conjugates such as complex vaccines, diagnostic imaging reagents, and immunotoxins. The method described in this invention is improved over other similar processes in that it reduces or prevents crosslinking of the avidin or streptavidin protein by a carbodiimide and eliminates the need for additional preparative steps once the modified PASA or PAA has been produced. In addition, because avidin- or streptavidin-modified polymers other than PASA and PAA may be used, this method allows for the production of a variety of conjugates.
Licensing Contact: Steve Ferguson

Backbone Polysubstituted Chelates For Forming A Metal Chelate-Protein Conjugate

Gansow, O.A., Brechbiel, M.W. (NCI)
Serial No. 07/285,025
Patent Issued 24 Mar 92
U.S. Patent No. 5,099,069

A novel method for forming metal-chelate protein conjugates offers to improve the delivery of biologically important metal ions to target tissues. There are presently no acceptable methods for delivering metal ions selectively to their intended target. This novel method of conjugating metal-chelate complexes to cell receptor or antigen-specific proteins or antibodies can be used, for example, to deliver imaging or tumor-killing metal ions directly to their intended site.
Licensing Contact: Marjorie Hunter

Protein Crosslinking Reagents Cleavable Within Acidified Intracellular Vesicles

Neville, D.M., Srinivasachar, K. (NIMH)
Serial No. 07/204,163
Patent Issued 19 Nov 91
U.S. Patent No. 5,066,490

Novel protein crosslinking reagents that can be cleaved under acidic conditions offer an improved method for delivering therapeutic agents to cells. Presently available therapeutic delivery methods are not specific, do not adequately deliver the drug across the cell membrane barrier, or modify the therapeutic agent during the conjugation process. These novel protein crosslinking agents allow biologically active compounds such as proteins, peptides, enzymes, drugs, or cell toxins to be linked to monoclonal antibodies without altering their biological activity. The cell-specific, crosslinked compound is not cleaved until the therapeutic agent is deposited within the cell.
Licensing Contact: Daniel Passeri

Process For Synthesizing Macrocyclic Chelates

Gansow, O.A., Kumar, K. (NCI)
Serial No. 07/198,537
Patent Issued 8 May 90
U.S. Patent No. 4,923,985

These macrocycles provide a novel means of attaching metals that have therapeutic and diagnostic uses to macromolecules such as proteins. The newly synthesized compounds are very stable *in vivo* and are effective in MRI, which is used as a diagnostic tool for studying soft tissues in the body. They can also be used in formulating site-specific delivery systems for metals. A method for production of these macrocyclic chelates has not been previously described.
Licensing Contact: Marjorie Hunter

Administration Of Steroid Hormones

Pitha, J., Harman, M., Uekama, K. (NIA)
Serial No. 07/094,597
Patent Issued 31 Oct 89
U.S. Patent No. 4,877,774

Steroid hormones complexed with crystalline γ-cyclodextrin offer an improved method of treating disorders such as osteoporosis and premenstrual syndrome. The effectiveness of conventional means of administering steroids is limited because the steroids are absorbed only slowly from the gastrointestinal tract and are rapidly cleared from circulating blood by the liver. These steroid/crystalline γ-cyclodextrin complexes can be administered by direct contact with mucosa or the conjunctiva, which allows for better delivery of the drugs to their intended tissues or organs.
Licensing Contact: Mark Hankins

Process For Making Systems For The Controlled Release Of Macromolecules: Mixing Polymer and Drug Below Glass Transition Temperature Of Polymer And Compressing Above Glass Transition Temperature

Cohen, J.M., Langer, R., Siegel, R. (EM)
Serial No. 06/571,007
Patent Issued 27 May 86
U.S. Patent No. 4,591,496

A new method for making polymeric systems for the sustained release of macromolecules offers an improved method of drug delivery. This method consists of mixing a drug with a polymer such as ethylene-vinyl acetate copolymer powders at a temperature below the glass transition temperature of the polymer. This mixture is then compressed at a temperature above the glass transition point. This preparation, when administered to a patient, allows for the sustained release of the complete bioactive molecule.
Licensing Contact: Mark Hankins

Method Of Forming A Metal Chelate Protein Conjugate

Gansow, O. (NCI)
Serial No. 06/727,919
Patent Issued 25 Apr 89
U.S. Patent No. 4,824,986

A novel method of forming metal chelate-protein conjugates offers an improved method for delivering biologically active metal compounds to their target tissues or organs. Presently available methods of delivering metal chelates have limitations due to unwanted release of the metals *in vivo*. This new metal chelate conjugation method sustantially eliminates adventitiously bound metal on the protein that may be released *in vivo*. Monoclonal antibodies, polyclonal antibodies, antigens, and blood proteins can all be formulated as metal chelate-protein conjugates using this method.
Licensing Contact: Daniel Passeri

ENDOCRINOLOGY

Monoclonal Antibodies Against Cytosolic Thyroid Hormone Binding Protein

Cheng, S. (NCI)
Filed 21 Feb 91
Serial No. 07/657,943 (CON of 07/255,760)

Monoclonal antibodies (mAbs) that specifically bind cytoplasmic thyroid hormone binding protein, p58, offer an important new tool for elucidating the localization and biochemical and functional roles of this protein. Previously, it has been difficult to study the role of this protein because no p58-specific marker existed. These new mAbs are specific for p58 isolated from a number of different animal species, including humans.
Licensing Contact: Arthur Cohn

Steroid-Secreting Human Adrenocortical Carcinoma Cell Lines

Gazdar, A.F., La Rocca, R.V., Stein, C.A., Myers, C.E. (NCI)
Filed 24 Jan 91
Serial No. 07/645,358 (CON of 07/558,552)

A continuous cell line established from an invasive primary adrenocortical carcinoma offers an important new tool for studying the biology of the various steroid pathways. Previously, there has been no available human model for studying the hormonal control, inter-relationships, and secretion of the various steroid pathways. This new cell line, which is the first continuous human adrenocortical carcinoma cell line ever established, expresses multiple pathways of steroidogenesis including the formation of corticosteroids, mineralocorticoids, and androgens.
Licensing Contact: Arthur Cohn

Cloned Endothelial Cells Of Endocrine Origin

Aurbach, G.D., Sakaguchi, K., Brandi, M. (NIDDK)
Filed 25 May 89
Serial No. 07/356,999

Cloned endothelial cells derived from bovine parathyroid tissue offer a valuable tool for the study of endocrine vasculature. Previously, cultured endocrine cells could only be propagated for a few generations, making studies of the blood barrier in these organs difficult. This limitation has been overcome using a medium enriched in serum substitutes which stimulates selective proliferation of endothelial cells from long-term cultures of bovine parathyroid cells. These cells have been cloned and maintained by serial passage for more than 22 months without signs of senescence.
Licensing Contact: Steve Ferguson

Assay For Thyrotropin And Thyroid Stimulatory or Inhibitory Factors With Thyroid Cell Line FRTL-5

Kohn, L.D., Valente, W.A., Grollman-Wolff, E.F., Aloj, S.M., Vitti, P. (NIDDK)
Serial No. 06/499,787
Patent Issued 2 Sep 86
U.S. Patent No. 4,609,622

A Fischer rat thyroid cell strain, FRTL-5, maintains functional characteristics of iodide uptake and thyroglobin synthesis over prolonged periods of culture. The FRTL-5 cells can be used to measure thyroid stimulatory or inhibitory factors such as thymidine incorporation, cAMP elevation, and iodide uptake. They permit the evaluation of patient sera, particularly for patients with Graves' disease and other autoimmune thyroid diseases, providing indications of treatment.
Licensing Contact: Arthur Cohn

EYE

μ-Crystallin

Wistow, G., Kim, R. (NEI)
Filed 28 Feb 92
Serial No. 07/844,304

A protein present in the lens of the eyes and the DNA sequence that encodes for this protein have been discovered. This protein, μ-crytallin, is a structural protein involved in visual perception; it is also found in the retina and brain and may be involved in neurotransmitter function. Methods for the production of μ-crystallin and antibodies against this protein are described. This invention may be useful as a diagnostic tool, e.g., as a neural marker (similar to γ-enolase) to type cells and tumors for neural origin; further, if μ-crystallin is involved in nerve function, the compound itself as well as agonists and antagonists of this compound may have important therapeutic value.
Licensing Contact: Marjorie Hunter

Blockage Of Cell Adhesion Molecules

Whitcup, S., Chan, C., Nussenblat, R.B. (NEI)
Filed 4 Oct 91
Serial No. 07/770,026

A method of blocking cell adhesion molecules is valuable for the treatment of inflammatory and autoimmune disorders of the eye. Cell adhesion molecules are surface proteins that mediate cell binding, and the expression of these molecules can promote the migration of leukocytes to areas of inflammation. Several cell adhesion molecules are expressed in large amounts in inflammatory eye diseases. Previously, there has been no method available for blocking these cell adhesion molecules in eye tissue in order to show whether or not inflammatory eye disease can be inhibited. This new method, which uses monoclonal antibodies or synthetic molecules to block the binding site of cell adhesion molecules in ocular tissue, has been shown to block ocular inflammation in animal studies.
Licensing Contact: Marjorie Hunter

Isolation Of Macrophage Migration Inhibition Factor From Ocular Lens And DNA Which Encodes The Factor

Wistow, G. (NEI)
Serial No. 07/691,191
Filed 26 Apr 91

Macrophage migration inhibition factor (MMIF) mediates macrophage function in host defense mechanisms and is found predominantly in the ocular lens of various birds and mammals. The amino acid sequence of ocular lens MMIF from mice, chickens, and humans has been determined, and its cDNA has been cloned. The newly sequenced protein has research and therapeutic applications in treating certain inflammatory conditions of the lens. Like other lymphokines, MMIF may have specific therapeutic value in stimulating immune system and other cells.
Licensing Contact: Marjorie Hunter

Method Of Treating Ocular Inflammatory Diseases

Chan, C-C., Nussenblatt, R. (NEI)
Filed 7 Dec 90
Serial No. 07/623,690 (CIP of 07/122,379)

Topical application of synthetic antiflammins dissolved in an ophthalmic irrigating solution decreased ocular inflammation in experimental (endotoxin-induced) anterior uveitis in rats. *In vitro* studies demonstrate that these water-soluble peptides are potent inhibitors of phospholipase A2 and anti-platelet factor. Antiflammins appear to be safe, effective replacements for corticosteroids.
Licensing Contact: Marjorie Hunter

Method Of Treating Ocular Diseases By Periocular Administration Of Cyclosporine A Or G

Nussenblatt, R.B., Palestine, A.G. (NEI)
Filed 20 Dec 89
Serial No. 07/453,793

Periocular injection of cyclosporine A or G in a carrier acceptable to the patient was found to be an effective means of treating ocular disease. Cyclosporine A has been used for treatment of eye diseases but has been associated with kidney failure and increased incidence of opportunistic infections, which limit its effectiveness. The method utilized was found to lower the risks of toxicity associated with conventional treatments (e.g., topical application). Cyclosporine A and G have valuable immunological, anti-inflammatory, and antiprotozoal activity and can be effective in the treatment of ocular diseases such as uveitis, corneal transplantation, keraconjunctivitis, and dry eye.
Licensing Contact: Marjorie Hunter

Methods Of Treating And Preventing Autoimmune Uveoretinitis In Mammals

Hafler, D.A., Nussenblatt, R., Weiner, R.L., Palestine, A.G. (NEI)
Filed 14 Jul 89
Serial No. 07/379,778

The oral administration of uveitogenic antigens offers a significant advance in the treatment of uveoretinitis (uveitis). Uveitis, an autoimmune disease, causes about 10 percent of visual handicaps in the United States. Currently available treatments for this disorder all have serious side effects. In animals, oral administration of uveitogenic antigen — the antigen thought to elicit the autoimmune response — dramatically reduced the appearance of experimentally induced autoimmune uveitis within 14 days with no apparent adverse side effects.
Licensing Contact: Marjorie Hunter

System For Producing Selective Stabilization Of A Portion Of The Retinal Image

Crane, H.D., Kelly, D.H. (NCI)
Serial No. 06/503,800
Patent Issued 1 Oct 85
U.S. Patent No. 4,544,246

Two mirrors that can be rotated about their axes in response to eye movements are mounted for rotation about axes corresponding to horizontal and vertical eye movements. Along one optical path, an image of the eye is formed at each mirror with the eye's center at the axes of rotation, and an image of the scene is projected along a second optical path to the eye. An obscuration member, which is either an aperture or an opaque target, forms an aperture or scotoma of predetermined size and shape on the retina that is stabilized with respect to eye movement, although the remainder of the visual scene is not.
Licensing Contact: John Fahner-Vihtelic

A Macula-Disc Camera With Improved Resolution

Pomerantzeff, O. (EM)
Serial No. 06/239,448
Patent Issued 2 Nov 82
U.S. Patent No. 4,357,088

A newly designed macula-disc camera that records the first aerial image of the patient's fundus increases the resolution of retinal detail that is not obtainable by merely magnifying this image with the recording optics. A high degree of contrast is achieved by tightly separating the observation and illumination beams throughout the lens of the cornea and crystalline lens. Magnification is on the order of 6.9 times.
Licensing Contact: John Fahner-Vihtelic

IMMUNOSCIENCES

Nucleotide And Amino Acid Sequence Of Pemphigus Vulgaris Antigen And Methods Of Use

Stanley, J.,Amagai, M., Klaus-Kovtun, V. (NCI)
Filed 27 Nov 91
Serial No. 07/798,918

In pemphigus vulgaris, an autoimmune disease of the skin and mucous membranes, autoantibodies against pemphigus vulgaris antigen (PVA) cause loss of cell-to-cell adhesion, producing epidermal blisters. This invention describes the cloning and subsequent expression of the DNA sequence for PVA in cells transformed with a cDNA sequence encoding the antigen. PVA can be used for the development of immunodiagnostic tests; in a therapeutic application, the novel sequences may also be used to generate proteins for plasmapheresis. No other clones or sequences of the PVA gene are available.
Licensing Contact: Daniel Passeri

Antigen-Specific Plasmacytomas And Antibodies Derived Therefrom

Risser, R., Largaespada, D., Mischak, H., Weissinger, E. (NCI)
Filed 19 Sep 91
Serial No. 07/762,169 (CON of 07/518,887)

This new method of developing novel hybrid cells/cell lines uses a combination of activated oncogenes and the antigen of interest to select plasmacytomas during their formation. The techniques described in this invention overcome some of the problems associated with standard hybridoma technologies, such as the loss of hybrid cells during culture, the need to screen numerous cell cultures, and the time-consuming nature of antibody production. This simplified method of producing monoclonal antibodies should have broad applications in medicine and basic biological sciences, particularly in the development of diagnostic and pharmaceutical agents.
Licensing Contact: Mark Hankins

A Method Of Producing Improved Immune Response

Berzofsky, J.A., Kawamura, H. (NCI)
Filed 18 Jun 91
Serial No. 07/715,712 (CON of 06/763,218

A novel process for enhancing immune response to an antigen offers an improved method of vaccine development. Presently, the effectiveness of using antigens to stimulate a protective immune response is limited either by the antigens' being poor immune stimulators or by not having large enough quantities of the antigen to stimulate an effective immune response. This novel antigen-enhancing process involves conjugating an antigen to an anti-immunoglobulin. This conjugate, thus, makes it possible to produce antibodies against very low doses of antigens and otherwise weak or insufficient antigens or synthetic vaccines.
Licensing Contact: Daniel Passeri

Lymphokine 154

Kelly, K., Siebenlist, U., Smith, K. (NCI, NIAID)
Filed 13 Aug 90
Serial No. 07/566,108

A newly discovered lymphokine known as lymphokine 154, which has been cloned and sequenced, offers a unique tool for studying the immune system. The cloned DNA can be used in gene regulation studies, and the protein product can be used in immune activating studies or to generate monoclonal antibodies in order to detect increased amounts of this lymphokine in the immune systems of certain patients.
Licensing Contact: Arthur Cohn

A Polypeptide And DNA Sequence Corresponding To The Human Receptor With High Affinity For IgE

Kinet, J.P., Kochan, J.P. (NIAMS)
Filed 2 Jul 90
Serial No. 07/547,892

The gene for the α subunit of the human high-affinity receptor for IgE (human FcϵRI) was cloned, sequenced, and expressed. This receptor is ultimately responsible for the release of chemicals (e.g., histamine, serotonin) that produce an allergic response to an antigen. The gene can be introduced to and expressed by both prokaryotic and eukaryotic microbes. The gene and the expressed polypeptide (i.e., the α subunit) can be used as diagnostic or therapeutic tools in the treatment of allergies. They may also be used to monitor IgE levels in individuals. This invention represents the first complete isolation and cloning of the sequence encoding human FcϵRI.
Licensing Contact: Marjorie Hunter

Target-Specific, Cytotoxic, Recombinant *Pseudomonas* Exotoxin

Pastan, I., Fitzgerald, D,. Chaudhary, V. (NCI)
Filed 12 May 90
Serial No. 07/522,563 (CIP of 07/459,635)

The domain of the *Pseudomonas* exotoxin (PE) amino acid sequence that is responsible for the cytotoxic activity of the protein has been identified. Specific modifications of the C terminus result in enhanced cytocidal activity. Site-specific insertion of recognition molecules, such as growth factors, hormones, and antibodies, within the PE protein results in a target-specific chimeric protein having enhanced cytoxicity. Chimeric proteins containing multiple recognition molecules result in higher specificity and may be useful for killing cells with different receptor sites.
Licensing Contact: Daniel Passeri

Improved *Pseudomonas* Exotoxins Of Low Animal Toxicity and High Cytocidal Activity

Pastan, I., Fitzgerald, D., Chaudhary, V. (NCI)
Filed 11 May 90
Serial No. 07/522,182

Improved recombinant *Pseudomonas* exotoxins that demonstrate decreased atoxicity in animals and increased cytocidal activity are obtained by modifying the amino acid sequence responsible for the toxic effect in humans and animals. The modified *Pseudomonas* exotoxins can be conjugated to target-specific molecules, such as growth factors, hormones, and antibodies, to produce chimeric fusion proteins with specificity, low toxicity, and high cytocidal activity. One such modified exotoxin is designated PE66-4Glu.
Licensing Contact: Daniel Passeri

An Improved Toxin For Construction Of Immunotoxins (Lys-PE40)

Pastan, I., Adyha, S., Fitzgerald, D. (NCI)
Filed 21 Dec 89
Serial No. 07/454,162 (CIP of 06/911,227)

A new form of *Pseudomonas* exotoxin (Lys-PE40) with only one lysine residue in domain I of the toxin has been produced so that it can be conjugated to an antibody and still have high cytotoxic activity toward target cells. Earlier forms of PE40 for immunotoxin use without lysine residues in domain I required the coupling of the antibody or other targeting molecule through a lysine residue in domain III, resulting in low activity for the resulting immunotoxin conjugate.
Licensing Contact: Daniel Passeri

IgE Fc-Directed Delivery System

Kaliner, M.A., Boltansky, H. (NIAID)
Serial No. 06/888,059
Patent Issued 20 Feb 90
U.S. Patent No. 4,902,495

An immunotoxin consisting of a toxin conjugated to IgE or a portion of IgE was produced. A method of delivering this conjugate to its target, i.e., mast cells or basophils with high-affinity IgE Fc receptors, was also designed. Prior immunological linking agents used for the delivery of toxins or other drugs have not employed IgE, which is involved in the mechanisms responsible for producing allergic disorders. In addition, prior agents have used the Fab′ (rather than the Fc) moiety, which is targeted to a molecule rather than to a cell. The IgE-toxin conjugate is proposed as a therapeutic agent for the treatment of disorders characterized by extensive proliferation of mast cells for which there currently are no effective therapies (e.g., malignant or severe benign systemic mastocytosis). The conjugate may also be a useful diagnostic tool for detecting mast cell abnormalities.
Licensing Contact: Todd Leonard

Target-Specific Crosslinked Heteroantibodies

Segal, D.M., Perez, P. (NCI)
Serial No. 06/778,670
Patent Issued 30 Jun 89
U.S. Patent No. 4,676,980

Elements of the immune system can be targeted against specific types of detrimental cells *in vivo* using antibody heteroaggregates. In particular, designated cell types may be specifically lysed by antibody-dependent, cell-mediated cytolytic effector cells and cytotoxic T cells. Because the crosslinked heteroantibodies activate the body's own immune system, they eliminate the need for introducing toxins, drugs, and radioactive material.
Licensing Contact: Daniel Passeri

INDUSTRIAL HYGIENE

Splash Containment Testing Device For Emergency Eye Wash Units

West, R.L., Kirby, D.W., Seymore, D. (CDC)
Filed 28 Feb 92
Serial No. 07/842,957

This invention describes a clear transparent splash containment device and an alignment indicator and how these items can assist in testing emergency eye wash and eye/face wash units, including those that are sink-, wall-, or deck-mounted. The containment device and indicator are attached directly to the emergency wash unit and can be used to ensure that alignment and rate of the water flow from the unit are acceptable; that the flushing streams rise to approximately equal heights; that the water will wash both eyes simultaneously at a velocity that is not injurious to the user; and that the lines carrying the water to the unit are not plugged or contaminated. These convenient methods and devices can be helpful to a variety of facilities that are required by the American National Standard Institute for Emergency Eyewash and Shower Equipment to periodically, perhaps weekly, inspect and test emergency wash units, e.g., hospital laboratories, clinical research laboratories, university and industrial laboratories, work shops, and industrial environments in which particles, projectiles, and chemicals pose a hazard. This invention overcomes problems associated with testing emergency wash units, such as excessive splashing and the consequent "flood".
Licensing Contact: John Fahner-Vihtelic

Variable Air Flow Eddy Control

Crouch, K.G. (CDC)
Filed 24 May 91
Serial No. 07/705,201 (CIP of 07/397,226)

This invention is designed to reduce or eliminate hazardous vapors or dust exposures that exist as a result of inadequate ventilation systems in the workplace. The system improves air quality by altering the direction or speed of auxiliary air flows which, in turn, interrupt the circulating air and the eddies that form and normally carry the toxic materials back to a person's breathing zone. No other comparable system exists.
Licensing Contact: John Fahner-Vihtelic

Dust Control Emissions Control Mechanism For Hand Sanders

Hampl, V., Topmiller, J., Watkins, D. (CDC)
Serial No. 07/691,895
Patent Issued 21 Apr 92
U.S. Patent No. 5,105,585

Commercially available mechanisms for controlling the fine dust emitted by hand sanders are somewhat ineffective in that they are not able to apply a sufficiently strong vacuum to an aspirator without drawing the sander to the surface being sanded. This device uses a new type of sanding pad and a suction manifold to overcome that difficulty. Methods for attaching the device to any type of power sander in the market are also described.
Licensing Contact: John Fahner-Vihtelic

Apparatus And Method For Reducing Wood Dust Emissions From Large Diameter Disc Sanders While Cleaning A Sanding Disc Thereof

Hampl, V., Johnston, O. (CDC)
Serial No. 07/574,972
Patent Issued 31 Mar 92
U.S. Patent No. 5,099,616

An apparatus has been designed to significantly reduce wood dust emissions from large-diameter disc sanders while simultaneously cleaning the sander disc surface. The increased efficiency and safety for the sander is achieved through the use of a specially configured pressurized air stripper and conventional local exhaust.
Licensing Contact: John Fahner-Vihtelic

Supercritical Fluid Extraction Enhancer

Hopper, M.L., King, J.W. (FDA)
Filed 12 Jun 90
Serial No. 07/536,861

This invention describes a novel method that uses supercritical fluids to enhance extraction of materials in chromatography [i.e., the extraction of organic compounds from samples using a dense carbon dioxide gas ($SC\text{-}CO_2$)]. This method is improved over prior methods in that it allows for extraction of liquid samples via absorption on solid carriers such as diatomaceous earth. It also outlines improved preparative methods that reduce the moisture content of the test material, which further enhances extraction. This new method may be used to extract pesticides and lipids from foods; it may also be applicable to extractions from biological tissues and fine particulate solids such as clays.
Licensing Contact: John Fahner-Vihtelic

Compact Drill Sampler For Quantitation Of Microoganisms In Wood

Dutkiewicz, L., Kwapiszewski, C., Olenchock, S.A., D.M. (CDC)
Serial No. 07/474,923
Patent Issued 7 Jan 92
U.S. Patent No. 5,078,553

A novel compact drill for obtaining and preparing wood samples offers an improved method of analyzing such samples for microbial contaminants. Microbial contaminants are a significant problem for woodworkers and others exposed to airborne wood dust. Existing methods for detecting microbial contaminants in wood samples are cumbersome, do not effectively pulverize the wood, and do not allow for sterile collection. This new drill, which collects the wood samples in a single, one-step operation, does not require handling the samples by hand and effectively grinds the wood during sampling.
Licensing Contact: John Fahner-Vihtelic

Prevention Of The Acute Cytotoxicity Associated With Silica-Containing Minerals

Vallyathan, V., Castranova, V., Dalal, N.S., Van Dyke, K. (CDC)
Serial No. 07/429,033
Patent Issued 17 May 92
U.S. Patent No. 5,096,733

The acute cytotoxicity of freshly fractured silica-containing minerals including asbestos and coal mine dust can be prevented by coating silica-containing minerals with a new monomolecular film of an aqueously compatible silane coupling agent. The method could be used in sandblasting, rock drilling, tunneling, and silica mill operations and to aid in preventing such pulmonary diseases as silicosis and pneumoconiosis, including black lung and asbestosis.
Licensing Contact: John Fahner-Vihtelic

Auxiliary Control Technology For Routers

Hampl, V., Johnston, O.E. (CDC)
Serial No. 07/345,317
Patent Issued 22 Jan 91
U.S. Patent No. 4,986,703

A dust-collecting assembly for use with a machine tool having a rotating tool bit offers an improved method of preventing worker exposure to harmful dust. Parallel air jets are directed to slow down particles as they are thrown from a workpiece by the tooling operation so that they can be removed by a vacuum exhaust system.
Licensing Contact: John Fahner-Vihtelic

Method And Kit For Detecting Human Exposure To Genotoxic Agents

Harris, C.C. (NCI)
Serial No. 07/289,723
Patent Issued 17 Mar 92
U.S. Patent No. 5,096,808

A novel kit offers a significant advancement in detecting human exposure to environmental carcinogens or mutagens. Presently, there is no objective means of monitoring human exposure to certain carcinogens and mutagens generally found in industrial surroundings and in the atmosphere. This kit provides an immunoassay for detecting specific serum antibodies directed against DNA bound to suspected gene-damaging agents.
Licensing Contact: John Fahner-Vihtelic

Thin-Film Environmental Monitor

Burroughs, G.E., Huebener, D.J. (CDC)
Serial No. 07/234,092
Patent Issued 8 Oct 91
U.S. Patent No. 5,055,267

A thin-film environmental monitor is available that can significantly improve the detection of harmful contaminants in the environment. Previously available equipment for monitoring exposure to contaminants has frequently not been portable enough to allow for direct sampling of the worker's environment or has not been designed to give instantaneous readings of air samples. This

portable thin-film environmental monitor houses an air sample pump and a sensor, which automatically lets the wearer know if analyte concentrations are higher than acceptable levels.
Licensing Contact: John Fahner-Vihtelic

Active Hearing Protectors

McCutchen, C.W. (NIAID)
Serial No. 06/630,578
Patent Issued 30 Jun 87
U.S. Patent No. 4,677,678

A new device consisting of a headset and opposite earmuff and earplug assemblies offers a better method for pretecting hearing. A balanced attenuation circuit arrangement reduces the size of too-large sound waves without altering their shape, so that the volumes of the two stereo channels are maintained in proper relation to preserve binaural hearing. Prior devices possessed distortion and were monaural.
Licensing Contact: Mark Hankins

Reductive Destruction Of Nitrosamines, Hydrazines, Nitramines, Azo- And Azoxy-Compounds

Keefer, L.K., Lunn, G. (NCI)
Serial No. 06/282,844
Patent Issued 13 Aug 85
U.S. Patent No. 4,535,154

This invention provides a simple method for converting known or suspected carcinogens to innocuous waste materials. The one-step reduction of compounds with a N-N or N=N bond is achieved using a nickel-aluminum alloy in a base (a hydroxide solution). This technique is an improvement over other disposal methods, which may be impractical if large volumes of nitrogenous compounds are used, may not completely degrade the parent compounds, or may generate additional carcinogens.
Licensing Contact: Todd Leonard

INFECTIOUS DISEASES (NON-VIRAL)

Methods And Compositions For Diagnosing Cat Scratch Disease And Bacillary Angiomatosis

Regnery, R.L., Anderson, B.E. (CDC)
Filed 17 Jan 92
Serial No. 07/822,539

A previously unidentified pathogenic species of the rickettsia-like *Rochalimaea*, named *R. henselae, sp. nov.*, has been identified and characterized; this new organism causes two clinically related diseases, bacillary angiomatosis and cat scratch disease. Currently, diagnosis of *Rochalimaea* diseases is limited to detection of the etiologic agent associated with "trench fever", referred to as *R. quintata*. Novel diagnostic tests using immunofluorescence assays or ELISAs can detect the newly discovered pathogen in sera from infected individuals and distinguish it from *R. quintata*, thus offering improved differential diagnosis for disease syndromes such as "trench fever", bacillary angiomatosis, cat scratch disease, and bacillary peliosis hepatitis.
Licensing Contact: Mark Hankins

Detoxified LPS-Cholera Toxin Conjugate Vaccine For Prevention Of Cholera

Szu, S., Robbins, J.B., Gupta, R.K. (NICHD)
Filed 16 Jan 92
Serial No. 07/821,453

This novel antibacterial vaccine was produced by conjugating detoxified lipopolysaccharide (LPS) derived from the target strain, *Vibrio cholerae*, to proteins produced by the same bacteria. Combining LPS with *V. cholerae* proteins reduces the adverse side effects associated with currently available vaccines, improves immunogenicity in infants and young children, and overcomes the T cell-dependent properties of LPS in cellular vaccines. Because immunization against cholera has proved difficult, this new vaccine may represent a significant step toward worldwide prevention of cholera, which annually affects hundreds of thousands of individuals.
Licensing Contact: Mark Hankins

Clones Encoding Mammalian ADP-Ribosylarginine Hydrolases

Moss, J., Stanley, S.J., Nightingale, M.S., Murtagh, J.J., Monaco, L., Mishima, K., Chen, H.-C., Williamson, K.C., Tsai, S.-C. (NHLBI)
Filed 22 May 92
Serial No. 07/888,231

Highly purified, active ADP-ribosylarginine hydrolases from a variety of species and tissues, including rat and mouse brain, spleen, and testis were isolated, and the coding regions for the hydrolases were cloned. The availability of this new hydrolase cDNA provides a novel molecular approach to studying the role of ADP-ribosylation in cell function. The cloning of the genes for these enzymes may also be useful in treating or preventing a variety of bacterial diseases, including cholera, that appear to be mediated via ADP-ribosylation.
Licensing Contact: Mark Hankins

Method And Compositions For The Diagnosis Of Cat Scratch Disease

Quinn, F.D., Birkness, K.A. (CDC)
Filed 3 Apr 92
Serial No. 07/862,784

A rapid, accurate diagnostic test for cat scratch disease (CSD), which affects as many as 70,000 Americans each year and can progress to a recurrent or even life-threatening infection, has been developed. A vaccine against the infective agent, *Afipia felis*, is also provided. In the lymphocyte proliferation assay described in this invention, skin from the affected individual is incubated with antigens or whole-cell fractions derived from *A. felis*. This novel test replaces a potentially risky and difficult-to-use skin test assay (the Hanger-Rose skin test) and provides a

reliable alternative to monitoring a patient's history and symptoms.
Licensing Contact: Mark Hankins

Genetically-Detoxified *Pseudomonas aeruginosa* Exotoxin: A Protein for Polysaccharide Conjugate Vaccines

Schneerson, R., Fattom, A., Shiloach, J., Robbins, J.B., Fitzgerald, D., Pastan, I. (NICHD)
Filed 24 Jan 92
Serial No. 07/825,089

Pseudomonas aeruginosa is a primary cause of serious infections among persons with decreased resistance; the protein produced by this bacteria, *P. aeruginosa* exotoxin A, can act as a virulence factor as well as a protective antigen for systemic *P. aeruginosa* infections. This invention describes the development of genetically detoxified *P. aeruginosa* recombinant exoprotein A (*r*EPA). Conjugates and vaccines prepared with *r*EPA can be used to treat various bacterial and fungal diseases and are expected to be particularly effective in individuals receiving immunosuppressive therapies, those with lymphoid malignancies, and those with cystic fibrosis.
Licensing Contact: Mark Hankins

Pneumococcal Fimbrial Protein A Vaccines

Russell, H. (CDC)
Filed 3 Jan 92
Serial No. 07/816,563 (CIP 07/791,377)

A new vaccine designed to protect against pneumococcal disease has been developed. This novel vaccine is prepared using a unique 37 kD surface protein of *Streptococcus pneumoniae*, pneumococcal fimbrial protein A (PfpA). The vaccine protects mammals against a lethal dose of a virulent pneumococcal strain, and, unlike the presently used vaccine, Pneumovax, children under the age of 2 produce antibodies to PfpA. The primary clinical application of the novel pneumococcal vaccine is prevention of pneumococcal disease, particularly in high-risk populations such as young children, the elderly, and immunocompromised individuals. PfpA may also be a useful diagnostic tool; currently, early diagnosis of *Pneumococcus* infections is rarely successful.
Licensing Contact: Mark Hankins

Bispecific Antibodies That Enhance Immunization Efficiency

Segal, D., Snider, D. (NCI)
Filed 18 Nov 91
Serial No. 07/794,638 (CON of 07/516,879)

Bispecific antibodies (two antibodies of different specificity linked together) can greatly decrease (by 1000X or more) the amount of antigen required to immunize. In humans, this could increase the safety of existing vaccines and allow for the development of others that are currently too toxic or too rare to use on a large scale. It should improve immunization of farm animals by decreasing the number of injections required.
Licensing Contact: Daniel Passeri

Pneumococcal Fimbrial Protein A

Russell, H., Tharpe, J., Sampson, J. (CDC)
Filed 14 Nov 92
Serial No. 07/791,377

A novel 37 kD surface protein of *Streptococcus pneumoniae* and the DNA sequence encoding this protein have been isolated and characterized. The protein, called pneumococcal fimbrial protein A (PfpA), appears to be unique to *S. pneumoniae*, as monoclonal antibodies against this antigen do not react with 60 other strains representing 15 genera of bacteria that also cause acute lower respiratory disease. Following immunization with highly purified PfpA, mice normally susceptible to *S. pneumoniae* infection were protected. The invention is proposed as an immunodiagnostic marker for *S. pneumoniae* infection and as a possible vaccine for children under 2 years of age, who are not protected against pneumococcal disease with the currently available vaccine.
Licensing Contact: Mark Hankins

Method Of Introducing Hydroxyl Group Into Artemisinin Derivatives

Ziffer, H., Hu. Y. (NIDDK)
Filed 31 Oct 91
Serial No. 07/785,993

The need for drugs to treat malaria is great, in part because of the number of drug-resistant strains of the disease's etiologic agent, *Plasmodium falciparum*, and the difficulty in developing an effective antimalarial vaccine. This invention describes the production of clinically active derivatives of the antimalarial drug artemisinin via a microbial hydroxylation reaction that preserves the peroxide bridge necessary for compound efficacy. These novel agents, which have enhanced water and lipid solubilities compared with the parent drug, may be used as alternatives to artemisinin for the treatment of malaria, which annually results in more than 1 million deaths worldwide.
Licensing Contact: Mark Hankins

Lipopolysaccharide From *Brucella abortus* As A Carrier In Vaccines

Golding, B. (FDA)
Filed 22 Oct 91
Serial No. 07/780,205

A novel lipopolysaccaride (LPS) isolated from the gram negative bacteria *Brucella abortus* (BA) promises to be an important new carrier for vaccines. BA, when conjugated to trinitrophenyl (TNP), has been shown to be capable of stimulating antibody responses in adult and neonatal human B cells in the absence of T cell activation. BA is especially useful as a vaccine carrier, or adjuvant, in certain immunodeficiency states (e.g., HIV infection) in which T cell impairment is common; T cell activation is normally required for B cell antibody response; however, the lipopolysaccharide (LPS) portion of the BA cell wall has been shown to cause the release of monokines that are associated with toxic shock

syndrome, thus limiting its value as a carrier. This new BA-derived LPS appears to have all of the B cell-stimulating activity of whole BA but does not cause the release of toxic-shock-causing monokines from monocytes and macrophages.
Licensing Contact: Mark Hankins

Isolation And Characterization Of cDNA Of *Plasmodium falciparum* Glucose-6-Phosphate Dehydrogenase

Kaslow, D.C., Shahabuddin, M. (NIAID)
Filed 20 Sep 91
Serial No. 07/762,137

A cDNA clone encoding glucose-6-phosphate dehydrogenase (G6PD) of *Plasmodium falciparum*, the parasite that causes malaria, offers an important new tool for developing antimalarial therapies. Several investigators have reported that *P. falciparum* initially do not grow well in red blood cells (RBCs) that are deficient in G6PD, but eventually produce enough of their own G6PD to grow well in these cells. Thus, there is strong evidence that human G6PD deficiency affords protection against malaria. This cDNA encoding the *P. falciparum* G6PD can be used to produce large amounts of this enzyme for screening drugs that can inhibit its activity. Compounds that effectively inhibit *P. falciparum* G6PD activity may have potent antimalaria properties.
Licensing Contact: Mark Hankins

Glucuronoxylomanan-Protein Conjugates Of *Cryptococcus neoformans*

Devi, S. Schneerson, R., Bennett, J.B., Robbins, J.B. (NIAID)
Filed 16 Sep 91
Serial No. 07/760,143

A novel conjugate vaccine may offer an improved method for treating disseminated *Cytptococcus* in patients with diabetes or who are immune compromised, such as AIDS patients. *C. neoformans* is an encapsulated yeast-like fungus that causes systemic infections, including fatal meningoencephalitis in normal, diabetic, and immunocompromised patients. This incidence of *Crytococcus* is high (approximately 10 percent) in AIDS patients. Despite advanced fungal therapy, morbidity, mortality, and relapse rates are high. This new vaccine, which contains purified glucuronoxylomanan (GXM) from the capsule of *C. neoformans* conjugated to tetanus toxin (TT), was shown to induce higher titers of anti-*Cryptococcus* antibodies than GXM alone and appears suitable for clinical evaluation.
Licensing Contact: Mark Hankins

Heat Labile Toxin And *Bordetella*

Sekura, R.D., Zhang, Y.L. (NICHD)
Filed 30 Aug 91
Serial No. 07/751,926

This invention describes the purification and, for the first time, the immunogenic characterization of pertussis heat labile toxin (PEHLT) from *Bordetella pertussis*. Antibodies against this purified protein protect laboratory animals from *B. pertussis*-induced disease. Vaccine preparations containing PEHLT may be effective in preventing pertussis ("whooping cough") and other related diseases in humans; antibodies against this toxin may also have prophylactic uses.
Licensing Contact: Mark Hankins

Improved Expression In Influenza A M2 Protein In Baculovirus And Uses Of M2 Protein

Kendal, A.P., Black,R., Rota, P.A. (CDC)
Filed 31 Jul 91
Serial No. 07/738,032

An expression system for the production of large amounts of the highly conserved influenza A M2 membrane protein was developed. The novel system, which uses baculovirus-infected insect cells, is less costly, simpler, and safer than conventional methods for producing the M2 protein. The ability to better control the production and activity of the M2 protein may be useful for the development of vaccines, diagnostic test kits, and novel cytotoxic therapies.
Licensing Contact: Mark Hankins

***rfaD* Gene And Product**

Coleman, W.G. (NIDDK)
Filed 31 Jul 91
Serial No. 07/737,854

The cloning and characterization of the *rfaD* gene for ADP-L-glycerol mannoheptose epimerase, an enzyme essential to the synthesis of the outer membrane of gram-negative bacteria, can be applied to developing screening tests for pharmacologic agents that inhibit the growth of these bacteria or that increase the permeability of the bacterial membrane to antibiotics or other bactericides. Gram-negative bacteria remain a significant therapeutic problem because of the paucity of agents available to kill the bacteria or block their activity. This invention represents the first cloning and description of the *rfaD* gene and its product.
Licensing Contact: Mark Hankins

Transmission-Blocking Vaccine Against Malaria

Kaslow, D.C., Barr, P.J. (NIAID)
Filed 8 May 91
Serial No. 07/697,275 (CIP of 07/658,845)

A new immunovaccine directed against the Pfs25 antigen of *Plasmodium falciparum* offers to significantly enhance the development of an effective antimalarial vaccine. Previously, peptides derived from the sporozoite and asexual stage of the parasite have only been able to stimulate weak production of antibodies. This Pfs25 antigen, which is only expressed in the sexual reproductive stage of the parasite, stimulates strong antibody response; anti-Pfs25 antibodies have effectively blocked the transmission of infection in animal studies.
Licensing Contact: Mark Hankins

Identification Of A New *Ehrlichia* Species From A Patient Suffering From Ehrlichiosis

Dawson, J., Anderson, B. (CDC)
Filed 18 April 1991
Serial No. 07/687,526

The causative agent of human ehrlichiosis and the etiology of the disease have not been known. This microorganism, isolated from a patient suffering from ehrlichiosis, appears to be antigenically related to the etiologic agent of human ehrlichiosis. The isolate, its cloned genes, and its antigenic products may make possible a vaccine, an assay, and a method of rational design for drugs against human *Ehrlichia*.
Licensing Contact: Mark Hankins

Nucleotide, Deduced Amino Acid Sequence, Isolation, And Purification Of Heat-Shock Chlamydial Proteins

Morrison, R.P., Caldwell, H.D. (NIAID)
Filed 2 Apr 91
Serial No. 07/679,302 (DIV of 07/531,317)

Novel vectors encoding analogs of a protein HypB, which is common to both *Chlamydia psittaci* and *Clamydia trachomatis*, offer a unique tool for the study and treatment of this sexually transmitted disease. Persistent infection by *C. trachomatis* can lead to debilitating illnesses in humans such as blindness, infertility, and perhaps arthritis. Previously, no biologically active antigen for *Chlamydia* has been identified. Cells containing these chlamydial protein expression vectors produce large quantities of HypB protein, which can be used to stimulate the production of antibodies for use as diagnostic tools or vaccines.
Licensing Contact: Mark Hankins

Circumsporozoite Protein Of *Plasmodium reichenowi* And Vaccine For Human Malaria

Lal, A., Goldman, I. (NIAID)
Filed 1 Apr 91
Serial No. 07/677,539

Attempts to develop a vaccine against human malarial infection have concentrated on B and T cell determinants for inducing a host immune response to the circumsporozoite protein (CS), which has been cloned from three of the four human malaria parasites. These efforts have failed to produce protective antibody responses consistently; further, genetic nonresponsiveness and polymorphism in the T and B cell determinants is also anticipated to affect vaccine efficacy. A new approach that exploits the host-parasite reaction on the more stable, nonpolymorphic regions of the CS protein has been developed. These new sequences, which were located by comparison of homologous proteins of two closely related malaria parasites, *P. falciparum* and *P. reichenowi*, appear to be useful antigenic determinants for preparing an antimalarial vaccine suitable for humans.
Licensing Contact: Mark Hankins

A Simple, Rapid, And Reliable Method For Detecting Toxigenic *Clostridium difficile* With Specificity

Kato, N. (CDC)
Filed 15 Mar 91
Serial No. 07/670,605

A new method to detect *Clostridium difficile*, which causes pseudomembranous colitis and antimicrobial agent-associated diarrhea and colitis, was developed. By combining the PCR with novel oligonucleotide probes and primer sequences specific to *C. difficile*, this method, unlike others, can readily distinguish *C. difficile* from other *Clostridium* species. It also reduces the total detection and diagnostic time from 7 to 2 days and can be used with either blood or stool samples. This invention represents an improved diagnostic test for *C. difficile*-induced disease.
Licensing Contact: Mark Hankins

Polysaccharide Protein Conjugates

Schneerson, R., Robbins, J., Devi, S. (NICHD)
Filed 12 Mar 91
Serial No. 07/667,170

Despite antibiotic treatment, meningitis caused by two pathogens, *Neisseriae meningitidis*, group B, and *E. coli*, K1, continues to cause high morbidity. Capsular polysaccharide (CP) vaccines are licensed for meningococcal groups A, C, Y, and W135. A novel polysaccharide-protein conjugate presented in this invention elicits antibodies to the CP of group B meningococci and of *E. coli* K1; the CPs are identical. A pharmaceutical composition for a meningitis vaccine, and methods of administering that vaccine, are described.
Licensing Contact: Mark Hankins

Antigenic Proteins Of *Borrelia burgdorferi*

Simpson, W., Schwan, T. (NIAID)
Filed 5 Mar 91
Serial No. 07/664,731 (CIP of 07/487,716)

Two 39 kD proteins and a 28 kD protein were isolated from *Borrelia burgdorferi*. These newly isolated proteins react with Lyme borreliosis serum and can be used to produce a vaccine against Lyme disease. Related products — a test for Lyme disease in mammals and methods of screening anti-Lyme-disease drugs — also have considerable commercial value.
Licensing Contact: Mark Hankins

Metal-Based Formulations With High Microbicidal Efficiency Valuable For Disinfection And Sterilization

Sagripanti, J. (FDA)
Filed 26 Feb 91
Serial No. 07/661,005

New metal-based formulations offer are an advancement over previously available methods of disinfecting medical equipment, tissues and organs for

transplant, and for inactivating viruses for vaccines. Presently available disinfecting and inactivating agents are unsatisfactory because they are corrosive, mutagenic, or carcinogenic. These new metal-based formulations are as much as 50 times more efficient antimicrobial and antiviral agents as presently recommended sterilizing substances while having substantially fewer unwanted side effects.
Licensing Contact: Mark Hankins

Transmission-Blocking Vaccine Against Malaria

Kaslow, C. K., Isaacs, S, Moss, B. (NIAID)
Filed 2 Feb 91
Serial No. 07/658,845 (CIP of 07/188,918)

A transmission-blocking vaccine developed against malaria contains a recombinant virus, which encodes a unique portion of the sexual-stage surface antigen of *Plasmodium falciparum* (referred to as Pfs25), or the Pfs25 protein purified from infected host cells. Mice inoculated with the recombinant virus developed antibodies capable of blocking transmission of the virus. None of the monoclonal antibodies known to block transmission recognize the reduced Pfs25 antigen. This vaccine, which induces high, long-lasting titers at low cost, can be useful for controlling malaria.
Licensing Contact: Mark Hankins

A DNA Segment Encoding A Specific Immunodiagnostic Antigen

Lazzeri, M., Nutman, T., Weiss, N. (NIAID)
Filed 23 Jan 91
Serial No. 07/644,372

The code for an antigen to the causative agent of onchocerciasis ("river blindness") — the parasitic filarial nematode *Onchocerca volvulus* — can be used as a specific and early marker of this disease. Current diagnostic techniques rely on detection of microfilariae in the skin or eyes or on identifying the adult worm in surgically removed subcutaneous nodules, both of which are invasive and insensitive. Serological tests have been unsatisfactory because of cross-reactivity of the filarial parasites; other tests are unable to detect low-level infection, and additional problems arise because the parasite will not infect convenient laboratory hosts. Research into improving diagnosis and therapy has been slow, but this invention should improve diagnosis substantially.
Licensing Contact: Mark Hankins

Test For Virulent Revertants In Attenuated Live Vaccine

Levenbook, I., Chumakov, K., Powers, L., Roninson, I. (FDA)
Filed 6 Nov 90
Serial No. 07/607,742

This invention provides for a rapid, inexpensive, sensitive, and accurate test to ensure the safety of live poliomyelitits (polio) vaccines, which can be genetically unstable and may revert to neurovirulence. It uses molecular sequencing techniques to determine whether any virulent strains of poliomyelitis are present in a batch of polio vaccine. This method is preferable to the only other accepted safety test, which requires the use of monkeys that are inoculated with the vaccine. This invention can be used to complement or replace the monkey neurovirulence assay.
Licensing Contact: Mark Hankins

Recombinant Clones Of *Chlamydia trachomatis* Lipopolysaccharide

Nano, F.E., Caldwell, H.D. (NIAID)
Serial No. 07/590,443
Patent Issued 24 Dec 91
U.S. Patent No. 5,075,228

These recombinant clones provide a simple, rapid, and inexpensive means of diagnosing and treating infections caused by *Chlamydia trachomatis* and *C. psittaci*. The clones possess an antigen that is reactive with monoclonal antibodies directed against the genus-specific lipopolysaccharide epitope. The clones and the process for developing them are important in the early diagnosis of trachoma and genital infections, which are significant worldwide health problems.
Licensing Contact: Mark Hankins

***Plasmodium vivax* And *Plasmodium knowlesi* Duffy Receptor**

Miller, L.H., Adams, J.H., Kaslow, D.C., Fang, X.D. (NIAID)
Filed 20 Jul 90
Serial No. 07/554,837

A useful protein in the development of a potential malaria vaccine has been developed by cloning the gene for the Duffy binding receptor of *Plasmodium vivax*, a human malaria. Duffy blood group determinants on human erythrocytes are known to be essential for invasion by both the *P. vivax* and *P. knowlesi* malaria strains. A candidate malaria vaccine could result from the use of antibodies to the recombinant Duffy receptor binding protein or the receptor protein itself functioning through competitive blocking therapy.
Licensing Contact: Mark Hankins

Immunodiagnostic Reagent Specific For *Legionella*

Aloisio, C., Carlone, G., Pau, C., Plikaytis, B. (CDC)
Filed 5 Jul 90
Serial No. 07/548,011

These novel antibodies recognize all known species of *Legionella* and have none of the cross-reactivities found in earlier antibodies. The kit provided in this invention may be used with standard immunodiagnostic tests and is an important screening tool for clinical and environmental samples.
Licensing Contact: Mark Hankins

Pertussis Toxin Gene: Cloning And Expression Of Protective Antigen

Keith, J.M. (NIAID, NIDR)
Filed 22 Jun 90
Serial No. 07/542,149 (CIP of 07/311,612, CIP of 06/843,727)

The molecular cloning of the gene for pertussis toxin has resulted in the ability to

design and express a mutant toxin gene that has substantially reduced enzymatic activity but retains its full antigenic ability. The expression of protective peptide antigen encoded by this gene can be used as an effective vaccine without the well-known side effects of traditional vaccines against *Bordetella pertussis* currently in use.
Licensing Contact: Mark Hankins

Growing *Ehrlichia* Species In A Continuous Cell Line

Dawson, J.E., Rikihisa, Y. (CDC)
Filed 3 Mar 90
Serial No. 07/518,182

A method of growing the *Ehrlichia* species of pathogens such as *E. canis*, *W. risticii*, *E. sennetsu*, *E. phagocytophila*, and *Neorickettsia helminthoeca* in the continuous monocyte-macrophage cell line DH82 has been found. The development of canine diagnostics and vaccines for these diseases has been hampered by a lack of continuous cell lines to produce large quantities of these *Ehrlichia* antigens. This method may also be useful in producing antigens in quantity for detection and treatment of human ehrlichiosis as well.
Licensing Contact: Mark Hankins

Antigenic Protein Of *Borrelia burgdorferi*

Simpson, W., Schwan, T. (NIAID)
Filed 5 Mar 90
Serial No. 07/487,716

A 39 kD and a 28 kD *Borrelia burgdorferi* protein that react with Lyme borreliosis serum were isolated. These proteins may be useful in developing a vaccine and a screen for Lyme disease.
Licensing Contact: Mark Hankins

Method For The Immune Capture And Detection Of *Borrelia burgdorferi* Antigens In Fluids And Tissues From Infected Ticks, Mice, Dogs, And Human, Test Kit Therefor, Purified Antigen Of *Borrelia burgdorferi*, And Antibody Capable Of Binding Therewith

Dorward, D.W., Schwan, T.G., Garon, C.F. (NIAID)
Filed 27 Feb 90
Serial No. 07/485,551

New antigens associated with *Borrelia burgdorferi*, the organism that causes Lyme disease, and antibodies against these antigens were isolated and characterized. The novel antigens and antibodies can be used to detect the presence of this organism in several animal species and to diagnose the disease in humans; serum, urine, tissue biopsies, and whole ticks can be used for these tests. The assays described in this invention provide a more rapid and more sensitive means of detecting *Borrelia burgdorferi* than prior methods.
Licensing Contact: Mark Hankins

Antigenic Proteins Of *Plasmodium*

Waters, A.P., McCutchan, T.F. (NIAID)
Filed 22 Feb 90
Serial No. 07/483,516

Although the cause of malaria is known (i.e., by parasites of the genus *Plasmodium*), no malaria vaccines to date have been successful in human trials, and most exhibit only limited effectiveness in primates. The novel proteins described in this invention are derived from the human pathogen, *P. vivax*, and from the simian malaria parasite, *P. knowlesi*. The two proteins are about 85 percent homologous to each other and about 55 percent homologous to *P. falciparum*. They are proposed as components for a new malaria vaccine directed against the asexual stages of the parasite.
Licensing Contact: Mark Hankins

Novel Receptor For Pathogenic Fungi

Jimenez, V., Ginsburg, V., Krivan, H. (NIDDK)
Filed 30 Jan 90
Serial No. 07/472,128

A specific receptor for pathogenic fungi has been isolated and substantially purified for the first time, and a method of using the receptor to prevent adhesion of pathogenic fungi to host cells has been developed. A kit for detecting the presence of certain fungi was also described. These products make possible the detection and removal of two important pathogenic fungi, *Candida albicans* and *Cryptococcus neoformans*, and may be useful in preventing yeast diseases.
Licensing Contact: Mark Hankins

***Rickettsia rickettsii* Surface Protein Gene**

Gilmore, R.D., Joste, N., McDonald, G.A. (NIAID)
Filed 01 Nov 89
Serial No. 07/429,936

The 120 kD surface protein (p120) of the bacterium *Rickettsia rickettsii* has been cloned, sequenced, and expressed in a vector. A bioassay for diagnosis of Rocky Mountain Spotted Fever (RMSP) and a human vaccine against RMSP were developed. A method for producing the *Rickettsia* protein is also described. The test will allow for early treatment of RMSP. Previously, there was no satisfactory diagnostic test for early detection of RMSP caused by the bacterium, *R. rickettsii*, and no vaccines were available.
Licensing Contact: Mark Hankins

Specific And Sensitive Diagnostic Test For Lyme Disease

Simpson, W., Schwan, T., Garon, C. (NIAID)
Filed 26 Oct 89
Serial No. 07/427,735

Identification of repeated DNA sequences in *Borrelia burgdorferi*, found at multiple locations within each viral genome, allow

for construction of a reliable and sensitive diagnostic probe for Lyme borreliosis. Most prior DNA probes for Lyme borreliosis recognize only one specific sequence and are generally unreliable, primarily because that sequence is lost during cultivation.
Licensing Contact: Mark Hankins

Reagents For Identifying *Mycoplasma pneumoniae*

Olson, L.D., Kenimer, J.G., Barile, M.F., Probst, P.G. (FDA)
Filed 21 Feb 89
Serial No. 07/313,519

A newly developed immunoassay can quickly and efficiently speciate *Mycoplasma pneumoniae*. Current methods for *Mycoplasma* speciation such as protein and DNA analysis are laborious, require extensive sample preparation, and are plagued by cross-reactivity. This invention comprises monoclonal antibodies that have specific binding affinity for epitopes unique to *M. pneumoniae*. Provided in a simple ELISA kit, these antibodies can positively differentiate *M. pneumoniae* from other *Mycoplasma* species in a few hours using only a small volume of the patient's specimen of culture.
Licensing Contact: Mark Hankins

Process For Purification Of A 69,000 Da Outer Membrane Protein Of *Bordetella pertussis*

Burns, D.L., Brennan, M.J., Gould-Kostka, J., Manclark, C.R. (FDA)
Filed 10 Feb 89
Serial No. 07/308,864

A new heat extraction method for purifying the outer membrane of *B. pertussis*, the pathogen responsible for whooping cough in humans, offers to make the production of vaccines for this disease much more efficient and cost-effective. Present methods for purifying *B. pertussis* proteins are time-consuming, expensive, and require specialized materials such as immunoaffinity columns and monoclonal antibodies (mAbs). This heat extraction method is substantially more efficient because it takes only a few hours and does not require either mAbs or immunoaffinity columns. Thus, it is much easier to scale up for the purification of large quantities of protein needed for vaccine production.
Licensing Contact: Mark Hankins

Probe To Identify Enteroinvasive *E. coli* And *Shigella* Species

Lampel, K., Jagow, J. (FDA)
Filed 2 Nov 88
Serial No. 07/266,038

Standard means for detecting pathogenic organisms in food or clinical specimens rely on animals or large DNA fragments, such as the 17 kb *Eco*RI fragment of Boileau. These methods are expensive, time-consuming, difficult to use, and have not been able to distinguish between nonvirulent enteroinvasive *E. coli* and *Shigella*. This invention describes DNA probes for enteroinvasive *E. coli* and *Shigella* species, including the sequence of the 2.5 kb fragment (*Sma*II and Falkow's) on which the probe is based. The probe is more reliable, more sensitive, and less expensive than methods now in use.
Licensing Contact: Steve Ferguson

Peptide Agents Which Confer Protective Immunity Against *Plasmodium* Malariae

Lal, A., McCutchan, T.F., Cruz, V. (NIAID)
Filed 31 Aug 88
Serial No. 07/238,746

A cloned gene encoding the circumsporozoite protein (CSP) of *Plasmodium* malariae offers to significantly enhance the development of vaccines against malaria. Presently, there is no known vaccine to give individuals protective immunity from malaria. This cloned gene produces large amounts of CSP in bacteria. When injected into individuals, this substantially pure antigenic protein may induce an immune response that will confer protective immunity against malaria.
Licensing Contact: Mark Hankins

Synthetic Vaccine Against *P. falciparum* Malaria

Good, M.F., Kumar, S., Berzofsky, J.A., Miller, L.H. (NCI)
Serial No. 07/216,088
Patent Issued 2 Jul 91
U.S. Patent No. 5,028,425

A synthetic vaccine is available for testing against *P. falciparum* malaria. Control of malarial disease has been achieved on a limited basis in certain parts of the world; however, no vaccine presently exists that can provide protective immunity. This synthetic vaccine contains a peptide which induces the activation of cytotoxic T cells that specifically recognize and kill cells infected with malaria sporozoites.
Licensing Contact: Mark Hankins

Improved Vaccinia-Based Vaccines

Moss, B., Yima, T. (NIAID)
Filed 24 Mar 87
Serial No. 07/029,747

A newly constructed vaccinia virus vector enhances the immune response to disease. With previous vaccinia vaccines, a less-than-optimum immune response was achieved because no method existed for simultaneously introducing an adjuvant along with the expressed antigen. This newly constructed vaccinia vaccine remedies this deficiency by encoding both an antigen protein and an adjuvant protein on the same vector.
Licensing Contact: Mark Hankins

Antigenic Determinants Recognized By Antibodies Obtained Using A Pathogenic Agent Or A Derivative Thereof That Presents A Restricted Set Of Antigens

Lyon, J.A., Chulay, J.D., Thomas, A.W., Howard, R.J. (NIAID)
Filed 13 Mar 87
Serial No. 07/025,741

A method that uses intact pathogenic agents to identify potential immunological target offers to enhance the development of vaccines for diseases. Existing methods for identifying antigens that are prime

immunological targets have disadvantages because they first require a functional monoclonal antibody or the synthesis of a vast number of peptides. This improved method overcomes these limitations by mixing the intact pathogen with "functional immune serum" to generate a mixture of radiolabeled antibodies. Unbound antibodies are washed away, and the remaining antibodies, which are complexed with potential immune target antigens, are isolated.
Licensing Contact: Mark Hankins

Malarial Immunogen

Good, M.A., Berzofsky, J., Miller, L.H. (NIAID)
Serial No. 07/019,000
Patent Issued 12 Dec 89
U.S. Patent No. 4,886,782

A new synthetic peptide which stimulates secondary immune response to malaria circumsporozite (CS) protein offers to improve the rational design and construction of more efficacious malaria vaccines. Previously prepared antimalarial vaccines have only been able to produce secondary immune response in laboratory animals harboring particular genes. This new peptide sequence stimulates secondary helper T cells as well as increased antibody production against the CS protein in strains of animals that previously failed to respond adequately to other similar vaccines.
Licensing Contact: Mark Hankins

Process For Isolation Of The B Oligomer Of Pertussis Toxin

Burns, D.L., Manclark, C.R. (FDA)
Serial No. 07/010,467
Patent Issued 4 Jul 87
U.S. Patent No. 4,845,036

A new method for isolating the B oligomer of pertussis toxin offers an advancement for the production of a pertussis vaccine. Pertussis toxin is an exotoxin produced by *Bordetella pertussis*; its A unit is enzymatically active, and its B oligomer, composed of five subunits, is responsible for binding of the toxin to eucaryotic cell surfaces. The new chromatography purification method pruduces large, highly pure quantities of the B oligomer which, when administered as a vaccine, is free from side effects, does not substantially contain any endotoxin, and has a high phylaxis effect.
Licensing Contact: Mark Hankins

Recombinant *Pseudomonas* Exotoxin: Construction Of An Active Immunotoxin With Low Side Effects

Pastan, I.H., Fitzgerald, D., Adhya, S. (NCI)
Serial No. 06/911,227
Patent Issued 9 Jan 90
U.S. Patent No. 4,892,827

A recombinant form of *Pseudomonas* exotoxin (PE) is valuable for producing *Pseudomonas* sepsis vaccines. Previous attempts to develop immunotoxins using PE have used chemical modification of the molecule to prevent it from binding to cells with PE receptors; however, such chemical modifications have failed to completely eliminate toxic side effects of PE. These recombinant forms of PE lack the cell- binding domain and, thus, have relatively low, non-specific toxicity. In animal studies, the recombinant PE immunotoxin is at least as effective as native PE in killing infected cells but is 100-fold less toxic than native PE on nontarget cells.
Licensing Contact: Daniel Passeri

Protective Synthetic Peptide Against Malaria and Encoding Gene

McCutchan, T.F., Wistar, R. (NIAID)
Serial No. 06/799,464
Patent Issued 15 Nov 87
U.S. Patent No. 4,693,994

A synthetic peptide that is capable of inducing antibodies protective against malarial infection caused by *Plasmodium vivax* offers an important new tool for the development of a malarial vaccine. In order to provide this peptide in a vaccine composition, the nature of the immunodominant epitope of the surface protein of *P. vivax* sporozoite was identified, and the gene encoding the epitope was cloned. The peptide can be administered with an adjuvant in an acceptable carrier such as a nontoxic bacterial cell or liposome.
Licensing Contact: Mark Hankins

Vaccine Against *Neisseria meningitidis* Group B Serotype 2 Invasive Disease

Frasch, C. (FDA)
Serial No. 06/729,206
Patent Issued 22 Jul 86
U.S. Patent No. 4,601,903

A vaccine obtained from a single group B, serotype 2b lipopolysaccharide-depleted outer membrane antigen from a *Neisseria meningitidis* strain is capable of inducing in a host protective antibodies against both *N. meningitidis* group B, serotype 2a and 2b invasive disease. Previous vaccines evaluated in young children were found to be less immunogenic than in adults, indicating the use of an adjuvant would be required. Serotype 2 remains the predominant cause of group B *N. meningitidis* in the world; most of this disease is due to serotype 2b.
Licensing Contact: Mark Hankins

Vaccine For Vesicular Stomatitis

Rose, J.K., Yilma, T., Moss, B., Mackett, M. (NIAID)
Serial No. 06/645,998
Patent Issued 19 Apr 88
U.S. Patent No. 4,738,846

Synthetic vaccines for vesicular stomatitis virus (VSV) offer a means of protecting humans as well as animals from this inflammatory disease. Currently, animal VSV vaccines cannot be used in humans or in some animals because they contain inactivated or attenuated whole viruses, which can revert back to a virulent state. These synthetic vaccines contain only segments of the VSV genome, which have been inserted into a non-pathogenic vaccinia virus vector. Thus, an immune response is induced to VSV antigens without the danger of reversion of the virus to virulence.
Licensing Contact: Mark Hankins

Monoclonal Antibodies Which Block Infectivity Of Malarial Parasites To Mosquitoes

Carter, R., Miller, L.H. (NIAID)
Serial No. 06/547,235
Patent Issued 30 Dec 86
U.S. Patent No. 4,632,909

Monoclonal antibodies (mAbs) that block the transmission of malaria (*Plasmodium falciparum* or *Plasmodium gallinaceum*) to mosquitoes offer an improved method for controlling the spread of this disease. There has previously been no effective method of preventing mosquitoes from acquiring malarial parasites. These mAbs — which block fertilization of the gametes preventing formation of the zygote and development of the zygote in the mosquito midgut — exhibit affinity and specificity for proteins located on the surface of the gametes or ookinetes of the malaria parasite.
Licensing Contact: Mark Hankins

Lysis Of *Trypanosoma cruzi*

Mercado, T.I., Colon-Whitt, A. (NIAID)
Serial No. 06/375,553
Patent Issued 2 Oct 84
U.S. Patent No. 4,474,772

A substance capable of killing the parasite *Trypanosoma cruzi* has been isolated. This substance, called antitrypanosome factor (ATF-II), is produced by the bacterium *Pseudomonas fluorescens* and can kill *T. cruzi* within 24 hours at doses that are not toxic to test animals (e.g., mice). *T. cruzi* causes Chagas' disease, a chronic disorder that is manifested by cardiomyopathy with heart failure and arrythmia. This invention represents a new treatment for Chagas' disease.
Licensing Contact: Mark Hankins

Group B *Streptococcus* Antigens And Vaccines

Swenson, R., Shockman, G., Eisenstein, T., Carey, R. (EM)
Serial No. 06/345,054
Patent Issued 27 Mar 84
U.S. Patent No. 4,439,422

With this new method, pure group B *Streptococcus* antigen and group B type III *Streptococcus* antigens can be isolated, separated, and purified from the culture medium in which the group B type III *Streptococcus* are grown. The antigens can be used to prepare vaccines against infections caused by group B or group B, type III *Streptococcus* in pregnant women or neonates. Prior to this invention, it had not been possible to prepare a vaccine against group B streptococcal infections that is suitable for pregnant women and neonates because pure group B or type III antigens had not been isolated.
Licensing Contact: Mark Hankins

***Neisseria gonorrhea* Vaccine**

Buchanan, T., Pearce, W., Chen, K. (EM)
Serial No. 06/267,538
Patent Issued 17 Apr 84
U.S. Patent No. 4,443,431

The development of some penicillin-resistant strains of gonococci has produced the need for a prophylactic effective against the numerous strains of *Neisseria gonorrhea*. To achieve this, the pili binding site and pili antigens, which are associated with the antigenic heterogeneity of gonococci, were isolated and incorporated into a vaccine that is effective against numerous strains of *N. gonorrhea* in humans.
Licensing Contact: Mark Hankins

Tick Cell Lines

Yunker, C.E., Cory, J.C., Meibos, H.R. (NIAID)
Serial No. 06/227,166
Patent Issued 8 May 84
U.S. Patent No. 4,447,537

Six new continuous cell lines, each generated from embryonic tick tissue, were established. The cell lines can be introduced into pathogenic microorganisms that normally do not replicate in culture (rickettsias, chlamydias, spiroplasms, protozoans). These microorganisms, in turn, can be used in the diagnosis, treatment, and control of infectious diseases. The replicated pathogens may also be used in the production of antigens for allergy testing.
Licensing Contact: Mark Hankins

Subcutaneous Fluid And Culture Chamber And Implant Technique

Arko, R.J. (CDC)
Serial No. 05/768,397
Patent Issued 18 Aug 87
U.S. Patent No. 4,687,001

A subcutaneous culture chamber provides a pliable polyethylene cylinder with holes at each end that allows studying infectious disease processes of microorganisms in laboratory animals. The cylinder is inserted under the skin in a flattened arrangement and expands following closure of the incision. It is designed to prevent development of pressure necrosis in the host animal.
Licensing Contact: Todd Leonard

INFORMATION SCIENCES

Semiconductor Structure Using Protein As Its Active Element

Turin, L. (NIEHS)
Filed 4 Dec 91
Serial No. 07/802,305

In this novel semiconductor, a layer of protein is sandwiched between two liquid metal electrodes in a U-shaped design. The device, which uses liquid mercury as its electrode, is based on three principles: that proteins in aqueous solution adsorb to mercury, forming protein monolayers and preventing mercury drops from aggregating; that the smoothness of the liquid mercury preserves the integrity of the protein layer, which would otherwise be pierced by contact with other solids or liquids; and that amalgams of mercury with other metals retain the desirable characteristics of mercury while endowing the mercury surface with different electronic properties. Previous devices have failed or been difficult to use because of poor conduction, poor reproducibility, or instability; further, unlike the current device, other protein-based semiconductors have not been purely electronic.
Licensing Contact: John Fahner-Vihtelic

Dynamically Stable Associative Learning Neural Network System

Alkon, D.L., Vogl, T.P., Blackwell, K.L. (NINDS)
Serial No. 07/448,090
Patent Issued 2 Jun 92
U.S. Patent No. 5,119,469

A dynamically stable learning neural network system was designed that associatively learns both correlations and anti-correlations. This network system overcomes the disadvantages of prior computationally intensive neural networks by greatly reducing the number of interconnections required for using the network. Thus, it is possible to increase the size of the neural network with a lesser degree of additional effort, which can be a significant advantage in many applications. Computers using this system will be able to recognize objects that are inexact.
Licensing Contact: John Fahner-Vihtelic

Computer-Assisted Design Of Antipeptides Based On The Amino Acid Sequence Of A Target Peptide

Omichinski, J.G., Fassina, G., Olson, A.D., Thorgeirsson, S.S. (NCI)
Filed 13 March 89
Serial No. 07/322,266

A novel computer program allows for the design of any antipeptide sequence for a target peptide. Such sequences are useful for preventing proteolysis of a polypeptide in the presence of a proteolytic enzyme, preventing or reducing the binding of a polypeptide to a target peptide, and for detecting a target peptide.
Licensing Contact: John Fahner-Vihtelic

Method For Producing High-Quality Chemical Structure Diagrams

Feldman, A.P. (NCI)
Serial No. 07/296,019
Patent Issued 16 Apr 91
U.S. Patent No. 5,008,831

A computer-operated method can be used to transform the appearance of a chemical structure consisting of rings and chains. Parameters along with their appropriate values are established such that the alternative structures for the input structure can be evaluated. The alternate structure with the highest total score is selected as the ouput structure with the most conventional and pleasing appearance, which can be printed.
Licensing Contact: John Fahner-Vihtelic

Automatic Orientation And Interactive Addressing Of Display

Feldman, A.P. (NCI)
Serial No. 06/863,981
Patent Issued 30 Oct 90
U.S. Patent No. 4,967,372

A technique for interactively entering graphic data into a computer offers an improvement of display encoding of chemical structures and other graphically displayed data. The most commonly used methods for encoding graphic display data are cumbersome, time-consuming, and require the operator to make a number of precise adjustments. With this new, interactive display method, the computer automatically moves the cursor to the exact location where the next object is to be added. Each object specified has a "standard" orientation, which is then automatically rotatable by 90 degrees. Once a site has been selected for adding an object, a computer list is maintained of the angle pairs possible with the new structure.
Licensing Contact: John Fahner-Vihtelic

Use Of Context To Simplify Two-Dimensional Computer Input

Feldman, A.P. (NCI)
Serial No. 06/321,689
Patent Issued 9 Oct 84
U.S. Patent No. 4,476,462

It is cumbersome and time-consuming to enter two-dimensional material in a conventional keyboarding system based on a typewriter mechanism. Cursor (carriage) positioning functions such as backspace, reverse line feed, and return must be incorporated between entry of each actual symbol. This program uses display grid location to predict the next character and where it is to appear; the CRT then displays those predictions for the user to accept or correct. Functions are assigned to the programmable keys provided by the manufacturers of many CRTs. Program logic and key functions are applicable to entry of any two-dimensional structure, but are tailored for entry and display of chemical structures, reducing required keystrokes and simplifying the process for relatively unskilled personnel.
Licensing Contact: John Fahner-Vihtelic

MOLECULAR BIOLOGY

Novel System For Isolating And Producing New Genes, Gene Products, And DNA Sequences

Resnick, M., Radman, M. (NIEHS)
Filed 27 Mar 92
Serial No. 07/860,233 (CON of 07/457,557)

This rapid and simple *in vitro* intramolecular system for interaction between homologous or divergent DNA sequences makes it possible to isolate and clone DNA sequences related to known DNA sequences or DNA sequences of relatively low homology from unknown DNA libraries. This method greatly simplifies prior identification, location, and cloning techniques, which are limited by DNA sequences with limited homology. The system should make it possible to generate new and novel genes, gene products, and DNA sequences.
Licensing Contact: Steve Ferguson

Method To Eliminate Inhibitory/ Instability Regions From mRNA

Pavlakas, G.K., Felber, B.K. (NCI)
Filed 27 Mar 92
Serial No. 07/858,747

This invention describes methodology for modifying the inhibitory/instability sequences (INS) of mRNA by making multiple nucleotide substitutions without altering the coding capacity of the mRNA of interest. Mutating INS allows for or increases the expression of genes that would otherwise have not been expressed or would have been poorly expressed because of the INS normally present on the mRNA transcript. This novel approach also improves stability of mRNA. These methods can be used to increase the production of protein from genes encoding growth hormones, interferons, interleukins, and HIV-1 *gag* and *env*. Assays have also been developed to facilitate detection of the boundaries of INS sequences of any mRNA.
Licensing Contact: Steve Ferguson

Catalyst For Preparing Polyacrylamide Gel Which Improves The Detection Of Biomaterials By Silver Staining

Hochstrasses, D.F., Merril, C.R. (NIMH)
Filed 11 Mar 92
Serial No. 07/849,344 (CIP of 07/323,851)

This novel process improves the detection of proteins via use of an ammonia-based silver stain and a polymerizing agent, diacrylylpiperazine (PIP). Unlike other staining methods, this new approach produces little if any background staining. Further, use of the new gel and stain reduces the time and number of steps needed for staining and improves resolution.
Licensing Contact: Steve Ferguson

Exchangeable Template Reaction

Khudyakov, Y., Fields, H.A. (CDC)
Filed 10 Mar 92
Serial No. 07/849,294

This novel method, referred to as the exchangeable template reaction (ETR), uses short deoxyoligonucleotides as templates for the synthesis of long deoxypolynucleotides. The method is based on a cyclic mechanism for the exchange of these template and involves three components: polymerase activity to synthesize double-stranded DNA; enzymatic activity to create 3′ terminal single-stranded regions at the growing point of the double-stranded DNA; and specifically designed synthetic deoxyoligonucleotides, which are used as templates for the polymerase. The order of oligonucleotide additions for each cycle is encoded in each 3′ terminal sequence. The primary advantage of ETR over other methods is that long DNA fragments can be synthesized in one step by simply combining the entire set of deoxyoligonucleotides in one reaction tube containing all of the required enzymatic activities; cloning of each intermediate synthesized small DNA is unnecessary.
Licensing Contact: Steve Ferguson

Vectors For Ligation-Independent Cloning And Methods For Using Same

Haun, R.S. (NHLBI)
Filed 7 Jan 92
Serial No. 07/847,298

A novel vector and cloning process that can rapidly and efficiently produce fusion proteins has been developed. In this new procedure, the pGEX-5G/LIC vector permits ligation-independent cloning of cDNAs in any reading frame; the vector also directs the synthesis of these cloned products in *Escherichia coli* as fusion proteins with glutathione-*S*-transferase. Unlike prior methods, this new process eliminates the need for restriction enzyme digestion of the target sequence and does not introduce any additional sequences between the thrombin cleavage site and the foreign protein. These features reduce cloning time and overcome problems associated with prior methods, such as poor yield and the introduction of erroneous bases during amplification.
Licensing Contact: Steve Ferguson

Novel Plasmid pJL6

Papas, T.S., Lautenberger, J.A. (NCI)
Filed 30 Jan 92
Serial No. 07/827,877 (CON of 07/275,573, CON of 06/611,108)

The plasmid pJL6, which contains the cII translation initiation site and a PL promoter, offers an efficient method for producing large amounts of proteins. This plasmid, which contains a unique ClaI restriction site in the amino terminal portion of the cII gene suitable for insertion of foreign genes, is an improvement over other plasmids because the inserted genes are subject to the same transcriptional and translational characteristics of the cII gene.
Licensing Contact: Todd Leonard

DNA Binding Protein

Pastan, I. (NCI)
Filed 30 Dec 91
Serial No. 07/816,522 (CON of 07/441,912)

This invention describes the isolation of a DNA-binding protein that regulates cell growth and the identification of the DNA sequence encoding this binding protein. The protein promotes transcription by binding to GC-rich sequences in the epidermal growth factor receptor (EGFR) proto-oncogene as well as in β-actin and calcium-dependent protease genes; however, the protein can also repress expression of promoters associated with these same three sites. Thus, the same DNA sequence may function as either a positive or negative control element depending on the DNA-binding factors present in the cell. Manipulation of the expression of the EGRF protogene in particular has potential therapeutic applications in human cancer.
Licensing Contact: Daniel Passeri

Method Of Preparation Of Templates For DNA Sequencing

Usdin, K., Woodford, K.J. (NIDDK)
Filed 11 Dec 91
Serial No. 07/804,663

A rapid, simple method for preparing templates for DNA sequencing has been developed. In this novel technique, bacteria containing plasmids that carry the DNA to be sequenced are suspended in a Tris-EDTA-buffered, ribonuclease-based solution; the solution is boiled and can then be used directly for sequencing, yielding results within five minutes after a prepreparation time (i.e., harvesting to gel application) as short as 20 minutes. This method can be used with both colonies (up to one month old) and overnight suspension cultures; up to 400 bases of sequence can be obtained from a single primer. Currently available methods are significantly more time- consuming, often have poor yields, and are restrictive with respect to the class of plasmid templates and the type of DNA- sequencing protocols that can be used.
Licensing Contact: Steve Ferguson

21 Highly Informative Microsatellite Repeat Polymorphic DNA Markers

Polymeropoulos, M.H., Merrill, C.R. (NIMH)
Filed 27 Nov 91
Serial No. 07/799,828 (CIP of 07/707,501)

A novel group of 21 microsatellite repeat polymorphic DNA markers is valuable for rapidly identifying and differentiating between individual human DNA sequences for forensic, genetic, and human DNA mapping studies. Presently available methods for studying differences in DNA structure between individuals, such as DNA sequencing, restriction fragment length polymorphism (RFLP) analysis, DNA hybridization analysis, or primer extension analysis, are not practical for comparing more than a few DNA sequences, take a long time to perform, or cannot detect genetic differences that do not effect cleavage by a restriction endonuclease. These new microsatellite DNA markers can be used as primers for rapid PCR amplification of 27 unique human DNA polymorphisms, which are naturally occurring mutations in DNA sequences that are often unique to each individual. The PCR-amplified DNA segments can then be easily resolved on the basis of as little as a single nucleotide difference using electrophoresis and autoradiography.
Licensing Contact: Steve Ferguson

Characterization Of Estrogen-Responsive Mouse Lactoferrin Promoter

Teng, C.T. (NICHD)
Filed 12 Nov 91
Serial No. 07/789,728

Lactoferrin is an endogenous iron-binding glycoprotein that appears to play a role in cell growth and proliferation. Isolation and characterization of the functional and 5′ flanking sequences of the mouse and human lactoferrin gene promoter indicate that these sequences contain a variety of regulatory elements. When cloned into a chloramphenicol acetyltransferase reporter-plasmid, the mouse-derived promoter was active in both human endometrium carcinoma (in the presence of estrogen receptors) and rat glia cells. The lactoferrin promoter region may be used in therapeutic procedures as a means of carrying sequences such as oncogenes, drug resistance genes, and genes encoding growth factors to various target organs. This promoter region had not been previously characterized.
Licensing Contact: Steve Ferguson

Polyacrylamide Gels For Improved Detection Of Proteins

Hochstrasser, D.F., Merril, C.R., Patchornik, A. (NIMH)
Filed 24 Feb 88
Serial No. 07/789,456 (CON of 07/159,847, CIP of 07/142,978)

A series of new crosslinking agents for polyacrylamide gels provide improved reproducibility and accuracy in the separation and detection of proteins and nucleic acids by silver staining techniques. Previously available crosslinking agents interact with samples and silver staining and, thus, increase background staining. These new crosslinking agents are tailored to the specific sample being separated so that interaction with the samples or the silver stain is minimized.
Licensing Contact: Steve Ferguson

New Techniques For Producing Site-Directed Mutagenesis Of Cloned DNA

Feinstone, S.M., Wychowski, C., Silver, J.E., Emerson, S.U. (NIAID)
Filed 27 Sep 91
Serial No. 07/764,085 (CON of 07/332,616)

A novel method for producing site-directed mutagenesis of cDNA is valuable for developing vaccines, growth factors, and antigens for use as diagnostic agents. Previously, chimeric cDNAs with large inserts have been difficult to make because they required the presence of convenient restriction enzyme sites or sophisticated

and complicated genetic engineering. This new method, which introduces or substitutes relatively large cDNA fragments into cDNA at any chosen position without regard to the specific restriction enzyme sites or any other specific sequences, enables the production of entirely new protein structures.
Licensing Contact: Steve Ferguson

Adeno-Associated Virus (AAV)-Based Eucaryotic Vectors

Chatterjee, S., Wong, K.K. (NIAID)
Filed 26 Aug 91
Serial No. 07/752,899 (CON of 07/527,195)

Adeno-associated virus (AAV)-based eucaryotic vectors containing HIV or HSV offer a valuable new method for treating these viral infections. Presently available drugs for inhibiting viral replication have limitations because the viruses have the ability to rapidly mutate and ultimately become resistant to these drugs. These AAV-based eucaryotic vectors have the advantage for inhibiting viral replication because they contain sequences that code for proteins that have been shown to down-regulate specific HIV and HSV replication genes. The AAV-based vectors containing these down-regulating genes can then be used to infect host cells and integrate with their DNA and thus, confer intracellular resistance to infection by these viruses.
Licensing Contact: Steve Ferguson

A Method For Discriminating And Identifying Alleles in Complex Loci

Mann, M.D., Dean, D.M., Carrington, M., White, M.B. (NCI)
Filed 29 Aug 91
Serial No. 07/751,892

A novel method for identifying polymorphic alleles of the HLA class II genes offers a powerful new tool for studying genetic associations with disease as well as for forensic studies. The human major histocompatibility complex (MHC) contains sets of genes that encode products which are intimately involved in the initiation of immune response. Among this set of genes are those designated as HLA class II. Previously, determination of HLA alleles in various populations has been accomplished by serological techniques, which do not recognize a considerable number of polymorphisms. This new method for identifying HLA class II polymorphic alleles uses HLA class II-specific primers to amplify the gene or genes of interest, which are then electrophoresed on a nondenaturing polyacrylamide gel. The presence or absence of multiple DNA bands is used to determine whether allelic polymorphism is present. This method is also useful for the identification of new alleles and for typing of tissue for transplantation.
Licensing Contact: Steve Ferguson

Amino Acid-Derivative And Bromoacetyl-Modified Peptides For The Preparation Of Synthetic Peptide Polymers, Conjugated Peptides, And Cyclic Peptides

Inman, J.K., Robey, F.A. (NIAID)
Filed 14 Jun 91
Serial No. 07/715,650

A novel method for synthesizing peptides that have a crosslinking handle has been developed. This method is based on a new compound called BBAL, which can be used at any point and at any peptide residue in a stepwise solid- or solution-phase peptide synthesis, thus greatly increasing the flexibility in designing peptide-based compounds. The BBAL side chains of an intermediate peptide can react selectively with sulfhydryl groups to form thioether crosslinks with itself, yielding cyclic peptide molecules or linear polymers, or with other molecules or surfaces, forming various conjugates or biospecifically modified surfaces. BBAL is especially useful in preparing structurally well-defined, peptide-based components of compounds that modify biological activity (e.g., immunogens, immunizing epitopes, vaccines, inhibitors), in developing bioassay and affinity separation materials, and in designing medical protheses. The method used to synthesize BBAL is included in this invention.
Licensing Contact: Steve Ferguson

Perilipin

Londos, C., Egan, J.J., Greenberg, A.S. (NIDDK)
Filed 11 Jun 91
Serial No. 07/712,152

A recombinant DNA sequence encoding the protein perilipin is a valuable tool for studying the molecular processes involved in formation and hydrolosis of lipids. Previously, the enzymes involved in the formation and hydrolysis of lipid droplets in adipocytes, or fat cells, have been known, but the process by which metabolites traffic in and out of the droplet has remained a mystery. Perilipin is found in high concentrations in adipocytes; therefore, polypeptides generated from this perilipin-encoding sequence can be used to make perilipin-specific mAbs. These mAbs, in turn, can be used to study processes such as the abnormal deposition or depletion of lipid in conditions such as obesity, cachexia, or chronic illness.
Licensing Contact: Steve Ferguson

Process For Producing A Human Neutrophil Chemotactic Factor Polypeptide And A Recombinant Expression Vector For The Said Polypeptide

Matsushima, K., Yoshimura, T., Yamada, M., Ryuji, F., Yamagishi, J. (NCI)
Filed 3 Jun 91
Serial No. 07/711,275 (CON of 07/189,164)

An *E. coli* cell line containing a novel expression vector that encodes a human neutrophil chemotactic factor (NCF) polypeptide offers an important tool for studying the processes involved in immune responses such as inflammation. Previous attempts to produce large amounts of NCF by recombinant DNA technology have required indirect methods of cloning the gene, because the gene product is an extremely low molecular weight polypeptide with a structure that can lead to degradation of the host cell. This new expression vector directly expressed the

human NCF polypeptide without significant degradation of the host cell.
Licensing Contact: Todd Leonard

Three Highly Informative Microsatellite Repeat Polymorphic DNA Markers

Polymeropoulos, M.H., Merril, C. (NIMH)
Filed 25 May 91
Serial No. 07/707,501

Three original polymorphic markers (two original tetranucleotide and one dinucleotide repeat polymorphisms) were developed. These nucleotides can be used for forensic testing, paternity and prenatal screening, and genetic mapping. Assays using these nucleotides are based on the PCR and therefore need only small amounts (40 ng) of test DNA. As a result, the common problem of DNA shearing is minimized. The assays are easy to perform and relatively inexpensive. Results can be obtained in less than 24 hours, compared with 3 to 4 days for similar tests.
Licensing Contact: Steve Ferguson

PCR-Induced (Ligase-Free) Subcloning: A Rapid And Versatile Method Of Subcloning PCR Products

Shuldiner, A.R., Roth, J. (NIDDK)
Filed 10 Apr 91
Serial No. 07/683,440

A novel, ligase-free DNA amplification method that uses PCR to rapidly subclone DNA into a plasmid vector offers an improved method for sequencing. The vector containing the PCR product may be used to transform host cells, e.g., *E. coli* cells. The alternative method of blunt-end subcloning often fails for PCR products because it is not always possible to efficiently fill in the ends of the PCR fragment to generate blunt ends.
Licensing Contact: Steve Ferguson

Modified RNA Template-Specific PCR

Shuldiner, A.R., Roth, J. (NIDDK)
Filed 15 Mar 91
Serial No. 07/669,731

A novel modification of PCR offers to increase the accuracy of detecting specific RNA sequences without sacrificing sensitivity. Presently available methods for detecting RNA sequences are hampered by frequent false positives due to contaminating DNA in the sample that preclude meaningful interpretation of experimental results. This new PCR modification greatly amplifies the RNA target sequence over background amounts of DNA using an RNA-specific primer and, thus, significantly reduces the number of false positives.
Licensing Contact: Steve Ferguson

Restriction Enzyme Digestion To Decontaminate The PCR Reaction

DeFilippes, F.M. (NIAID)
File 19 Dec 90
Serial No. 07/631,724

A method for inactivating contaminating DNA by restriction enzyme digestion offers to improve the sensitivity and accuracy of PCR analysis. PCR analysis, which is used to amplify minute amounts of DNA that has been made single-stranded by heat denaturation, is often complicated by the presence of contaminating DNA segments into the reagents. Presently used methods for preventing the contamination of PCR reagents with foreign DNA, such as ultraviolet irradiation followed by heat denaturation, often do not remove contaminating DNA that is less than 2000 bases in length. This new method uses a restriction enzyme to decontaminate the PCR agents prior to thier use; the restriction enzyme will digest any double-stranded DNA between 800 and 1200 bases in length but will not digest single-stranded DNA.
Licensing Contact: Steve Ferguson

Automated Or Manual Hydrolysis Of Proteins, Peptides And Carbohydrates In A Hermetically Sealed Microcapillary Tube Or Similar Container Having A Small Cross-Sectional Area About One Of Its Axes

Liu, D., Boykins, R. (FDA)
Filed 13 Mar 91
Serial No. 07/668,723 (CIP of 07/413,736, CIP of 07/330,435)

A new method preparing the hydrolysis products of proteins, peptides, or carbohydrates has been developed using a sealed microcapillary tube. This new technique speeds an amino acid or carbohydrate compositional analysis by permitting a rapid hydrolysis without the evacuation and flushing with nitrogen. This is accomplished in a three-step process: 1) the analyte is dissolved in acid to form a homogenous solution; 2) this solution is placed in a container having a cross-sectional area of about 0.5 mm^2 about one of its axes and then is hermetically sealed; and 3) the container is heated to about 100-200°C.
Licensing Contact: John Fahner-Vihtelic

Fibrinogen

Redman, C.M., Roy, S.N. (NHLBI)
Filed 4 Mar 91
Serial No. 07/663,380

Recombinant DNA plasmids encoding fully-functional fibrinogen molecules offer a novel tool for studying the biochemistry of this molecule. Previously, it has been difficult to study fibrinogen biochemistry because no system has been available for the expression of fully-formed, functional fibrinogen molecules. These recombinant plasmids encode various subunits of fibrinogen and express them in large quantities in host cells.
Licensing Contact: Steve Ferguson

Plasmid Construction For High-Level Production Of Eukaryotic Proteins

Mukherjee, A.B., Miele, L. (NICHD)
Filed 24 Jan 91
Serial No. 07/645,356 (CON of 07/255,723)

Novel plasmid constructions offer an improved method for producing high levels of eukaryotic proteins in their native form. Presently available plasmid constructions have been unable to express proteins with quaternary structures (i.e., formed by more than one subunit) in their natural form in bacteria. These new plasmid constructions, which contain artificial operons, have successfully expressed large quantities of the quarternary protein, uteroglobin, in its natural form in *E. coli*.
Licensing Contact: Steve Ferguson

Method For *In Vivo* Recombination And Mutagenesis

Jones, D.H. (NCI)
Filed 9 Jan 91
Serial No. 07/638,512

The method referred to as recombination PCR (RPCR) was used to synthesize double-stranded DNA. RPRC can be used for the rapid generation of recombinant DNA constructs and for the generation of site-specific mutants. The placement of homologous ends to DNA permits very rapid cloning of the desired mutant or recombinant with a minimal number of steps and primers. The RPCR method is easier than the commonly used crossover linker technique because RPCR requires no enzymatic step beyond the PCR amplification and permits the placement of site-specific mutations without regard to restriction enzyme sites. A portable, self-contained kit can be developed for the generation of recombinant constructs.
Licensing Contact: Steve Ferguson

Method of Forming Three-Stranded DNA

Camerini-Otero, R.D., McIntosh, M., Camerini-Otero, C.S. (NIDDK)
Filed 9 Nov 90
Serial No. 07/611,268

A novel method of constructing a three-stranded DNA molecule offers an improved method of cleaving double-stranded DNA at specific sites, identifying specific DNA sequences, protecting double-stranded DNA from cleavage, or inhibiting transcription of a specific gene sequence present on one strand of a double-stranded DNA molecule. Previous attempts to construct molecules that can accomplish all of these tasks have been confounded by too much DNA or protein sequence interaction. This novel method contacts a recombinant protein with a double-stranded DNA molecule and a sufficiently complementary single-stranded DNA molecule that hybridizes to a specific sequence, thus protecting it or making it a target for cleavage.
Licensing Contact: Arthur Cohn

Method Of Electroporation Using Bipolar Oscillating Electric Fields

Tekle, E., Chock, P.B., Astumian, R.D. (NHLBI)
Filed 27 Sep 90
Serial No. 07/588,998

High-frequency bipolar oscillating electric fields have been found to be an effective method of introducing DNA, inhibitors, antibodies, and other macromolecules into living cells. By improving cell survivability and transfection efficiency, this method is an improvement over the currently used electroporation and chemical methods. Application of this new method should facilitate the usage of molecular biological methods, such as genetic engineering and gene therapy, in both research and clinical settings.
Licensing Contact: Steve Ferguson

Novel System For Cloning, Locating, And Modifying DNA Sequences Between And Within Species that Share Limited Homology With Known Sequences

Resnick, M.A., Nilsson-Tillgren, T., Radman, M., Priebe, S. (NIEHS)
Filed 23 Jul 90
Serial No. 07/555,092

The use of mutants and double-stranded break recombinational repair mechanisms provides a rapid, efficient means of isolating and cloning DNA that is less than 80 percent homologous with a known sequence of DNA. The methods provided by this novel system can also be used to locate other related unknown sequences on a large segment of DNA and to modify the newly isolated DNA. This invention is an improvement over other similar systems, which are limited because of low DNA homology.
Licensing Contact: Steve Ferguson

Stable Mammalian Cell Line Expressing A Bacteriophage RNA Polymerase

Moss, B., Elroy-Stein, O. (NIAID)
Filed 1 Mar 90
Serial No. 07/485,871 (CIP of 07/376,687, CIP of 06/905,253)

A stable mammalian cell line that expresses a foreign RNA polymerase gene was constructed, and a method for expressing the protein was described. The new cell line is a major improvement in the field because it is a more efficient expression vector and because it eliminates the requirement for the vaccinia virus, which is cytopathic and is a health hazard. This invention can be used as a prototypical model for establishing other eukaryotic cells lines that can express any number of bacteriophage RNAs or foreign genes and produce foreign proteins.
Licensing Contact: Mark Hankins

A Method Of Synthesizing Double-Stranded DNA Molecules

Jones, D. (NCI)
Filed 8 Nov 89
Serial No. 07/432,993

The PCR allows a number of different *in vitro* DNA manipulations. PCR-generated products are blunt-ended, meaning that cloning has always required additional *in vitro* enzymatic operations. This novel method employs PCR to generate products that, when combined, denatured, and annealed, form double-stranded DNA with discrete, cohesive, single-stranded ends. The resulting products simplify DNA mutagenesis, recombination, and cloning.
Licensing Contact: Steve Ferguson

Automated Peptide Design And Synthesis

Saxinger, C. (NCI)
Filed 25 Aug 89
Serial No. 07/398,458

This automated system allows for synthesis of peptides from stable, preprepared amino acid solutions at one laboratory workstation. The invention is an improvement over current technology, which is not automated and which requires freshly prepared solutions of amino acids. The proposed method may also be used for manual synthesis of peptides and for rapid screening of immunogenic protein sites, creation of synthetic vaccines and diagnostic reagents, and modeling of enzyme activity.
Licensing Contact: John Fahner-Vihtelic

Efficient Directional Genetic Cloning System

Miki, T., Aaronson, S. (NCI)
Filed 28 July 89
Serial No. 07/386,053

Current techniques of cloning cDNA from mRNA are inefficient, produce low yields of cDNA, and/or do not allow for directional cloning. The technique described here, automatic directional cloning (ADC), allows insertion of DNAs into vectors in a predetermined orientation. ADC is an improvement over other techniques that use one or more symmetrical restriction recognition sites for ligations that result in undesired and difficult-to-screen products. ADC greatly increases the efficiency of cloning because the probability of obtaining a full-length clone from each mRNA molecule is enhanced.
Licensing Contact: Steve Ferguson

RNA Probe For Detecting *c-fes* mRNA

Glazer, R.I., Smithgill, T.E., Yu, G. (NCI)
Filed 22 May 89
Serial No. 07/355,207

A novel kit for detecting mRNA from the *c-fes* oncogene offers to enhance the study of myeloid cell differentiation (myelopoiesis). The *c-fes* gene is known to play a certain functional role in myelopoiesis. Previously, no specific and sensitive assay has been available to measure the level of *c-fes* mRNA in biological samples. This kit includes a plasmid encoding an DNA probe that is sensitive and specific for *c-fes* mRNA.
Licensing Contact: Marjorie Hunter

Synthesis of Chloroacetyl and Bromoacetyl Modified Peptides For The Preparation Of Synthetic Peptide Polymers, Conjugated Peptides, And Cyclic Peptides

Robey, F.A., Fields, R.L., Lindner, W. (NIDR)
Serial No. 07/283,849
Patent Issued 18 Nov 91
U.S. Patent No. 5,066,716

The novel peptide-synthesizing method offers an improved means of inserting a reactive moiety at a specific position in a synthetic peptide. Previous methods for derivatizing peptides were time-consuming and cumbersome because the reactive moieties had to be added after the initial synthesis step. This new method automatially produces bromoacetyl- and chloroacetyl-modified peptides, which are stable even after the acid hydrolysis step used to deprotect the peptide. These derivatized peptides, when conjugated to a carrier protein, are useful as reagents for potential peptide immunogens, vaccines, and therapeutics.
Licensing Contact: Steve Ferguson

Novel Restriction Endonuclease

Leonard, W.J., Wolf, J.B., Halden, N.F. (NICHD)
Serial No. 07/260,829
Patent Issued 19 Jun 90
U.S. Patent No. 4,935,367

A novel restriction enzyme, *Mfe*I, recognizes the sequence CAATTG and cleaves between the C and first A, generating compatible cohesive ends with *Eco*RI-cleaved fragments. The endonuclease is produced by growing *Mycoplasma fermentans* in a cell culture and recovering it from extracts by conventional techniques. A diagnostic kit for detecting the presence of a source of *Mfe*I or *M. fermentans* contains a solution of CAATTG sequence.
Licensing Contact: Steve Ferguson

Phosphoramidite Reagent For Chemical Synthesis Of Modified DNA

Marquez, V.E., Goddard, A.J. (NCI)
Filed 6 Apr 88
Serial No. 07/178,153

A novel phosphoramidite reagent for use in the synthesis of DNA allows the incorporation of modified 5-azacytosine bases at specific sites in the sequence. The incorporation of the modified base, 5-azacytosine, into DNA has long been associated with gene activation. Previously, it has been difficult to study this gene activation phenomena *in vitro* because 5-azacytosine is extremely unstable in its native form and cannot be incorporated into synthetic DNA. This phosphoramidite analog of 5-azacytosine is extremely stable and can be successfully incorporated using standard DNA synthesizing methods; at the conclusion of the synthesis, an easily performed oxidation generates the biologically active 5-azacytosine moiety.
Licensing Contact: Steve Ferguson

Novel Recombinant Vaccinia Virus Expression Vectors And Method Of Selecting Same

Moss, B., Falkner, F.G. (NIAID)
Filed 18 March 88
Serial No. 07/169,949

A unique vaccinia virus offers an improved method for expressing foreign genes in mammalian cells. This expression vector has many advantages over previously available mammalian cell expression vectors such as easier maintenance of infectivity, wide host range, large DNA capacity, and correct synthesis, processing, and transport of proteins.
Licensing Contact: Mark Hankins

Plasmid Cloning Vector pAS1

Rosenberg, M. (NCI)
Serial No. 06/819,406
Patent Issued 15 May 90
U.S. Patent No. 4,925,799

A plasmid cloning vector that contains both transcriptional and translational regulatory sequences from the genome of λ phage was constructed. The system contains a highly efficient λ promoter as well as host lysogens into which the vector can be stably transformed. The promoter is controlled by a heat-sensitive repressor produced by the host lysogen, thereby permitting simple, rapid induction of the phage transcripts. High-level expression of both prokaryotic and eukaryotic genes can be achieved with this vector.
Licensing Contact: Steve Ferguson

Polyethylene Glycol (PEG) Reagent

Yoakum, G. H. (NCI)
Serial No. 06/792,647
Patent Issued 17 Mar 87
U.S. Patent No. 4,650,909

A new process for producting an improved polyethylene glycol (PEG) overcomes the toxicity that results from using the known, impure PEG-fusion reagent. This method removes the toxic elements that are usually present in PEG preparations stored above 0°C in the presence of oxygen. The resulting PEG product is a fusion reagent suitable for use in human cell genetic transfection and human-human hybridoma applications.
Licensing Contact: Steve Ferguson

Mini-μ-Containing Plasmid And A Method For Rapid DNA Sequencing

Mizuuchi, K., Adachi, T., Mizuuchi, M. (NIDDK)
Serial No. 06/680,992
Patent Issued 29 Dec 87
U.S. Patent No. 4,716,105

Random *in situ* insertion of transposons in *E. coli* cultured cells improves the speed and convenience of DNA sequencing. The commonly used Sanger base-pair chain terminator sequencing method is elaborate, complex, and time-consuming and requires random fragmentation and subcloning of a long DNA chain. The mini-μ transposon method described in this invention is considerably simpler and leaves the DNA segment of interest intact, allowing the user easily to assess which part of the segment has been sequenced.
Licensing Contact: Steve Ferguson

Rapid Visualization System For Gel Electrophoresis

Merril, C.R. (NIMH)
Serial No. 06/618,949
Patent Issued 26 Nov 85
U.S. Patent No. 4,555,490

Protein patterns are visualizable within 10 minutes after electrophoretic separation by means of photodevelopment by a new silver-staining method of biopolymers. A sensitivity of about 0.5 ng of protein is achievable; DNA separated on polyacrylamide can also be visualized. Two solutions are required, the first to fix the proteins, and the second containing silver ions.
Licensing Contact: Steve Ferguson

Stimulation Of Enzymatic Ligation Of DNA By High Concentration Of Nonspecific Polymers

Zimmerman, S., Pheiffer, B. (NIDDK)
Serial No. 06/537,572
Patent Issued 15 Apr 86
U.S. Patent No. 4,582,802

Ligation of duplex DNA is a critical step in the production of hybrid plasmids. Several methods for ligation of cohesive ends of DNA fragments produces DNA with no appreciable blunt-end activity. Enzymatic ligation in dilute solution with T4 DNA ligase, however, accomplishes both blunt- and cohesive-end ligation. This method, which involves introducing macromolecular material to a DNA ligation system, increases DNA ligase activity, and blunt-end ligation of DNA substrate in particular. The consequent increase in productivity has significant potential in recombinant DNA applications.
Licensing Contact: Steve Ferguson

Protein From SV40 Recombinants

Hamer, D.H., Kaehler, M., Leder, P. (NIAID)
Serial No. 06/536,579
Patent Issued 8 Jul 86
U.S. Patent No. 4,599,308

SV40 DNA vectors can be cloned in *E. coli* to a gene of interest to produce recombinant DNA. Bacterial clones can be grown in a few hours on inexpensive agar plates, whereas an SV40 plaque assay on monkey cells can take 2 weeks and requires expensive equipment. Examples include production of Y182-mouse β-maj globin gene recombinant, construction of SV40 (OY) recombinants carrying the mouse globin gene in two orientations, and production of human growth hormone (hGH) using 28C.
Licensing Contact: Steve Ferguson

Automated System For Determining The Molecular Weight And/Or Concentration Of Macromolecules Via Sedimentation Equilibrium

Minton, A.P., Attri, A.K., Sullivan, J.V., Fitze, P. (NCI)
Serial No. 06/515,169
Patent Issued 2 Sep 86
U.S. Patent No. 4,609,991

A new automated system has been found for measuring concentration gradient of centrifuged solutes, permitting the direct microcomputer calculation of the molecular weight and sedimentation coefficient of an optically absorbing solute. Previous methods for calculating molecular weights of proteins by sedimentation equilibrium required fractionating the solution in the centrifuge tube into vertical layers. This new method uses transmitted light impinging on a photodetector that provides absorbance readings versus time; a motor is used to move the centrifuge tube vertically relative to the light beam.
Licensing Contact: John Fahner-Vihtelic

Multi-Slab Gel Casting Electrophoresis Apparatus

Brown, G., Karpetsky, T., Jewett, P. (NCI)
Serial No. 06/402,353
Patent Issued 22 Nov 83
U.S. Patent No. 4,416,761

This is an apparatus for a two-dimensional electrophoresis technique in which, after isoelectric focusing in a disc gel, a slab containing DNA is cast on the side of the disc. Subsequent electrophoresing, incubating, and staining reveal the position of nucleases on the slab. The apparatus for this technique includes a holder for a stack of glass plates designed to receive disc gels; a rack that supports the holder in a tilted position for casting slabs containing DNA on the sides of the gels; and an electrophoresis chamber for receiving the holder in vertical position, with opposite analyte and catholyte compartments. Two-dimensional electrophoresis is superior to one-dimensional electrophoresis in resolution, sensitivity, and detection of enzyme activity.
Licensing Contact: John Fahner-Vihtelic

Isoelectric-Focusing Polyacrylamide Gel Electrophoresis

Karpetsky, T., Brown, G. (EM)
Serial No. 06/402,352
Patent Issued 22 Jan 85
U.S. Patent No. 4,495,279

Many one-dimensional electrophoretic techniques provide poor resolution of components; require a radioactive substrate to locate nuclease activity among proteins separated; and destroy enzyme activity. This technique separates proteins according to isoelectric point in the first dimension and according to mass and charge in the second dimension, much improving resolution. Other features of the technique improve sensitivity, thus allowing nuclease detection in crude samples such as serum. The nondenaturing conditions of this electrophoretic method permit a user to profile multiple-enzyme activity in samples.
Licensing Contact: Steve Ferguson

Silver Stains For Protein In Gels

Merril, C.R. (NIMH)
Serial No. 06/339,886
Issued 20 Sep 83
U.S. Patent No. 4,405,720

This invention provides an improved silver-staining method for the detection and characterization of polypeptides fixed in synthetic (e.g., polyacrylamide, agarose, cellulose acetate) gels. The method combines two-dimensional electrophoresis, which can resolve thousands of polypeptides within a complex biological mixture, with a staining process analogous to photographic chemistry: fixing, oxidation, latent image formation, and image development. As little as 0.01 ng polypeptide/mm^2 can be detected with this method. All types of biological fluids can be used as source materials; the staining process can also be applied to tissue slices and biopsied material. This invention is easier to perform, less time-consuming, and more sensitive than other staining methods, including prior silver-staining techniques.
Licensing Contact: Steve Ferguson

Nondenaturing Zwitterionic Detergents

Hjelmeland, L.M. (NICHD)
Serial No. 06/294,203
Patent Issued 8 Feb 83
U.S. Patent No. 4,372,888

This invention describes the preparation of detergents that do not denature proteins. The primary ingredient in these detergents is 3-[(3-cholaminodipropyl) dimethylammonio]-1-propane-sulfonate (CHAPS); other alicyclic compounds utilizing cholic acid, deoxycholic acid, or dehydroabietic acid may be substituted for CHAPS. These detergents are an improvement over many other detergents, which often cause proteins to denature and aggregate. The invention is particularly useful in purification of membrane proteins.
Licensing Contact: Arthur Cohn

Electric Gel Slicer

Williams, V.P., Sandifer, S.S. (EM)
Serial No. 06/174,239
Patent Issued 25 May 82
U.S. Patent No. 4,331,054

A novel electric gel slicer consists of a support formed with a gel guide trough, a feed screw journaled on the support parallel to the trough, a feed plunger, a feed screw drive, a transverse cutting blade, and a blade drive. Slice thickness depends on the number of teeth on the gear disc driving the feed screw. Previous devices such as this failed to provide accurate coordination between operation of the feed screw and the slice-cuting blade, so that it has been difficult to obtain adequate uniformity in slice thickness combined with reasonably rapid slicing action.
Licensing Contact: John Fahner-Vihtelic

LTR Vectors

Vande Woude, G., McClements, W., Oskarsson, M., Blair, D. (NCI)
Serial No. 05/279,443
Patent Issued 20 Sep 83
U.S. Patent No. 4,405,712

Many viral-gene products of interest to eukaryotic cells cannot be expressed in prokaryotic viruses, which limits the use of prokaryotic viruses as cloning vectors; however, this invention demonstrates that the long terminal repeat (LTR) sequence of a retrovirus can be used to activate, clone, and rescue any gene with a selectable marker. When combined with more conventional cloning and recombinant DNA techniques, exploitation of LTRs can increase yields of the gene of interest.
Licensing Contact: Arthur Cohn

MUSCULAR/SKELETAL

Enhancement Of Musculature In Animals

Hughes, S.H., Sutrave, P. (NCI)
Filed 3 Dec 90
Serial No. 07/620,415

Animals having increased muscle size or reduced fat, or both, can be constructed by means of various DNA segments such as δ-FB29 that encode a *c-ski* protein or a truncation having the function of *c-ski*. The DNA segments may be combined with vectors such as pMEX*neo*. This DNA construct may be used to provide livestock with increased muscle size and decreased fat tissue, as well as providing a treatment for patients suffering from serious muscle injury or muscle degenerative disease such as muscular dystrophy and amyotrophic lateral sclerosis.
Licensing Contact: Steve Ferguson

Apparatus And Method For Measuring Muscle Sarcomere Length *In Vivo*

Podolsky, R.J., Baker, G.R., Brenner, B. (NIAID)
Serial No. 06/784,258
Patent Issued 15 Sep 87
U.S. Patent No. 4,693,606

A laser diffraction apparatus is useful for measuring muscle sarcomere length *in vivo*. Such laser diffraction measurements enable tendons to be accurately replaced or restored to function at maximum force. The invention includes a support for resting muscle tissue thereon while it is under examination.
Licensing Contact: John Fahner-Vihtelic

Method Of Making Live Autogenous Skeletal Replacement Parts

Khouri, R.K., Reddi, A.H. (NIDR)
Filed 21 Aug 90
Serial No. 07/570,442

A new method of manufacturing live autogenous skeletal replacement parts through muscle flap molding and osteoinduction has been developed. Any muscle flap, whether a local muscle or a distant free muscle flap, can be molded to the desired shape, transformed into bone, and transferred as a prefabricated part to a defect site. A virtually unlimited supply of donor tissue can thus be made available for the reconstruction of any skeletal defect. By being autogenous, skeletal replacement parts produced by this method are not subject to immune rejection.
Licensing Contact: Steve Ferguson

Drill Guide For Bone Plate Fixation

Weigle, R.M., Duggan, S., Foster, C., Miner, J., Vantucci, J., Woozley, M. (FDA)
Serial No. 06/468,776
Patent Issued 5 Mar 85
U.S. Patent No. 4,502,475

This device assists the surgeon in accurately aligning and drilling holes on bone surfaces prior to attachment of a plate to the bone. The drill guide is clamped to the bone during the drilling process, thus allowing for tilting and slipping. Use of this invention should reduce excess and uneven stress, fracturing, and corrosion that can result from poor spacing of drill holes or from use of the plate as the drill guide.
Licensing Contact: John Fahner-Vihtelic

PULMONARY

Aerosolization Of Protein Therapeutic Agent

Roosdorp, N.J., Crystal, R.G. (NHLBI)
Filed 23 Apr 92
Serial No. 07/873,640 (CON of 07/504,047, CON of 07/044,446)

A new method for the aerosolization of therapeutic proteins was designed. The prototypical protein used was recombinant α1-antitrypsin, which inhibits elastase, a proteolytic enzyme affecting lung tissue that is implicated as a major cause of emphysema. Direct aerosol application of antitrypsin to the diseased tissue overcomes many of the problems associated with other routes of drug administration, such as delivering the drug to the target tissue and maintaining an effective dose level for extended periods of time. Diseases that may be treated by this method include asthma, respiratory distress, emphysema, and lung cancer.
Licensing Contact: John Fahner-Vihtelic

Glutathione Aerosol

Crystal, R. (NHLBI)
Filed 31 Dec 91
Serial No. 07/814,885 (CIP of 07/441,521)

This invention increases the levels of reduced glutathione (GSH) in the lungs via a novel aerosol formulation of GSH. This aerosol may be helpful in treating any infectious or inflammatory lung disorder where the glutathione defense system is compromised, including cystic fibrosis, bronchitis, pneumonia, emphysema, adult or newborn respiratory distress syndrome,

interstitial lung disease, idiopathic pulmonary fibrosis, and conditions associated with AIDS. Aerosol administration overcomes degradation problems associated with oral formulations and the short half-life associated with intravenous dosing.
Licensing contact: Arthur Cohn

Aerosolization Of Protein

Crystal, R.G., Roosdorp, N.J. (NHLBI)
Filed 21 Jan 92
Serial No. 07/828,447 (CIP of 07/504,047; CON of 07/044,446)

This invention describes the method of preparation and subsequent use of aerosolized α1-antitrypsin and secretory leukoprotease inhibitor. Preliminary studies indicate successful delivery of physiologically effective doses to the lungs via the novel method. This invention, which overcomes the problem of delivering an active ingredient at a safe dosage, may be useful for prophylactic or therapeutic treatment of lung disorders, most notably cystic fibrosis.
Licensing Contact: Mark Hankins

Prevention Of The Acute Cytotoxicity Associated With Silica-Containing Minerals

Vallyathan, V., Castranova, V., Dalal, N.S., Van Dyke, K. (CDC)
Serial No. 07/429,033
Patent Issued 17 Mar 92
U.S. Patent No. 5,096,733

A method of preventing pulmonary diseases associated with the exposure to free radicals from freshly ground and fractured silica particles has been uncovered. Inhalation of such silica-containing minerals and silicates, including those found in asbestos and coal, is implicated in such diseases such as silicosis and pneumoconiosis. The acute cytotoxic effects of these materials is controlled by coating the ground silica minerals with an aqueous silane coupling agent. This coating agent can easily be delivered with the water used as a coolant or wash with mining drills or other mineral-processing equipment.
Licensing Contact: John Fahner-Vihtelic

Method And Device For Improved Use Of Heart/Lung Machine

Kolobow, T. (NHLBI)
Serial No. 07/190,627
Patent Issued 26 Dec 89
U.S. Patent No. 4,889,782

A novel coil spring device offers to significantly improve the ability of heart/lung machines to sustain patients during severe heart failure. Previously, the use of artificial heart/lung devices to aid circulation has been handicapped because there was no satisfactory way to decompress the left heart. This coil spring device, which is positioned within the pulmonary artery and across the pulmonary artery valve, renders the pulmonary artery incompetent, thus allowing successful decompression of the left heart.
Licensing Contact: Todd Leonard

New Immunotherapeutic Method Of Treating Respiratory Disease

Prince, G., Hemming, V.G. (NIAID)
Filed 14 Dec 88
Serial No. 07/284,349 (CON of 07/055,008)

Purified human immunoglobin offers a more effective and rapid method of treating or preventing lower respiratory tract infections caused by respiratory syncytial virus (RSV) or other respiratory viruses. Lower respiratory tract infection caused by RSV is a serious problem, particularly in children and infants under six months of age; the present therapy for RSV infection, ribavarin, requires treatment for 12 to 20 hours a day for at least three days. This purified human immunglobin, which is an anti-RSV neutralizing antibody, is administered topically through the intranasal route and significantly reduces the infection after only a single dose.
Licensing Contact: Marjorie Hunter

New Immunotherapeutic Method Of Treating Respiratory Illness

Prince, G., Chanock, R., Hemming, V.G. (NIAID)
Filed 2 Nov 88
Serial No. 07/265,891 (DIV of 07/055,008)

Purified human immunoglobin offers a more effective and rapid method of treating or preventing lower respiratory tract infections caused by respiratory syncytial virus (RSV) or other respiratory viruses. Lower respiratory tract infection caused by RSV is a serious problem, particularly in children and infants under six months of age; the present therapy for RSV infection, ribavarin, requires treatment for 12 to 20 hours a day for at least three days. This purified human immunglobin, which is an anti-RSV neutralizing antibody, is administered topically through the intranasal route and significantly reduces the infection after only a single dose.
Licensing Contact: Marjorie Hunter

Lung Surfactant Compositions

Clements, J.A. (NHLBI)
Serial No. 06/200,216
Patent Issued 26 Jan 82
U.S. Patent No. 4,312,860

A synthetic, protein-free lung surfactant that can be used as a temporary substitute for natural lung surfactant was developed. The surfactant, which is composed primarily of 1,2-dipalmitoyl-sn-3-glycerophosphoryl choline (DPPC) and a fatty alcohol, is applied directly to the lungs of the distressed subject to reduce surface tension and increase expansion of the alveolar spaces. This new formulation is particularly useful in alleviating symptoms of respiratory distress syndrome in premature newborns. It may also be used to treat adults with diseases or functional difficulties that result in a significant reduction in natural lung surfactant. This invention represents the first effective protein-free, synthetic surfactant.
Licensing Contact: Arthur Cohn

THERAPEUTIC METHODS

Nerve Growth Factor/Receptor Complex

Parada, L., Soppet, D., Kaplan, D., Martin-Zãnca, D. (NCI)
Filed 29 May 92
Serial No. 07/890,713 (CIP of 07/668,298)

This novel neurotrophic nerve growth factor (NGF)/*trk*-proto-oncogene protein receptor complex can detect NGF, neurotropin-3 (NT-3), and brain-derived neurotrophic factor (BDNF) bound to *trk*-proto-oncogene protein. It can also be used to detect other neurotrophic factor receptor/ligand complexes on the basis of their structural and functional similarlity to the *trk* receptor and to NGF. Because of its capabilities to detect these ligand-receptor pairs, this complex may provide a new method for diagnosing and treating conditions such as Alzheimer's diseae and neuroblastoma.
Licensing Contact: Arthur Cohn

Antimicrobial And Antiviral Bis-Adamantanamine Compounds

Shetty, B.V. (FDA)
Filed 28 Mar 92
Serial No. 07/888,438 (CON of 07/571,910)

A new class of bis-adamantanamine compounds, which can be used for preventing and treating viral and bacterial infections, has been produced. These compounds are biologically active against gram-positive and gram-negative bacteria, fungi, yeasts, enveloped viruses such as herpes, and retroviruses such as HIV. This ability to act against both viruses and bacteria is important in treatment of AIDS patients, who have multiple infections. The compounds can be used as surface antiseptics, disinfectants, food preservatives, and antimicrobial agents in contact fluids.
Licensing Contact: Mark Hankins

Crystal Structure of TGF-β2

Davies, D.R., Daopin, S., Ogawa, Y., Piez, K. (NIDDK)
Filed 7 May 92
Serial No. 07/879,358

The determination of the three-dimensional structure of crystalline transforming growth factor β (TGF-β2), as described for the first time in this invention, will be useful in delineating the mechanism(s) by which the group of structurally related β forms of transforming growth factors (TGF-βs) regulate not only cell proliferation TGF-βs but also a variety of cellular processes, including the production of cellular matrix, chemotaxis, and cell differentiation and morphogenesis. This discovery may also be useful in developing pharmaceuticals that mimic the action of TGF-β2 and/or other members of the TGF-β family of proteins in suppressing inflammation, promoting healing of soft tissue wounds, repairing damaged bone and cartilage, and controlling tumor growth.
Licensing Contact: Mark Hankins

Method For Treating Malignancy And Autoimmune Disorders In Humans

Waldmann, T.A. (NCI)
Filed 17 Aug 87
Serial No. 07/879,056 (CON of 07/085,707)

Novel conjugated or unconjugated anti-Tac monoclonal antibodies (mAbs) offer an improved therapy for disorders such as leukemia, autoimmune disfunction, or allograft incompatibility that are mediated by adult T cells. The expression of Tac antigen by T cells occurs when foreign histocompatibility antigens become activated due to autoimmune disfunction or during allograft rejection. Presently available treatments for such disorders are limited by nonspecific activity, which results in toxicity to non-diseased cells. These anti-Tac mAbs, which can be conjugated with cytotoxic agents such as cell toxins or radionuclides, can effectively eliminate disease-associated Tac-positive cells without affecting normal cells.
Licensing Contact: Marjorie Hunter

Cloning And Characterization Of A Vasopressin V2 Receptor

Brownstein, M.J., O'Carroll, A.-M., Lolait, S.J., Morel, A. (NIMH)
Filed 27 Mar 92
Serial No. 07/860,239 (CIP 07/846,388)

Rat kidney arginine vasopressin receptor (i.e., renal-type V2 AVP receptor) cDNA has been cloned and expressed, and response to expression of this novel sequence has been detected biochemically. The V2 receptor is critical to the antidiuretic effect of arginine vasopressin (AVP). This invention may lead to a better understanding of the antidiuretic action of AVP and, more specifically, to improved therapies for managing nephrogenic diabetes insipidous, an X-linked recessive disorder characterized by renal resistance to the antidiuretic action of AVP. Although the gene for the V1a AVP receptor has been sequenced, the V2 receptor had not been similarly characterized.
Licensing Contact: Arthur Cohn

Nitroxides As Protectors Against Oxidative Stress

Mitchell, J.B., Samui, A., DeGraff, W., Hahn, S. (NCI)
Filed 20 Mar 92
Serial No. 07/859,622 (CON of 07/494,532)

New metal-independent nitroxide compounds are antioxidants capable of protecting cells, tissues, and organs against the harmful effects of toxic oxygen-related species (hydroxyl radical, hydrogen peroxide, superoxide). These toxic oxygen-related species have been implicated in tissue damage from ionizing radiation, reperfusion injury, adult respiratory distress syndrome, inflammation, and agents involved in such processes as carcinogenesis and aging. These mimetic agents have several advantages over natural antioxidants such as superoxide dismutase in that they can exert protection inside the cell since they are small and uncharged.
Licensing Contact: Todd Leonard

Total Synthesis Of Northebaine, Normorphine, Noroxymorphone Enantiomers, And Derivatives Via N-nor Intermediates

Rice, K.C., Newman, A.H. (NIDDK)
Filed 12 Mar 90
Serial No. 07/851,672 (CIP of 07/421,900, CIP of 06/925,620)

A new synthetic process has been found in which nordihydrocodeinone, an early intermediate in the total synthesis of codeine and related compounds, is easily formed into a number of N-nor compounds. These N-nor compounds can be used as precursors in the formation of narcotics, narcotic antagonists, or narcotic agonist-antagonists. The manufacture of drugs of this type, such as northebaine or normorphine, can now be done without the use of thebaine as starting material.
Licensing Contact: Arthur Cohn

Macrocyclic Chelates And Methods Of Use Thereof

Gansow, O.A., Brechbiel, M.W., Magerstadt, M. (NCI)
Filed 2 Jan 92
Serial No. 07/815,956 (CON of 07/198,538)

Substituted 1,4,7,10-tetraaza cyclododecane-N,N′,N″,N‴-tetraacetic acid (DOTA) has numerous desirable chelating qualities that make it useful for treating a number of cellular disorders. Presently available chelating agents lack specificity for their intended targets or do not adequately bind the chelated metal ion. These substituted DOTAs have a strong affinity for a number of metal ions. They can also be linked to biomolecules to form systems for delivering the chelated metal ion, which can be radiolabeled, to specific sites within a cell or organelle.
Licensing Contact: Marjorie Hunter

Specific Tolerance In Transplantation

Sachs, D.H. (NCI)
Filed 22 Nov 91
Serial No. 07/797,555

This invention describes a method of inducing tolerance in humans that receive transplanted tissue from another another human and, potentially, another mammal. In this novel technique, DNA encoding a major histocompatibility (MHC) antigen from tissue of the donor species is inserted into a bone marrow hematopoietic stem cell from the recipient, with subsequent expression of the MHC protein in the recipient. This approach, that is, the induction of specific transplantation tolerance by somatic transfer of MHC genes, avoids the adverse side effects associated with broad spectrum suppressants that are commonly used in transplatation; this new method also reduces the risk of severe graft- versus-host disease, which develops in many individuals who have had organ, tissue, or cell transplants.
Licensing Contact: Steve Ferguson

Prevention Of Drug-Induced Agranulocytes With Free Radical Scavengers

Mason, R. (NIEHS)
Filed 31 Oct 91
Serial No. 07/786,004

Radical scavengers, including L-ascorbic acid, may be used to prevent drug-induced granulocytopenia agranulocytosis and peroxidase-dependent oxygen uptake by thiyl radicals. Dosing regimens, pharmaceutical preparations, and a drug-dipsensing device for L-ascorbic acid and related compounds are provided. Although L-ascorbic acid has been suggested as a means of preventing clozapine-induced agranulocytosis, this invention provides a broader preventive role for L-ascorbic acid as well as for L-ascorbic acid salts and iso-ascorbic acid and any derivatives of these compounds. The invention includes a comprehensive list of medications that cause or are suspected of causing either of the two conditions named above.
Licensing Contact: Arthur Cohn

A Fat-Cell-Specific β-Adrenergic Receptor

Venter, J.C., Fraser, C.M., Giacobino, J.P. (NINDS)
Filed 11 Nov 91
Serial No. 07/783,602

A novel fat-cell-specific β-adrenergic receptor may be valuable for the treatment of obesity. There is presently no effective method for diagnosing and treating obesity. The metabolism of brown adipose tissue, which is the main effector of cold- and diet-induced thermogenesis in mammals, is primarily controlled by norepinephrine release from nerve terminals that act through β-adrenergic receptors. This newly isolated β-adrenergic receptor, which is specific for brown adipose tissue, has been shown to mediate the decomposition of fat cells, or lipolysis, in rats. This receptor may be used as a diagnostic test for obesity as well as for treating obesity or testing potential treatments for obesity.
Licensing Contact: Arthur Cohn

Adenovirus-Mediated Transfer Of Genes To The Lung

Crystal, R.G. (NHLBI)
Filed 20 Oct 91
Serial No. 07/769,623

A novel method for introducing therapeutic genes into lung tissue cells using adenovirus offers a valuable method for treating respiratory diseases such as hereditary emphysema and cystic fibrosis. Previous attempts were unable to deliver therapeutic genes directly to respiratory epithelial cells, because only a small proportion of alveolar and airway epithelial cells go through a proliferative cycle in one day, and a large proportion of these cells are terminally differentiated. Thus, the therapeutic genes could not become permanently incorporated into the cells. This new method of gene transfer uses a recombinant adenoviral vector containing the therapeutic gene. Adenoviruses are normally trophic for respiratory epithelium and do not require

host cell differentiation or proliferation in order to incorporate their genetic sequences into host cell DNA.
Licensing Contact: Arthur Cohn

Thiapysovenine And Carbamate Analogs, Pharmaceutical Compositions, And Method For Inhibiting Cholinesterases

Brossi, A., He, X-S., Rapoport, S.I., Greig, N.H. (NIDDK)
Filed 26 Sep 91
Serial No. 07/765,766

Novel compounds that exhibit potent, long-acting anticholinesterase activity were prepared by substituting sulfur for oxygen in the C-ring of the drug physovenine and then adding longer alkyl and phenyl groups to the carbamate moiety of the basic molecule. These new sulfur-containing tricyclic compounds appear to be less toxic than their nitrogen-containing counterparts, the physostigmines, and may provide improvements in therapy for treating cholinergic diseases such as glaucoma, myasthenia gravis, Alzheimer's disease, and organophosphate poisoning.
Licensing Contact: Arthur Cohn

Substituted Phenserines As Specific Inhibitors Of Acetylcholinesterase

Brossi, A., Brozstowska, M., Rapoport, S.I., Greig, N., He, X.-S. (NIDDK)
Filed 26 Sep 91
Serial No. 07/765,736

The chemical methods used to synthesize novel analogs of three short-acting acetyl- and butylcholinesterase inhibitors (i.e., (-)-physostigmine, (-)-N(1)-norphysostigmine, and (-)-physovenine) are described. Analogs with o-methyl substitutions in the phenyl ring were found to be potent, long-acting inhibitors of acetylcholinesterase but had a less marked effect on butylcholinesterase. These selective cholinesterase inhibitors, which have not been described previously, have potential clinical applications in treating cholinergic diseases such as glaucoma, myasthenia gravis, Alzheimer's disease, and organophosphate poisoning.
Licensing Contact: Arthur Cohn

IL-2-Stimulated T Lymphocyte Cell Death For The Treatment Of Autoimmune Diseases, Allergic Disorders, And Graft Rejection

Leonard, M.J. (NIAID)
Filed 28 Aug 91
Serial No. 07/751,090

Administration of IL-2 offers an important new treatment for autoimmune diseases, allergic disorders, and tissue graft rejection. All of these conditions are due to the effects of antigen-activated T cells, which cause the release of harmful lymphokines and the production of immunoglobulin E by B cells. Presently available methods for treating these disorders have limitations because they are nonspecific in their action and often leave the patient immune compromised. IL-2 stimulates the programmed death of only antigen-activated T cells while leaving the rest of the patient's T cells and other immune cells intact.
Licensing Contact: Marjorie Hunter

Method For Treating Acne

Peck, G.L. (NCI)
Filed 26 Apr 88
Serial No. 07/735,113 (CON of 07/186,260)

Analogs of retinoic acid offer an improved method for treating acne. Currently available drugs for the treatment of acne are ineffective in many severe cases and have side effects that restrict their usefulness. Even the most severe cases of acne have responded to 13-*cis*-retinoic acid and its derivatives, and although these compounds have side effects, most of them are dose-related and can be effectively controlled.
Licensing Contact: Arthur Cohn

Super Glucocorticoid Receptors

Simons, S.S., Chakrabarti, P.K., Yamamoto, K.R., Garabedian, M.J. (NIDDK)
Filed 19 Jun 91
Serial No. 07/716,827

A DNA segment that encodes an altered mammalian super glucocorticoid receptor offers a possible method for treating conditions in a patient characterized by decreased endogenous glucocorticoid steroid levels. The altered superreceptor retains full biological activity in intact cells and also has higher affinity and specificity for binding glucocorticoid steroid than the natural receptor.
Licensing Contact: Arthur Cohn

Human Lactoferrin

Teng, C., Panella, T.J. (NIEHS)
Filed 31 May 91
Serial No. 07/707,502

A protein product encoded by a human lactoferrin cDNA gene sequence isolated from breast tissue can be used in methods for detecting and analyzing malignancies arising from tissues that normally secrete lactoferrin. It can also be administered as treatment to patients with conditions such as neutropenia, AIDS, skin infection, gastrointestinal bacterial overgrowth syndrome, vaginal infection, and septic shock that are characterized by a deficiency in lactoferrin.
Licensing Contact: Marjorie Hunter

Eukaryotic Expression Vectors With Regulation Of RNA Processing

Lisziewicz, L. (NCI)
Filed 29 May 91
Serial No. 07/707,055

A retrovirus vector in which intron-containing RNA is transported and packaged by the host cell was developed. This unique vector contains the *rev*-RRE elements of primate lentiviruses, which control RNA processing and transport. Exploitation of these elements help overcome the primary problems of

previous vectors, i.e., low titer and inefficient gene/protein expression. The retroviral vector is proposed as a therapeutic device for gene therapy (e.g., in adenosine deaminase-deficient individuals; in AIDS patients).
Licensing Contact: Steve Ferguson

Gene Therapy Using Gene Fusions For Genetic Or Acquired Disorders

Pastan, I., Gottesman, M. (NCI)
Filed 3 May 91
Serial No. 07/697,000 (CON of 07/202,783)

A novel gene construct offers a reliable and effective method of introducing foreign genes into animal or human cells to treat genetic or acquired disorders. Presently available methods of introducing foreign genes into animal cells are unreliable because they do not contain a dominant marker gene that allows selection and enrichment of cells expressing the desired foreign gene. This new gene construct fuses the desired gene to a multidrug resistance-1 (MDR1) gene so that cells expressing the desired gene are selected by their resistance to certain drugs. This construct has been used to introduce adenosine deaminase (ADA) activity into ADA-deficient animal cells.
Licensing Contact: Marjorie Hunter

Compositions Having Use As Treatment Of Neuropsychiatric Deficits

Bridge, P., Goodwin, F. (NIMH)
Filed 8 May 91
Serial No. 07/696,556 (CIP of 07/352,313, CIP of 07/285,557, CIP of 07/199,873)

Novel peptides derived from the amino acid sequence of peptide T offer a significant advancement in the treatment of chronic fatigue syndrome not associated with HIV infection. Previously, there have been no effective treatments for this syndrome. Patients treated with these novel peptides have shown significant symptomatic and functional improvement.
Licensing Contact: Todd Leonard

Method Of Treating Trichotillomania And Onychophagia

Swedo, S., Rapoport, J., Leonard, H. (NIMH)
Filed 16 Apr 91
Serial No. 07/685,752

Various treatments, including psychotherapy, behavior modification, hypnosis, relaxation therapy, and a number of pharmaceuticals, have been unsuccessful in controlling impulsive disorders involving hairpulling and nailbiting. Serotonin uptake inhibitors such as clomipramine, fluoxetine, fluvoxamine, zimelidine, and sertraline appear to inhibit the behavior. These drugs may also be useful in treatment of other impulse control disorders: pathological gambling, kleptomania, and pyromania.
Licensing Contact: Arthur Cohn

Increasing The Therapeutic Efficiency Of Macrophage-Targeted Therapeutic Agents By Up-Regulating The Mannose Lectin On Macrophages

Barton, N.W., Brady, R.O. (NINDS)
Filed 13 Mar 91
Serial No. 07/669,023

The delivery of therapeutic agents to macrophages and other cells can be enhanced by utilizing a lectin found on the surface of macrophages that reacts with great avidity to mannose-terminal glycoproteins. Therapeutic agents such as enzymes, antiviral drugs, biologic response modifiers, and chemotherapeutic agents can be delivered to macrophages by specifically targeting such agents via the lectins on the cells. This targeting method provides a novel means of treating Gaucher disease, viral diseases, and metastic cancer. Use of this method could greatly reduce the amount of expensive therapeutic agents used and thus diminish drug toxicity.
Licensing Contact: Arthur Cohn

Novel IL-2 Receptor And Applications Thereof

Waldmann, T.A., Leonard, W.J. (NCI)
Filed 11 Feb 91
Serial No. 07/653,477 (DIV of 07/588,498, CON of 07/165,302)

A novel glycoprotein produced by cells that respond to IL-2 but do not have high-affinity IL-2 receptors or express the Tac antigen (p55) was isolated. This new polypeptide, referred to as p70-75, appears to act as a receptor for IL-2 in p55-negative cells such as resting large granular lymphocytes, natural killer cells, and precursors of lymphokine-activated killer (LAK) cells. The novel protein also appears to be a component of the high-affinity IL-2 receptor. Antibodies against p70-75 are proposed for therapeutic use through conjugation with a cytotoxic agent or other toxin. Recombinant interleukins capable of binding to the new receptor are proposed as means of producing novel LAK cells.
Licensing Contact: Marjorie Hunter

Antifection — The Use Of Antibodies To Transport DNA Into Cells

Hirsch, R., Hirsch, F. (NCI)
Filed 22 Jan 91
Serial No. 07/643,091 (CON of 07/255,837)

A novel method of integrating foreign DNA into cells in a tissue- or cell-specific manner offers an important new tool for treating genetic disorders. Presently available methods for integrating foreign DNA into cells generally have low efficiency, cannot be performed *in vivo*, and lack target specificity. This new method conjugates the foreign DNA to an antibody that selectively delivers it to the target cell or tissue. This method, which is called antifection, can be performed *in vivo* and can be used for treating genetic diseases, inducing tolerance to foreign transplantation antigens, or for immortalization of cells.
Licensing Contact: Steve Ferguson

Mammalian Bilirubin UDP-Glucoronosyltransferase Clones And Methods Of Use Thereof

Owens, I., Ritter, J. (NICHD)
Filed 10 Jan 91
Serial No. 07/639,453

Liver transplantation is now the only treatment for Crigler-Najjar Type I syndrome. Other hyperbilirubinemic syndromes are difficult and expensive to diagnose. This cDNA clone encodes a mammalian bilirubin UDP-glucoronosyltransferase. Applications include gene therapy for patients with Crigler-Najjar Type I syndrome, a gene-based fetal diagnostic probe for the syndrome, and diagnostic tools for other hyperbilirubinemic syndromes, such as Gilbert syndrome.
Licensing Contact: Todd Leonard

Regioselective Substitutions In Cyclodextrins

Pitha, J., Bengt, L. (NIA)
Serial No. 07/633,402
Patent Issued 17 Mar 92
U.S. Patent No. 5,096,893

A method of selectively introducing substitutions in cyclodextrin compounds offers improvement in the treatment of high blood levels of cholesterol and triglycerides. Previously, there has been no available means of selectively introducing substitutions onto cyclodextrin molecules; such substitutions enhance the cyclodextrin molecule's ability to bind to other molecules. This new method allows for the production of mixtures of cyclodextrins with unique substition patterns which allow them to recognize and bind to specific molecules such as to cholesterol and triglycerides in the blood.
Licensing Contact: Mark Hankins

Sustained And Continuous Production Of High Titers Of Recombinant Viral Vectors And Transduced Target Cells For Use In Gene Therapy

Culver, K., Knazek, R., Blaese, R. (NCI)
Filed 13 Dec 90
Serial No. 07/627,008

This novel approach to gene therapy uses packaging cell lines that produce replication-incompetent retroviral vectors which, in turn, introduce heterologous DNA into host cells to replace or supplement the products of defective, absent, or sparsely producing genes, or to encode therapeutic products. Cell lines developed to date produce retroviruses at a low titer and have limited clinical usefulness; in addition, there is no method known for concentrating retrovirus particles. This method of culturing a packaging cell line in a hollow fiber bioreactor allows continuous production of a high titer of recombinant eukaryotic viral vectors. Cheaper and easier production of transduced target cells will be valuable in many genetic therapies.
Licensing Contact: Arthur Cohn

Isolation And Characterization Of cDNAs Coding For The α, β, And γ Subunits Of The High-Affinity Receptor For Immunoglobulin E

Kinet, J.P., Metzger, H. (NIAMS)
Filed 14 Dec 90
Serial No. 07/626,704

The high-affinity immunoglobulin E (IgE) receptor mediates immunoglobulin transport across membranes, stimulates a variety of cellular activities induced by antigen-antibody complexes (including those activities implicated in human allergic conditions), and possibly regulates the biosynthesis of antibodies. These cDNA clones for the α, β, and γ subunits of the IgE receptor allow for the simultaneous production of the receptor in host cells. The invention promises valuable applications in the assay and design of drugs, particularly in allergy therapy.
Licensing Contact: Marjorie Hunter

Phosphorothioate And Normal Oligodeoxynucleotides With 5′-Linked Acridine

Cohen, J., Mori, K., Loke, S., Zhang, X., Neckers, L., Stein, C. (NCI)
Filed 27 Nov 90
Serial No. 07/619,845 (CON of 07/246,688)

The use of carbon disulfide/pyridine as a solvent provides for improved production of a 5′-linked acridine phosphorothioate oligodeoxynucleotide. Previous processes using different solvents have imposed much harsher sulfurization conditions and resulted in products with a much lower degree of sulfurization and much lower production yields. These compounds are potentially useful for inhibiting gene expression (antisense) and can enable the kinetics of cellular uptake to be determined using fluorescence cell sorting.
Licensing Contact: Arthur Cohn

Method Of Treating Diseases Caused By Immunodeficiency States By Administering Human Neutrophil Chemotactic Factor To Humans

Matsushima, K., Larsen, C., Oppenheim, J., Sohmura, Y. (NCI)
Filed 19 Nov 90
Serial No. 07/616,805 (CON of 07/517,556, CON of 07/216,418)

It has long been known that human neutrophil chemotactic factor (HNC) attracts and activates neutrophils. This invention demonstrates that HNC also attracts and activates T lymphocytes. It also includes a composition consisting of HNC and a method for administering this HNC formulation to patients with malignant tumors and immunodeficiency states. The method may be a valuable therapy for immunodeficiency states caused by T lymphocyte disorders.
Licensing Contact: Todd Leonard

Human IL-6

Tanner, J., Tosato, G. (FDA)
Filed 14 Nov 90
Serial No. 07/612,675

IL-6 (formerly B cell stimulatory factor 2, interferon-β2, and hepatocyte stimulatory factor) has been described and cloned. Its location and activity in a number of human tissues has also been described, although its exact biological mechanisms are still largely unknown. The products described here — cell lines that secrete an IL-6 that is similar to natural IL-6; a pharmaceutical composition; and a number of specific administrations — are expected to be useful in the treatment of tumors, immunodeficiency diseases, bone marrow deficiencies, and shock syndromes.
Licensing Contact: Arthur Cohn

Human Macrophage-Stimulating Protein

Leonard, E.J., Yoshimura, Y., Showalter, S., Skeel, A., Appella, E., Tanaka, S. (NCI)
Filed 20 Sep 90
Serial No. 07/586,085

Macrophage-stimulating protein (MSP), a component of human and animal (mammalian) blood plasma, accelerates the movement and increases the activity of macrophages which, when activated, can kill foreign microorganisms and tumor cells. This invention describes the preparation of highly purified MSP and the production of antibodies to the purified MSP. These methods overcome the primary problem with natural MSP, i.e., that its concentration in the plasma is too low for purification by conventional techniques and for use as an effective therapeutic agent. Highly purified MSP and/or its antibodies can be used as a diagnostic and therapeutic agent and a basic research tool for diseases characterized by macrophage-mediated inflammation.
Licensing Contact: Todd Leonard

A_2 Adenosine Receptor Agonists, Useful As Probes, Therapeutic Agents, And Methods Of Using

Jacobson, K.A., McCabe, R.T., Skolnick, P. (NIDDK)
Filed 5 Sep 90
Serial No. 07/577,528

Novel A_2 adenosine receptor agonists offer an improved method for studying these receptors as well as for treating central nervous system and cardiovascular disorders. Presently available A_2 receptor agonists also have some affinity for A_1 adenosine receptors, which generally have the opposite function of A_2 receptors. These new compounds, which are derivatives of ethylcarboxamidoadenosuine, are specific for A_2 receptors and may be useful in treating schizophrenia, hypertension, and thrombosis.
Licensing Contact: Arthur Cohn

(+)-Isomers Of Edoetheno/Endoethano-Epoxymorphinan Derivatives As Antitussive Agents

Rice, K.C., Wood, P.L., Farah, J.M., Grayson, N.A. (NIDDK)
Filed 20 Aug 90
Serial No. 07/568,732 (CIP of 07/398,213)

A class of epoxymorphinan derivatives offers an improved method of cough suppression. Presently, the most effective cough suppressing (antitussive) agents are opiate derivatives, which have unwanted side effects such as drowsiness and respiratory suppression. These (+)-enantiomers of the compound epoxymorphinan have potent antitussive activity without the unwanted narcotic side effects.
Licensing Contact: Arthur Cohn

A Method Of Making Tetrahydropteroylpolyglutamic Acid Derivatives

Fitzhugh, A., Chabner, B. (NCI)
Filed 27 Jul 90
Serial No. 07/558,535

A simple procedure has been designed for the production of a more biologically active form of folinic acid or leucovorin (tetrahydropteroylpoly-L-glutamic acid) starting from the monoglutamic derivative. This direct chemical synthesis overcomes the production limitations of previously used enzymatic methods. Folinic acids are used as inhibitors or enhanced substrates against folic acid enzymes, particularly in the assay and treatment of anemias or other conditions due to folic acid deficiency.
Licensing Contact: Marjorie Hunter

The Novel Use Of Intravenous Immunoglobulin In The Treatment Of Complement-Mediated Diseases

Basta, M., Frank, M.M., Fries, L.F. (NIAID)
Filed 11 July 90
Serial No. 07/551,522

A new method of treating complement-mediated diseases using high doses of intravenous immunoglobulin (IVIG) has been developed. Certain immunoglobulins, known as myeloma proteins, have been shown to interfere with the complement system by preventing complement fragments from binding to target cells. Complement is believed to play a major role in many health problems including allergies, heart attacks, and renal disease. Current therapy for many of these problems is inefficient and consists mainly of prolonged glucocorticoid administration, which often causes serious side effects.
Licensing Contact: Arthur Cohn

A cDNA Encoding The Rat D1 Dopamine Receptor Linked To Adenylyl Cyclase Activation And Expression Of The Receptor Protein in Plasmid-Transfected Cell Lines

Sibley, D., Monsma, F.J., McVittie, L.D., Mahan, L.C. (NINDS, NIMH)
Filed 6 Jul 90
Serial No. 07/548,714

A cDNA for the D1 dopamine receptor subclass has been cloned and expressed in high abundance within mammalian cell lines. Dopamine receptors are extremely important from a clinical viewpoint, since drugs that activate these receptors (agonists) are used to treat Parkinson's disease, whereas drugs that block (antagonists) dopamine are used to treat schizophrenia and other mental disorders. Current drugs used for these purposes produce side effects due to a lack of receptor subclass specificity. Using the D1 subclass dopamine receptor, it will now be possible to screen drugs that have increased receptor specificity and fewer side effects.
Licensing Contact: Arthur Cohn

Diagnosis And Treatment Of Autoimmune Diseases

Hauser, S.L., Seboun, E., Kindt, T.J., Robinson, M. (NIAID)
Filed 29 Jun 90
Serial No. 07/545,077

A novel method for rapidly screening large segments of DNA offers an advancement for the diagnosis and treatment of inherited autoimmune diseases such as multiple sclerosis (MS). Disorders such as MS appear to be caused by multiple genes. Methods for screening individuals for these disease genes are cumbersome and time-consuming, and therapies often are started only after the disease is well established. This new screening method maps large regions of DNA by detecting insertion deletion related polymorphisms (IDRPs) in order to identify markers associated with such autoimmune disease. These markers can be used to determine an individual's propensity for developing the disease, as well as for identifying the parental origin of the disease genes.
Licensing Contact: Arthur Cohn

Treatment Of Mood Disorders With Functional Antagonists Of The Glycine/NMDA Receptor Complex

Trullas, R., Skolnick, P. (NIDDK)
Serial No. 07/541,032
Patent Issued 4 Feb 92
U.S. Patent No. 5,086,072

A new method for the treatment of mood disorders through the use of antagonists for the functional glycine/NMDA receptor complex has been discovered. Compounds capable of reducing excessive activity at the NMDA-operated cation channels may also have applications in the treatment of such neuropathological diseases such as epilepsy, stroke, anxiety, and Alzheimer's disease.
Licensing Contact: Arthur Cohn

Peptide Derivatives Of Cytochrome b558 And Their Use As Medicaments [As Anti-Inflammatory Agents]

Malech, H., Lomax, K., Rotrosen, D., Nunoi, H. (NIAID)
Filed 24 May 90
Serial No. 07/527,767 (CIP of 07/331,652)

A new anti-inflammatory agent based on two c-terminal amino acid sequences of cytochrome b558 has been shown to inhibit the production of toxic oxygen products (superoxide, peroxide) by human phagocytic cells. Because of its specificity for phagocytic cells, it is expected that these peptide derivatives would not have the side effects of other anti-inflammatory agents in general use.
Licensing Contact: Mark Hankins

Target-Specific, Cytotoxic Recombinant *Psuedomonas* Exotoxin

Pastan, I., Fitzgerald, D,. Chaudhary, V. (NCI)
Filed 12 May 90
Serial No. 07/522,563 (CIP of 07/459,635)

The domain of the *Pseudomonas* exotoxin (PE) amino acid sequence that is responsible for the cytotoxic activity of the protein has been identified. Specific modifications of the c-terminus result in enhanced cytocidal activity. Site-specific insertion of recognition molecules — such as growth factors, hormones, and antibodies — within the PE protein results in a target-specific chimeric protein having enhanced cytoxicity. Chimeric proteins containing multiple recognition molecules result in higher specificity and may be useful for killing cells with different receptor sites.
Licensing Contact: Daniel Passeri

Improved *Pseudomonas* Exotoxins Of Low Animal Toxicity And High Cytocidal Activity

Pastan, I., Fitzgerald, D., Chaudhary, V. (NCI)
Filed 11 May 90
Serial No. 07/522,182

Improved recombinant *Pseudomonas* exotoxins that demonstrate decreased atoxicity in animals and increased cytocidal activity are obtained by modifying the amino acid sequence responsible for the toxic effect in humans and animals. The modified *Pseudomonas* exotoxins can be conjugated to target-specific molecules — such as growth factors, hormones, and antibodies — to produce chimeric fusion proteins with specificity, low toxicity, and high cytocidal activity. One such modified exotoxin is designated PE66-4Glu.
Licensing Contact: Daniel Passeri

Aminoalkylcarbamyl Derivatives Of Forskolin As Intermediates For The Synthesis Of Useful Forskolin Derivatives

Seamon, K.B., Robbins, J., Laurenza, A. (FDA)
Filed 3 May 90
Serial No. 07/518,719

A new method of synthesizing forskolin intermediates offers to enhance the study and treatment of a number of conditions including asthma, glaucoma, and heart disease. Previous, synthetic derivatives of forskolin, a naturally occurring compound that interacts with a diverse group of

important membrane proteins, have not had very specific activity and have not been stable under physiologic conditions. This new method of synthesizing forskolin analogs produces compounds that are extremely stable and specific for different forskolin-binding proteins.
Licensing Contact: Arthur Cohn

New Synthetic Bioactive Compounds

Zasloff, M.A. (NICHD)
Filed 6 Oct 89
Serial No. 07/507,263 (CON of 07/076,734, CIP of 07/021,493)

A new class of synthetic polypeptides, called magainins, is valuable for inhibiting the growth of a broad range of organisms including gram-negative and gram-positive bacteria, fungi, viruses, and protozoan species. These peptides, which have not previously been identified, have a molecular weight of about 2500 or less and are highly water-soluble, amphiphilic, and non-hemolytic.
Licensing Contact: Arthur Cohn

Method Of Treating Diseases Associated With Elevated Levels Of IL-1

Rosenthal, G.J., Kouchi, Y., Cosini, E., Blaylock, B., Comment, C. Luster, M., Craig, W., Taylor, M. (NIEHS)
Filed 10 Apr 90
Serial No. 07/506,613

Pentamidine, when used in therapeutically effective amounts, has been found to reduce IL-1 levels. Current therapies (e.g., corticosteroids) block nonselectively, which often results in decreased host resistance. Pentamidine, which is more specific and more effective in reducing IL-1 levels than steroids, does not produce the adverse side effects associated with corticosteroid therapy. Reducing levels of IL-1 is useful in the treatment of inflammatory diseases such as arthritis, endotoxemia, fibrosis, and hypersensitivity diseases.
Licensing Contact: Todd Leonard

Suramin And Active Analogues Thereof In The Treatment Of Hypercalcemia

Walther, M.M., LaRocca, R.V., Myers, C.E., Stein, C.A. Linehan, W.M. (NCI)
Filed 29 Mar 90
Serial No. 07/500,913

The novel dosing regimen described in this invention demonstrates that a single course of treatment with suramin or its analogs normalizes plasma calcium levels in patients with hypercalcemia for three months. With other treatments, hypercalcemia readily returns after the therapy is discontinued. Suramin also exhibits anticancer, antifilarial, and antiviral (e.g., HIV/AIDS) activity. Hypercalcemia is caused by hyperparathyroidism, cancer, hypervitaminosis D, thyrotoxicosis, and adrenal insufficiency.
Licensing Contact: Marjorie Hunter

Bifunctional Cyclohexyl DTPA Ligands

Gansow, O.A., Brechbiel, M.W. (NCI)
Filed 26 Mar 90
Serial No. 07/498,319

A new bifunctional cyclohexyl DTPA-type ligand has been developed as a metal-chelating agent to form metal chelate-protein conjugates. Such ligands are thus useful for labeling proteins with radioactive metals and can be consequently used for radioimmunoimaging and radioimmunotherapy.
Licensing Contact: Daniel Passeri

A Functionalized Complexand

Brechbiel, M.W., Gansow, O. (NCI)
Filed 26 Mar 90
Serial No. 07/498,320

A new macrocyclic ligand has been developed as a metal-chelating agent to form metal chelate-protein conjugates. Such ligands are useful for labeling proteins with radioactive metals such as Yttrium-90 and can be consequently used for radioimmunoimaging and radioimmunotherapy.
Licensing Contact: Daniel Passeri

Use Of Suramin To Treat Rheumatologic Diseases

LaRocca, R.V., Stein, C.A., Cooper, M.R., Myers, C.E. (NCI)
Filed 14 Feb 90
Serial No. 07/479,817

Suramin and its polysulfonated compounds and salts were effective in the treatment of rheumatoid arthritis and other immunoregulatory diseases. Suramin currently has only one approved treatment protocol, i.e., to treat parasitic infection and, prior to this invention, no evidence has been presented that suramin is an effective immunoregulatory agent. Preliminary studies indicate that high doses of suramin are required to achieve and maintain the desired anti-autoimmune effects and that frequent monitoring of serum suramin levels is needed to avoid neurotoxic effects. The particular autoimmune and allergic diseases potentially treatable with suramin include Crohn's disease, polyarthritis, psoriasis, interstitial and glomerular nephritis, systemic lupus erythematosus, asthma, and inflammatory lung disorders.
Licensing Contact: Marjorie Hunter

Cloned DNA For Synthesizing Unique Glucocerebrosidase

Ginns, E.I., Martin, B., Maysak, K.A., Eliason, W.K., LaMarca, M.E. (NIMH)
Filed 5 Feb 90
Serial No. 07/474,307 (CON of 07/137,976)

A new cDNA that can be used for synthesizing large quantities of a unique glucocerebrosidase offers a significant advancement for the treatment of Gaucher's disease. Previously available methods for isolating or producing (by recombinant DNA technology) glucocerebrosidase yielded an enzyme with a carbohydrate structure different from that found in other tissues or only produced small amounts of enzyme. This

new cDNA, which uses a baculovirus expression system, produces 10 times as much glucocerebrosidase as the previously available expression system, and the carbohydrate portion of the enzyme is substantially different from that of the placental enzyme.
Licensing Contact: Arthur Cohn

Pharmaceutical Composition Containing Uric Gases And Method Of Treating Oxidant-Related Disorders

Peden, D.B., Kaliner, M.A. (NIAID)
Filed 31 Jan 90
Serial No. 07/472,855

A uric acid compound has been isolated that is useful as an antioxidant in the treatment of respiratory diseases was isolated from the nasal mucosa. When combined with a suitable carrier, the purified compound can effectively inhibit or reverse the oxidation processes associated with respiratory airway disorders such as asthma, pulmonary inflammatory diseases, and bronchopulmonary dysplasia.
Licensing Contact: Mark Hankins

Novel Monoclonal Antibody 8G8 Against Human Platelets

Gralnick, H.R. (CC)
Filed 3 Nov 89
Serial No. 07/432,380

A unique anti-platelet monoclonal antibody 8G8 that binds only to human platelets in the activated state has been uncovered. With its ability to enhance platelet activation, this antibody could be used as an antihemorrhagic agent to stop or reduce surgical bleeding and promote wound healing. Diagnostic uses include the identification of activated platelets as part of monitoring anti-thrombotic therapy.
Licensing Contact: Steve Ferguson

Anti-Platelet Monoclonal Antibody (5G8)

Gralnick, H.R. (CC)
Filed 3 Nov 89
Serial No. 07/432,126

A unique anti-platelet monoclonal antibody 5G8 that binds to human platelet glycoprotein IV has been developed. With its ability to promote platelet aggregation, this antibody could be used as an antihemorrhagic agent to stop or reduce surgical bleeding and promote wound healing. Diagnostic uses include the identification of platelet defects in individuals with coagulation or hemostatic disorders.
Licensing Contact: Steve Ferguson

(+)-Isomers of Endoetheno/Endoethano-Epoxymorphianan Derivatives As Antitussive Agents

Rice, K.C., Wood, P.L., Farah, J.M., Grayson, N.E. (NIDDK)
Filed 24 Aug 89
Serial No. 07/398,213

Many compounds classed as (+)-isomers of endoetheno/endoethano-epoxymorphinan derivatives have antitussive characteristics without the adverse side effects of the most widely used anitussives, which are narcotic derivatives. These epoxymorphinan derivatives may be administered in a variety of ways and can use typical carriers, diluents, and adjuvants.
Licensing Contact: Arthur Cohn

Selectively Cytotoxic IL4-PE40 Fusion Protein

Pastan, I., Fitzgerald, D., Ogata, M. (NCI)
Serial No. 07/351,448
Patent Issued 21 Jan 92
U.S. Patent No. 5,082,927

Conjugation of a *Pseudomonas* exotoxin (PE) gene and a monoclonal antibody can be used to create selective cytotoxins. The method described in this invention is used to produce a chimeric protein, IL4-PE40, which selectively kills IL-4 receptor-bearing cells.
Licensing Contact: Daniel Passeri

Human-Derived Monocyte Attracting Purified Protein Product Useful In A Method Of Treating Infection And Neoplasms In A Human Body, And The Cloning Of A Full-Length cDNA Thereof

Yoshimura, T., Robinson, E.A., Appella, E., Leonard, E.J. (NCI)
Filed 30 Mar 89
Serial No. 07/330,446 (CIP of 07/304,234)

A novel class of human-derived peptide products offers an important new tool for the treatment of a variety of infections and neoplasms in the human body. Macrophages, which are derived from monocytes, play a central role in human immune response and defense against infection. Previously, no pure human leukocyte-derived monocyte-attracting substance has been isolated. These newly isolated peptide products, which exhibit potent monocyte chemotactic activity, may be helpful in enhancing immune response to a variety of infections as well as cancers.
Licensing Contact: Todd Leonard

Method Of Synthesis Of Hydroxy-Substituted 4-Alkoxyphenylacetic Acids

Rice, K.C. (NIDDK)
Serial No. 07/318,590
Patent Issued 14 Apr 91
U.S. Patent No. 5,008,449

A novel method of synthesizing hydroxy-substituted 4-alkoxyphenylacetic acids offers a more efficient means of producing raw materials for the synthesis of natural and unnatural opium derivatives, including antagonists and agonist-antagonists. Advantages of this method over previously available methods include the ability to use atmospheric pressure, high concentrations of reactants, isolation of products by filtration, lower reaction temperatures, and lower molar ratios of base and copper salts.
Licensing Contact: Arthur Cohn

Calmodulin-Binding Peptide Derivatives Of Non-Erythroid α-Spectrin [Tissue Rejection And Autoimmune Therapy]

Leto, T. (NIAID)
Filed 2 Mar 89
Serial No. 07/318,172

Peptide derivatives of the α subunit of the protein, non-erythroid spectin, have utility in protecting against organ and tissue transplant rejection or autoimmune disorders. Calmodulin, an intracellular receptor, is associated with organ and tissue rejection and autoimmune disorders. Cyclosporin A, a drug that is known to bind to calmodulin, is presently the most effective drug in the treatment of these disorders. Cyclosporin A, however, has a number of toxic side effects that limit its dosage. Peptides derived from the α subunit of non-erythroid spectin, a naturally occurring protein with potent calmodulin-binding activity, offer to mimic cyclosporin A's antirejection and anti-autoimmune activity without its associated toxicities.
Licensing Contact: Marjorie Hunter

Thymoleptic Peptides

Bridge, P., Goodwin, F. (NIMH)
Filed 16 Dec 88
Serial No. 07/285,559

Peptides that inhibit binding of HIV to cell receptors sites are useful as agents for the treatment of mental disorders and psoriasis *not* associated with HIV infections. Patients with AIDS often are afflicted with skin disorders such as psoriasis and/or mental impairment such as dementias and depression; because central nervous system cells have receptors similar to immune cells, both the psoriasis and mental impairment in AIDS patients is believed to be associated with HIV binding. These peptides, which were originally formulated to block HIV infection, are effective in treating psoriasis and depression related to AIDS as well as psoriasis and depression *not* related to AIDS. Thus, these peptides are also believed to have mood-improving, or thymoleptic, properties.
Licensing Contact: Todd Leonard

Use Of Minoxidil To Stimulate Wound Healing

Sank, A., Martin, G.R., Ledbetter, S. (NIDR)
Serial No. 07/281,129
Patent Issued 27 Mar 90
U.S. Patent No. 4,912,111

Minoxidil is used to improve or accelerate the healing of wounds. The drug can be applied topically, given orally, or administered by injection to promote the migration of epithelial cells (i.e., fibroblasts and keratinocytes), which can help restore the epidermis. Minoxidil may be useful in conditions where healing is a problem, such as diabetes, aging, and after burns. Rapid epidermal coverage of burns would reduce infection, fluid loss, and abnormal scarring. Medical devices can be designed to deliver minoxidil at various concentrations directly to wounds.
Licensing Contact: Steve Ferguson

Antimicrobial Peptides And Processes For Making The Same

Chen, H.C., Brown, J.H., Morell, J.L., Huang, C.M. (NICHD)
Filed 6 Dec 88
Serial No. 07/280,363

Xenopus peptide analogs are improved antimicrobial agents. These modified peptide analogs exhibit up to two orders of magnitude more antimicrobial activity than their unmodified counterparts.
Licensing Contact: Mark Hankins

Method Of Treating Trichotillomania And Onchyphagia

Swedo, S.E., Rapoport, J.L., Leonard, H.L. (NIMH)
Serial No. 07/207,617
Patent Issued 16 Apr 91
U.S. Patent No. 5,008,262

The drug clomipramine effectively treats trichotillomania (impulsive hairpulling) and onchyphagia (pathologic nailbiting) not accompanied by any other mental or obsessive-compulsive disorder. This invention provides a novel pharmaceutical approach to treating primary hairpulling and nailbiting. It is effective in individuals for whom prior therapies have been unsuccessful.
Licensing Contact: Arthur Cohn

Carbamates Related To (-)-Physostigmine As Cholinergic Agents

Brossi, A., Yu, Q-S., Atack, J.R., Rapoport, S.I. (NIDDK)
Serial No. 07/166,825
Patent Issued 13 Feb 90
U.S. Patent No. 4,900,748

Structural analogs of (-)-physostigmine are potent inhibitors of acetylcholinesterase and butyrylcholinesterase. Animal studies indicate that these newly synthesized compounds may be effective in treating cholinergic disorders and other diseases, including glaucoma, Alzheimer's disease, myasthenia gravis, and organophosphate poisoning.
Licensing Contact: Arthur Cohn

Method Of Treating Psychotic Illnesses

Straw, G.M. (NIMH)
Serial No. 07/158,035
Patent Issued 28 Feb 89
U.S. Patent No. 4,808,630

Retinoid compounds offer to improve the treatment of certain psychotic illnesses such as schizophrenia. Patients with psychotic illnesses are often treated with a neuroleptic such as haloperidol, which has a number of dose-related adverse side effects. When administered to patients taking haloperidol, retinoids such as retinoic acid result in decreased serum levels of haloperidol in a patient without loss of efficacy. In addition, the retinoids themselves have direct psychotropic effects. Retinoid treatment also inhibits the occurrence of movement disorders (such as tardive dyskinesia) and extrapyramidal side effects resulting from the administration of the neuroleptic.
Licensing Contact: Arthur Cohn

Vi Capsular Polysaccharide-Protein Conjugate

Szu, S.C., Schulz, D., Schneerson, R., Robbins, J.B. (NICHD)
Filed 16 Feb 88
Serial No. 07/155,799

Vi capsular polysaccharides conjugated to toxin-dependent proteins are valuable for enhancing antibody response and converting toxin-dependent properties to the Vi capsular polysaccharide. A heterobifunctional crosslinking agent can be used to bind thiol derivatives of the Vi capsular polysaccharides to the proteins, such as dipththeria toxoid, tetanus toxoid, cholera toxin, and *Haemophilus influenzae*. **Licensing Contact: Mark Hankins**

Method Of Eliminating Immunosuppressive Effects Of Thymus-Derived (T) Suppressor Cells

Baker, P.J., Rudbach, J.A. (NIAID)
Filed 17 Dec 87
Serial No. 07/133,948

A novel agent which selectively eliminates thymus-derived (T) suppressor cells has utility as an immunorestorative agent. Previously, there has been no available method to eliminate suppressor T cells, which are associated with decreased immune response to tumor cells or infectious agents, without affecting other beneficial immune cells. This novel agent is a modified bacterial lipopolysaccharide which, when given at a particular dose, concentration, and time, significantly decreases the activity of suppressor T cells while leaving the immune-stimulating ability of amplifier and helper T cells intact.
Licensing Contact: Todd Leonard

New Method Of Producing Bioactive Effect

Zasloff, M.A. (NICHD)
Filed 5 Aug 87
Serial No. 07/081,793 (CIP of 07/076,734, CIP of 07/021,493)

Two polypeptides, XPF and PGLa, have potent antibacterial and antifungal activity and offer an inexpensive, alternative method for treating microbial infections. Presently available antimicrobial agents are often isolated from biological compounds and are cumbersome and expensive to purify. Since the amino acid sequence of these polypeptides is known, they can be routinely synthesized in substantially pure form by standard techniques.
Licensing Contact: Arthur Cohn

Method Of Enhancing Lipophile Transport Using Cyclodextrin Derivatives

Pitha, J., Carpenter, T. (NIA)
Filed 1 Jul 87
Serial No. 07/068,921

Cyclodextrin derivatives offer a novel method of treating individuals with disorders associated with lipophile transport or distribution. Lipophiles such as cholesterol, vitamin A, or triglycerides are essential to biological processes but become pathogenic in excess concentrations or when they are not properly distributed throughout the system. Cyclodextrins, which are derived from the enzymatic degradation of starch, are effective carriers of lipophiles and are relatively nontoxic. Thus, they are a relatively benign way to clear the system of excess lipophiles.
Licensing Contact: Mark Hankins

Antimicrobial Compounds

Zasloff, M.A. (NICHD)
Serial No. 07/021,493
Patent Issued 7 Mar 89
U.S. Patent No. 4,810,777

A new class of polypeptides called "magainins" offers a novel alternative for the treatment of microbial and fungal infections. Many currently available antimicrobial and antifungal compounds have very low solubility in water as well as toxic side effects, which limits their method of administration and utility. These magainins have a broad range of antimicrobial and antifungal activity, are very water-soluble, and are nontoxic to animal cells, including red blood cells.
Licensing Contact: Arthur Cohn

Method For Detecting Melanin-Containing Matter

Kebabian, J.W. (NINDS)
Serial No. 06/869,714
Patent Issued 7 Jun 88
U.S. Patent No. 4,749,559

A novel ligand for detecting melanin-containing tissues or cells is valuable for diagnosing and treating melanomas. Previously developed methods for detecting melanin have not been very specific or simple to use. This melanin-specific ligand, which belongs to a group of compounds known as benzazepines, can be used for detecting and localizing pigmented melanomas or for delivering cytotoxic agents that are covalently attached to the ligand.
Licensing Contact: Arthur Cohn

Water-Soluble Derivatives Of Fredericamycin A

Misra, R. (NCI)
Serial No. 06/889,501
Patent Issued 16 Jun 87
U.S. Patent No. 4,673,678

Potassium, sodium, and lithium salts of fredericamycin A (FMA) have greater water solubility (of at least 0.5-1.00 mg/ml) than FMA and have wide-ranging *in vitro* and *in vivo* antimicrobial and antitumor activity. Previous derivatives of FMA had low water solubility or reduced biological activity.
Licensing Contact: Marjorie Hunter

Inducing Analgesia By Implementation Of Cells Releasing Neuroactive Substances

Pollard, H.B., Sagen, J., Pappas, G.D., Perlow, M. (NIDDK)
Serial No. 06/866,479
Patent Issued 28 Jun 88
U.S. Patent No. 4,753,635

A method of reducing pain by implanting cell material in the central nervous system (CNS) offers a novel means of treating intractable pain. Presently available analgesic therapies often have unwanted side effects that limit their long-term use. This method comprises implanting living cells or tissue in the CNS that release effective amounts of analgesic substances such as opioid peptides or catecholamines when stimulated to do so.
Licensing Contact: Arthur Cohn

Synthesis Of Chiral 1-Benzyl-1,2,3,4-Tetra-Hydroisoquinolines By Asymmetric Reduction

Rice, K.C. (NIDDK)
Serial No. 06/748,854
Patent Issued 23 Feb 88
U.S. Patent No. 4,727,146

Synthesizing chiral 1-benzyl-1,2,3,4-tetrahydroisoquinolines from dehydroisoquinoline via a catalytic or chemical asymmetric reduction offers a more efficient method for generating natural and unnatural opioids. Optical resolution, the method presently used to produce these compounds from dehydroisoquinoline, produces only about 50 percent of the theoretical yield of the desired isomer. This asymmetric reduction method produces the desired isomer almost exclusively.
Licensing Contact: Arthur Cohn

Carbamates Of Colchicine For Treatment Of Gout

Brossi, A., Kerekes, P. (NIDDK)
Serial No. 06/601,314
Patent Issued 6 Jul 85
U.S. Patent No. 4,533,675

Novel carbamate derivatives of colchicine offer an improved method of treating inflammatory and autoimmune diseases. Colchicine, which is used to treat gout and arthritis, as well as some cancers, has a number of potent toxicities that limit its usefulness. These carbamate derivatives of colchicine have far fewer unwanted side effects but retain full therapeutic activity for the treatment of gout and arthritis, as well as enhanced antitumor and antileukemic activity.
Licensing Contact: Arthur Cohn

***Pseudomonas* Exotoxin Conjugate Immunotoxins**

Pastan, I., Willingham, M., Fitzgerald, D. (NCI)
Serial No. 06/574,173
Patent Issued 8 Oct 85
U.S. Patent No. 4,545,985

Ricin and diphtheria toxins have been modified to produce selective and potent cell toxins. *Pseudomonas* exotoxin, modified with methyl-4-mercaptobutyrimidate, is superior to other cell toxins because is it easily prepared in large amounts, because humans do not have antibodies to it, and because it does not have to be separated into subunits before being conjugated.
Licensing Contact: Daniel Passeri

Short Total Synthesis Of Morphinan Compounds Which Uses Cyclization Of Cycloalkylcarbonyl Compound Selected From Cyclopropylcarbonyl And Cyclobutylcarbonyl

Rice, K.C. (NIDDK)
Serial No. 06/564,515
Patent Issued 23 Sep 86
U.S. Patent No. 4,613,668

Morphinan compounds can be produced by a process that does not involve opium derivatives, N-methylated, or N-normorphinan intermediates, but necessary intermediates are obtained from m-methoxyphenethylamine. Thus, the need for opium and its extractives as raw materials for production of the drugs Naltrexone, Buprenorphine, Nalbuphine, and Nalmefene is obviated.
Licensing Contact: Arthur Cohn

Saponin-Based Polyether Polyols

Pitha, J. (NIA)
Serial No. 06/548,849
Patent Issued 8 Oct 85
U.S. Patent No. 4,546,097

Solubilizing digitonin and digitonin-related saponins yields a product superior to the purified saponin extract generally employed in pharmaceutical applications. Prior extracts have low solubility and are fairly toxic; they also form insoluble complexes with cholesterol, which is useful in regulating cholesterol adsorption, but has been implicated in the extracts' toxicity. Saponin-based polyether polyols have low toxicity, high solubility, and a decreased capacity for forming insoluble complexes with cholesterol. They are effective, nontoxic solubilizers of hormones and drugs and are useful anti-mycoplasmatic agents in cell cultures.
Licensing Contact: Mark Hankins

Practical Total Synthesis Of Unnatural Enantiomers Of Opium-Derived Morphinans

Rice, K.C. (NIDDK)
Serial No. 06/477,970
Patent Issued 4 Jun 85
U.S. Patent No. 4,521,601

Several opium-derived compounds that can act as antitussives (drugs that prevent or relieve coughing) were synthesized. The method used to produce these compounds is simpler than previous methods; it also allows for total synthesis and provides a step for resolution of the (-)-7 and (+)-7 enantiomers so that one enantiomer can be produced to the exclusion of the other. This invention can be applied to the production of all synthetic, morphine-like enantiomers of opium derivatives.
Licensing Contact: Arthur Cohn

Antitussive 6-Ketomorphinans Of The (+)-Series

Brossi, A. (NCI)
Serial No. 06/459,796
Patent Issued 12 Nov 85
U.S. Patent No. 4,552,962

Morphinans of the synthetic (+)-series of opioids do not bind to the opiate receptor but have profound antitussive effects. To date, the best of these valuable non-narcotic antitussive agents has been dextromethorphan. These new compounds, (+)-6 ketomorphinans, have even better antitussive properties in experimental animals and seem to be longer-acting and more potent than dextromethorphan or codeine.
Licensing Contact: Arthur Cohn

Treatment Of Graft-Versus-Host Disease Using A Mixture Of T Lymphocyte-Specific Monoclonal Antibody: Ricin Conjugates

Neville, D., Youle, R. (NIMH)
Serial No. 06/456,401
Patent Issued 28 May 85
U.S. Patent No. 4,520,226

A novel three-part mixture of monoclonal antibodies, hybridized to the toxin ricin, selectively kills T cells in human bone marrow samples without damaging the bone marrow stem cells. T cells in donor marrow react against a host and cause graft-versus-host disease. Prior methods, such as direct elimination of T cells, damages bone marrow stem cells, and use of antibody plus complement is difficult to standardize and is often again toxic to human bone marrow stem cells. The new reagent may be especially useful in the treatment of aplastic anemia or in leukemia patients who receive bone marrow transplants.
Licensing Contact: Daniel Passeri

Prevention Of Graft-Versus-Host Disease Following Bone Marrow Transplantation

Neville, D., Youle, R. (NIMH)
Serial No. 06/399,257
Patent Issued 19 Feb 85
U.S. Patent No. 4,500,637

A monoclonal antibody known as TA-1, when hybridized to the toxin ricin, selectively kills T cells in human bone marrow samples without damaging bone marrow stem cells. This reagent may permit bone marrow transplantation even when HLA-matched siblings are unavailable as donors. This novel antibody-toxin complex is particularly useful in transplants to patients with aplastic anemia or leukemia. It may also be useful in transplants directed at cancerous infiltration of the bone marrow, autoimmune diseases, or organ transplantations. This invention helps reduce the graft-versus-host disease that results when T cells in donor marrow react against a host. It also overcomes the problems associated with direct elimination of T cells, which damages bone marrow stem cells, and with the use of antibody plus complement, which is difficult to standardize and is often again toxic to human bone marrow stem cells.
Licensing Contact: Daniel Passeri

Short Total Synthesis Of Dihydrothebainone, Dihydrocodeinone, And Nordihydroccodeinone

Rice, K.C. (NIDDK)
Serial No. 06/350,221
Issued 11 Jan 83
U.S. Patent No. 4,368,326

A novel, improved method of synthesizing morphinan compounds was developed. In this invention, β,γ-unsaturated ketones replace α,β-unsaturated ketones, and superacids, rather than other acids, are used successfully in the cylcization steps needed to produce these morphinans. This process also facilitates the formation of N-nor derivatives through oxide bridge closure; these intermediates are critical in the synthesis of narcotic agonists and antagonists.
Licensing Contact: Arthur Cohn

Inactivating Protein Synthesis By Incubating Anti-Thy 1.1-Ricin A Chain Monoclonal Antibody Hybrids With Target Protein Cells

Neville, D., Youle, R. (NIMH)
Serial No. 06/350,222
Patent Issued 28 May 85
U.S. Patent No. 4,520,011

A method of producing potent hybrid ricin-antibody toxins with receptor specificity was developed. The new hybrid toxins are produced by adding an excess of ricin B chain to ricin hybrids composed of the ricin A chain conjugated with anti-Thy 1.1 monoclonal antibodies. Other similar hybrid toxins lack the selectivity and toxicity of the present invention.
Licensing Contact: Daniel Passeri

Inhibition By Peptides Of Tolerance To And Physical Dependence On Morphine

Walter, R., Krivoy, W., Ritzmann, R., Bhargava, H. (NIDDK)
Serial No. 06/338,537
Patent Issued 22 Nov 83
U.S. Patent No. 4,416,871

Certain peptides containing selected amino acid moieties are found to have startling effects when administered during chronic morphine treatment. The peptide treatment prevented development of tolerance and physical dependence, did not impair the analgesic and hypothermic effects of morphine, and reduced the development of tolerance to those effects. An analgesic compound comprising morphine and one of these dipeptides has considerable therapeutic value.
Licensing Contact: Mark Hankins

Highly Potent 6-Ketomorphinans Belonging To The 14-Hydroxy Series And Preparation

Brossi, A. (NCI)
Serial No. 06/284,089
Patent Issued 28 Jun 83
U.S. Patent No. 4,390,699

Anti-nociceptive morphine-like activity is found in 6-keto-14-hydroxymorphinans. When substituted on the nitrogen, the resulting compounds function as agonists to the morphine-like properties for certain substituents and as antagonists to the morphine-like properties for other substituents. These compounds can either be made from natural opioids, such as morphine or thebaine, or by total synthesis.
Licensing Contact: Arthur Cohn

6-Ketomorphinan Analgesics

Brossi, A., Schmidhammer, H., Jacobson, A.E., Hsu, F.-L. (NCI)
Serial No. 06/284,088
Patent Issued 14 Jun 83
U.S. Patent No. 4,388,463

A new series of potent morphinan analgesics was synthesized and characterized. Within this set of compounds are narcotic agonists and narcotic antagonists. This invention demonstrates that hydroxylation at the C-4 position and etherification of morphinans does not result in loss of analgesic activity, as was previously thought. The stereochemistry of these compounds reflect natural morphine (-) or synthetic oxymorphine (±).
Licensing Contact: Arthur Cohn

Preparation Of Chiral 1-Benzyl-1,2,3,4-Tetrahydroisoquinolines By Optical Resolution

Rice, K. (NIDDK)
Serial No. 06/265,469
Patent Issued 18 Oct 83
U.S. Patent No. 4,410,700

This is a simple and effective method for synthesizing chiral intermediates used in the manufacturing of medically important opium derivatives. In a short total synthesis of morphinan compounds, derivatives of 1-benzyl-1,2,3,4-tetrahydroisoquinoline are produced, and specific resultant compounds can be optically resolved. The optically active enantiomers facilitate production of natural and unnatural opioids, which have a wide range of pharmacological and research uses.
Licensing Contact: Arthur Cohn

Method For The Use Of Orally Administered 13-*cis*-Retinoic Acid In The Treatment Of Acne

Peck, G.L. (NCI)
Serial No. 06/175,594
Patent Issued 30 Mar 82
U.S. Patent No. 4,322,438

A novel high-low oral dosage schedule offers an improved method of treating cystic acne while reducing the toxic effects of the 13-*cis*-retinoic acid. Unexpectedly, 13-*cis*-retinoic acid — unlike all-*trans* retinoic acid, the naturally occurring form — exerts therapeutic effects in the case of nodulocystic acne even after administration of the compound has stopped. The high dose is given for two to four weeks; then the low dose of 25 percent strength is given for 12 to 14 weeks. Complete clearing has persisted up to 41 months following treatment, which may be repeated at any time thereafter.
Licensing Contact: Marjorie Hunter

Enzyme-Resistant Opiate Pentapeptides

Pert, C.B., Chang, J.-K. (NIMH)
Serial No. 05/769,686
Patent Issued 1 Feb 83
U.S. Patent No. 4,371,463

Synthetic analogs of the naturally occurring opiates met- and leu-enkephalin were produced. These novel compounds are effective analgesics that are also resistant to enzyme degradation *in vivo*. This invention is an improvement over prior compounds, which were readily degraded and, as a result, minimally effective, even at relatively large doses.
Licensing Contact: Arthur Cohn

TRANSGENIC ANIMALS/ VETERINARY

Transgenic Animals For Testing Multidrug Resistance

Pastan, I., Gottesman, M., Galaski, H., Merlino, G. (NCI)
Filed 8 Jul 91
Serial No. 07/727,355 (CON of 07/260,827)

These newly developed transgenic mice express the human multidrug resistance gene (MDR1) in their bone marrow and in other tissues, allowing them to tolerate high doses of chemotherapeutic drugs. This invention can be used to test the safety and efficacy of current and new anticancer drugs in animals that presently cannot be used for such testing.
Licensing Contact: Steve Ferguson

Phi-X174 Transgenic Mammals

Burkhart, J., Malling, H.V. (NIEHS)
Filed 7 Jun 91
Serial No. 07/710,428

This invention offers a new vehicle, the double-stranded viral vector phage X147, for the detection and study of *in vivo* mutations directly at the DNA level in both somatic and germinal cells using simple techniques and a small number of animals. The novel vehicle has been stably integrated into the chromosomal genome of transgenic mice and is not expressed in host cells or tissues. The viral vector can be recovered from the host DNA, and mutations within the genes of the vector can be detected and analyzed. This novel method can bypass disparities frequently observed between *in vitro* tests and whole-animal assays; it is also less expensive and less cumbersome than other approaches to studying mutations. The vehicle also can be used in a variety of eukaryotes and prokaryotes.
Licensing Contact: Steve Ferguson

Enhancement Of Musculature In Animals

Hughes, S.H., Sutrave, P. (NCI)
Filed 3 Dec 90
Serial No. 07/620,415 (CIP of 07/546,449, CIP of 07/373,864)

Animals having increased muscle size or reduced fat, or both, can be constructed by means of various DNA segments such as δ-FB29 that encode a *c-ski* protein or a truncation having the function of *c-ski*. The DNA segments may be combined with vectors such as pMEX*neo*. This DNA construct may be used to provide livestock with increased muscle size and decreased fat tissue, as well as providing a treatment for patients suffering from serious muscle injury or muscle degenerative disease such as muscular dystrophy and amyotrophic lateral sclerosis.
Licensing Contact: Steve Ferguson

Cage Configuration For Arboreal Reptiles

Mason, R.T., Hoyt, R.F. Jr., Pannell, L.K. (NHLBI)
Filed 10 Oct 90
Serial No. 07/594,923

These new reptile cages maintain a high-humidity environment, reduce disturbance of animals, and are safer for investigators than most other models. The novel structure of these cages provides adequate ventilation, high humidity, and visual contact while minimizing unwanted contact with hazardous reptiles. These units are an improvement over previous designs of reptile cages in terms of meeting regulatory requirements and increased safety. Increased usage of reptiles for biomedical research has resulted in a growing need for appropriate cages for housing reptiles.
Licensing Contact: John Fahner-Vitelic

Treated Bird Seed Preferentially Palatable To Birds But Not Palatable To Animals Having Capsaicin-Sensitive Receptors

Blumburg, P.M. (NCI)
Filed 29 Aug 90
Serial No. 07/574,159

A special preparation of bird seed has been developed that has been treated with capsaicin or capsaicin-like compounds such that it can be eaten by birds but is unpalatable to animals having capsaicin-sensitive receptors such as rodents or squirrels. Capsaicin, the pungent ingredient in chile peppers, can thus be used to coat or otherwise be mixed with bird seed to repel these troublesome mammals which recognize these compounds as "hot". Birds, lacking the receptors for these "hot" compounds, do not have this sensitivity and can consume the bird seed in a normal fashion.
Licensing Contact: Steve Ferguson

Method And Apparatus For Assessing Metabolic And Behavior Physiology Of Animals

Duffy, P.H., Meehan, J.F., Hart, R.W. (FDA)
Filed 09 Aug 90
Serial No. 07/564,877

A method and equipment for assessing metabolic, physiological, and behavioral responses of laboratory animals to drugs, toxins, and carcinogens or to environmental changes were developed. Responses such as body weight, food and water consumption, metabolic changes, oxygen uptake, energy expenditure, heart rate, body temperature, and blood pressure are monitored and compared to baseline data via use of weight sensors and a radio-frequency transducer embedded in the animal. Conventional protocols detect changes in only a few parameters, whereas this invention can simultaneously evaluate a large number of interrelated variables on a real-time basis.
Licensing Contact: John Fahner-Vihtelic

Enhancement Of Musculature In Animals

Hughes, S., Sutrave, P. (NCI)
Filed 2 Jul 90
Serial No. 07/546,449 (CIP of 07/373,864)

A new method of increasing muscle size (and reducing fat) in potentially a wide variety of animals has been uncovered through the introduction and expression of the chicken *c-ski* gene into the animal. Transgenic musculature enhancement, in addition to aiding traditional animal breeding schemes, is believed to be potentially useful in the treatment of muscle degenerative diseases in humans.
Licensing Contact: Steve Ferguson

Transgenic Animals For Testing Multidrug Resistance

Pastan, I., Gottesman, M., Galaski, H., Merlino, G. (NCI)
Filed 10 Mar 90
Serial No. 07/492,546 (CIP of 07/260,827)

Transgenic animals have been produced that carry and express the human multidrug resistance gene (MDR1). Since intrinsic and acquired resistance to multiple chemotherapeutic agents is a major clinical problem in the treatment of cancer, these animals can serve as a useful model for the identification and testing of new compounds to modulate MDR.
Licensing Contact: Steve Ferguson

Grooming And/Or Foraging Apparatus For Reduction Of Stress In Caged Animals

Bayne, K. (NCRR)
Serial No. 07/398,564
Patent Issued 23 Jun 92
U.S. Patent No. 5,123,378

A novel foraging apparatus offers to significantly reduce stress in caged animals. Presently available methods for enhancing the "psychological well-being" or relieving physical distress of caged animals are often expensive or bulky. This novel foraging apparatus is composed of stiff backing material covered by a fibrous carpet or simulated grass blades in which food particles are placed. This thin, inexpensive structure allows the animal to forage for the food particles or groom the materials and thus, simulate natural behaviors.
Licensing Contact: John Fahner-Vihtelic

Laboratory Rat Feeder

Hunziker, J. (FDA)
Serial No. 06/247,713
Patent Issued 10 Aug 82
U.S. Patent No. 4,343,262

A feed storage hopper with a feeding chamber near its bottom edge uses a mesh wire screen designed so that the weight of the feed above forces food (which may contain test drugs) continually through the mesh as it is eaten. The rat is restricted from entry into the feeder, preventing contamination of the feed by feces or urine, as well as uneconomical spillage of the feed. Most prior commercially available rat feeders do not have the capacity to hold 600-700 grams of feed required to maintain three rats for a week, which is the capacity of this feeder.
Licensing Contact: John Fahner-Vihtelic

VIROLOGY (OTHER THAN HIV)

Nucleotide Sequences For The Glycoprotein-Encoding Genes Of U.S. Wild-Type Measles Viruses

Rota, J.S., Bellini, W.J. (CDC)
Filed 8 Apr 92
Serial No. 07/866,033

The discovery that certain nucleotide sequences in wild-type measles viruses in the United States differ from those used for vaccine development suggests that contemporary strains may have undergone genetic changes relative to the vaccine strain. These differences may contribute, in part, to the recent dramatic increase in the number and severity of measles cases. The newly discovered sequences may be used as a benchmark for future studies of U.S. and non-U.S. measles wild-type viruses and of further evolution of the U.S. wild-type virus; for the construction of probes for diagnostic and prognostic purposes; for the development of new vaccines to replace older, less efficacious preparations; and for study of the human immune system.
Licensing Contact: Mark Hankins

Attenuated Influenza A Virus

Murphy, B.R., Chanock, R.M., Palese, P., Muster, T., Subbarao, K., Enami, M., Bergman, M. (NIAID)
Filed 3 Feb 92
Serial No. 07/841,310

This invention describes the development of a novel, live, attenuated influenza A virus for use in intranasal vaccines. The novel influenza A virus is unique in that its 3′ and 5′ terminal sequences, which previously were thought to be essential to the formation of mature influenza A virions, are substituted with flanking sequences from the influenza B virus; these substitutions modify the virulence of the original virus. The RNA sequences needed to generate the altered influenza virus in a host cell are described.
Licensing Contact: Mark Hankins

Raccoon Poxvirus As A Gene Expression And Vaccine Vector For Genes Of Rabies Virus And Other Organisms

Esposito, J.J., Baer, G.M. (CDC)
Filed 25 May 88
Serial No. 07/829,597 (CON of 07/198,213, CIP of 07/010,425)

A recombinant vector containing raccoon poxvirus offers an improved method for inducing protective immunity against rabies or for detecting the presence of rabies. Presently, there is no oral rabies vaccine that can be administered as bait-delivered vaccine to protect raccoons and other wildlife species against rabies or to to produce related immunoreagents and other veterinary vaccines. This recombinant raccoon poxvirus, which has a nucleotide coding sequence of a rabies virus, can be used to stimulate the production of neutralizing antibodies for a vaccine or for detecting the presence of rabies virus.
Licensing Contact: Mark Hankins

Hepatitis E Virus Vaccine And Method

Reyes, G. (CDC)
Filed 17 Jan 92
Serial No. 07/822,335 (CIP of 07/505,888, CIP of 07/420,921, CIP of 07/367,486, CIP of 07/336,672, CIP of 07/208,997)

Novel antigen and antibody vaccine compositions have been developed for the treatment and/or prevention of infection via the enterically transmitted non-A, non-B hepatitis virus, i.e., hepatitis E virus (HEV). This invention has greatest clinical potential for pregnant women who, unlike

other infected populations, have a particularly high mortality rate of 10 to 20 percent following exposure to HEV. The vaccines can be administered via intramuscular, intravenous, or parenteral injection.
Licensing Contact: Mark Hankins

Hepatitis A Vaccine

Cohen, J.I., Purcell, R.H., Feinstone, S.M., Ticehurst, J.R. (NIAID)
Filed 12 Nov 91
Serial No. 07/789,640 (CON of 07/462,916, CON of 07/088,220)

A full-length DNA analog of the hepatitis A virus genome and RNA transcripts of the DNA analog can be mutated to produce an infectious hepatitis A virus suitable for a vaccine. Prior technologies have used cell culture techniques, rather than recombinant DNA methods, in an attempt to produce an acceptable hepatitis A entity. This new method overcomes the difficulties associated with the random mutation processes that occur with conventional methods.
Licensing Contact: Mark Hankins

Production Of Complementary DNA Representing Hepatitis A Viral Sequences By Recombinant DNA Methods And Uses Therefor

Ticehurst, J., Baltimore, D., Feinstone, S.M., Purcell, R.H., Racaniello, V.R., Baroudy, B.M., Emerson, S.U. (NIAID)
Filed 6 Nov 91
Serial No. 07/788,262 (CIP of 07/256,135, CON of 06/654,942, CIP of 06/536,911)

A method for the production and use of single- and double-stranded (ds) cDNA representing hepatitis A virus (HAV) sequences has been discovered, including an infectious, full-length cDNA clone of wild-type HAV. Large quantitites of the novel HAV cDNA can be harvested at a relatively low cost via insertion of the cDNA molecules into a recombinant DNA vector and subsequent transformation in appropriate cells; modification of bacteria by genetic engineering permits for the production of ds HAV cDNA. The cDNA molecules hold substantial diagnostic potential because they are highly specific and very sensitive to HAV; they can also be used in the production of either HAV antigen or antibodies to HAV antigen for possible vaccine development. Currently, no vaccine is available for protection against HAV infection.
Licensing Contact: Mark Hankins

Reproducible Generation Of High Yields Of Hepatitis A Virus By Cell Culture

Robertson, B., Khanna, B., Brown, V., Margolis, H.S. (CDC)
Filed 6 Sep 91
Serial No. 07/758,470 (CON of 07/211,973)

A rapid, reproducible, and cost-effective means of producing milligram amounts of hepatitis A virus (HAV) has been developed. This novel approach uses cell culture-adapted HAS-15 HAV grown under conditions of acute, high multiplicity infection, yielding milligrams of purified HAV each month. Currently available methods, which use persistently infected cells, require that one person work full time for one year to produce 1 mg of the same product at an estimated cost of at least $25,000. The new method provides a superior alternative to producing antigen for immunodiagnostic purposes.
Licensing Contact: Mark Hankins

Human B Lymphotropic Virus

Salahuddin, Z.S., Ablashi, D.V., Josephs, S.F., Saxinger, C.W., Wong-Staal, F., Gallo, R.C. (NCI)
Filed 27 Aug 91
Serial No. 07/754,220 (CON of 07/255,759, CIP of 07/228,550, CIP of 06/901,682, CIP of 06/892,423)

A new human herpes virus that is associated with various lymphomas, human B lymphotropic virus (HBLV), was isolated and characterized. HBLV is distinguishable from all known human and subhuman primate herpes viruses by host range, biological effects, and a lack of immunologic, antigenic, and genomic relatedness. The virus was isolated from blood mononuclear cells of AIDS patients with lymphoproliferative disorders; it can also be isolated from human leukocytes in umbilical cord blood, adult peripheral blood, bone narrow, and spleen. HBLV antibodies were elevated in the following disease groups: HHV-6 (roseola), Burkitt's lymphoma, Hodgkin's disease, mononucleosis, and HIV antibody positive cases. A kit containing anti-HBLV antibodies was developed for the detection of HBLV in biological materials. It has recently been shown that HBLV is HHV-6, the cause of roseola.
Licensing Contact: Todd Leonard

Flavivirus Envelope Proteins With Increased Immunogenicity For Use In Immunization Against Virus Infection

Lai, C., Men, R., Jan, L., Bray, M. (NIAID)
Filed 20 Aug 91
Serial No. 07/747,785 (CIP of 07/572,633)

Novel flavivirus envelope proteins are valuable for the development of vaccines against viruses, particularly dengue viruses. Dengue viruses are a major public health problem in many tropical and subtropical areas, causing yellow fever and encephalitis. Despite more than 40 years of research, a safe and effective vaccine against flaviviruses such as dengue is still not available. These C-truncated flavivirus envelope proteins, cloned into vaccinia virus, produced 94 to 100 percent protective immunity against dengue in mice.
Licensing Contact: Mark Hankins

Papua New Guinea Human T Lymphotropic Virus

Yanagihara, R., Nerurkar, V.R., Jenkins, C., Miller, M., Garruto, R.M. (NINDS)
Filed 12 Aug 91
Serial No. 07/743,518 (CIP of 07/572,090)

A novel cell line persistently infected with a Papua New Guinea HTLV-1 variant is valuable for the diagnosis and treatment of human T cell leukemia lymphoma virus-I

(HTLV-1) infections, which cause adult T cell leukemia/lymphoma. Presently available assays for HTLV-1 infection have been unable to detect widespread HTLV-1 infection in the Melanesian population due to the genetic variability between HTLV-1 strains found there and those found in other parts of the world. This new assay, developed from a cell line containing the Papau New Guinea HTLV-1 strain, has been used to detect high prevalence of HTLV-1 infection in some Melanesian subpopulations.
Licensing Contact: Mark Hankins

Novel Peptide Antigens And Immunoassays, Test Kits, And Vaccines Using The Same

Lal, R.B. (CDC)
Filed 23 Jul 91
Serial No. 07/734,777 (CIP of 07/574,352)

Peptides derived from structural gene products of human T cell lymphotropic virus (HTLV) type I and type II offer important new tools for the diagnosis and treatment of these viral infections. HTLV-1 infection is associated with adult T cell leukemia, while HTLV-2 infection is associated with a T cell variant of hairy cell leukemia. Previous methods for detecting the presence of HTLV-1 have been hampered by cross-reactivity with HTLV-2; recent data from the screening of blood donors indicate that more than half of those seropositive for HTLV-2 indeed may be infected with HTLV-2. These new peptides, which have specific immunoreactivity to antibodies of HTLV-1 or HTLV-2, allow for the accurate identification of which virus is responsible for the infection, with little cross-reactivity. These peptides may also be used as a vaccine to produce neutralizing antibodies against these viruses.
Licensing Contact: Mark Hankins

Method Of Inhibiting Viral Replication

Palumbo, G.J., Buller, R.M.L. (NIAID)
Filed 14 May 91
Serial No. 07/699,374

A novel compound that inhibits the lipoxygenase pathway is an important new tool for inhibiting the replication of DNA-containing viruses. Presently available antiviral drugs, which inhibit viral replication by interfering with DNA replication or viral enzymes, can have unwanted toxicities because they also inhibit host cell DNA replication and enzyme activities. These lipoxygenase pathway inhibitors effectively inhibit the replication of a broad range of DNA-containing viruses but are relatively nontoxic to host cells.
Licensing Contact: Mark Hankins

Monoclonal Antibodies For The Detection Of Friend Murine Leukemia Virus

Robertson, M., Chesebro, B., Miyazawa, M., Britt, W.J. (NIAID)
Filed 2 May 91
Serial No. 07/694,302

New monoclonal antibodies (mAbs) that recognize Friend murine leukemia virus (F-MuLV) provide a more sensitive method of diagnosing individuals infected with this retrovirus. Presently, the most sensitive method of detecting virally infected live cells is immunoperoxidase staining after the cells have been fixed with methanol; however, the most widely available mAbs for F-MuLV frequently do not recognize this virus' antigens on methanol-fixed cells. These new mAbs are highly effective in titrating F-MuLV antigens on methanol-fixed cells using an indirect immunoperoxidase system.
Licensing Contact: Todd Leonard

Rabies Virus N Protein Prepared From Baculovirus Expression System

Reid-Sanden, F., Sumner, J., Smith, J., Makonnen, F., Bellini, W. (CDC)
Filed 26 Apr 91
Serial No. 07/691,857

The most rapid and reliable test for diagnosing rabies, the direct immunofluorescence test, uses a reagent produced with infectious rabies virus. This reagent is not available in the United States, and it poses risks for laboratory workers and requires large amounts of rabies virus to produce. Baculovirus-expressed rabies virus N protein can be used to produce a superior reagent. It is noninfectious, comparable in size to the native rabies virus N protein, and possesses similar antigenic and immunogenic properties. This novel protein has applications in diagnostic assays, experimental vaccines, and basic research.
Licensing Contact: Mark Hankins

Novel Baculovirus Expression Vectors And Recombinant Antigens For Detecting Type-Specific Antibodies To Herpes Simplex Virus

Pellett, P.E., Sanchez-Martinez, D. (CDC)
Filed 26 Apr 91
Serial No. 07/691,728

A novel recombinant baculovirus vector capable of expressing herpes simplex virus (HSV) glycoproteins gG-1 and gG-2 was constructed. Antigens produced by this vector can be used diagnostically to detect and differentiate between HSV-1 and HSV-2 infection. This vector is an improvement over other similar vectors in that it provides a consistent level of expression of the herpes genome. A test kit for the serological diagnosis of HSV is provided with this invention.
Licensing Contact: Mark Hankins

Novel Reference Influenza Viruses And Antiviral Drug Susceptibility Methods

Kendal, A.P. (CDC)
Filed 16 Apr 91
Serial No. 07/685,408

Novel strains of the influenza A virus were used in developing a rapid, simplified, standardized enzyme immunoassay and an internal standard to screen for drug-resistant and drug-sensitive strains of the virus. The new methodology may also be useful in screening drugs for antiviral activity against influenza viruses, in designing anti-influenza drugs, and in evaluating viruses isolated from infected individuals. This invention does not require multiple cycles of virus replication and can be readily adapted to the chicken embryo cell cultures used in diagnostic laboratories throughout the world. Results can be obtained within one day, rather than the several needed for other assays.
Licensing Contact: Mark Hankins

Detection Of Non-A, Non-B Hepatitis

Seto, B., Coleman, W.G. (NIDDK)
Filed 2 Apr 91
Serial No. 07/680,779 (CON of 07/346,492, CIP of 07/234,641, CIP of 07/202,315)

This cloned DNA probe contains sequences of non-A, non-B hepatitis that can detect the presence of non-A, non-B hepatitis in the serum or liver. Polypeptides expressed by the clone can be used as antigens to determine the presence of antibodies to non-A, non-B hepatitis. This invention is an improvement over other screening tests because it is synthetic and because of its specificity, reproducibility, and sensitivity. It can serve as a reliable method for protecting the blood supply.
Licensing Contact: Mark Hankins

Hepatitis A Virus Vaccine

Nainan, O., Margolis, H., Robertson, B., Brinton, M., Ebert, J. (CDC)
Filed 3 Apr 91
Serial No. 07/678,828

A hepatitis A virus (HAV) was isolated from cynomolgus macaques, and the capsid region of this new HAV was sequenced. It was found that the amino acid sequence within the immunodominant site of the capsid region is significantly different from that of other HAV isolates. This new virus is suitable for preparing a whole virus vaccine for preventing hepatitis A in animals and, potentially, in humans.
Licensing Contact: Mark Hankins

A Vaccine Against Hepatitis A

Tsarev, S.A., Emerson, S.U., Balayan, M.S., Purcell, R.H. (NIAID)
Filed 26 Mar 91
Serial No. 07/674,852

A novel viral construct consisting of portions of a new simian hepatitis mutant genome and segments of the human hepatitis A virus 7 (human attenuated HAV) is proposed for use in a vaccine. The new virus is structurally and biologically different from all other known HAV strains. Its tendency to revert to a virulent strain is minimal, thus making it safer than many other currently available live, attenuated hepatitis viruses. A vaccine capable of preventing active infection by hepatitis A is critical, since the virus causes 20 to 25 percent of the cases of clinical hepatitis in underdeveloped countries.
Licensing Contact: Mark Hankins

Expression Of Influenza A And B Nucleoprotein Antigens In Baculovirus

Rota, P, Black R. (CDC)
Filed 19 Mar 91
Serial No. 07/670,791

Nucleoprotein (NP) genes or antigens of the influenza A and B viruses were constructed from virion RNA and expressed in *Spodoptera frugiperda* (S19) cells using a baculovirus vector. NP antigens are useful for serodiagnostic tests for the detection of influenza infections in mammals. This new vector is preferable to the traditional hemagglutination and complement fixation (CF) tests, which can be cumbersome (i.e., a large number of biological reagents must be standardized) and are generally nonspecific (i.e., they may include antigens that cross-react with other antibodies in human serum).
Licensing Contact: Mark Hankins

A Simple Method For Detecting Inhibitors Of Retrotransposition

Garfinkel, D.J., Curcio, J.M. (NCI)
Filed 13 Mar 91
Serial No. 07/668,865

A method of identifying and selecting cells in which retrotransposition has occurred offers a novel means of identifying compounds or agents that can inhibit retrotransposition or retroviral replication. Previously, methods developed to detect retrotransposition have not been able to accurately identify DNA in which reverse transcription has occurred. This new method uses a selectable marker gene inserted into a retrotransposon, which creates a unique restriction enzyme site wherever reverse transcription occurs. Because certain types of retrotransposition are similar to retroviral replication, this method should be applicable to identifying antiretroviral compounds as well as inhibitors of retrotransposition.
Licensing Contact: Marjorie Hunter

Solomon Islands Variants Of Human T Lymphotropic Virus

Yanagihara, R., Ajdukiewicz, A.B., Garruto, R.M., Gajdusek, D.C. (NINDS)
Filed 28 Feb 91
Serial No. 07/662,368

New human T cell lines infected with a variant of human T lymphotropic virus type I (HTLV-I) were established. The cells used to establish this line were isolated from individuals living on the Solomon Islands; the variant is referred to as HTLV-1 SI-5. The cell lines grow more

rapidly and produced more virus than another cell line established from an infected New Guinean population. They can be used to support claims of HTLV-1 hyperendemicity in Melanesia, which have been contested because of the inability to adequately screen for this virus and the failure of Melanesian sera to neutralize a prototype strain of HTLV-1. An antibody specific for the HTLV-1 SI-5 variant and a vaccine for the prevention of infection and of diseases caused by HTLV-1 and related viruses, such as adult T cell leukemia/lymphoma, were produced. A bioassay for the diagnosis of infection caused by variants of HTLV-1 and diagnostic kits for immunoassay were developed. The isolation of the variant and the establishment of a cell line will greatly facilitate accurate serological testing in Melanesia and elsewhere.
Licensing Contact: Todd Leonard

Method For Replicating Human B Lymphotropic Virus In Human Cell Lines

Ablashi, D.V., Salahuddin, Z.S., Gallo, R. (NCI)
Filed 25 Feb 91
Serial No. 07/660,239 (CON of 07/130,515)

Novel cell lines for replicating the human B lymphotropic virus (HBLV) offer to enhance the study of lymphoproliferative disorders. HBLV is associated with a number of lymphoproliferative diseases such as B and T cell lymphomas and leukemia. Previously, studying this virus has been difficult because HBLV could only be grown in freshly obtained human mononuclear cells and not in a number of other established human and animal cell lines. These newly isolated human cell lines are extremely susceptible to HBLV infection and produce large quantities of the virus. A kit for detecting HBLV is also available. It has recently been shown that HBLV is HHV-6, the cause of roseola.
Licensing Contact: Todd Leonard

Sensor-Triggered Suction Trap For Collecting Gravid Mosquitoes

Reiter, I.P. (CDC)
Serial No. 07/653,338
Patent Issued 23 Jun 92
U.S. Patent No. 5,123,201

This automated, battery-powered device is used to catch live, adult *Aedes* mosquitoes, which carry the viruses responsible for dengue, dengue hemorrhagic fever, and yellow fever. The device employs a chemical to attract female mosquitoes that are ready to lay eggs. As the mosquitoes rest on the strip bearing the attractant, a suction fan is activated, and the flies are drawn into a collecting tube. In addition to its collection function, this invention can be used for research and surveillance purposes. No other comparable device is available.
Licensing Contact: John Fahner-Vihtelic

Phosphorothioate And Normal Oligodeoxynucleotides With 5′-Linked Acridine

Cohen, J.S., Mori, K., Loke, S.L., Zhang, X. (NCI)
Filed 27 Nov 90
Serial No. 07/619,845 (CON of 07/246,688)

Oligodeoxynucleotides tagged at the 5′ end with acridine are available for the study and development of novel antiviral agents. It is currently difficult to monitor cell uptake of oligodeoxynucleotides used as antiviral agents. These agents often have limited therapeutic effect as well because of melting temperatures below 37°C. By attaching the acridine moiety to one end of the oligodeoxynucleotide, one can determine the kinetics of cellular uptake using fluorescent cell sorting. Additionally, the fluorescent group makes it easier to monitor the inhibitory effects of other substances on cell uptake and gives the oligodeoxynucleotide molecule a higher melting temperature as well.
Licensing Contact: Arthur Cohn

Method Of Propagating Human Paramyxoviruses Using Continuous Cell Lines [Parainfluenza Types 1, 2, 3, 4A, 4B, And Mumps]

Hierholzer, J.C. (CDC)
Serial No. 07/611,088
Filed 9 Nov 90

An alternative method to produce human paramyxoviruses (parainfluenza types 1, 2, 3, 4A, 4B, and mumps) through the use of a new continuous cell line NCI-H292, a human lung mucoepidermal cell line, has been discovered. The new technique is a suitable alternative to the current use of increasingly-difficult-to-obtain primary rhesus monkey kidney (MK) cells to produce and isolate these human viruses in quantity. Use of the new cell line also avoids the problems of the various unwanted latent or endogenous viral infections associated with MK cells.
Licensing Contact: Mark Hankins

Infectious RNA Transcribed From Stable Full-Length cDNA Of Dengue Type 4 Virus

Lai, C., Zhoa, B., Hori, H., Bray, M. (NIAID)
Filed 8 Nov 90
Serial No. 07/610,206

A cDNA encoding infectious RNA of dengue virus type 4 offers a significant advancement for the development of a vaccine for this debilitating disease. To date, a safe and effective vaccine for this virus is not available. This cDNA can be used for engineering mutations at strategic regions of the viral genome. Each mutation can then be evaluated in experimental animals for alterations in virulence; mutants that exhibit altered virulence can then be further evaluated as potential vaccines.
Licensing Contact: Mark Hankins

Vaccine Against Disease Caused By Human Type 3 Parainfluenza Virus

Coelingh, K.L., Murphy, B.B. (NIAID)
Filed 31 Oct 90
Serial No. 07/608,040 (CIP 07/167,695)

A vaccine that affords protection against human parainfluenza virus type 3 (PIV3), one of the most common causes of acute lower respiratory tract disease, was developed. This vaccine, which comprises live, wild-type, attenuated bovine PIV3, is inhaled. It is effective against both human and bovine PIV3 in infected monkeys. Previous vaccines against human PIV3 have been ineffective or have not used live virus.
Licensing Contact: Mark Hankins

Novel Peptide Antigens And Immunoassays, Test Kits, And Vaccines Using The Same [Derived From The Gene Products Of HTLV-1 And HTLV-2]

Lal, R.B. (CDC)
Filed 29 Aug 90
Serial No. 07/574,352

Synthetic peptides representing the conserved immunodominant epitopes of human T cell lymphotropic viruses (HTLV) types I and II have been developed. These peptides provide an attractive alternative to virus-derived antigens in view of their low cost and capacity to differentiate type I and type II infections. About 50 percent of blood donor samples screen positive for HTLV-2. At present, HTLV-1 is associated with T cell leukemia and myelopathy, while no known disease has been associated with HTLV-2. With their ability to be accurately reproduced, these synthetic antigens can serve as the basis for various HTLV immunoassays, test kits, or vaccines.
Licensing Contact: Todd Leonard

Highly Immunogenic Flavivirus Envelope Proteins For Immunization Against Virus Infection

Lai, C., Men, R., Bray, M. (NIAID)
Filed 27 Aug 90
Serial No. 07/572,633

Flavivirus E proteins offer an important advancement for the development of new diagnostic tools and vaccines against dengue and other flavivirus diseases. There is presently no safe, effective vaccine against dengue and other flaviviruses. These truncated flavivirus E proteins, which are cloned into a vaccinia vector, can be expressed in large quantities in host cells for the detection or stimulation of flavivirus neutralizing antibodies.
Licensing Contact: Mark Hankins

A PCR Technique To Type Rotaviruses

Gouvea, V.deS. (CDC)
Filed 27 Aug 90
Serial No. 07/572,631

A new method to identify rotavirus serotypes directly from stool specimens by detecting the G9 gene has been developed. The new technique, using PCR or direct hybridization, has several advantages in cost, ease of use, and versatility over currently used serotyping methods. DNA-based serotyping can be used for viral diagnostic and type identification purposes in both humans and animals. The technique may be particularly useful for companies developing vaccines to particular serotypes.
Licensing Contact: Mark Hankins

Papua New Guinea Human T Lymphotropic Virus

Yanagihara, R., Garruto, R.M., Jenkins, C.L. Miller, M.A. (NINDS)
Filed 24 Aug 90
Serial No. 07/572,090

A cell line designated Papua New Guinea-1 (PNG-1) infected with a virus related to HTLV-1 can be used in a vaccine for humans to prevent infection with HTLV-1. The PNG-1 cell line can also be used in bioassays for the diagnosis of infection with the PNG-1 variant. This capability would particularly facilitate testing in Melanesia, where high prevalence of HTLV-1 infection occurs.
Licensing Contact: Todd Leonard

Immunotherapeutic Method Of Preventing Or Treating Viral Respiratory Tract Disease

Chanock, R., Murphy, B., Prince, G., Hemming, V., Beeler, J., Coelingh, K. (NIAID)
Filed 19 Jul 90
Serial No. 07/555,091

When delivered to the lower respiratory tract of a susceptible host, a combination of monoclonal antibodies specific to various respiratory viral diseases has prophylactic and therapeutic effects. Prior to this invention, there has not been a satisfactory method of administration. For example, small children and infants have only been able to use this therapy when intubated and attached to a ventilator. This method uses an aerosol nebulizer; a prophylactic, neutralizing, and therapeutic combination of antiviral agents is also described.
Licensing Contact: Mark Hankins

Human Herpesvirus-7

Frenkel, N. (NIAID)
Filed 19 Jul 90
Serial No. 07/553,798

Diagnostic procedures for the detection and isolation of human herpesvirus 7 (HHV-7) were developed. This invention includes an indirect immunofluorescence test and a Western blot assay for the detection of HHV-7 antibodies in sera and tissues. The presence of HHV-7 in the blood can also be detected using HHV-7-specific *Cla*I and *Hin*dIII DNA clones as probes. Molecular methods for detecting, isolating, and amplifying HHV-7 sequences in test tissues are also described. No other diagnostic tests specific to HHV-7 are available.
Licensing Contact: Todd Leonard

High-Efficiency Packaging Of Mutant Adeno-Associated Virus Using Amber Suppression And Assay Of Effects Of Mutagenic Agents On Reversion To Wild Type

Carter, B.J., Chejanovsky, N. (NIDDK)
Filed 9 Jul 90
Serial No. 07/549,304 (CIP of 07/366,130)

An adeno-associated virus (AAV) plasmid containing an amber mutation within the AAV *rep* (or *cap*) gene was propagated on monkey cell lines containing an amber suppressor and in cultured human HeLaJW cells. An assay using this plasmid can be used to screen for mutagenic and genotoxic agents by infecting a cell culture with the plasmid (using a viral vector) and determining the extent of reversion of the mutated virus to a wild-type recombinant. The plasmid can be also used to generate pure mutant populations. Novel features of this invention are that the mutant virus can be introduced into any human or other mammalian cells, the AAV genome is single-stranded DNA, and various classes of reversions (transitions, transversions, frameshift mutations, deletions) can be detected.
Licensing Contact: Arthur Cohn

Versatile Reagent For Detecting Murine Leukemia Viruses

Evans, L., Britt, W. (NIAID)
Serial No. 07/528,714
Filed 24 May 90

Monoclonal antibodies (mAbs) directed at the proteins of murine leukemia viruses (MuLVs) have some value as immunological reagents, but differ greatly in their applicability. The kit described in this invention uses a mAb, designated 83A25, which identifies almost all ecotropic, xenotropic, polytropic, and amphotropic MuLVs. It can be used in a wide variety of procedures, including focal immunofluorescence assays on live or fixed monolayers, immunoblotting, immunoprecipitation, immunohistochemical, and flow cytometric procedures. This kit overcomes some of the problems associated with prior methods, which may not efficiently precipitate proteins or react in immunoblots, are not capable of detecting MuLVs belonging to all classes with a single reagent, and may not efficiently neutralize all MuLVs.
Licensing Contact: Mark Hankins

Treatment Of Viral Infections With Leukoregulin

Hooks, J.J., Evans, C.H., Detrick, B. (NEI)
Filed 11 May 90
Serial No. 07/521,706

The cytokine leukoregulin offers to significantly enhance the effectiveness of presently used antiviral therapies. The effectiveness of a number of widely used antiviral drugs is limited by the ability of the drug to be taken up by the targeted cell. Leukoregulin, which has been shown to enhance membrane permeability of virally infected cells, can be used to selectively increase the concentration of antiviral drugs into these cells.
Licensing Contact: Todd Leonard

Co-Expression And Interaction Of Two Subunits Of Vaccinia Virus Capping Enzyme

Guo, P., Moss, B. (NIAID)
Filed 10 May 90
Serial No. 07/521,682

A new method of producing large amounts of recombinant poxvirus (vaccinia) capping enzyme safely and economically in an uninfected cell has been discovered. The capping enzyme is a useful reagent that adds the 5′ terminal cap structure that is necessary for translation and stability of eukaryotic mRNA.
Licensing Contact: Mark Hankins

Novel Method For Amplifying Unknown Nucleic Acid Sequences [Using PCR]

Silver, J., Feinstone, S. (NIAID)
Serial No. 07/454,171
Patent Issued 14 Apr 92
U.S. Patent No. 5,104,792

A new technique has been developed to amplify small fragments of RNA or DNA without prior knowledge of their sequence using the PCR technique. Such amplification would greatly facilitate the identification of viruses present in minute amounts in clinical specimens and could be very useful in the discovery of new viruses, the cloning of DNA obtained from microdissected chromosomes, and in other applications where small amounts of nucleic acid of unknown sequence are obtained.
Licensing Contact: Steve Ferguson

Vector For Recombinant Poxvirus Expressing Rabies Virus Glycoprotein

Esposito, J.J., Moss, B., Breechling, K. (CDC)
Filed 30 Nov 89
Serial No. 07/445,131 (CON of 07/010,424)

A plasmid containing a recombinant infectious vaccinia poxvirus is valuable for expressing the rabies virus glycoprotein in animals or in tissue cultures. Such a recombinant could be used for production of rabies vaccine and production of rabiesvirus glycoprotein antigen, antibody, or related reagent. Present rabies vaccines are perishable, costly, and have detrimental side effects.
Licensing Contact: Mark Hankins

3-Deazaneplanocin A And Method Of Preparation

Marquez, V.E., Driscoll, J.S., Lim, M., Tseng, C.K., Haces, A., Glazer, R.I. (NCI)
Serial No. 07/299,021
Patent Issued 6 Nov 90
U.S. Patent No. 4,968,690

The newly discovered compound 3-deazaneplanocin A has potent antiviral, antitumor, and differentiating activity. This

compound has been found to be a particularly potent inhibitor of AdoHyc hydrolase without the toxicity of neplanocin A. A simple method for preparing 3-deazaneplanocin A has been developed involving nucleophilic substitution. Other cyclopentenyl carbocyclic nucleosides can be prepared by similar methods.
Licensing Contact: Todd Leonard

Inhibitors For Replication Of Viruses

Cohen, J.S., Stein, C.A., Cheng, Y. (NCI)
Filed 17 Oct 88
Serial No. 07/258,417

Phosphorothioate oligodeoxyribonucleotide analogs can be used to prevent replication of viruses such as herpes simplex II and viruses that replicate by means of HBLV polymerase. Presently available antivirus oligodeoxyribonucleotides have limited effect because they degrade too easily or excessively high concentrations are required in order to elicit strong antiviral effects. These phosphorothioate (sulfur-substituted) oligonucleotide analogs are more effective because they are resistant to degradation, are very soluble, and hybridize with complementary sequences much more efficiently.
Licensing Contact: Arthur Cohn

Diagnostic Test For HBLV

Saxinger, C., Gallo, R.C., Salahuddin, S.Z., Ablashi, D.V. (NCI)
Filed 28 Sep 88
Serial No. 07/250,301

A new qualitative and quantitative assay for the presence of human B lymphotropic virus (HBLV) offers a significant advancement in the detection of exposure or infection by this virus. An objective serologic test has not been previously available for detecting HBLV infection. This new assay uses viral antigen to detect the presence of anti-HBLV antibodies in serum by incubation of suspected positive samples with soluble antigen lysate. It has recently been shown that HBLV is HHV-6, the cause of rosela.
Licensing Contact: Mark Hankins

Clone-Produced Cell Line For Production Of HTLV-1

Salahuddin, S.Z., Gallo, R.C. (NCI)
Filed 11 Aug 88
Serial No. 07/230,817

A clone-produced cell line is available for producing infectious and competent HTLV-1 and viral products. Previously available cell lines produced low amounts of HTLV-1 virus and antigens; large percentages of these products were often defective and incompetent. These clone-produced cell lines produce consistently high levels of virus and viral products, and the HTLV-1 is also consistently competent and infectious.
Licensing Contact: Mark Hankins

Vaccine For Dengue Virus

Lai, C., Zhang, Y., Eckels, K.H., Chanock, R. (NIAID)
Filed 14 Jul 88
Serial No. 07/218,852

A new vaccine for dengue virus encephalitis offers a significant advance in the treatment of this disease. There is presently no effective protective vaccine against dengue virus infection. This new vaccine contains one or more of the following recombinant proteins: dengue virus capsid protein, pre-matrix protein, envelope glycoprotein, and NS1 and NS2a nonstructural proteins. The strategies used to develop this vaccine should be applicable to other important flaviviruses such as Japanese B encephalitis virus and the tick-borne encephalitis viruses.
Licensing Contact: Mark Hankins

Vaccine Against Hepatitis A Virus

Purcell, R.H., Cohen, J.L., Ticehurst, J.R., Emerson, S.U. (NCI)
Serial No. 07/217,824
Patent Issued 16 Jan 90
U.S. Patent No. 4,894,228

An attenuated hepatitis A virus (HAV) offers an inportant new tool for the development of a protective vaccine. Presently, immune serum globulin (ISG) is the only effective vaccine for preventing HAV infection; however, ISG elicits only low levels of neutralizing antibodies and, thus, requires repeated doses. This attenuated HAV, which is a mutant of the wild-type strain, elicits serum-neutralizing antibody production in chimpanzees and is suitable for vaccine development.
Licensing Contact: Mark Hankins

Novel Technique For Isolating New Retroviruses

Jacobson, S., McFarlin, D. (NINDS)
Serial No. 07/153,933
Patent Issued 6 Nov 90
U.S. Patent No. 4,968,601

A novel method for isolating a new HTLV-related virus from lymphocytes in the blood and cerebrospinal fluid from patients with neurological diseases or other viral disorders offers to improve the study and treatment of retrovirus diseases. Previously, isolating large amounts of retroviruses from patients has been cumbersome and time-consuming. This new method uses T cell activation with the monoclonal antibody OKT3 to rapidly amplify HTLV-related virus in cell lines isolated from patients with tropical spastic paraparesis (TSP), a neurological disorder. The culture of the new virus can be used, either alive or killed, attenuated or virulent, in a standard vaccine.
Licensing Contact: Todd Leonard

Production Of Human T Cell Leukemia (Lymphotropic) Retrovirus (HTLV-1) Envelope Protein Fragments In Bacteria And Use In Seroepidemiological Studies

Papas, T.S., Samuel, K., Lautenberger, J.S., Wong-Staal, F. (NCI)
Filed 27 Nov 87
Serial No. 07/126,007 (CIP of 06/664,972)

Coding sequences found in the HTLV-1 envelope gene can be inserted into vectors that express antigenic proteins in bacteria such as *E. coli*. The resulting antigenic proteins are useful in identifying antibodies to the organisms from which the DNA fragments were originally obtained. In addition, the synthetically produced

structures are recognized by antibodies that are produced in response to native viral protein.
Licensing Contact: Todd Leonard

Vaccine Against Rotavirus Diseases And Method Of Preparing Same

Chanock, R.M., Kapikian, A., Midthun, K., Flores, J., Gorzilia, M., Hoshino, Y., Peres-Schael, I. (NIAID)
Serial No. 07/098,977
Issued 22 May 90
U.S. Patent No. 4,927,628

New live, attenuated rotavirus strains that can be used for immunization were discovered. The attenuated viruses, which are obtained from asymptomatically infected newborn infants, have a genetic sequence that is significantly different from the viruses found in affected infants. The attenuated viruses, or a virulent virus substituted with the genetic sequence from the attenuated strain, can be administered orally to infants and young children to prevent the serious diarrhea that results from rotavirus infections.
Licensing Contact: Mark Hankins

Viral Expression Inhibitors

Lowy, D.R., Schiller, J.T., Androphy, E.J. (NCI)
Filed 6 Oct 87
Serial No. 07/083,771

A novel nucleic acid sequence offers may be valuable for treating virally induced warts in humans and a variety of viral diseases in animals. Papillomaviruses cause genital warts in humans and other viral diseases in animals. his novel DNA sequence, which has at least 80 percent homology with the E2 binding site of papillomavirues, effectively inhibits replication of the virus. Because the protein-enhancer interaction that this sequence blocks is specific to these viruses, uninfected cells are not adversely affected.
Licensing Contact: Mark Hankins

Expression Of Immunologically Active Proteins Of Human B Lymphocyte Virus

Chang, N., Gallo, R., Wong-Staal, F. (NCI)
Filed 1 Jun 87
Serial No. 07/056,963

Recombinant proteins of human B lymphotropic virus (HBLV) that are immunoreactive with antibodies against HBLV were produced. These proteins can be used to detect antibodies against HBLV in biological fluids. They may also be useful in stimulating an immune response to HBLV.
Licensing Contact: Todd Leonard

Immunotherapeutic Method Of Treating Respiratory Disease By Intranasal Administration Of IGB

Prince, G., Chanock, R., Hemming, V.G. (NIAID)
Serial No. 07/055,008
Patent Issued 24 Jan 89
U.S. Patent No. 4,800,078

A new immunotherapy specific for inhibiting respiratory syncytial virus (RSV) or other respiratory viruses offers a more effective and rapid method of treating lower respiratory tract diseases, especially in children. Presently, the most effective method for treating viral respiratory diseases requires administration of the drug for 12 to 20 hours a day for at least three days. This new immunotherapy method requires administering as little as a single dose of anti-RSV neutralizing antibodies, preferably intranasally.
Licensing Contact: Mark Hankins

Cell Line Producing Human Monoclonal Antibody Which Binds To HTLV-1-Producing Cells

Broder, S., Robert-Garoff, M., Matsushita, S. (NCI)
Serial No. 06/717,613
Patent Issued 2 Feb 88
U.S. Patent No. 4,722,888

A monoclonal antibody was isolated that is specific for an HTLV-1 envelope protein and that may be used in diagnosis and treatment of leukemia. Antibodies currently used to detect HTLV-1 are isolated from animals and can induce adverse reactions when used therapeutically in humans. This new antibody is of human origin. It binds to complement, giving it value as a therapeutic reagent, as well as to Protein A from staphylococcal organisms, meaning it can be harvested conveniently and in large quantities.
Licensing Contact: Todd Leonard

Purified Antigen from Non-A, Non-B Hepatitis-Causing Factor

Seto, B., Gerety, R.J. (FDA)
Serial No. 06/709,678
Patent Issued 16 Jun 87
U.S. Patent No. 4,673,634

An antigen specific to non-A, non-B hepatitis (hepatitis C) is useful as a diagnostic serologic marker and as a screening device for detecting the carrier or source of this virus in a blood bank or plasmapheresis setting. Previously, the only way to detect this virus was to rule out both hepatitis A and hepatitis B contamination or infection. The new antigen can be used to detect neutralizing antibodies in blood or as a vaccine to induce the production of neutralizing antibodies.
Licensing Contact: Mark Hankins

ELISA For Determining Antibodies Against Herpes Simplex Virus (HSV) Types 1 And 2 In Human Sera

Hampar, B., Zweig, M., Schowalter, S.D. (NCI)
Serial No. 06/687,370
Patent Issued 16 Aug 88
U.S. Patent No. 4,764,459

A test kit for detecting herpes simplex virus (HSV) antigens offers an advancement for the diagnosis and treatment of this viral infection. The transmission of HSV infection from pregnant women to their infants during birth is a significant problem. Previously, there has been no rapid, reliable, and

inexpensive test for identifying pregnant women harboring HSV infections. This test kit is a rapid and reliable method for identifying anti-HSV antibodies in human sera and can also be used to distinguish between HSV Type 1 and HSV Type 2.
Licensing Contact: Todd Leonard

Isolation of Hepatitis A Virus Strain HM-175

Daemer, R.J., Feinstone, S.M., Gust, I.D., Purcell, R.H. (NIAID)
Serial No. 06/686,524
Patent Issued 13 Jan 87
U.S. Patent No. 4,636,469

Human hepatitis A virus (HAV) strain HM-175, taken directly from human clinical specimens, can be isolated and serially passaged in primary African green monkey kidney cell cultures for vaccine development. Previously, marmosets were the major source for production of HAV and hepatitis A antigen; however, these animals are of decreasing availability.
Licensing Contact: Mark Hankins

Screening Test For Reverse Transcriptase-Containing Virus Such As Non-A, Non-B Hepatitis

Seto, B.P., Colman, W.G., Gerety, R.J. (FDA)
Serial No. 06/665,400
Patent Issued 17 Nov 87
U.S. Patent No. 4,707,439

An kit that detects the presence of reverse transcriptase-containing viruses offers to improve methods for screening blood products for non-A, non-B hepatitis (hepatitis C) and other retroviruses. Previously, there has been no test available to detect the presence of this virus, which accounts for 90 percent of the cases of post-transfusion hepatitis. This kit measures the ability of suspected samples to transcribe RNA templates into DNA using radiolabeled deoxyribonucleosides.
Licensing Contact: Mark Hankins

Immortal Line Of Human Fetal Glial Cells

Major, E.O. (NINDS)
Serial No. 06/657,630
Patent Issued 17 Nov 87
U.S. Patent No. 4,707,448

An immortal line of human fetal glial cells offers an improved method for studying the replication of neurotropic human viruses. Previously, viral studies done in cultured human glial cells have had limited applicability to *in vivo* situations because glial cells derived from normal fetal brain tissue have a limited life span in culture. This immortalized line of fetal glial cells has an unlimited life span and is capable of reproducing infectious JC virus at the same rate as primary human fetal glial cells.
Licensing Contact: Arthur Cohn

Hepatitis A Virus Purified And Triply Cloned

Daemer, R.J., Feinstone, S.M., Gust, I.D., Purcell, R.H. (NIAID)
Serial No. 06/652,067
Patent Issued 4 Nov 86
U.S. Patent No. 4,620,978

Human hepatitis A virus (HAV) can be purified by preparing master seed lots of HM-175 strain of HAV from triply cloned virus from African green monkey kidney cell culture at a passage level of at least 10-30. The clones tested induced minimal or no hepatitis, although significant antibody response occurred in inoculated primates. Vaccination with HAV confers protection against type A hepatitis caused by unmodified (wild-type) HAV.
Licensing Contact: Mark Hankins

Hepatitis B Core Antigen Vaccine Made By Recombinant DNA; Administered As Vaccine To Primates

Gerety, R.J., Tabor, E. (NIAID)
Serial No. 06/637,880
Patent Issued 15 Oct 85
U.S. Patent No. 4,547,368

A vaccine comprising hepatitis B core antigen encoded by a recombinant DNA is effective in protecting primates against infection by this virus. Chimpanzees immunized with this vaccine were protected from hepatitis B infection.
Licensing Contact: Mark Hankins

Inactivation Of A Lipid Virus

Purcell, R.H., Feinstone, S.M. (NIAID)
Serial No. 06/611,752
Patent Issued 7 Oct 86
U.S. Patent No. 4,615,886

A novel treatment that employs a halohydrocarbon such as chloroform, an alcohol, and water at 4-40°C offers an important new tool for the treatment of lipid viruses such as hepatitis B and non-A, non-B hepatitis (hepatitis C). Other viruses inactivatable in the same way include herpes-, delta-, toga-, bunya-, retro-, orthomyxo-, paramyxo-, rhabdo-, pox-, hepadna-, arena-, and corona viruses. In this treatment, the biologic activity of the blood- or plasma-derived protein product is retained.
Licensing Contact: Mark Hankins

Protoplast Fusion Method For High-Frequency DNA Transfection In Human Cells

Yoakum, G.H., Harris, C.C., Korba, B.E., Lechner, J.F. (NCI)
Serial No. 06/545,257
Patent Issued 26 Aug 86
U.S. Patent No. 4,608,339

A modified protoplast fusion method and cell line stably transfect human cells with pSV2-derived plasmids, making possible the isolation and testing of individual genes. This method results in, for example, a genetic test for the biological

consequences of HBc gene expression separate from the rest of the HBV genome, producing a screening method to determine the cytopathologic potential of subgenomic fragments of viral DNA. The expression of the transfected genes can also be enhanced, e.g., growth of the gpt^+/HBc^+ cell line in serum-free medium or treatment with 5'-azacytidine stimulates the production of HBV antigen.
Licensing Contact: Mark Hankins

Inactivation Of A Lipid Virus

Purcell, R., Feinstone, S. (NIAID)
Serial No. 06/528,258
Patent Issued 8 Apr 86
U.S. Patent No. 4,581,231

This method of inactivating any virus that contains an essential lipid was developed as a continuation of efforts to inactivate non-A, non-B-type (NANB) hepatitis agents, which are relatively immune to the action of most physical and chemical agents. Lipid viruses in a protein carrier may be inactivated by extracting their essential lipids with a lipid solvent. Here, the NANB agent is contacted with a halohydrocarbon solvent or agent, preferably chloroform, for ten minutes to five hours (or longer). Any lipid solvent can be so used to inactivate a wide range of viruses in blood plasma products.
Licensing Contact: Mark Hankins

Monoclonal Antibodies To Herpes Simplex Virus Type I Polypeptides

Hampar, B., Zweig, M., Showalter, S. (NCI)
Serial No. 06/443,682
Patent Issued 25 Feb 86
U.S. Patent No. 4,572,896

This method allows researchers to develop monoclonal antibodies (mAbs) against a variety of HSV-I proteins and immediately determine the protein against which the antibody is directed. The four mAbs developed using the process are unique reagents for novel HSV-I proteins, including a previously unknown glycoprotein. These antibodies can be used to diagnose HSV-I and differentiate it from HSV-II; the process will allow identification of further antibodies and the proteins for which they are specific. Previous work has identified hybrid cells that release antibodies that react with HSV-I antigens, and about 50 proteins of HSV-I and -II have been discovered, but no study has identified a specific protein against which an antibody is directed.
Licensing Contact: Mark Hankins

Inactivation Of A Lipid Virus

Purcell, R., Feinstone, S. (NIAID)
Serial No. 06/386,991
Patent Issued 16 Apr 85
U.S. Patent No. 4,511,556

At least one non-A, non-B (NANB) hepatitis virus contains a lipid essential to its viability; that virus is rendered noninfectious after exposure to a potent lipid solvent (chloroform). It is further shown that this method of virus inactivation is applicable to any lipid-containing NANB hepatitis virus. The technique may be useful in ensuring that blood plasma products are not a source of viral hepatitis.
Licensing Contact: Mark Hankins

Isolation Of Hepatitis A Virus Strain HM-175

Daemer, R.J., Feinstone, S.M., Gust, I.D., Purcell, R.H. (NIAID)
Filed 7 Apr 82
Serial No. 06/366,165
Patent Issued 30 Jul 85
U.S. Patent No. 4,532,215

Human hepatitis A virus (HAV) strain HM-175 was isolated from sera and stool samples of infected individuals and successfully grown in monkey kidney cell cultures. The presence of antibodies to HAV HM-175 in the sera of inoculated chimpanzees indicates the potential usefulness of this strain of hepatitis A in vaccine development. This invention is an improvement over other HAV strains, which often cannot be cultivated directly from human specimens or are derived from decreasingly available and increasingly expensive sources (e.g., the marmoset).
Licensing Contact: Mark Hankins

Antiviral Activities of Dansylcadaverine And Closely Related Compounds

Pastan, I.H., Willingham, M.C. (NCI)
Serial No. 06/352,599
Patent Issued 2 Aug 83
U.S. Patent No. 4,396,628

Dansylcadaverine and related compounds, such as amantadine, have been found to block a novel central regulatory pathway, thus blocking virus (such as vesicular stomatitis virus,), and α2-macroglobulin uptake. Dansylcadaverine, an antithrombosis drug designed to inhibit enzymes involved in blood clotting, is about 20 times as potent as amantadine, a widely used antiviral compound, for the blocking of the virus and α2-macroglobulin uptake.
Licensing Contact: Mark Hankins

Heat Treatment Of A Non-A, Non-B Hepatitis Agent To Prepare A Vaccine

Tabor, E., Gerety, R. (FDA)
Serial No. 06/343,026
Patent Issued 20 Mar 84
U.S. Patent No. 4,438,098

A non-A, non-B (NANB) hepatitis agent may be rendered noninfectious by extended heat treatment. The optimum conditions for inactivation were found to be about 60°C for ten hours; this is the highest temperature at which the protein can no longer cause infection but does not lose its antigenic properties. The method inactivates NANB from animal plasma, and a vaccine prepared using the heat-treated agent is effective in chimpanzees.
Licensing Contact: Mark Hankins

Detection of Non-A, Non-B Hepatitis-Associated Antigen

Tabor, E., Gerety, R.J. (FDA)
Serial No. 06/319,995
Patent Issued 26 Jul 83
U.S. Patent No. 4,395,395

An antigen isolated from blood serum or liver tissue known to contain non-A, non-B hepatitis (hepatitis C), a disease that accounts for about 90 percent of all cases of post-transfusion hepatitis in the United States, can be used in a vaccine against the disease in mammals. Preferred donors are chimpanzees and humans. The activity of the antigen has been shown by counterelectrophoresis as well as by solid phase radioimmunoassay.
Licensing Contact: Mark Hankins

Recombinant DNA Process Utilizing A Papilloma Virus DNA As A Vector

Howley, P.M., Sarver, N., Law, M.-F. (NCI)
Serial No. 06/221,565
Patent Issued 6 Dec 83
U.S. Patent No. 4,419,446

A portion of the bovine papilloma virus genome capable of extrachromosomal replication can be linked to a foreign gene (e.g., sequences that encode specific proteins) via recombinant DNA techniques and inserted into eukaryotic cells, where the foreign gene is copied and expressed. The papilloma virus vector can be used in vaccine development and for large-scale production of human or mammalian proteins, such as insulin and interferon (i.e., by introducing genes into cells to produce antigen or protein). This invention overcomes several problems associated with use of prior vectors, such as viral DNA size limitations, cell death following introduction of the recombinant genome, and disruption of the integrity of the foreign DNA.
Licensing Contact: Steve Ferguson

Cultivatable Human Rotavirus Type 2

Wyatt, R.G., James, W.D., Bohl, E.H., Theil, K.W., Saif, L.J., Kalica, A.R., Greenberg, G.B., Kapikian, A.Z., Chanock, R.M. (NIAID)
Serial No. 06/208,389
Patent Issued 27 Jul 82
U.S. Patent No. 4,341,870

A precursor or intermediate for a rotavirus vaccine is valuable for protecting young children against diarrhea. This strain of human rotavirus type 2 was prepared by cultivation with multiple passages *in vivo* in gnotobiotic piglets and by multiple passages *in vitro* subsequently in African green monkey kidney cell cultures. Previously, there has not been a successful cultivation of human rotavirus that was confirmed on subsequent evaluation of viral RNA.
Licensing Contact: Mark Hankins

Nuclease-Resistant Hydrophilic Complex of Polyriboinosinic-Polyribocytidylic Acid

Levy, H.B. (FDA)
Serial No. 06/208,029
Patent Issued 14 Sep 82
U.S. Patent No. 4,349,538

A novel hydrophilic complex of polyriboinosinic-polyribocytidylic acid (In.Cn) is useful for inducing the synthesis of antiviral levels of interferon in primates. Previously available complexes such as this have been inoperative when tested. In its preferred embodiment, the poly-1-lysine component of In.Cn has a molecular weight between 13 and 35 kD.
Licensing Contact: Mark Hankins

Detection of Non-A, Non-B Hepatitis-Associated Antigen

Tabor, E., Gerety, R.J. (FDA)
Serial No. 06/040,921
Patent Issued 27 Oct 82
U.S. Patent No. 4,356,164

Antigen-antibody reaction, counterelectrophoresis, and radioimmunoassay can be used for the detection of non-A, non-B hepatitis (hepatitis-C) antigen. The method can be applied to screening of blood donors when the blood donor had transmitted the antigen by transfusion several years previously or there was at least a 1-5 year retrospective period from donating blood to retention of active transmittable agent. The antigen can also be used for the preparation of a vaccine suitable for recipients of blood transfusions.
Licensing Contact: Mark Hankins

OTHER

Quick Color Test to Detect Lead Release from Glaze and Enamel Coatings

Gould, J.H. (FDA)
Serial No. 07/418,283
Patent Issued 23 Apr 91
U.S. Patent No. 5,010,020

A novel kit can be used to quickly test glazed or enameled coatings that release excessive amounts of lead. For this purpose, a filter paper containing a solution of citric acid is used to extract lead from such coatings. Color change in a lead-sensitive chromogen applied to the paper indicates the presence of lead on the paper within 30 minutes. In comparison, the ASTM test method for lead requires extraction of 6 pieces of ware for 24 hours with 4% acetic acid at room temperature; the leachate must then be analyzed for lead by flame atomic absorption spectroscopy.

Quick Color Test to Detect Lead Release from Glazed Ceramic and Enameled Metal Ware

Gould, J.H. (FDA)
Serial No. 07/264,041
Patent Issued 10 Nov 89
U.S. Patent No. 4,873,197

A new color test offers a quick, inexpesive method of identifying glazed ceramic or enameled metal ware that releases excessive lead. Previously, testing for lead in paint of earthenware or cookware has been expensive and required about 24

hours to complete. This new color test, which can be done in about 30 minutes, uses a citric acid solution on filter paper is used to extract lead from the ware and a lead-sensitive chromogen indicates the presence of lead on the paper.

Method of Joining Plastic Optical Fibers and Connections Obtained

Peterson, J.I. (NCRR)
Serial No. 06/509,819
Patent Issued 1 Oct 85
U.S. Patent No. 4,544,231

Plastic optical fibers can be joined by (a) heat-flaring their ends in a first tubular sleeve and (b) joining the flared ends within another tubular sleeve by means of an ultraviolet-curable optical cement. The fibers may be joined side-by-side or end-to-end; tubes of different diameter may also be joined.

Polymer Bound Dyes Prepared By Diazo Coupling Reactions With Poly(organophosphazenes)

Allcock, H., Austin, P. (NHLBI)
Serial No. 06/389,118
Patent Issued 25 Oct 83
U.S. Patent No. 4,412,066

Previous attempts to link preformed chromophores to a phosphazene chain were limited by the number of chromophoric units that could be added to each chain. This invention overcomes that problem and demonstrates that the linking of azo dyes to a polymer can be optimized by using the 4-nitrophenoxy side groups of polyphosphazenes (e.g., cyclotriphosphazenes). These novel polymer-bound azo dyes, which are not absorbed by the gut, are useful in animal research. They are also in great demand in photographic work.

Cobalt-Catalyzed One-Step Synthesis of Annulated Pyridines

Vollhardt, K., Naiman, A. (EM)
Serial No. 06/054 926
Patent Issued 4 May 82
U.S. Patent No. 4,328,343

Annulated fused-ring pyridines can be synthesized by cooligomerization of alpha,omega-diynes with about molar equivalents of nitriles using a cobalt catalyst such as cyclopentadienyl cobalt dicarbonyl. Fusion of rings in this heterocycle has generally been achieved by the use of intramolecular Friedel-Crafts cyclizations. Preveious methods for synthesizing these compounds used monoacetylenes but not diacetylenes in the co-oligomerization steps.

Hydrogel Adhesives And Sandwiches Or Laminates Using Microwave Energy

Boretos, J.W., Iriguchi, N. (NCRR)
Serial No. 05/161,823
Patent Issued 13 Jul 82
U.S. Patent No. 4,339,295

A novel a hydrogel adhesive that is activated with microwave energy offers an improved method of reversibly bonding materials to substrates. This bonding method has the advantage that it may be temporary and fangible by water or may be permanent when it is used in a pressurized vessel.

SECTION 7

NIH/ADAMHA/CDC POLICY STATEMENT AND MODEL AGREEMENTS

This section opens with a briefing on the purpose and uses of the policy statement and the various types of agreements, including

- Confidentiality Agreement for the Purpose of Reviewing Patent Application Claims
- NIH/ADAMHA/CDC Policy Statement on Technology Transfer
- Conflict of Interest and Fair Access Survey
- Model NIH/ADAMHA/CDC Cooperative Research and Development Agreement (CRADA)
- Application for Commercialization License to NIH/ADAMHA/CDC Inventions
- Model Biological Materials License Agreement
- Model Commercial Evaluation License Agreement
- Model NIH/ADAMHA/CDC Patent License Agreement—*Nonexclusive*
- Model NIH/ADAMHA/CDC Patent License Agreement—*Exclusive*
- Model NIH/ADAMHA Material Transfer Agreement

How and When to Use

Cooperative Research and Development Agreements (CRADAs)
and
Material Transfer Agreements (MTAs)

CRADAs provide an exciting opportunity for PHS investigators to join with their colleagues from industry and academia in the joint pursuit of common research goals. The government scientist can leverage his or her own research resources, as well as serve the larger mission of PHS, to facilitate the development and commercialization of health care pharmaceuticals and products. Companies also can leverage their own R&D efforts while collaborating in state-of-the-art PHS research. The purpose of a **CRADA** is to make Government facilities, intellectual property, and expertise available for collaborative interactions to further the development of scientific and technological knowledge into useful, marketable products.

Because issues involving patent rights lie at the heart of technology transfer, written **CRADAs** or **MTAs** should be considered for any outside collaborations and/or exchange of materials between PHS, industry and academia. Each PHS institute, center, or division has a Technology Development Coordinator (**TDC**) who should be consulted at an early stage of collaboration by the company and the PHS investigator to assist in identifying and developing the proper documents and obtaining the required approvals.

- *When do I use an MTA or a CRADA?*

  - **Purpose of an MTA:** An **MTA** generally is utilized when any proprietary material and/or information is exchanged, when the receiving party intends to use it for his/her own research purposes, and when no research collaboration between scientists is planned. Neither rights in intellectual property nor rights for commercial purposes may be granted under this type of agreement. **MTAs** define the terms and conditions under which the recipients of materials, provided by either the PHS scientist or the other party, may use the materials. Included in the **MTA** is the requirement that the materials be used for research purposes only and cannot be used in human subjects. The PHS also requires that all materials received by their scientists originating from humans be called under 45-CFR 46-Protection of Human Subjects.

  - **Purpose of a CRADA:** A **CRADA** generally is utilized when a cooperative R&D project between the PHS and a scientist from the private sector is contemplated; when the exchange of material and/or research and development collaboration takes place over a substantial period of time; when staff or equipment is to be supplied by one or more parties; or when the industrial partner contributes funding or requests the granting of intellectual property rights. A **CRADA** may also be necessary in instances where a company is providing an otherwise non-available material to the PHS and requests the transfer of intellectual property rights in the result of associated research. The model **MTA** specifically addresses this issue and recommends the use of a **CRADA** for exchange of unique research materials only, therefore providing a mechanism for securing intellectual property rights.

- *How do I get a CRADA Agreement Started?*

  Generally by contacting a PHS scientist with whom you would like to collaborate. Participants in a **CRADA** include the PHS Institute and one or more other parties (other agencies, state and local governments, non-profit and not-for-profit institutions; private corporations). Federal laboratories may contribute staff, facilities, equipment and supplies, but not funds. The collaborating party may contribute funds in addition to staff, facilities, equipment and supplies.

  A competitive process is generally not required in choosing a **CRADA** partner, although it is required by PHS fair access guidelines under limited circumstances. An agency may choose to use competition in a collaboration when interested parties are unknown or the technology/project is such that competition is in the government's and public's best interests. An announcement may be placed in the *Federal*

Register or Commerce Business Daily with a selection made known to the responding parties. The Institute may establish an ad hoc evaluation committee to review submissions, if appropriate.

A written **CRADA** should be developed as soon as both participating scientists negotiate the Research Plan (the written description of the research and development project, including each party's contribution to the planned research and development). NIH/ADAMHA/CDC has a model **CRADA** which is required and used as the basis for all negotiations with outside parties. The model **CRADA** contains four appendices: A) NIH/ADAMHA/CDC Policy on Intellectual Property; B) The Research Plan; C) Financial and Staffing Contributions and D) Modification to agreement provisions.

The PHS scientist is required to fill out and attach a **Conflict of Interest and Fair Access Survey** form. The purpose of this form is to assure that a PHS scientist engaging in a CRADA with a company is not consulting with the same company which would be considered by Federal government statute as a conflict of interest.

Each PHS institute has a Technology Development Coordinator (**TDC**) who facilitates the drafting of an acceptable **CRADA** and related Appendices advising the PHS scientist in the development of the overall agreement. The **CRADA** and Appendices are generally negotiated by the **TDC** and the program manager, in conjunction with the other party. The negotiated **CRADA** must be approved by the PHS scientist, the Laboratory or Branch Chief, and the Scientific Director. The **TDC** then forwards the agreement to the Office of Technology Transfer and the Office of General Counsel for review, who then forward the agreement to the **CRADA** Subcommittee for final approval recommendation. All **CRADA**s containing exclusive licensing-related clauses must be reviewed by the agency's **CRADA** Review Subcommittee.

The Federal Technology Transfer Act provides for a 30-day period in which to disapprove or modify a **CRADA** after its finalization by the Institute. When there are no changes required, the **CRADA** is signed and returned to the **TDC** at each PHS Institute. The **TDC** is responsible for obtaining the proper signatures required for execution by the collaborator. The date of the last signature may be specified as the starting date for the **CRADA**. Agreements have no mandatory term length, but are often designated for a one or two-year term, and can be extended by the mutual agreement of the parties if there is no substantial change in the Research Plan. Because scientific objectives and circumstances change, it is essential to include in a **CRADA** a specific time period for financial accountability and provisions for early termination.

In order to expedite the commencement of the Research Plan, prior to final execution of the **CRADA**, the Office of Technology Transfer has the authority to sign an interim Letter of Intent with the company.

Once an invention is made within the scope of a **CRADA** agreement, the Office of Technology Transfer will negotiate the CRADA-related license with the collaborating company.

- ***I want to use a technology for commercial purposes, but I don't foresee an actual collaboration between our company and PHS scientists. What agreement process do I use?***

If a company would like to acquire either an unpatented material, or a patented or patent-pending material for commercial purposes, either a **Commercial Evaluation License, a Biological Materials License,** or an **Exclusive/Nonexclusive License** is required. (See the section on licensing for details.)

How and When to Apply for a License

If a company would like to acquire rights to commercial either an unpatented material, or a patented or patent-pending material, a license is required. A license is a legal agreement, subject to federal, state, and local regulatory authorities, by which a patent owner promises not to take action to exclude the licensed party from making, using, or selling a potential invention. An exclusive license limits the use of the invention to a single group or entity while a nonexclusive license allows for use by multiple concerns. Licensing fees are determined based on the type of license awarded and its value in a commercial product development.

Usually, the licensing of inventions is granted on a worldwide basis. Most biomedical companies, whether large or small, require worldwide patent protection to secure foreign markets or to use their assets in establishing strategic alliances with foreign companies who provide important foreign marketing expertise. When a PHS invention is licensed worldwide, a simultaneous transfer of both U.S. and foreign patent rights occurs so that the company can manufacture and market its products in commercially important production or marketing regions.

If a company would like to acquire either an unpatented material, or a patented or patent-pending material for commercial purposes, either a **Commercial Evaluation License**, a **Biological Materials License**, or an **Exclusive/Nonexclusive License** is required:

- **Intellectual Property covered by a Patent/Patent Application:** If the materials being distributed are covered by a patent application filed by the U.S. Government, the recipient must negotiate a license through the Office of Technology Transfer in order to be able to use the materials for commercial purposes. There are two types of licenses available:

- **Commercial Evaluation License**: Commercial evaluation licenses grant the nonexclusive right to make and use the technology for the purpose of evaluating its commercial potential. The licenses are for a limited number of months, and do not grant the right to sell the technology. Companies are required to obtain a commercial patent license for further use and development of a technology.

- **Exclusive/Nonexclusive License**: Commercial patent licenses can be exclusive or nonexclusive and allow commercialization of the technology, under appropriate circumstances, pursuant to applicable statutes and regulations.

- **Intellectual Property <u>not</u> covered by a Patent/Patent Application:**

    - **Biological Materials License.** A biological material license is required and grants the right to make, use and/or sell commercially useful biological materials for which patent protection will not be obtained. This type of license typically is nonexclusive, and facilitates the commercial development of biological materials without requiring that patent protection be obtained for every material. The company and PHS scientists should work with the ICD's Technology Development Coordinator and the Office of Technology Transfer first to determine whether a material is already in the public domain or would be justifiably licensed, for either research or commercial purposes.

- ***What is the process that the Office of Technology Transfer (OTT) uses to decide when to file patents and license technology to companies?***

    A U.S. patent application <u>must</u> be filed prior to any public disclosure of an invention to preserve foreign patent rights and must be filed within one year of the official publication date or public use to preserve U.S. patent rights. After appropriate ICD and OTT reviews of patentability and commercial marketability, a patent application is filed with the U.S. Patent and Trademark Office (PTO) by the OTT Patent Branch or by a contract attorney. The Patent Branch is responsible for the supervision of patent

prosecution and for assuring that all information and material are forwarded to the PTO to assure that a patent is awarded.

Once the U.S. patent application is filed, OTT will update its preliminary marketability and patentability analysis and will provide, within 12 months, a recommendation to the ICD regarding foreign filing. In general, where foreign filing is possible and one can reasonably anticipate commercial interest, OTT recommends at least preliminary filing under the Patent Cooperation Treaty 12 months after the U.S. filing date, to preserve foreign rights for an additional 18 months at modest cost. Upon institute determination to exercise foreign patent rights, the OTT Patent Branch or a contract attorney arranges for foreign patent prosecution, and licensing and collection of royalties are handled in conjunction with the U.S. rights.

In parallel with the filing of a patent application, OTT's Licensing Branch reviews the invention and its commercial potential, develops a licensing approach (exclusive, nonexclusive, fields of use) and identifies potential companies to commercialize the invention. This is coordinated by the OTT Licensing Specialist in whose marketing portfolio the invention fits, and is a collaborative process requiring input from the inventors, the institute, and the Patent Branch Patent Advisor. The results of this review and planning are recorded in the Technology Management Team (TMT) memorandum, which is provided to the institute; and serves as the basis for technology transfer activities which may include CRADAs (at the institute's discretion).

OTT negotiates CRADA-related licenses and licenses for technology developed solely by ICD scientists. After formally advertising for potential licensees, and promoting the technology to companies identified through the TMT process, OTT receives an application for a license. OTT reviews the application, with input from the involved ICD when an exclusive license is proposed, to ensure that the proposed exclusivity is consistent with ongoing ICD research activities. OTT then negotiates the terms of the license, and administers the license and collects royalty payments from the licensees. The disbursement of royalty income to ICDS and PHS investigators is handled by the NIH Division of Financial Management as required by the FTTA.

- ***How do I get an exclusive License?***

While government regulations reflect a preference for nonexclusive licenses, exclusive licenses are available when appropriate to promote successful commercial development of a licensed invention.

Upon receipt of an exclusive license application, OTT evaluates a number of criteria to determine if an exclusive license is warranted. The criteria considered for evaluating exclusive license applications include whether:

- Exclusive licensing serves the best interests of the public.
- Practical application of the invention is not likely to be achieved under a nonexclusive license.
- An exclusive or partially exclusive license is a reasonable and necessary incentive to promote the investment of risk capital to bring the invention to practical application.
- Exclusive license terms and conditions are not broader than necessary.
- Exclusive licensing will not lessen competition.

Applicants seeking an exclusive license are required to submit a detailed justification addressing each of these criteria as well as a complete business. Notice of a proposed exclusive license (other than those resulting from a CRADA) will be published in the Federal Register, as required by law, to provide an opportunity for public comment. The public comments must be received within 60 days from the publication date of the Federal

Register notice of an intent to grant an exclusive license. Any such comments will be evaluated and a final decision will be made whether or not an exclusive license is warranted.

- ***What terms are included in a license agreement with PHS?***

  OTT has developed several model license agreements that serve as the basis for license negotiation. The business development plan submitted as part of the license application process serves as the basis for establishing performance benchmarks that are included in the license agreement. The OTT works closely with licensees to monitor performance and to adjust benchmarks, when appropriate, to ensure successful commercial development of PHS inventions.

  Licensees are required to report at least annually on their utilization of or efforts to utilize licensed patent rights. These reports are kept confidential, by law. The license is revocable for specific reasons, such as non-use of the patent or failure to comply with governing regulations or to satisfy public health needs.

Confidentiality Agreement for the Purpose of Reviewing Patent Application Claims

[1]

CONFIDENTIALITY AGREEMENT FOR THE PURPOSE OF REVIEWING PATENT APPLICATION CLAIMS

This Agreement is made by and between the National Institutes of Health and/or the Alcohol, Drug Abuse and Mental Health Administration (collectively "NIH/ADAMHA") and the entity indicated below (hereinafter "Reviewer").

In consideration of receiving for review from NIH/ADAMHA a copy of the claims of U.S. Patent Application bearing the Serial Number and Title indicated below (hereinafter "Claims"), Reviewer agrees as follows:

1. Reviewer agrees not to disclose any portion of the Claims to any third party without prior written permission from NIH/ADAMHA, shall use reasonable care to maintain the confidentiality of the claims with at least the same degree of care as is exercised in respect of Reviewer's own proprietary information, and shall disclose the claims only to those of Reviewer's employees who are under an obligation to maintain the confidentiality of Reviewer's own proprietary information.

2. The following information categories are excluded from the confidentiality obligation of Paragraph 1:

   a). Information that was known to Reviewer about the Claims prior to their disclosure under this Agreement;

   b). Information about the Claims that is or becomes generally available to the public through no fault of Reviewer;

   c). Information about the Claims that is subsequently made available to Reviewer from any third party that is not under a confidentiality obligation to NIH/ADAMHA.

3. This Agreement does not grant any license rights under the indicated patent application.

4. Reviewer represents that the purpose of requesting the Claims is only to assess interest in obtaining a license under the patent application. Reviewer further represents that its request for the Claims is not to assess the patentability of any technology or patent application owned by Reviewer, or to form the basis for filing a patent application or instituting any other proceeding in any patent office or court.

5. Title of Patent application:

_____

_____

and Serial Number: _____.

UNDERSTOOD AND ACCEPTED BY REVIEWER:

By: _____ Mailing Address: _____
Authorized Signature

_____ _____
Typed or Printed Name and Title

_____ _____
Date

_____

_____

[1]Office of Technology Transfer August 1992

NIH/ADAMHA/CDC Policy Statement of Technology Transfer

NATIONAL INSTITUTES OF HEALTH
ALCOHOL, DRUG ABUSE AND MENTAL HEALTH ADMINISTRATION
CENTERS FOR DISEASE CONTROL

POLICY STATEMENT ON COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS AND INTELLECTUAL PROPERTY LICENSING

This Statement sets forth the policies of the National Institutes of Health (NIH) and the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA) on various aspects of cooperative research and intellectual property licensing. These policies apply to the negotiation of NIH/ADAMHA Cooperative Research and Development Agreements (CRADAs). License agreements for intellectual property rights to inventions developed under a CRADA or through the NIH/ADAMHA intramural research programs, whether negotiated by NIH/ADAMHA or the National Technical Information Service on their behalf, will also incorporate these policies. This Statement may be revised from time to time as NIH and ADAMHA consider appropriate.*

To implement the Federal Technology Transfer Act of 1986, (FTTA, 15 U.S.C. at § 3710), Executive Order 12591 of April 10, 1987 orders Federal laboratories to assist universities and the private sector in broadening our national technology base by moving new knowledge from the research laboratory into the development of new products and processes. While Federal patent law (35 U.S.C. at §§ 200-212) authorizes the licensing of Government-owned patent rights, the FTTA seeks to facilitate technological collaboration at an earlier stage. Thus, the FTTA authorizes Federal laboratories to enter into CRADAs, and to agree to grant intellectual property rights in advance to collaborators for inventions made in whole or part by Federal employees under the CRADA. Besides assisting in the transfer of commercially useful technologies from Federal laboratories to the marketplace, CRADAs make outside resources more accessible to Federal laboratories.

NIH and ADAMHA, agencies of the Public Health Service (PHS) within the Department of Health and Human Services (DHHS), are among the world's preeminent biomedical research organizations. Their general mission is to conduct biomedical and behavioral research that will lead to the better health of the American people. For the NIH/ADAMHA investigator, this agency mission prescribes the exploration of ideas, the communication of ideas and information to colleagues, and a responsibility for the prompt and accurate publication of findings. Under the FTTA, 15 U.S.C. at § 3710a(a)(2), technology transfer, consistent with mission responsibilities, is also a responsibility of each laboratory science and engineering professional. To support their mission, NIH/ADAMHA have developed an interdisciplinary and synergistic research environment that promotes the free exchange of ideas and information. In order to safeguard the collegiality and integrity of, as well as public confidence in, the NIH/ADAMHA research programs, the following cooperative research and technology transfer policies have been adopted.

1. **Research Freedom**:

NIH/ADAMHA investigators generally are free to choose the subject matter of their research, consistent with the mission of their Institute and the research programs of their Laboratories. No CRADA or license agreement may contravene this freedom.

2. **Research Policy**:

NIH/ADAMHA research results generally are disseminated freely through publication in the scientific literature and presentations at public fora. Brief delays in this dissemination of research results may be permitted under a CRADA as necessary in order to file corresponding patent or other intellectual property

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*Questions or comments about this Statement and requests for updated versions should be directed to the NIH Office of Technology Transfer at (301) 496-7057. This Statement is effective on an interim basis, and will be revised after October 1, 1989.

applications. NIH/ADAMHA consider the filing of such applications to be an important component of their research efforts.

3. Cooperative Research and Development under a CRADA:

As defined by the FTTA, 15 U.S.C. § at 3710a(d)(1), a CRADA means any agreement between one or more Federal laboratories and one or more non-Federal parties, under which the Government provides personnel, services, facilities, equipment or other resources (but not funds), and the non-Federal parties provide funds, personnel, services, facilities, equipment or other resources toward the conduct of specified research or development efforts. Cooperative research and development activities are intended to facilitate the transfer of federally funded research and development for use by State and local governments, universities and the private sector, particularly small business.

4. NIH/ADAMHA CRADAs:

As adopted by NIH/ADAMHA, a CRADA is a standardized agreement intended to provide an appropriate legal framework for, and to expedite the approval of, cooperative research and development projects. The use of CRADAs is encouraged for cooperative efforts because they permit NIH/ADAMHA to accept, retain, and use funds, personnel, services, and property from collaborating parties and to provide personnel, services, and property to collaborating parties. NIH/ADAMHA may permit their investigators to enter into CRADAs with collaborators who will make a significant intellectual contribution to the research project undertaken or who will contribute essential research materials or technical resources not otherwise reasonably available. While NIH/ADAMHA welcome contributions to their gift funds for research purposes, they do not view CRADAs as a general funding source or a mechanism for sponsored research. This approach to implementing the FTTA has been chosen in order to maintain the public's confidence in NIH/ADAMHA through maintaining an independence from reliance on industry funding.

5. Selection of Collaborators under a CRADA:

Collaborations under a CRADA may be suggested by potential collaborators or by NIH/ADAMHA investigators. Generally, the decision to initiate the approval process for a CRADA is made by the involved NIH/ADAMHA investigator and laboratory chief based on scientific considerations and the desire for the public to benefit from the commercialization of particular NIH/ADAMHA research. For some cooperative projects, where the development and commercialization potential is more immediate relative to the basic research aspects, NIH/ADAMHA may seek a collaborator(s) which has both scientific expertise and commercialization capabilities. In certain areas of research, e.g., where the Government has the intellectual lead or where both scientific and commercialization capabilities are deemed essential at the outset, NIH/ADAMHA may competitively seek a collaborator through Federal Register notification. The PHS has also developed policy guidelines for ensuring fairness of access to PHS laboratories such as NIH and ADAMHA in the process of initiating and developing CRADAs.

6. Proprietary or Confidential Information and Materials:

NIH/ADAMHA recognize that an effective collaborative research program may require the disclosure of proprietary information to NIH/ADAMHA investigators. Although agreements to maintain confidentiality are permitted under a CRADA, collaborators should limit their disclosure of proprietary information to the amount necessary to carry out the research plan of the CRADA. The mutual exchange of confidential information, e.g., patient data, should be similarly limited. NIH/ADAMHA also recognize that cooperative research may require the exchange of proprietary research materials. Such materials may be used only for the purposes specified in the research plan set forth in the CRADA. All parties to the CRADA will agree to keep CRADA research results confidential to the extent permitted by law until they are published in the scientific literature or presented at a public forum.

7. **Treatment of Data and Research Products Produced under a CRADA:**

The NIH/ADAMHA investigator and the collaborator will agree to exchange all data and research products developed in the course of research under a CRADA whether developed solely by NIH/ADAMHA, jointly with the collaborator, or solely by the collaborator. In general, tangible research products developed under a CRADA will be shared equally by the parties to the CRADA. All parties to a CRADA will be free to utilize such data and research products for their own purposes. Data and research products developed solely by the collaborator may be designated as proprietary by the collaborator when they are wholly separable from the data and research products developed jointly with NIH/ADAMHA investigators. However, except as may be afforded through intellectual property rights that require public disclosure of the protected subject matter (e.g., patents), NIH/ADAMHA will not agree to exclude others from utilizing or commercializing the data or research products developed solely by NIH/ADAMHA investigators or jointly with the collaborator under a CRADA.

8. **Ownership and Licensing of NIH/ADAMHA Intellectual Property Rights:**

Pursuant to the FTTA, 15 U.S.C. at § 3710a(b)(2), a Federal laboratory is authorized to own and license patent rights to inventions made in whole or part by its employees under a CRADA. The term "invention" is defined at § 3703(9) to mean any invention or discovery which is or may be patentable or otherwise protected under Title 35 or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (PVPA), 7 U.S.C. § 2321 et seq. The patent law, 35 U.S.C. at § 207, authorizes the ownership and licensing of intramural inventions. Executive Order 12591 at § 1(b)(1)(B) further authorizes the transfer of Government intellectual property rights. Although the FTTA speaks broadly of the transfer of "technology," NIH/ADAMHA do not have statutory authority to license (or to agree to limit dissemination of) technology developed in whole or part by their investigators under a CRADA unless a patent, PVPA certificate or other intellectual property application has been filed for that technology. NIH/ADAMHA will retain the Government ownership interest in, but license rights to, all intellectual property rights to inventions developed solely through intramural research or developed in whole or in part by their investigators under a CRADA.

9. **General Licensing Policy:**

NIH/ADAMHA recognize that under the FTTA and the patent licensing law to which it refers, Congress and the President have chosen to utilize the patent system as the primary mechanism for transferring Government inventions to the private sector. The importance of patents to commercialization in the biomedical field is further reflected by the Drug Price Competition and Patent Term Restoration Act of 1984 (Pub. L. 98-417). A fundamental principle of the patent system is that the owner of a patent have a time-limited "right to exclude others from making, using, or selling the [patented] invention." The reason for such a period of exclusivity is to encourage industry to invest the resources necessary to bring an invention from the discovery stage through subsequent development, clinical trials, regulatory approvals, and ultimately into commercial production. NIH/ADAMHA accordingly are willing to grant exclusive commercialization licenses under their patent or other intellectual property rights in cases where substantial additional risks, time and costs must be undertaken by a licensee prior to commercialization. Under a CRADA, NIH/ADAMHA are also willing to agree to grant exclusive commercialization licenses in advance to collaborators. NIH/ADAMHA will attempt, however, to license their intramural inventions nonexclusively in cases where an invention reflects a relatively more advanced stage in its commercial development, e.g., when an NIH/ADAMHA investigator invents a patentable new therapeutic use for a known and FDA approved compound.

Federal laboratories are authorized to negotiate license agreements for Government-owned patent rights in intramural inventions pursuant to 35 U.S.C. § 207. Although § 207 does not apply to intellectual property license agreements authorized by the FTTA for inventions made under a CRADA, NIH/ADAMHA have adopted the following approach of § 207 for all license agreements:

> Each Federal Agency [may] ... grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection ... on such terms and conditions ... as determined appropriate in the public interest.

NIH/ADAMHA have determined it to be appropriate in the public interest to grant nonexclusive research licenses and either exclusive or nonexclusive commercialization licenses to DHHS owned intellectual property rights according to the plan discussed below.

10. Government Intellectual Property Rights:

For inventions developed wholly by NIH/ADAMHA investigators or jointly with a collaborator under a CRADA, NIH/ADAMHA are required by the FTTA at 15 U.S.C. § 3710a(b)(2) to retain at least a nonexclusive, irrevocable, paid-up license to practice the invention or to have the invention practiced throughout the world by or on behalf of the U. S. Government. When granting exclusive or partially exclusive licenses to NIH/ADAMHA intramural inventions, 35 U.S.C. § 208, as implemented by 37 C.F.R. § 404.7(2)(i), requires the reservation of similar Government rights. NIH/ADAMHA will not assert an ownership right in inventions made solely by a collaborator under a CRADA, but will require the grant of a research license, as described below, to the Government for inventions made wholly by a collaborator under a CRADA.

11. Research Licenses:

NIH/ADAMHA will reserve the right under any CRADA and intellectual property license to grant nonexclusive licenses to make and to use the invention for purposes of research involving the invention itself, and not for purposes of commercial manufacture or in lieu of purchase as a commercial product for use in other research. The purpose of the research license is to facilitate basic academic research. NIH/ADAMHA intend to consult with any involved commercialization licensee(s) before granting research licenses to commercial entities.

12. Commercialization Licenses:

NIH/ADAMHA are willing to consider requests for nonexclusive or exclusive commercialization licenses to intellectual property rights to inventions developed under a CRADA or in the course of intramural research, pursuant to applicable statutes and regulations. Under a CRADA, NIH/ADAMHA generally will grant a time-limited option to negotiate, in good faith, the terms of a license that fairly reflects the relative contributions of the parties, the risks incurred by the collaborator and the costs of subsequent research and development needed to bring the results of CRADA research to the marketplace. NIH/ADAMHA contemplate the drafting of a model invention license to serve as the starting point for license negotiations. It is contemplated further that such a model will reduce negotiations essentially to matters of execution fees, royalty rates and minimum annual royalties. Royalty rates will be based on product sales and the rates conventionally granted in the field identified in the CRADA's research plan for inventions with reasonably similar commercial potential. Royalty rates generally will not exceed a rate within the range of 5 - 8 % for exclusive commercialization licenses. Contingent royalty schemes based on, e.g., patent issuance or nonissuance, and clauses treating the stacking of royalties or packaging of other inventions developed under the CRADA may be provided. Exclusive licensees will be expected to reimburse NIH/ADAMHA for intellectual property related expenses, and may be permitted to offset such reimbursement against future product royalties.

13. Nonexclusive Commercialization Licenses:

Unless a request for exclusive commercialization license is made under a CRADA or submitted for an intramural invention, NIH/ADAMHA will attempt to license their inventions nonexclusively. Such nonexclusive licenses generally will follow the guidelines of 37 C.F.R. Part 404.

14. Exclusive Commercialization Licenses:

All NIH/ADAMHA exclusive commercialization licenses will require the submission by a prospective licensee of an acceptable development and commercialization plan as described by 35 U.S.C. § 209(a) and

subsequent, periodic reports on utilization of the invention as described by § 209(f)(1). All such plans and reports will be treated in confidence and as privileged from disclosure under the Freedom of Information Act. Modification provisions as described by § 209(f)(2)-(4) may apply. In appropriate cases, NIH/ADAMHA may also reserve the right to grant separate exclusive commercialization licenses in various fields of use. The remaining provisions of 35 U.S.C. §§ 200-212 will also apply to licenses to NIH/ADAMHA intramural inventions.

NIH/ADAMHA also consider the following provisions for exclusive commercialization licenses to be necessary and appropriate in the public interest:

(i) the exclusive licensee must pledge its reasonable best efforts to commercialize a licensed invention and the development and commercialization plan mentioned above may serve as the measure of such efforts;

(ii) NIH/ADAMHA shall have the right, after notice and opportunity to cure, to terminate or render nonexclusive any license granted: (1) if the licensee is not reasonably engaged in research, development, clinical trials, manufacturing, marketing, sublicensing, or other activities reasonably necessary to the expeditious commercial dissemination of the licensed invention; or (2) when the licensee cannot reasonably satisfy unmet health and safety needs;

(iii) in order to maximize the commercialization of the licensed invention in other fields of use not utilized by the exclusive licensee through ongoing development, manufacturing or sublicensing, NIH/ADAMHA reserve the right to require the licensee to grant sublicenses to responsible applicants, on reasonable terms, in such other fields of use, unless the licensee can reasonably demonstrate that such a sublicense would be contrary to sound and reasonable business practice and the granting of the sublicense would not materially increase the availability to the public of the licensed invention; and

(iv) exclusive licensees to DHHS inventions, whether developed under a CRADA or through intramural research, must agree to not unreasonably deny requests for sublicense or cross license rights from future CRADA collaborators when the possibility of acquiring such derivative rights is necessary in order to permit a proposed cooperative research project with NIH/ADAMHA to go forward, and the exclusive licensee has been given a reasonable opportunity to join as a party to the proposed CRADA

15. **Compliance under a CRADA with Other Policies**:

For research conducted pursuant to a CRADA, collaborators must agree to comply with PHS, NIH and ADAMHA policies and guidelines concerning, e.g., human subjects research, the use of research animals including nonwild chimpanzees, recombinant DNA and other policy statements as may be promulgated from time to time.

16. **Pricing**:

DHHS has responsibility for funding basic biomedical research, for funding medical treatment through programs such as Medicare and Medicaid, for providing direct medical care and, more generally, for protecting the health and safety of the public. Because of these responsibilities, and the public investment in the research that contributes to a product licensed under a CRADA, DHHS has a concern that there be a reasonable relationship between the pricing of a licensed product, the public investment in that product, and the health and safety needs of the public. Accordingly, exclusive commercialization licenses granted for NIH/ADAMHA intellectual property rights may require that this relationship be supported by reasonable evidence.

17. **Waivers**:

NIH/ADAMHA will consider requests to modify any of the foregoing policies in special cases where public health exigencies or commercial situations warrant such a modification. Modifications dealing with

business terms such as royalties are not decided by the NIH/ADAMHA investigators and should be discussed with the appropriate NIH/ADAMHA technology management personnel.

18. **Special Consideration and Preference under a CRADA:**

NIH/ADAMHA will give special consideration to entering into CRADAs with small business firms and consortia involving small business firms; and will give preference to business units located in the United States which agree to manufacture substantially in the United States products which embody inventions developed in the course of research under CRADAs.

Conflict of Interest and Fair Access Survey

CONFLICT OF INTEREST AND FAIR ACCESS SURVEY

To be completed by the NIH/ADAMHA Principal Investigator ONLY

I. General Information (Use attachments if needed)

CRADA Title _____

CRADA ID Number _____ NIH/ADAMHA ICD _____
NIH/ADAMHA PI _____
Collaborating Organization(s) _____

II. Financial Interest Statement

A "financial interest" is any interest of monetary value. A "financial CONFLICT of interest" is any financial interest which may be directly or predictably affected by the official action of an employee. There is no minimum amount of value or control that constitutes a financial interest. Normally, "financial interest" includes, salaries, stocks, or consultant agreements, but not royalties from inventions licensed by the Government.

To the best of your knowledge, do any of the following persons or institutions have a financial interest in the collaborating organization(s)?

(1) YES NO You, Your Spouse or Your Minor Child(ren)

(2) YES NO An organization in which you serve as an officer, director, trustee, partner or employee

(3) YES NO A person or organization with which you are negotiating for prospective employment or have an arrangement for prospective employment

If you answered "YES" to any of the above: Has a waiver of the financial interest been approved by your Institute and ICD Ethics Officer after consultation with the Office of the General Counsel? (Please attach an approved waiver before submitting your CRADA to the CRADA Subcommittee)

III. Appearance of Conflict of Interest Statement (Please attach a statement if necessary)

YES NO Have you worked with the proposed collaborator(s) before?

If yes, was it a paid outside activity, informal collaboration or other type of relationship? (Please Describe)

_____
_____
_____

When did the activity end? _____

YES NO Do your duties within your ICD involve management responsibilities such as oversight, approval, advising or initiating actions on ICD funded grants or contracts?

If yes, please describe: _____
_____
_____

IV. Collaborator Selection (Use attachments if needed)

Approximately when did you begin negotiating a CRADA with the proposed collaborator(s)? _____

YES NO Have you or anyone else in your laboratory had any past or present CRADAs with the proposed collaborator(s)?

If yes, please provide CRADA titles, ID numbers and period of collaboration.

Why was the proposed collaborator(s) selected? Please provide a brief statement as to why this is the collaborator of choice.

_____
_____

Also, select all reasons that apply as to why you choose the proposed collaborator:

YES Previous or ongoing informal collaboration since (date) _____

YES Unique technology (DESCRIBE) _____

_____

YES Unique expertise (DESCRIBE) _____

_____

YES Unique materials/equipment (DESCRIBE) _____

_____

YES Unique facilities (DESCRIBE) _____

_____

YES Government invention licensed to Collaborator (DESCRIBE) _____

_____

_____

YES Other (DESCRIBE) _____

_____

_____

_____

If it was announced publicly, was the proposed CRADA project advertised in:

YES A formal PHS forum? YES PHS Technology Transfer Directory?

YES The Federal Register? YES The Commerce Business Daily?

YES Other? (specify) _____

_____

V. Principal Investigator's Certification

NOTE: BECAUSE THE PATENT RIGHTS TO CRADA INVENTIONS WILL BE LICENSED UNDER THE CRADA RATHER THAN AS INTRAMURAL INVENTIONS, I ACKNOWLEDGE MY OBLIGATION TO LET COLLEAGUES IN OTHER NIH/ADAMHA LABORATORIES KNOW ABOUT THE EXISTENCE OF MY CRADA BECAUSE IT MAY HAVE AN IMPACT ON HOW JOINT INVENTIONS MADE WITH ME WILL BE LICENSED.

I certify that, to the best of my knowledge, all of the above information is true and accurate.

NIH/ADAMHA Principal Investigator's Signature:

_____ Date _____

VI. Ethics Officer's Certification

Based on my review of the information presented in Sections II and III above, there are no real or apparent conflict of interest issues for this CRADA.

ICD Ethics Officer's Signature:

_____ Date _____

Model NIH/ADAMHA/CDC Cooperative Research and Development Agreement

NATIONAL INSTITUTES OF HEALTH
ALCOHOL, DRUG ABUSE AND MENTAL HEALTH ADMINISTRATION
CENTERS FOR DISEASE CONTROL

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT*

This Cooperative Research and Development Agreement, hereinafter referred to as the "CRADA," consists of this Cover Page, an attached Agreement, a Signature Page and various Appendices referenced in the Agreement. This Cover Page serves to identify the Parties to this CRADA:

(1) the following Bureau(s), Institute(s) or Division(s) of the National Institutes of Health and/or the Alcohol, Drug Abuse and Mental Health Administration: _____ _____, hereinafter singly or collectively referred to as the "NIH/ADAMHA;" and

(2) _____, which has offices at _____ _____ _____, hereinafter referred to as the "Collaborator."

Although drafted for two Parties, the attached CRADA may also be used for any number. This Cover Page, however, should be modified by repeating block (2) to identify other Parties to the CRADA. All non-NIH/ADAMHA Parties are hereinafter collectively referred to as the "Collaborator." Use of the terms "Collaborator," "Party" and "Parties" should be construed as appropriate for the actual number of CRADA participants.

*This Cooperative Research and Development Agreement form is effective on an interim basis, and will be revised after October 1, 1989 for use in CRADAs entered into by NIH/ADAMHA after that date. Questions or comments about this CRADA and requests for updated versions should be directed to the NIH Office of Technology Transfer at (301) 496-7057.

CRADA SIGNATURE PAGE

FOR NIH/ADAMHA:

_____ _____
Date

_____

Mailing Address for Notices:

_____
_____
_____
_____
_____

FOR THE COLLABORATOR:

_____ _____
Date

_____

Mailing Address for Notices:

_____
_____
_____
_____
_____

[Include additional signature and address blocks as necessary for all Parties to this CRADA.]

APPENDIX A

NIH/ADAMHA POLICY STATEMENT ON COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS AND INTELLECTUAL PROPERTY LICENSING

[Insert the Policy Statement as Appendix A behind this page.]

APPENDIX B

RESEARCH PLAN

TITLE OF CRADA: _____
_____.

NIH/ADAMHA PRINCIPAL INVESTIGATOR: _____ and his/her Laboratory: _____.

COLLABORATOR PRINCIPAL INVESTIGATOR: _____
_____.

TERM OF CRADA: ___ ( ) years.

CONFLICTS OF INTEREST INFORMATION: Describe any relevant past, present or contemplated relationships between the NIH/ADAMHA Principal Investigator and his/her Laboratory and the Collaborator in sufficient detail to permit reviewers of this CRADA to determine whether or not any conflicts of interest exist: _____
_____
_____.

The Research Plan which follows this page should be concise but of sufficient detail to permit reviewers of this CRADA to evaluate the scientific merit of the proposed collaboration. The RP should explain the scientific importance of the collaboration and the research goals of NIH/ADAMHA and the Collaborator. The respective contributions in terms of expertise and/or research materials of NIH/ADAMHA and Collaborator should be summarized. Initial and subsequent projects contemplated under the RP, and the time periods estimated for their completion, should be described, and pertinent methodological considerations summarized. Pertinent literature references may be cited and additional relevant information included. Include additional pages to identify the Principal Investigators of all other Parties to this CRADA.

APPENDIX C

FINANCIAL AND STAFFING CONTRIBUTIONS OF THE PARTIES

[Insert the Financial and Staffing Contributions as Appendix C behind this page.]

APPENDIX D

EXCEPTIONS OR MODIFICATIONS TO THIS CRADA

SUPPLEMENT TO APPENDIX B

GUIDELINES FOR DRAFTING THIS RESEARCH PLAN

In order to assist in the drafting of an appropriate Research Plan and to facilitate its processing and approval at NIH/ADAMHA, the following supplement has been adopted. Please use as many additional pages as are necessary in order to respond fully, and number responses consistent with the numbering below. These guidelines and explanatory notes are an incorporated part of this CRADA.

1. Goal of this CRADA:

Explanatory Note: Identify (three to four sentences) the research goal(s) of this CRADA, including the respective research goals of the NIH/ADAMHA and Collaborator Principal Investigators. Explain why this project is important scientifically.

2. Detailed Description of the Research Plan:

Explanatory Note: The primary purpose of this Research Plan is to permit careful monitoring of CRADA research projects by scientific and division directors of our institutes, centers and divisions. An additional purpose for the Research Plan is established by the Federal Technology Transfer Act of 1986 (FTTA). Under the FTTA, the Parties' obligations to each other in such areas as confidentiality and patent rights extend only to "specified research or development efforts." This statutory limitation will create the boundaries for license rights to inventions made under the CRADA. Appropriate care should be taken in drafting this Research Plan carefully and completely. The field(s) of use to which Article VIII of this CRADA pertains will be limited to the specified research or development efforts in view of the foregoing research goals. The Collaborator further should bear in mind that, although insubstantial changes in this Research Plan may be made by mutual consent of the Principal Investigators under Article 3.4, substantial changes will require formal amendment under Article 14.6 in order to maintain entitlement to invention rights. Absent compelling justification for a failure to make the original Research Plan complete, amendments will not be made retroactive.

Therefore, please provide a description (two to five pages) of the intended Research Plan in sufficient detail to permit reviewers of the CRADA to evaluate the scientific merit of the proposed collaboration. The Research Plan should be described in detail in terms of specific research projects – not in terms of a general research program or research goals. Contemplated initial and subsequent projects should be summarized along with estimated time periods for their completion. These projects may be described sequentially in distinct phases contingent upon the success of earlier phases. Important methodological considerations should be noted, and citations to pertinent literature reference may be helpful.

3. Respective Contributions of the Parties:

Explanatory Note: Under Paragraph 4 of the NIH/ADAMHA "Policy Statement" attached as Appendix A, CRADAs are authorized only with collaborators who will make a significant intellectual contribution to the research project undertaken, or who will contribute essential research materials or technical resources not otherwise reasonably available to NIH/ADAMHA. CRADAs are not viewed by NIH/ADAMHA as a general funding source or as a mechanism for sponsored research. Thus, unless essential materials or technical resources are involved, the Research Plan must indicate clearly that a true intellectual collaboration will take place. With regard to the detailed research plan described above, identify in detail by Party and by Principal Investigator the respective contributions

of research, development, analysis, expertise, research materials, time, etc. to be committed to the various specified research projects and their component steps.

4. Abstract of the Research Plan for Public Release:

Explanatory Note: In order to fulfill their obligations regarding NIH/ADAMHA activities to the public, to Congress and to the scientific community, NIH/ADAMHA intend to make an abstract of this Research Plan available upon request. To protect the legitimate concerns of the Collaborator as to its research agenda, the Collaborator is requested to assist in and carefully review this abstract. Signature of this CRADA by the Collaborator shall be deemed to be agreement by the Collaborator that NIH/ADAMHA may disclose this abstract publicly.

5. Related CRADAs:

The Collaborator should identify by Title, Principal Investigator and Institute all other CRADAs that it has with NIH/ADAMHA. The NIH/ADAMHA Principal Investigator should similarly identify all CRADAs that his or her laboratory has with this or any other Collaborator.

6. Related MTAs:

The NIH/ADAMHA Principal Investigator carefully must review his or her laboratory files and attach to the clearance form for this CRADA any material transfer agreements from any source that provided research materials used in earlier projects that relate directly or indirectly to this CRADA, or that provided research materials used to develop any materials to be studied or utilized in this CRADA. The ICD Technology Development Coordinator should similarly review any central material transfer agreement files and attach relevant agreements.

7. Related Patent Applications and Patents:

The NIH/ADAMHA Principal Investigator and Technology Development Coordinator should identify by title and serial number any ICD patent applications and patents that are directly or indirectly related to the subject matter of this CRADA.

8. Avoidance of Conflict of Interests and Assurance of Fair Access:

Explanatory Note: NIH/ADAMHA have implemented the FTTA with strict attention to Federal conflict of interest and ethic laws, as well as various Departmental and NIH/ADAMHA regulations. Additionally, the Public Health Service has issued guidelines for PHS agencies in order to assure fair access to our laboratories and consideration for CRADAs. Completion and signature certification of the following conflict of interest disclosure and fair access assurance form by the NIH/ADAMHA Principal Investigator only is mandatory prior to review of a proposed CRADA by the CRADA Subcommittee.

Application for Commercialization License to NIH/ADAMHA/CDC Inventions

APPLICATION FOR COMMERCIALIZATION LICENSE TO NIH/ADAMHA/CDC INVENTORS

Thank you for your interest in the technology transfer activities of the NIH/ADAMHA. Your answers to the following questions will provide the foundation for licensing decisions. Please return the completed application to: Office of Technology Transfer, National Institutes of Health, Box OTT, Bethesda, MD 20892.

I. GENERAL INFORMATION

A. IDENTIFICATION OF INVENTOR(S) FOR WHICH LICENSE IS SOUGHT
(Complete all relevant sections)

U.S. Patent Application(s) Serial Number(s), Filing Date(s), and Patent Number(s) (if issued):

Title of Patent Application(s):

Biological Material(s):

Inventor(s):

Source from which you learned of availability of a license to the present inventor(s):

B. INFORMATION ABOUT APPLICANT

1. Name & Address of Applicant:

2. Name, title, address, telephone number of Applicant's licensing representative:

3. Is Applicant a U.S. Corporation? _____yes _____no
   If no, state country of origin _____
   State of incorporation or citizenship (if an individual):
   _____

4. Is Applicant a Small Business Firm? _____yes _____no

5. Approximate number of persons employed by Applicant: _____

6. Identify licenses previously granted to applicant under federally owned inventions:

7. On an attachment to this application, please describe your company. (If a prior license application has been submitted to the Office of Technology Transfer within the past year, you may reference that application for the company description.) Include in this description corporate/divisional commitment to R&D, production, sales & marketing; financial resources; and any unique capabilities of your company relative to the licensed technology, e.g., drug development, engineering, sales/distribution, management.

On attachments to this application, please respond to each of the following questions/issues in as much detail as possible. The commercial and financial responses in this application will be treated as privileged and confidential information as provided in 15 U.S.C. 209(a); and will not be accessible under the Freedom of Information Act.

II. PROPOSED LICENSE TERMS

The following terms are set forth in NIH/ADAMHA/CDC Patent License Agreements; please propose:

1. Definition of licensed technology:
   (a) Proposed licensed product, process, method
   (b) Field(s) of use
   (c) Identify the claims (if known) of the patent application under which the proposed licensed technology would fall.

2. Type of license sought:
   (a) Exclusive, partially exclusive, or nonexclusive
   (b) Geographic Territories. (Include territories in which the product will be manufactured or sold)
   (c) Other terms.

III. MARKET ANALYSIS/PRODUCT DEVELOPMENT PLAN

In this section you are asked to provide, for the proposed licensed technology, a product development plan as required by 37 CFR Part 404. This plan will form the administrative record on which a license is granted, and will be used to establish benchmarks to measure performance under the license.

1. Describe the product(s) or method(s) to be developed with the licensed technology.

2. Provide a market analysis which identifies the relevant market segment(s) the licensed technology will serve when commercialized. The analysis should include market size and projected growth of relevant markets during the duration of the license, estimated market share once product is introduced, and sales projections based on market share analysis.

3. If Applicant plans to market a product based on the licensed technology, describe the expected product research and development programs, including (as relevant) major preclinical, clinical, regulatory, manufacturing and marketing stages. Outline monetary and personnel commitments for each development stage. Indicate the projected time to accomplish each stage of commercial development.

4. Describe any intended international development program, if applicable, and if separate from that described above. Identify any particular commitments necessary for any non-domestic market, e.g., R&D, regulatory registration, production, sales, and sales support.

5. Provide a statement containing applicant's best knowledge of the extent to which the invention is being practiced by private industry or Government, or both, or is otherwise available commercially.

6. Provide any other information which you believe will support a determination to grant the requested license.

IV. SUPPLEMENTAL QUESTIONS FOR APPLICANTS FOR EXCLUSIVE OR PARTIALLY EXCLUSIVE COMMERCIALIZATION LICENSES TO PATENT APPLICATION NOT DEVELOPED UNDER A CRADA

Under 37 CFR Part 404, in order to grant an exclusive or partially exclusive license, the licensing agency must find that:

1. Federal and public interests are best served by exclusive licensing;

2. Expeditious practical application of the invention is unlikely to occur under a nonexclusive license;

3. Exclusive licensing is a reasonable and necessary incentive to attract investments of risk capital;

4. Exclusive licensing will not tend substantially to lessen competition or result in undue market concentration; and

5. Proposed terms and scope of exclusivity are not greater than reasonably necessary.

If you are requesting an exclusive or partially exclusive license for any or all fields of use, please submit statements addressing each of these issues, with detailed supporting justifications.

I certify, to the best of my knowledge, that all of the information provided on this application and on attachments to this application is true and accurate.

_____ _____

Signature of Applicant or Authorized Representative Date

_____

Print Name and Title

Model Biological Materials License Agreement

BIOLOGICAL MATERIALS LICENSE AGREEMENT

This Agreement is entered into between the National Institutes of Health and the Alcohol, Drug Abuse and Mental Health Administration ("NIH/ADAMHA"), through the Office of Technology Transfer, Box OTT, Bethesda, Maryland, 20892, U.S.A., and _____ ("LICENSEE") having an office at _____.

1. NIH/ADAMHA represents that it presently has custody of and has the authority to license the following biological materials including all progeny, subclones, and derivatives ("Materials"): _____ _____.

2. LICENSEE, a health care research and product development company, wishes to obtain a license from NIH/ADAMHA to use the Materials provided under this Agreement in its commercial research or product development and marketing activities. LICENSEE represents that it has the facilities, personnel and expertise to use the Materials for commercial purposes and agrees to expend reasonable efforts and resources to develop the Materials for commercial use.

3. NIH/ADAMHA hereby grants to LICENSEE a worldwide, nonexclusive license to make, have made, use, and sell the Materials in the field of use of _____. NIH/ADAMHA agrees to provide LICENSEE with samples of the Materials, as available, and to replace such Materials in the event of their unintentional destruction.

4. "Net Sales" means the total gross receipts by LICENSEE for sales of products made using the Materials, or for income from leasing, renting or otherwise making products available to others without sale or other disposition transferring title, whether invoiced or not, less returns and allowances actually granted, packing costs, insurance costs, freight out, taxes or excise duties imposed on the transaction (if separately invoiced), and wholesaler and cash discounts in amounts customary in the trade. No deductions shall be made for commissions paid to individuals, whether they be with independent sales agencies or regularly employed by LICENSEE, or for the cost of collections.

5. In consideration of the grant in Paragraph 3 above, LICENSEE hereby agrees to pay within 30 days of its execution of this Agreement, the sum of _____ Dollars ($_____). In addition, LICENSEE agrees to pay an annual royalty of _____ Dollars ($_____) on December 31 of each year during the term of this agreement, and an earned royalty on Net Sales of _____ percent (____%). All payments shall be in U.S. Dollars, net of all non-U.S. taxes, and shall be made by check or bank draft drawn on a United States bank and made payable to "NIH/Patent Licensing.

6. This Agreement shall become effective on the date when the last party to sign has executed this Agreement and shall terminate _____ (___) years from this effective date, unless previously terminated under the terms of Paragraphs 16 or 17 below.

7. LICENSEE agrees to supply Dr. _____ (NIH/ADAMHA) at no charge reasonable quantities of Materials that will be used or made available for public use and benefit.

8. LICENSEE agrees to make written reports and payments to NIH/ADAMHA within ninety (90) days after the end of each calendar half-year. This report shall state the number, description, and aggregate Net Sales of Materials made, sold, or otherwise disposed of, and the total gross income received by LICENSEE from leasing, renting, or otherwise making Materials available to others without sale or other disposition transferring title, during such completed calendar half-year, and resulting calculation pursuant to Paragraph 5 of payment due. Concurrent with the making of each such report, LICENSEE shall include payment due NIH/ADAMHA for the calendar half-year covered by such report.

9. As part of LICENSEE's performance under this Agreement, LICENSEE agrees to _____ _____.

10. LICENSEE agrees to retain control over the Materials, and not to distribute them to third parties without the prior written consent of NIH/ADAMHA except as provided in Paragraph 3.

11. LICENSEE agrees that this Agreement does not preclude NIH/ADAMHA from distributing the Materials to third parties for research or commercial purposes.

12. NIH/ADAMHA represents that, to the best of its present knowledge, the Materials per se are not and will not be claimed in any NIH/ADAMHA-filed patent applications. By this Agreement, NIH/ ADAMHA grants no patent rights expressly or by implication to any anticipated or pending NIH/ ADAMHA patent applications or issued patents.

13. NO WARRANTIES, EXPRESS OR IMPLIED, ARE OFFERED AS TO THE MERCHANTABILITY OR FITNESS FOR ANY PURPOSE OF THE MATERIALS PROVIDED TO LICENSEE UNDER THIS AGREEMENT, OR THAT THE MATERIALS MAY BE EXPLOITED WITHOUT INFRINGING THE PATENT RIGHTS OF ANY THIRD PARTIES. LICENSEE accepts license rights to the Materials "as is," and NIH/ADAMHA does not offer any guarantee of any kind.

14. LICENSEE agrees to indemnify and hold harmless the United States Government from any claims, costs, damages or losses that may arise from or through LICENSEE's use of the Materials. LICENSEE further agrees that it will not by its action bring the United States Government into any lawsuit involving the Materials.

15. LICENSEE agrees in its use of the Materials to comply with all applicable statutes, regulations and guidelines, including Public Health Service and NIH/ADAMHA regulations and guidelines. Licensee may not use the Materials for research involving human subjects, without express written consent from NIH/ADAMHA and compliance with 45 CFR Part 4616. LICENSEE may terminate this Agreement upon sixty (60) days written notice to NIH/ADAMHA.

16. LICENSEE may terminate this Agreement upon sixty (60) days written notice to NIH/ ADAMHA.

17. NIH/ADAMHA may terminate this Agreement if LICENSEE is in default in the performance of any material obligation under this Agreement, and if the default has not been remedied within ninety (90) days after the date of written notice by NIH/ADAMHA of such default.

18. Upon termination of this Agreement, LICENSEE agrees to return all Materials to NIH/ ADAMHA, or provide NIH/ADAMHA with certification of their destruction.

19. Within ninety (90) days of termination of this Agreement, LICENSEE agrees to submit a final report to NIH/ADAMHA, and to submit payment of any royalties due.

20. LICENSEE is encouraged to publish the results of its research projects using the Materials. In all oral presentations or written publications concerning the Materials, LICENSEE will acknowledge the contribution by the named inventors of the Materials, unless requested otherwise by NIH/ADAMHA or the named inventors.

21. This Agreement shall be construed in accordance with the laws of the United States as interpreted and applied by the Federal courts in the District of Columbia.

22. This Agreement constitutes the entire understanding of NIH/ADAMHA and LICENSEE and supersedes all prior agreements and understandings with respect to the Materials.

23. The provisions of this Agreement are severable, and in the event that any provision of this agreement shall be determined to be invalid or unenforceable under any controlling body of law, such

invalidity or unenforceability shall not in any way affect the validity or enforceability of the remaining provisions of this agreement.

In Witness Whereof, the parties have executed this agreement on the dates set forth below. Any communication or notice to be given shall be forwarded to the respective addresses listed below.

FOR NIH/ADAMHA:

_____

Reid G. Adler, J.D.,
Director
Office of Technology Transfer
Date _____

Mailing address for notices:
Office of Technology Transfer
National Institutes of Health
Box OTT
Bethesda, MD 20892 U.S.A.

FOR LICENSEE: (Upon information and belief, the undersigned expressly certifies or affirms that the contents of any statements of LICENSEE made or referred to in this document are truthful and accurate.)

_____ _____

Name Date

_____

Printed Name

_____

Title

Mailing address for notices:

_____

_____

_____

Model Commercial Evaluation Licesne Agreement

COMMERCIAL EVALUATION LICENSE AGREEMENT

Agreement made between the National Institutes of Health and the Alcohol, Drug Abuse and Mental Health Administration ("NIH/ADAMHA"), through the Office of Technology Transfer, Box OTT, Bethesda, Maryland, 20892, U.S.A. and _____("LICENSEE"), having an office at _____.

1. NIH represents that it presently has custody of and has the authority to license biological materials that fall within the scope of a claim of the following U. S. Patent Application ("Application") pursuant to 35 U.S.C. § 207 and 37 C.F.R. Part 404:

U.S. Patent Application SN _____
"_____"
Filed _____

2. LICENSEE, as a health care research and product development company, wishes to obtain a license to evaluate the commercial applications of the following biological materials, _____ _____, including any progeny, subclones or derivatives thereof ("Materials"), any inventions claimed in the Application and any patent rights that may issue from the Application.

3. LICENSEE intends to conduct laboratory experiments under this Agreement to evaluate the suitability for commercial development of the Application or the Materials in the field of _____ _____.

4. LICENSEE represents that it has the facilities, personnel and expertise to evaluate the commercial applications of the Materials and the Application, and that it will expend reasonable efforts and resources on research and development of potential commercial products using the Application and Materials.

5. NIH/ADAMHA hereby grants to LICENSEE a nonexclusive license for evaluation purposes to make and use but not to sell products and processes encompassed within the scope of a claim in the Application or incorporating the Materials. LICENSEE agrees that any commercial or industrial use or sale of any such products or processes, including any formalized in-house screening programs, other than for evaluation purposes, will be made only pursuant to the terms of a commercialization license to be negotiated in good faith by the parties. The Materials as well as the Application are provided for the evaluation of commercial applications only and not for commercial use.

6. NIH/ADAMHA agrees to provide LICENSEE with samples of the Materials, as available, and to replace such Materials in the event of their unintentional destruction.

7. LICENSEE agrees to retain control over the Materials, and not to distribute them to third parties without the prior written consent of NIH/ADAMHA.

8. LICENSEE agrees that this Agreement does not preclude NIH/ADAMHA from distributing the Materials to third parties for research or commercial purposes.

9. In consideration of the grant in Paragraph 5, LICENSEE hereby agrees to pay the sum of U.S. $_____ (_____ Dollars). Payment is due within thirty (30) days of LICENSEE's execution of this Agreement, and should be made by check or bank draft drawn on a United States bank made payable to "NIH/Patent Licensing."

10. This Agreement shall become effective on the date when the last party to sign has executed this Agreement and shall terminate _____ (___) months from its effective date. Upon termination, all Materials provided under this Agreement, including progeny, subclones and derivatives thereof, shall be

returned to NIH/ADAMHA or destroyed, unless a commercialization license for the Application is being negotiated or has been executed.

11. LICENSEE agrees to notify NIH/ADAMHA promptly of any commercial products and processes encompassed within the scope of a claim in the Application or incorporating the Materials.

12. In the event that LICENSEE is in default in the performance of any material obligations under this Agreement, and if the default has not been remedied within ninety(90) days after the date of notice in writing of such default, NIH/ADAMHA may terminate this Agreement by written notice.

13. LICENSEE acknowledges that other corporations also may be evaluating the Application and Materials for a variety of commercial purposes, and no guarantee can be made, should LICENSEE apply for an exclusive license, that one would be available for any particular field of use. NIH/ADAMHA agrees to notify LICENSEE promptly if it receives from another company an exclusive license application in the field of use described in Paragraph 3.

14. LICENSEE is encouraged to publish the results of its research projects using the Materials. In all oral presentations or written publications concerning these Materials, LICENSEE will acknowledge the contribution by the named inventors of these Materials, unless requested otherwise by NIH/ADAMHA or the named inventors.

15. LICENSEE agrees to submit in confidence a final report to NIH/ADAMHA within thirty (30) days of termination of this Agreement outlining in general its results of commercial evaluation of the Application and Materials provided by this Agreement.

16. NIH/ADAMHA agrees, to the extent permitted by law, to treat in confidence for a period of three (3) years from the date of disclosure any of LICENSEE's written information about the Application or Materials that is stamped "CONFIDENTIAL" except for information that was previously known to NIH/ ADAMHA, or that is or becomes publicly available, or that is disclosed to NIH/ADAMHA without a confidentiality agreement.

17. NO WARRANTIES, EXPRESS OR IMPLIED, ARE OFFERED AS TO THE FITNESS FOR ANY PURPOSE OF THE MATERIALS PROVIDED TO LICENSEE UNDER THIS AGREEMENT, OR THAT THE APPLICATION MAY BE EXPLOITED WITHOUT INFRINGING OTHER PATENT RIGHTS. LICENSEE accepts license rights to the Application "as is," and NIH/ADAMHA does not offer any guarantee as to its patentability.

18. LICENSEE agrees to indemnify and hold harmless NIH/ADAMHA and the United States Government from any claims, costs, damages or losses that may arise from the practice of the Application or through the use of the Materials.

19. Neither party shall have any obligation with respect to the other if any applicable patent rights are infringed by a third party.

20. LICENSEE agrees in its use of the Materials to comply with all applicable statutes, regulations and guidelines, including Public Health Service and NIH/ADAMHA regulations and guidelines. Licensee may not use the Materials for research involving human subjects, without express written consent from NIH/ ADAMHA and compliance with 45 CFR Part 46.

21. This Agreement shall be construed in accordance with the laws of the United States as interpreted and applied by the Federal courts in the District of Columbia.

22. This Agreement constitutes the entire understanding of NIH/ADAMHA and LICENSEE and supersedes all prior agreements and understandings with respect to the Application and Materials.

23. The provisions of this Agreement are severable, and in the event that any provision of this agreement shall be determined to be invalid or unenforceable under any controlling body of law, such invalidity or unenforceability shall not in any way affect the validity or enforceability of the remaining provisions of this agreement.

In Witness Whereof, the parties have executed this agreement on the dates set forth below. Any communication or notice to be given shall be forwarded to the respective addresses listed below.

FOR NIH/ADAMHA:

Reid G. Adler, J.D.
Director
Office of Technology Transfer
Date _____

Mailing address for notices:

Office of Technology Transfer
National Institutes of Health
Box OTT
Bethesda, MD 20892 U.S.A.

FOR LICENSEE: (Upon information and belief, the undersigned expressly certifies or affirms that the contents of any statements of LICENSEE made or referred to in this document are truthful and accurate.)

_____ _____
Name Date

_____
Printed Name

_____
Title

Mailing address for notices:

_____

_____

_____

Model NIH/ADAMHA/CDC Patent License Agreement–*Nonexclusive*

NATIONAL INSTITUTES OF HEALTH
ALCOHOL, DRUG ABUSE AND MENTAL HEALTH ADMINISTRATION
CENTERS FOR DISEASE CONTROL

PATENT LICENSE Agreement – *NONEXCLUSIVE*
COVER PAGE

For Office of Technology Transfer/NIH internal use only:
Patent License Number: _____
Serial Numbers of Licensed Patents: _____
Licensee: _____
CRADA Number (if applicable): _____
Additional Remarks: _____
_____

This Patent License Agreement, hereinafter referred to as the "**Agreement**" consists of this Cover Page, an attached agreement, a Signature Page, Appendix A (Patent or Patent Application), Appendix B (Fields of Use and Territory), Appendix C (Royalties), Appendix D (Modifications). This Cover Page serves to identify the Parties to this **Agreement** as follows :

(1) the National Institutes of Health ("**NIH**") or the Centers for Disease Control ("CDC"), or the Alcohol, Drug Abuse and Mental Health Administration ("**ADAMHA**"), hereinafter singly or collectively referred to as "**PHS**," agencies of the United States Public Health Service within the Department of Health and Human Services ("**DHHS**"); and

(2) The person, corporation, or institution identified on the Signature Page, having offices at the address indicated on the Signature Page, hereinafter referred to as "**LICENSEE.**"

PHS PATENT LICENSE Agreement – NONEXCLUSIVE

PHS and **LICENSEE** agree as follows:

1. BACKGROUND

1.01 In the course of conducting biomedical and behavioral research, **PHS** investigators made inventions that may have commercial applicability.

1.02 By assignment of rights from **PHS** employees and other inventors, **DHHS**, on behalf of the United States Government, owns the intellectual property rights claimed in any United States and foreign patent applications or patents corresponding to the assigned inventions. **DHHS** also owns any tangible embodiments of these inventions actually reduced to practice by **PHS**.

1.03 The Assistant Secretary for Health of **DHHS** has delegated to **PHS** the authority to enter into this **Agreement** for the licensing of the rights to these inventions under the patent law, 35 U.S.C. §§200-212 and the Federal Technology Transfer Act of 1986, 15 U.S.C. § 3710a.

1.04 **PHS** desires to transfer these inventions to the private sector through commercialization licenses to facilitate the commercial development of products and processes for public use and benefit.

1.05 **LICENSEE** desires to acquire commercialization rights to certain of these inventions in order to develop processes, methods or marketable products for public use and benefit.

2. DEFINITIONS

2.01 **Licensed Patent Rights** shall mean:

a) U.S. patent applications and patents listed in Appendix A, all divisions and continuations of these applications, all patents issuing from such applications, divisions and continuations, and any reissues, reexaminations and extensions of all such patents,

b) to the extent that the following contain one or more claims to the invention or inventions claimed in a) above: continuations-in-part of a) above, all divisions and continuations of these continuations-in-part, all patents issuing from such continuations-in-part, divisions and continuations, and any reissues, reexaminations and extensions of all such patents;

c) to the extent that the following contain one or more claims to the invention or inventions claimed in a) above: all counterpart foreign applications and patents to a) and b) above, including those listed in Appendix A.

Licensed Patent Rights shall not include b) or c) above to the extent that they contain one or more claims directed to new matter which is not the subject matter of a claim in a) above.

2.02 **Licensed Product(s)** means tangible materials which, in the course of manufacture, use or sale would, in the absence of this **Agreement**, infringe one or more claims of the **Licensed Patent Rights** that have not been held invalid or unenforceable by an unappealed or unappealable judgement of a court of competent jurisdiction.

2.03 **Licensed Process(es)** means processes which, in the course of being practiced would, in the absence of this **Agreement**, infringe one or more claims of the **Licensed Patent Rights** that have not been held invalid or unenforceable by an unappealed or unappealable judgment of a court of competent jurisdiction.

2.04 **Licensed Territory** means the geographical area identified in Appendix B.

2.05 **Net Sales** means the total gross receipts for sales of **Licensed Products** or practice of **Licensed Processes** by **or on behalf of LICENSEE** and from leasing, renting, or otherwise making **Licensed Products** available to others without sale or other dispositions, whether invoiced or not, less returns and allowances actually granted, packing costs, insurance costs, freight out, taxes or excise duties imposed on the transaction (if separately invoiced), and wholesaler and cash discounts in amounts customary in the trade. No deductions shall be made for commissions paid to individuals, whether they be with independent sales agencies or regularly employed by **LICENSEE** ~~or its~~ and on their payroll, or for the cost of collections.

2.06 **Net Sales Price** means the **Net Sales** divided by the quantity of **Licensed Product** sold or **Licensed Process** practiced.

2.07 **Combined Product** means a product that contains a **Licensed Product** along with at least one other active component or ingredient not covered by the **Licensed Patent Rights**.

2.08 **First Commercial Sale** means the initial transfer by **or on behalf of LICENSEE**, of **Licensed Products** in exchange for cash or some equivalent to which value can be assigned for the purpose of determining **Net Sales**, and **First Commercial Use** means the initial practice of a **Licensed Process** by **LICENSEE.**

2.09 Government means the United States Government.

2.10 **Licensed Fields of Use** means the fields of use identified in Appendix B.

3. GRANT OF RIGHTS

3.01 **PHS** hereby grants and **LICENSEE** accepts, subject to the terms and conditions of this **Agreement**, a **Nonexclusive License to LICENSEE** under the **Licensed Patent Rights** in the **Licensed Territory** to make and have made, to use and have used and to sell and have sold any **Licensed Products** in the **Licensed Fields of Use** and to practice and have practiced any **Licensed Processes** in the **Licensed Fields of Use.**

3.02 **LICENSEE** has no right to grant sublicenses.

3.03 This **Agreement** is effective when signed by all parties and shall extend to the expiration of the last to expire of the **Licensed Patent Rights** unless sooner terminated as provided in Article **11** below.

3.04 This **Agreement** confers no license or rights by implication, estoppel or otherwise under any patent applications or patents of **PHS** other than **Licensed Patent Rights** regardless of whether such patents are dominant or subordinate to **Licensed Patent Rights**.

4. STATUTORY AND PHS REQUIREMENTS AND RESERVED GOVERNMENT RIGHTS

4.01 **LICENSEE** agrees that products used or sold in the United States embodying **Licensed Products** or produced through use of **Licensed Processes** shall be manufactured substantially in the United States, unless a written waiver is obtained in advance from **PHS**.

4.02 **DHHS** has responsibility for funding basic biomedical research, for funding medical treatment through programs such as Medicare and Medicaid, for providing direct medical care and, more generally, for protecting the health and safety of the public. Because of these responsibilities, and the public investment in the research that culminated in the **Licensed Patent Rights**, **PHS** may require **LICENSEE** to submit documentation in confidence showing a reasonable relationship between the pricing of a **Licensed**

Product, the public investment in that product and the health and safety needs of the public. This paragraph shall not restrict the right of **LICENSEE** to price a **Licensed Product** or **Licensed Process** so as to obtain a reasonable profit for its sale or use. This Paragraph **4.02** does not permit **PHS** or any other government agency to set or dictate prices for **Licensed Products** or **Licensed Processes.**

5. ROYALTIES AND REIMBURSEMENT

5.01 **LICENSEE** agrees to pay to **PHS** a noncreditable, nonrefundable license issue royalty as set forth in Appendix C within thirty (30) days from the date that this **Agreement** becomes effective.

5.02 **LICENSEE** agrees to pay to **PHS** a nonrefundable minimum annual royalty as set forth in Appendix C. The minimum annual royalty is due and payable on January 1 of each calendar year, and may be credited against any earned royalties due for sales made in that year. The minimum annual royalty for the first calendar year of this **Agreement is due and payable within thirty (30) days from the effective date of this Agreement and** may be prorated according to the fraction of the calendar year remaining between the effective date of this **Agreement** and the next subsequent January 1.

5.03 **LICENSEE** agrees to pay **PHS** earned royalties as set forth in Appendix C.

5.04 A claim of a patent application licensed under this **Agreement** shall cease to fall within the **Licensed Patent Rights** for purposes of computing the minimum annual royalty and earned royalty payments in any given country on the earliest of the dates that it: (a) has been abandoned but not continued, or (b) has been pending (including the pendency time of any parent cases) but not allowed for more than six (6) years from its effective filing date; but shall be reinstated for purposes of computing these royalty payments on the date that a patent issues thereon. A claim of a patent licensed under this **Agreement** shall cease to fall within the **Licensed Patent Rights** for the purpose of computing the minimum annual royalty and earned royalty payments in any given country on the earliest of the dates that: (a) the patent expires, (b) the patent is no longer maintained by the **Government**, or (c) all claims of the **Licensed Patent Rights** have been held to be invalid or unenforceable by an unappealed or unappealable decision of a court of competent jurisdiction or administrative agency.

5.05 No multiple royalties shall be payable because any **Licensed Products** or **Licensed Processes** are covered by more than one of the **Licensed Patent Rights.**

5.06 On sales of **Licensed Products by LICENSEE** in other than an arm's length transaction, the **Net Sales Price** attributed under this Article **5** to such a transaction shall be that which would have been received in an arm's length transaction, based on sales of like quantity and quality products on or about the time of such transaction.

5.07 **LICENSEE** agrees to pay **PHS**, within (60) days of **PHS's** submission of a statement and request for payment, a royalty amount equivalent to all patent expenses previously incurred by **PHS** in the preparation, filing, prosecution and maintenance of **Licensed Patent Rights** incurred during the previous calendar year, to be divided equally among all nonexclusive LICENSEES of record as of the date the statement and request for payment is sent by **PHS** to **LICENSEE.** Fifty Percent (50%) of the cumulative amount of such payments may be credited against royalties due under Paragraph 5.03, however, the net royalty payment in any calendar year may not be lower than the minimum annual royalty specified in Appendix C. **LICENSEE** may elect to surrender its rights in any country of the **Licensed Territory** under any **Licensed Patent Rights** upon sixty (60) days written notice to **PHS** and owe no payment obligation under this Paragraph for subsequent patent-related expenses incurred in that country.

6. RECORD KEEPING

6.01 **LICENSEE** agrees to keep, accurate and correct records of **Licensed Products** made, used or sold and **Licensed Processes** practiced under this **Agreement** appropriate to determine the amount of royalties due **PHS**. Such records shall be retained for at least **five (5)** years following a given reporting period. They shall be available during normal business hours for inspection at the expense of **PHS** by an accountant or other designated auditor selected by **PHS** for the sole purpose of verifying reports and payments hereunder. The accountant or **auditor** shall only disclose to **PHS** information relating to the accuracy of reports and payments made under this **Agreement.** If an inspection shows an underreporting or underpayment in excess of ten percent (10%) for any twelve (12) month period, then **LICENSEE** shall reimburse **PHS** for the cost of the inspection **at the time LICENSEE pays the unreported royalties.**

7. REPORTS ON PROGRESS, SALES, AND PAYMENTS

7.01 Prior to signing this **Agreement, LICENSEE** has provided to **PHS** a written commercialization plan (**"Commercial Development Plan"**) under which **LICENSEE** intends to bring the subject matter of the **Licensed Patent Rights** into commercial use upon execution of this **Agreement.** The **Commercial Development Plan** is hereby incorporated by reference into this **Agreement.**

7.02 **LICENSEE** shall provide written annual reports on its product development progress or efforts to commercialize under the **Commercial Development Plan** for each of the **Licensed Fields of Use** within sixty (60) days after December 31 of each calendar year. These progress reports shall include, but not be limited to: progress on research and development, status of applications for regulatory approvals, manufacturing, marketing and sales during the preceding calendar year, as well as plans for the present calendar year. **LICENSEE** agrees to provide any additional data reasonably required by **PHS** to evaluate **LICENSEE's** performance.

7.03 **LICENSEE** shall report to **PHS** the date of the **First Commercial Sale** of **Licensed Products** or the **First Commercial Use** of **Licensed Processes** in each country in the **Licensed Territory** within thirty (30) days of such occurrence.

7.04 **LICENSEE** shall submit to **PHS** within sixty (60) days after each calendar half year ending June 30 and December 31, a royalty report setting forth for the preceding half year period the amount of the **Licensed Products** sold or **Licensed Processes** practiced by **or on behalf of LICENSEE** in each country within the **Licensed Territory**, the **Net Sales**, and the amount of royalty accordingly due. With each such royalty report, **LICENSEE** shall submit payment of the earned royalties due. If no earned royalties are due to **PHS** for any reporting period, the written report shall so state. The royalty report shall be certified as correct by an authorized officer of **LICENSEE** and shall include a detailed listing of all deductions made under Paragraph 2.05 to determine **Net Sales** or made under Article 5 to determine royalties due.

7.05 Royalties due under Article 5 shall be paid in U. S. dollars. For conversion of foreign currency to U. S. dollars, the conversion rate shall be the rate quoted in the Wall Street Journal on the day that the payment is due. All checks and bank drafts shall be drawn on United States banks and shall be payable to NIH/Patent Licensing **at the address on the Signature Page below**. Any loss of exchange, value, taxes or other expenses incurred in the transfer or conversion to U. S. dollars shall be paid entirely by **LICENSEE.**

7.06 Late charges will be applied to any overdue payments as required by the U. S. Department of Treasury in the Treasury Fiscal Requirements Manual, Section 8020.20. The payment of such late charges shall not prevent **PHS** from exercising any other rights it may have as a consequence of the lateness of any payment.

7.07 All plans and reports required by this Article **7 and marked "confidential" by LICENSEE** shall be treated by **PHS** as commercial and financial information obtained from a person, and as privileged

and confidential, and to the extent permitted by law, shall and not be subject to disclosure under the Freedom of Information Act, 5 U.S.C. § 552.

8. REASONABLE BEST EFFORTS

8.01 **LICENSEE** shall use its reasonable best efforts to introduce the **Licensed Products** into the commercial market or apply the **Licensed Processes** to commercial use as soon as practicable, consistent with sound and reasonable business practices and judgment. **"Reasonable best efforts" for the purpose of this provision shall include, but not be limited to, adherence to the Commercial Development Plan. LICENSEE** agrees to apply at least the same level of effort that it applies to the commercial development of its own products and processes.

8.02 Upon the **First Commercial Sale** of **Licensed Products** or the **First Commercial Use** of **Licensed Processes**, until the expiration of this **Agreement, LICENSEE** shall use its reasonable best efforts to keep **Licensed Products** and **Licensed Processes** available to the public.

9. INFRINGEMENT AND PATENT ENFORCEMENT

9.01 **PHS** and **LICENSEE** agree to notify each other promptly of each infringement or possible infringement, as well as any facts which may affect the validity, scope or enforceability of the **Licensed Patent Rights** of which either Party becomes aware.

9.02 If **PHS** has been unable to eliminate a substantial infringement within **one year** of written notification to **the Office of Technology Transfer** from **LICENSEE** of the existence of a substantial infringement and has not instituted infringement litigation, **LICENSEE** shall be excused from the payment of the minimum annual royalty and earned royalties in any country in which the substantial infringement occurred. Thereafter, when the substantial infringement has ceased or an infringement suit **has been initiated, PHS** shall so notify the **LICENSEE** in writing, at which time **LICENSEE**'s obligation to pay such royalties shall resume as ~~to~~ **of** the date of such notification.

9.03 In the event that a declaratory judgment action alleging invalidity of any of the **Licensed Patent Rights** shall be brought against **PHS, PHS** agrees to notify **LICENSEE** that an action alleging invalidity has been brought. **PHS** does not represent that it will commence legal action to defend against a declaratory action alleging invalidity. **LICENSEE** shall take no action to compel the **Government** either to initiate or to join in any such declaratory judgment action. Should the **Government** be made a party to any such suit by motion or any other action of **LICENSEE, LICENSEE** shall reimburse the **Government** for any costs, expenses or fees which the **Government** incurs as a result of **its defending against** such motion or other action **taken in response to the motion.** Upon **LICENSEE's** payment of all costs incurred by the **Government** as a result of **LICENSEE's** joinder motion or other action, these actions by **LICENSEE** will not be considered a default in the performance of any material obligation under this **Agreement.**

10. NEGATION OF WARRANTIES AND INDEMNIFICATION

10.01 **PHS** offers no warranties other than those specified in Article 1.

10.02 **PHS** does not warrant the validity of the **Licensed Patent Rights**, and makes no representations whatsoever with regard to the scope of the **Licensed Patent Rights**, or that the **Licensed Patent Rights** may be exploited without infringing other patents or other intellectual property rights of third parties.

10.03 **PHS** MAKE NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE of any subject matter defined by the claims of the **Licensed Patent Rights**

10.04 **PHS** does not represent that it will commence legal actions against third parties infringing the **Licensed Patent Rights.**

10.05 **LICENSEE** shall defend, indemnify and hold **PHS** and its employees, students, fellows, agents and consultants harmless from and against all liability, demands, damages, expenses and losses, including but not limited to death, personal injury, illness or property damage in connection with or arising out of (a) the use by **or on behalf of LICENSEE,** or its directors, employees or third parties of any **Licensed Patent Rights,** or (b) the design, manufacture, distribution or use of any **Licensed Products, Licensed Processes,** or other products or processes developed in connection or arising out of the **Licensed Patent Rights. LICENSEE** agrees to maintain a liability insurance program consistent with sound business practice.

11. TERMINATION AND MODIFICATION OF RIGHTS

11.01 In the event that **LICENSEE** is in default in the performance of any material obligations under this **Agreement,** and if the default has not been remedied within ninety (90) days after the date of notice in writing of such default, **PHS** may terminate this **Agreement** by written notice.

11.02 At least 30 days prior to filing a petition in bankruptcy **LICENSEE** must inform **PHS in writing** of its intention to file the petition in bankruptcy or of a third party's intention to file an involuntary petition in bankruptcy.

11.03 In the event that **LICENSEE** becomes insolvent, makes an assignment of **Licensed Patent Rights** for the benefits of creditors, files a petition in bankruptcy, has such a petition filed against it, **determines** to file the petition in bankruptcy, or **receives notice of** a third party's intention to file an involuntary petition in bankruptcy, **LICENSEE shall immediately notify PHS in writing. Furthermore, PHS** shall have the right to terminate this **Agreement** by giving **LICENSEE** written notice. Termination of this **Agreement** is effective upon **LICENSEE'S** receipt of the written notice.

11.04 **LICENSEE** shall have a unilateral right to terminate this **Agreement** and/or any licenses in any country by giving **PHS** sixty (60) days written notice to that effect.

11.05 **PHS** shall specifically have the right to terminate this **Agreement,** if **PHS** determines that the **LICENSEE:** (1) is not executing the Commercial Development Plan submitted with its request for a license and the **LICENSEE** cannot otherwise demonstrate to **PHS's** satisfaction that the **LICENSEE** has taken, or can be expected to take within a reasonable time, effective steps to achieve practical application of the **Licensed Products** or **Licensed Processes;** (2) has willfully made a false statement of, or willfully omitted, a material fact in the license application or in any report required by the licensed agreement; (3) has committed a substantial breach of a covenant or agreement contained in the license; (4) is not keeping **Licensed Products or Licensed Processes** reasonably available to the public after commercial use commences; (5) cannot reasonably satisfy unmet health and safety needs; or (6) cannot reasonably justify a failure to comply with the domestic production requirement of Paragraph 4.02 unless waived. In making this determination, **PHS** will take into account the normal course of such commercial development programs conducted with sound and reasonable business practices and judgment and the annual reports submitted by **LICENSEE** under Paragraph 7.02. Prior to invoking this right, **PHS** shall give written notice to **LICENSEE** providing **LICENSEE** specific notice of and a ninety (90) day opportunity to satisfy **PHS's** concerns as to the previous items (1) to (6). If **LICENSEE** fails to satisfy or reasonably begin to rectify such concerns within the ninety (90) day period, **PHS** may terminate this **Agreement.**

11.06 **PHS** reserves the right according to 35 U.S.C. §209(f)(4) to terminate this **Agreement** if it is determined that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by **LICENSEE.**

11.07 Within thirty (30) days of receipt of written notice of **PHS's** unilateral decision to terminate this **Agreement, LICENSEE** may, consistent with the provisions of 37 C.F.R. § 404.11, appeal the decision by written submission to the Assistant Secretary for Health or designee. The Assistant Secretary for Health or designee's decision shall be the final agency decision. **LICENSEE** may thereafter exercise any and all administrative or judicial remedies that may be available.

11.08 Within ninety (90) days of termination of this **Agreement** under this Article 11 or expiration under Paragraph **3.03,** a final report shall be submitted by **LICENSEE.** Any royalty payments and unreimbursed patent expenses due to **PHS** become immediately due and payable upon termination.

11.09 Paragraphs 6.01, 7.05, 7.06, 10.05 and 11.08 of this **Agreement** shall survive termination of this **Agreement.**

12. GENERAL PROVISIONS

12.01 Neither Party may waive or release any of its rights or interests in this **Agreement** except in writing. The failure of **the Government** to assert a right hereunder or to insist upon compliance with any term or condition of this **Agreement** shall not constitute a waiver of that right **by the Government** or excuse a similar subsequent failure to perform any such term or condition by **LICENSEE.**

12.02 This **Agreement** constitutes the entire agreement between the **Parties** relating to the subject matter of the **Licensed Patent Rights,** and all prior negotiations, representations, agreements and understandings are merged into, extinguished by and completely expressed by this **Agreement.**

12.03 The provisions of this **Agreement** are severable, and in the event that any provision of this **Agreement** shall be determined to be invalid or unenforceable under any controlling body of law, such determination shall not in any way affect the validity or enforceability of the remaining provisions of this **Agreement.**

12.04 If either Party desires a modification to this **Agreement,** the Parties shall, upon reasonable notice of the proposed modification by the Party desiring the change, confer in good faith to determine the desirability of such modification. No modification will be effective until a written amendment is signed by the signatories to this **Agreement** or their designees.

12.05 The construction, validity, performance and effect of this **Agreement** shall be governed by Federal law as applied by the Federal Courts in the District of Columbia.

12.06 All notices required or permitted by this **Agreement** shall be given by prepaid registered or certified mail properly addressed to the other Party at the address designated on the following signature page, or to such other address as may be designated in writing by such other Party, and shall be effective as of the date of the postmark of such notice.

12.07 This **Agreement** shall not be assigned by **LICENSEE** except (a) with the prior written consent of **PHS,** such consent to be reasonably given; or (b) as part of a sale or transfer of substantially the entire business of **LICENSEE** relating to operations which concern this **Agreement.**

12.08 **LICENSEE** agrees in its practice of the **Licensed Patent Rights** to comply with all applicable **Government** regulations and guidelines including, for example, those relating to research involving human or animal subjects or recombinant DNA.

12.09 **LICENSEE** acknowledges that it is subject to and agrees to abide by the United States laws and regulations (including the Export Administration Act of 1979 and Arms Export Control Act) controlling the export of technical data, computer software, laboratory prototypes, biological material and other commodities. The transfer of such items may require a license from the cognizant agency of the U. S. Government or written assurances by **LICENSEE** that it shall not export such items to certain foreign countries without prior approval of such agency. **PHS** neither represents that a license is or is not required or that, if required, it shall be issued.

12.10 **LICENSEE** agrees to mark the **Licensed Products** or their packaging sold in the United States with all applicable U. S. patent numbers and similarly to indicate "Patent Pending" status. All **Licensed Products** manufactured in, shipped to or sold in other countries shall be marked in such a manner as to preserve **PHS** patent right in such countries.

12.11 By entering into this **Agreement, PHS** does not directly or indirectly endorse any product or service provided, or to be provided, by **LICENSEE** whether directly or indirectly related to this **Agreement. LICENSEE** shall not state or imply that this **Agreement** is an endorsement by the Government, **PHS,** any other **Government** organizational unit, or any **Government** employee. Additionally, **LICENSEE** shall not use the names of **PHS, NIH, CDC** or **ADAMHA** or their employees in any advertising, promotional or sales literature without the prior written consent of **PHS.**

12.12 The Parties agree to attempt to settle amicably any controversy or claim arising under this **Agreement** or a breach of the **Agreement,** except for appeals of modification or termination decisions provided for in Article 11. **LICENSEE** agrees first to appeal any such unsettled claims or controversies to the Director of NIH, whose decision shall be considered the final agency decision. Thereafter, **LICENSEE** may exercise any administrative or judicial remedies that may be available.

12.13 Nothing relating to the grant of a license, nor the grant itself, shall be construed to confer upon any person any immunity from or defenses under the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this part shall not be immunized from the operation of state or Federal law by reason of the source of the grant.

PHS PATENT LICENSE Agreement - *NONEXCLUSIVE*
SIGNATURE PAGE

FOR PHS:

_____

Reid G. Adler, J.D.
Director
Office of Technology Transfer
National Institutes of Health

Mailing Address for Notices and Payments:
Reid G. Adler, J.D.
Director
Office of Technology Transfer
Box OTT
National Institutes of Health
Bethesda, Maryland 20892

FOR LICENSEE (Upon information and belief, the undersigned expressly certifies or affirms on information and belief that the contents of any statements of LICENSEE made or referred to in this document are truthful and accurate.)

_____

Name

_____

Date

_____

Title

Mailing Address for Notices:

_____

_____

_____

APPENDIX A - Patent or Patent Application

Patent or Patent Application:

APPENDIX B - Licensed Fields of Use and Territory

Licensed Territory:

Licensed Fields of Use:

APPENDIX C - Royalties

Royalties:

LICENSEE agrees to pay to **PHS** a noncreditable, nonrefundable license issue royalty in the amount of ___ _____.

LICENSEE agrees to pay to **PHS** a nonrefundable minimum annual royalty in the amount of _____ _____.

LICENSEE agrees to pay **PHS** earned royalties as follows:

APPENDIX D - Modifications

PHS and **LICENSEE** agree to the following modifications to the Articles and Paragraphs of this **Agreement**:

Model NIH/ADAMHA/CDC Patent License Agreement–*Exclusive*

NATIONAL INSTITUTES OF HEALTH
ALCOHOL, DRUG ABUSE AND MENTAL HEALTH ADMINISTRATION
CENTERS FOR DISEASE CONTROL

PATENT LICENSE AGREEMENT – *EXCLUSIVE*
COVER PAGE

For **Office of Technology Transfer/NIH** internal use only:
Patent License Number: _____
Serial Numbers of Licensed Patents: _____
Licensee: _____
CRADA Number (if applicable): _____
Additional Remarks: _____
_____

This Patent License Agreement, hereinafter referred to as the "**Agreement**" consists of this Cover Page, an attached Agreement, a Signature Page, Appendix A (Patent or Patent Application), Appendix B (Fields of Use and Territory), Appendix C (Royalties), Appendix D (Modifications), and Appendix E (Benchmarks). This Cover Page serves to identify the Parties to this **Agreement**:

(1) the National Institutes of Health ("**NIH**") or the Centers for Disease Control (**CDC**), or the Alcohol, Drug Abuse and Mental Health Administration ("**ADAMHA**"), hereinafter singly or collectively referred to as "**PHS**," agencies of the United States Public Health Service within the Department of Health and Human Services ("**DHHS**"); and

(2) The person, corporation or institution identified on the Signature Page, having offices at the address indicated on the Signature Page, hereinafter referred to as "**LICENSEE.**"

PHS PATENT LICENSE AGREEMENT – EXCLUSIVE

PHS and **LICENSEE** agree as follows:

1. BACKGROUND

1.01 In the course of conducting biomedical and behavioral research, **PHS** investigators **made** inventions that may have commercial applicability.

1.02 By assignment of rights from **PHS** employees and other inventors, **DHHS**, on behalf of the United States Government, owns the intellectual property rights claimed in any United States and foreign patent applications or patents corresponding to the assigned inventions. **DHHS** also owns any tangible embodiments of these inventions actually reduced to practice by **PHS.**

1.03 The Assistant Secretary for Health of **DHHS** has delegated to **PHS** the authority to enter into this **Agreement** for the licensing of rights to these inventions under the patent law, 35 U.S.C. §§200-212 and the Federal Technology Transfer Act of 1986, 15 U.S.C. § 3710a.

1.04 **PHS** desires to transfer these inventions to the private sector through commercialization licenses to facilitate the commercial development of products and processes for public use and benefit.

1.05 **LICENSEE** desires to acquire commercialization rights to certain of these inventions in order to develop processes, methods or marketable products for public use and benefit.

2. DEFINITIONS

2.01 **Licensed Patent Rights** shall mean:

a) U.S. patent applications and patents listed in Appendix A, all divisions and continuations of these applications, all patents issuing from such applications, divisions and continuations, and any reissues, reexaminations and extensions of all such patents,

b) to the extent that the following contain one or more claims to the invention or inventions claimed in a) above: continuations-in-part of a) above, all divisions and continuations of these continuations-in-part, all patents issuing from such continuations-in-part, divisions and continuations, and any reissues, reexaminations and extensions of all such patents;

c) to the extent that the following contain one or more claims to the invention or inventions claimed in a) above: all counterpart foreign applications and patents to a) and b) above, including those listed in Appendix A.

Licensed Patent Rights shall not include b) or c) above to the extent that they contain one or more claims directed to new matter which is not the subject matter of a claim in a) above.

2.02 **Licensed Product(s)** means tangible materials which, in the course of manufacture, use or sale would, in the absence of this **Agreement**, infringe one or more claims of the **Licensed Patent Rights** that have not been held invalid or unenforceable by an unappealed or unappealable judgement of a court of competent jurisdiction.

2.03 **Licensed Process(es)** means processes which, in the course of being practiced would, in the absence of this **Agreement**, infringe one or more claims of the **Licensed Patent Rights** that have not been held invalid or unenforceable by an unappealed or unappealable judgment of a court of competent jurisdiction.

2.04 **Licensed Territory** means the geographical area identified in Appendix B.

2.05 **Net Sales** means the total gross receipts for sales of **Licensed Products** or practice of **Licensed Processes** by **or on behalf of LICENSEE**, or its sublicensees, and from leasing, renting, or otherwise making **Licensed Products** available to others without sale or other dispositions, whether invoiced or not, less returns and allowances actually granted, packing costs, insurance costs, freight out, taxes or excise duties imposed on the transaction (if separately invoiced), and wholesaler and cash discounts in amounts customary in the trade. No deductions shall be made for commissions paid to individuals, whether they be with independent sales agencies or regularly employed by **LICENSEE**, or sublicensees, and on their payroll, or for the cost of collections.

2.06 **Net Sales Price** means the **Net Sales** divided by the quantity of **Licensed Product** sold or **Licensed Process** practiced.

2.07 **Combined Product** means a product that contains a **Licensed Product** along with at least one other active component or ingredient not covered by the **Licensed Patent Rights**.

2.08 **First Commercial Sale** means the initial transfer by **or on behalf of LICENSEE** or its sublicensees, of **Licensed Products** in exchange for cash or some equivalent to which value can be assigned for the purpose of determining **Net Sales**, and **First Commercial Use** means the initial practice of a **Licensed Process** by **LICENSEE**, or its sublicensees.

2.10 **Licensed Fields of Use** means the fields of use identified in Appendix B.

2.11 **Exclusive Commercialization License** means that **PHS** will not grant further licenses for commercial exploitation of the **Licensed Patent Rights** in the **Licensed Fields of Use** in the **Licensed Territory**, so long as the **LICENSEE** complies with the terms of this **Agreement**.

3. GRANT OF RIGHTS

3.01 **PHS** hereby grants and **LICENSEE** accepts, subject to the terms and conditions of **this Agreement**, an **Exclusive Commercialization License** *to* **LICENSEE** under the **Licensed Patent Rights in the Licensed Territory** to make and have made, to use and have used and to sell and have sold any **Licensed Products in the Licensed Fields of Use** and to practice and have practiced any **Licensed Processes in the Licensed Fields of Use**.

3.02 This **Agreement** is effective when signed by all parties and shall extend to the expiration of the last to expire of the **Licensed Patent Rights** unless sooner terminated as provided in Article 13 below.

3.03 This **Agreement** confers no license or rights by implication, estoppel or otherwise under any patent applications or patents of **PHS** other than **Licensed Patent Rights** regardless of whether such patents are dominant or subordinate to **Licensed Patent Rights**.

3.09 **Government** means the United States Government.

4. SUBLICENSING

4.01 **LICENSEE** may enter into sublicensing agreements under the **Licensed Patent Rights, upon written approval by PHS, which approval will not be unreasonably withheld.**

4.02 **LICENSEE** agrees that any sublicenses granted by it shall provide that the obligations to **PHS** of Paragraphs 5.01, 5.02, 5.04, 8.01, 10.01, 10.02, 12.05, and 13.07-13.10 of this **Agreement** shall be binding

upon the sublicensee as if it were a party to this **Agreement**. **LICENSEE** further agrees to attach copies of these Paragraphs to all sublicense agreements.

4.03 Any sublicenses granted by **LICENSEE** shall provide for the termination of the sublicense, or the conversion to a license directly between such sublicensees and **PHS**, at the option of the sublicensee, upon termination of this **Agreement** under Article 13. Such conversion is **subject to PHS approval and contingent** upon acceptance by the sublicensee of the remaining provisions of this **Agreement.**

4.04 **LICENSEE** agrees to forward to **PHS** a copy of each fully executed sublicense agreement postmarked within sixty (60) days of the execution of such agreement, and further agrees to forward semi-annually to **PHS**, along with the royalty reports of **LICENSEE** to **PHS** under Article ~~10~~ 9, a copy of such reports received by **LICENSEE** from its sublicensees during the preceding half year period under the sublicense as shall be pertinent to a royalty accounting to **PHS** by **LICENSEE** for activities under the sublicenses.

5. STATUTORY AND PHS REQUIREMENTS AND RESERVED GOVERNMENT RIGHTS

5.01 **LICENSEE** agrees that products used or sold in the United States embodying **Licensed Products** or produced through use of **Licensed Processes** shall be manufactured substantially in the United States, unless a written waiver is obtained in advance from **PHS**.

5.02 **LICENSEE** acknowledges that **PHS** may enter into a future Cooperative Research and Development Agreement ("CRADA") under the Federal Technology Transfer Act of 1986 that relates to the subject matter of this **Agreement**. **LICENSEE** agrees not to unreasonably deny requests for sublicense or cross license rights from such future collaborators with **PHS** when acquiring such derivative rights is necessary in order to make a CRADA project feasible. **PHS** will endeavor to give **LICENSEE** a reasonable opportunity to join as a party to the proposed CRADA prior to its initiation, and to obtain reciprocal patent rights in any resultant inventions.

5.03 **DHHS** has responsibility for funding basic biomedical research, for funding medical treatment through programs such as Medicare and Medicaid, for providing direct medical care and, more generally, for protecting the health and safety of the public. Because of these responsibilities, and the public investment in the research that culminated in the **Licensed Patent Rights, PHS** may require **LICENSEE** to submit documentation in confidence showing a reasonable relationship between the pricing of a **Licensed Product**, the public investment in that product and the health and safety needs of the public. This paragraph shall not restrict the right of **LICENSEE** to price a **Licensed Product** or **Licensed Process** so as to obtain a reasonable profit for its sale or use. This Paragraph 5.03 does not permit PHS or any other government agency to set or dictate prices for **Licensed Products** or **Licensed Processes.**

5.04 PHS reserves the right to grant nonexclusive licenses to make and to use the inventions defined by the **Licensed Patent Rights** for purposes of research involving the inventions themselves, and not for purposes of commercial manufacture or in lieu of purchase if the inventions are available as commercial products for research purposes. The purpose of this research license is to encourage basic research, whether conducted at an academic or corporate facility. In order to safeguard the **Licensed Patent Rights**, however, **PHS** shall obtain the consent of **LICENSEE** before granting to commercial entities a research license or providing to them research samples of the materials claimed in the **Licensed Patent Rights**, which consent shall not be unreasonably withheld. Any such license shall be limited to research for non-commercial purposes.

6. ROYALTIES AND REIMBURSEMENT

6.01 **LICENSEE** agrees to pay to **PHS** a noncreditable, nonrefundable license issue royalty as set forth in Appendix C within thirty (30) days from the date that this **Agreement** becomes effective.

6.02 **LICENSEE** agrees to pay to **PHS** a nonrefundable minimum annual royalty as set forth in Appendix C. The minimum annual royalty is due and payable on January 1 of each calendar year, and may be credited against any earned royalties due for sales made in that year. The minimum annual royalty due for the first calendar year of this **Agreement** may be prorated according to the fraction of the calendar year remaining between the effective date of this Agreement and the next subsequent January 1.

6.03 **LICENSEE** agrees to pay **PHS** earned royalties as set forth in Appendix C.

6.04 **LICENSEE** agrees to pay **PHS** benchmark royalties as set forth in Appendix C.

6.05 **LICENSEE** agrees to pay **PHS** sublicensing royalties as set forth in Appendix C.

6.06 A claim of a patent application licensed under this **Agreement** shall cease to fall within the **Licensed Patent Rights** for purposes of computing the minimum annual royalty and earned royalty payments in any given country on the earliest of the dates that it: (a) has been abandoned but not continued, or (b) has been pending (including the pendency time of any parent cases) but not allowed for more than six (6) years from its effective filing date; but shall be reinstated for purposes of computing these royalty payments on the date that a patent issues thereon. A claim of a patent licensed under this **Agreement** shall cease to fall within the **Licensed Patent Rights** for the purpose of computing the minimum annual royalty and earned royalty payments in any given country on the earliest of the dates that: (a) the patent expires, (b) the patent is no longer maintained by the **Government**, or (c) all claims of the **Licensed Patent Rights** have been held to be invalid or unenforceable by an unappealed or unappealable decision of a court of competent jurisdiction or administrative agency.

6.07 No multiple royalties shall be payable because any **Licensed Products** or **Licensed Processes** are covered by more than one of the **Licensed Patent Rights**.

6.08 On sales of **Licensed Products** by between **LICENSEE** and its Affiliates, or on sales made in other than an arm's length transaction, the **Net Sales Price** attributed under this Article 6 to such a transaction shall be that which would have been received in an arm's length transaction, based on sales of like quantity and quality products on or about the time of such transaction.

6.09 As an additional royalty, **LICENSEE** agrees to pay **PHS**, within sixty (60) days of **PHS**'s submission of a statement and request for payment, a royalty amount equivalent to all reasonable expenses previously incurred by **PHS** in the preparation, filing, prosecution and maintenance of **Licensed Patent Rights**. **LICENSEE** further agrees to pay **PHS**, within sixty (60) days of **PHS**'s submission of a statement and request for payment, a royalty amount equivalent to all such future patent expenses incurred during the previous calendar year, as of the date the statement and request for payment is sent by **PHS** to **LICENSEE**. Fifty percent (50%) of the cumulative amount of such payments may be credited against royalties due under Paragraph 6.03, however, the net royalty payment in any calendar year may not be lower than the minimum annual royalty specified in Appendix B. **LICENSEE** may elect to surrender its rights in any country of the **Licensed Territory** under any **Licensed Patent Rights** upon sixty (60) days written notice to **PHS** and owe no payment obligation under this paragraph for subsequent patent-related expenses incurred in that country.

7. DOMESTIC AND FOREIGN PATENT FILING, PROSECUTION AND MAINTENANCE

7.01 **PHS** agrees to take responsibility for, but to consult with the **LICENSEE** in, the preparation, filing, prosecution and maintenance of any and all patent applications or patents included in the

Licensed Patent Rights and shall furnish copies of relevant patent-related documents to **LICENSEE**. **PHS** may agree to permit **LICENSEE** to handle the prosecution of some or all of the **Licensed Patent Rights**.

7.02 Each party shall provide to the other prompt notice as to all matters that come to its attention that may affect the preparation, filing, prosecution or maintenance of the **Licensed Patent Rights** and permit each other to provide comments and suggestions with respect to the preparation, filing, and prosecution of **Licensed Patent Rights**, which comments and suggestions shall be considered by the other party.

8. RECORD KEEPING

8.01 **LICENSEE** agrees to keep accurate and correct records of **Licensed Products** made, used or sold and **Licensed Processes** practiced under this **Agreement** appropriate to determine the amount of royalties due **PHS**. Such records shall be retained for at least **five (5)** years following a given reporting period. They shall be available during normal business hours for inspection at the expense of **PHS** by an accountant or other designated auditor selected by **PHS** for the sole purpose of verifying reports and payments hereunder. The accountant or **auditor** shall only disclose to **PHS** information relating to the accuracy of reports and payments made under this **Agreement**. If an inspection shows an underreporting or underpayment in excess of ten percent (10%) for any twelve (12) month period, then **LICENSEE** shall reimburse **PHS** for the cost of the inspection **at the time LICENSEE pays the unreported royalties.**

9. REPORTS ON PROGRESS, BENCHMARKS, SALES, AND PAYMENTS

9.01 Prior to signing this **Agreement, LICENSEE** has provided to **PHS** a written commercialization plan (**"Commercial Development Plan"**) under which **LICENSEE** intends to bring the subject matter of the **Licensed Patent Rights** into commercial use upon execution of this **Agreement**. The **Commercial Development Plan** is hereby incorporated by reference into this **Agreement**. Based on this plan, performance benchmarks are determined **as specified in Appendix E (Benchmarks)**.

9.02 **LICENSEE** shall provide written annual reports on its product development progress or efforts to commercialize under the **Commercial Development Plan** for each of the **Licensed Fields of Use** within sixty (60) days after December 31 of each calendar year. These progress reports shall include, but not be limited to: progress on research and development, status of applications for regulatory approvals, manufacturing, sublicensing, marketing and sales during the preceding calendar year, as well as plans for the present calendar year. If reported progress differs from that projected in the **Commercial Development Plan and Benchmarks, LICENSEE** shall explain the reasons for such differences. **LICENSEE** may propose amendments in any such annual report to the plan submitted under Paragraph 9.01, acceptance of which by **PHS** may not unreasonably be denied. **LICENSEE** agrees to provide any additional data reasonably required by **PHS** to evaluate **LICENSEE**'s performance. **LICENSEE** may amend the **Commercial Development Plan** at any time and shall do so at the request of **PHS** to address any **Licensed Fields of Use** not specifically addressed in the plan originally submitted. **LICENSEE may amend the Benchmarks at any time upon written consent by PHS. PHS shall not unreasonably withhold approval of any request of LICENSEE to extend the time periods of this schedule if such request is supported by a reasonable showing by LICENSEE of due diligence toward bringing the Licensed Products to the point of practical application.**

9.03 **LICENSEE** shall report to **PHS** the date of the **First Commercial Sale** of **Licensed Products** or the **First Commercial Use** of **Licensed Processes** in each country in the **Licensed Territory** within thirty (30) days of such occurrence.

9.04 **LICENSEE** shall submit to **PHS** within sixty (60) days after each calendar half year ending June 30 and December 31, a royalty report setting forth for the preceding half year period the amount of the **Licensed Products** sold or **Licensed Processes** practiced by, **or on behalf of LICENSEE** in each country within

the **Licensed Territory**, the **Net Sales**, and the amount of royalty accordingly due. With each such royalty report, **LICENSEE** shall submit payment of the earned royalty due. If no earned royalties are due to **PHS** for any reporting period, the written report shall so state. The royalty report shall be certified as correct by an authorized officer of **LICENSEE** and shall include a detailed listing of all deductions made under Paragraph 2.05 to determine **Net Sales** or made under Article 6 to determine royalties due.

9.05 Royalties due under Article 6 shall be paid in U. S. dollars. For conversion of foreign currency to U. S. dollars, the conversion rate shall be the rate quoted in the Wall Street Journal on the day that the payment is due. All checks and bank drafts shall be drawn on United States banks and shall be payable to NIH/Patent Licensing at the address shown on the Signature page below. Any loss of exchange, value, taxes or other expenses incurred in the transfer or conversion to U. S. dollars shall be paid entirely by **LICENSEE.**

9.06 Late charges will be applied to any overdue payments as required by the U. S. Department of Treasury in the Treasury Fiscal Requirements Manual, Section 8020.20. The payment of such late charges shall not prevent **PHS** from exercising any other rights it may have as a consequence of the lateness of any payment.

9.07 All plans and reports required by this Article 9 **and marked "confidential" by LICENSEE** shall be treated by **PHS** as commercial and financial information obtained from a person and as privileged and confidential, **and to the extent permitted by law, shall be** subject to disclosure under the Freedom of Information Act, 5 U.S.C. § 552.

10. REASONABLE BEST EFFORTS

10.01 **LICENSEE** shall use its reasonable best efforts to introduce the **Licensed Products** into the commercial market or apply the **Licensed Processes** to commercial use as soon as practicable, consistent with sound and reasonable business practices and judgment. **"Reasonable best efforts" for the purpose of this provision shall include, but not be limited to, adherence to the Commercial Development Plan and performance of the Benchmarks. LICENSEE** agrees to apply at least the same level of effort that it applies to the commercial development of its own products and processes. The efforts of a sublicensee shall be considered the efforts of **LICENSEE.**

10.02 Upon the **First Commercial Sale** of **Licensed Products** or the **First Commercial Use** of **Licensed Processes**, until the expiration of this **Agreement, LICENSEE** shall use its reasonable best efforts to keep **Licensed Products** and **Licensed Processes** available to the public.

11. INFRINGEMENT AND PATENT ENFORCEMENT

11.01 **PHS** and **LICENSEE** agree to notify each other promptly of each infringement or possible infringement, as well as any facts which may affect the validity, scope or enforceability of the **Licensed Patent Rights** of which either Party becomes aware.

11.02 **LICENSEE** is empowered pursuant to this **Agreement** and the provisions of Chapter 29 of Title 35, United States Code ~~or other statutes~~ to (a) bring suit in its own name, at its own expense, and on its own behalf for infringement of presumably valid claims in a Licensed Patent; (b) in any such suit, to enjoin infringement and to collect for its use, damages, profits and awards of whatever nature recoverable for such infringement; and (c) settle any claim or suit for infringement of the **Licensed Patent Rights** – provided, however, that **PHS** and appropriate **Government** authorities shall have a continuing right to intervene in such suit. **LICENSEE** shall take no action to compel the **Government** either to initiate or to join in any such suit for patent infringement unless such action is ultimately necessary to avoid dismissal of its suit. Should the **Government** be made a party to any such suit by motion or any other action of **LICENSEE, LICENSEE** shall

reimburse the **Government** for any costs, expenses or fees which the **Government** incurs as a result of such motion or other action, including any and all costs incurred by the **Government** in opposing any such joinder motion. Upon **LICENSEE'S** payment of all costs incurred by the **Government** as a result of **LICENSEE'S** joinder motion or other action, these actions by **LICENSEE** will not be considered a default in the performance of any material obligation under this **Agreement**. In any event, **LICENSEE** agrees to keep **PHS** reasonably apprised of the status and progress of any litigation. Before **LICENSEE** commences an infringement action, **LICENSEE** shall notify **PHS** and give careful consideration to the views of **PHS** and to any potential effects of the litigation on the public health in deciding whether to sue.

11.03 In any infringement action commenced under Paragraph **11.02**, the expenses including costs, fees, attorney fees and disbursements, shall be paid by **LICENSEE**. Up to fifty percent (50%) of such expenses may be credited against the royalties payable to **PHS** under the **Licensed Patent Rights** in the country in which such a suit is filed. In the event that fifty percent (50%) of such expenses exceed the amount of royalties withheld by **LICENSEE** in any calendar year, the expenses in excess may be carried over as a credit on the same basis into succeeding calendar years. A credit against litigation expenses, however, may not reduce the royalties due in any calendar year to less than the minimum annual royalty. Any recovery made by **LICENSEE**, through court judgment or settlement, first shall be applied to reimburse **PHS** for royalties withheld as a credit against litigation expenses and then to reimburse **LICENSEE** for its litigation expense. Any remaining recoveries shall be shared equally by **LICENSEE** and **PHS**.

11.04 **PHS** shall cooperate fully with **LICENSEE** in connection with an infringement action initiated under Paragraph **11.02**. **PHS** agree promptly to provide access to all necessary documents and to render reasonable assistance in response to a request by **LICENSEE**.

11.05 **PHS** shall have the right to sue for infringement of the **Licensed Patent Rights** in the event that **LICENSEE** elects not to do so under Paragraph **11.02**.

11.06 In the event that a declaratory judgment action alleging invalidity or non-infringement of any of the **Licensed Patent Rights** shall be brought against **LICENSEE** or raised by way of counterclaim or affirmative defense in an infringement suit brought by **LICENSEE** under Paragraph **11.02**, **LICENSEE** is empowered pursuant to this **Agreement** and the provisions of Chapter 29 of Title 35, United States Code or other statutes to: (a) defend the suit in its own name, at its own expense, and on its own behalf for presumably valid claims in the **Licensed Patent Rights**; (b) in any such suit, ultimately to enjoin infringement and to collect for its use, damages, profits and awards of whatever nature recoverable for such infringement; and (c) settle any claim or suit for declaratory judgment involving the **Licensed Patent Rights** – provided, however, that **PHS** and appropriate **Government** authorities shall have a continuing right to intervene in such suit. **LICENSEE** shall take no action to compel the **Government** either to initiate or to join in any such declaratory judgment action unless such action is ultimately necessary to avoid dismissal of its suit. Should the **Government** be made a party to any such suit by motion or any other action of **LICENSEE**, **LICENSEE** shall reimburse the **Government** for any costs, expenses or fees which the **Government** incurs as a result of such motion or other action. Upon **LICENSEE**'s payment of all costs incurred by the **Government** as a result of **LICENSEE**'s joinder motion or other action, these actions by **LICENSEE** will not be considered a default in the performance of any material obligation under this **Agreement**. If **LICENSEE** elects not to defend against such declaratory judgment action, **PHS**, at its option, may do so at its own expense. In any event, **LICENSEE** agrees to keep **PHS** reasonably apprised of the status and progress of any litigation. Before **LICENSEE** commences an infringement action, **LICENSEE** shall notify **PHS** and give careful consideration to the views of **PHS** and to any potential effects of the litigation on the public health in deciding whether to sue.

12. NEGATION OF WARRANTIES AND INDEMNIFICATION

12.01 **PHS** offers no warranties other than those specified in Article 1.

12.02 **PHS** does not warrant the validity of the **Licensed Patent Rights**, and makes no representations whatsoever with regard to the scope of the **Licensed Patent Rights**, or that the **Licensed Patent Rights** may be exploited without infringing other patents or other intellectual property rights of third parties.

12.03 **PHS** MAKE NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE of any subject matter defined by the claims of the **Licensed Patent Rights.**

12.04 **PHS** does not represent that they will commence legal actions against third parties infringing the **Licensed Patent Rights.**

12.05 **LICENSEE** shall defend, indemnify and hold **PHS** and its employees, students, fellows, agents and consultants harmless from and against all liability, demands, damages, expenses and losses, including but not limited to death, personal injury, illness or property damage in connection with or arising out of (a) the use by **or on behalf of LICENSEE**, its sublicensees, directors, employees or third parties of any **Licensed Patent Rights**, or (b) the design, manufacture, distribution or use of any **Licensed Products, Licensed Processes** or materials, or other products or processes developed in connection or arising out of the **Licensed Patent Rights. LICENSEE** agrees to maintain a liability insurance program consistent with sound business practice.

13. TERMINATION AND MODIFICATION OF RIGHTS

13.01 In the event that **LICENSEE** is in default in the performance of any material obligations under this **Agreement**, and if the default has not been remedied within ninety (90) days after the date of notice in writing of such default, **PHS** may terminate this **Agreement** by written notice.

13.02 At least 30 days prior to filing a petition in bankruptcy **LICENSEE** must inform **PHS in writing** of its intention to file the petition in bankruptcy or of a third party's intention to file an involuntary petition in bankruptcy.

13.03 In the event that **LICENSEE** becomes insolvent, makes an assignment of **Licensed Patent Rights** for the benefit of creditors, files a petition in bankruptcy, has such a petition filed against it, **determines** to file the petition in bankruptcy, or **receives notice of** a third party's intention to file an involuntary petition in bankruptcy, **LICENSEE shall immediately notify PHS in writing. Furthermore, PHS** shall have the right to terminate this **Agreement** by giving **LICENSEE** written notice. Termination of this **Agreement** is effective upon **LICENSEE'S** receipt of the written notice.

13.04 **LICENSEE** shall have a unilateral right to terminate this **Agreement** and/or any licenses in any country by giving **PHS** sixty (60) days written notice to that effect.

13.05 **PHS** shall specifically have the right to terminate this **Agreement**, if **PHS** determines that the **LICENSEE**: (1) is not executing the Commercial Development Plan submitted with its request for a license and the **LICENSEE** cannot otherwise demonstrate to **PHS's** satisfaction that the **LICENSEE** has taken, or can be expected to take within a reasonable time, effective steps to achieve practical application of the **Licensed Products** or **Licensed Processes**; (2) has not achieved the benchmarks established in the commercialization plan of Paragraph 9.01 **Benchmarks** as may be modified under Paragraph 9.02;(3) has willfully made a false statement of, or willfully omitted, a material fact in the license application or in any report required by the license agreement; (4) has committed a substantial breach of a covenant or agreement contained in the license; (5) is not keeping **Licensed Products or Licensed Processes** reasonably available to the public after commercial use commences; (6) cannot reasonably satisfy unmet health and safety needs; or (7) cannot reasonably justify a failure to comply with the domestic production requirement of Paragraph 5.01 unless waived. In making this determination, **PHS** will take into account the normal course of such commercial development programs conducted with sound and reasonable business practices and judgment and

the annual reports submitted by **LICENSEE** under Paragraph 9.02. Prior to invoking this right, **PHS** shall give written notice to **LICENSEE** providing **LICENSEE** specific notice of and a ninety (90) day opportunity to satisfy **PHS**'s concerns as to the previous items (1) to (7). If **LICENSEE** fails to satisfy or reasonably begin to rectify such concerns within the ninety (90) day period, **PHS** may terminate this **Agreement**.

13.06 When the public health and safety so require, and after written notice to **LICENSEE** providing **LICENSEE** a sixty (60) day opportunity to respond, **PHS** shall have the right to require **LICENSEE** to grant sublicenses to responsible applicants, on reasonable terms, in any **Licensed Fields of Use** under the **Licensed Patent Rights** that are not being adequately commercially exploited by **LICENSEE**, or adequately addressed in the Commercial Development plan of Paragraph 9.01 as amended under Paragraph 9.02, unless **LICENSEE** can reasonably demonstrate that such a sublicense would be contrary to sound and reasonable business practice or that the granting of the sublicense would not materially increase the availability to the public of the subject matter of the **Licensed Patent Rights**. **PHS** will not require the granting of a sublicense unless the responsible applicant has first negotiated in good faith with **LICENSEE**.

13.07 **PHS** reserves the right according to 35 U.S.C. §209(f)(4) to terminate or modify this **Agreement** if it is determined that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by **LICENSEE**.

13.08 Within thirty (30) days of receipt of written notice of **PHS**'s unilateral decision to modify or terminate this **Agreement**, **LICENSEE** may, consistent with the provisions of 37 C.F.R. § 404.11, appeal the decision by written submission to the Assistant Secretary for Health or designee. The Assistant Secretary for Health or designee's decision shall be the final agency decision. **LICENSEE** may thereafter exercise any and all administrative or judicial remedies that may be available.

13.09 Within ninety (90) days of termination of this **AGREEMENT** under this Article 13 or expiration under Paragraph 3.02, a final report shall be submitted by **LICENSEE**. Any royalty payments and unreimbursed patent expenses due to **PHS** become immediately due and payable upon termination or modification. If terminated under Article 13, sublicensees may elect to convert their sublicenses to direct licenses with **PHS** pursuant to Paragraph 4.03.

13.10 Paragraphs 4.03, ~~6.07~~, 8.01, 9.05, 9.06, 12.05 and 14.09 of this **Agreement** shall survive termination of this **AGREEMENT**.

14. GENERAL PROVISIONS

14.01 Neither Party may waive or release any of its rights or interests in this **Agreement** except in writing. The failure of **the Government** to assert a right hereunder or to insist upon compliance with any term or condition of this **Agreement** shall not constitute a waiver of that right **by the Government** or excuse a similar subsequent failure to perform any such term or condition by **LICENSEE**.

14.02 This **Agreement** constitutes the entire agreement between the **Parties** relating to the subject matter of the **Licensed Patent Rights**, and all prior negotiations, representations, agreements and understandings are merged into, extinguished by and completely expressed by this **Agreement**.

14.03 The provisions of this **Agreement** are severable, and in the event that any provision of this **Agreement** shall be determined to be invalid or unenforceable under any controlling body of law, such determination shall not in any way affect the validity or enforceability of the remaining provisions of this **Agreement**.

14.04 If either Party desires a modification to this **Agreement**, the Parties shall, upon reasonable notice of the proposed modification by the Party desiring the change, confer in good faith to determine the

desirability of such modification. No modification will be effective until a written amendment is signed by the signatories to this **Agreement** or their designees.

14.05 The construction, validity, performance and effect of this **Agreement** shall be governed by Federal law as applied by the Federal Courts in the District of Columbia.

14.06 All notices required or permitted by this **Agreement** shall be given by prepaid registered or certified mail properly addressed to the other Party at the address designated on the following signature page, or to such other address as may be designated in writing by such other Party and shall be effective as of the date of the postmark of such notice.

14.07 This **Agreement** shall not be assigned by **LICENSEE** except (a) with the prior written consent of **PHS**, such consent to be reasonably given; or (b) as part of a sale or transfer of substantially the entire business of **LICENSEE** relating to operations which concern this **Agreement**.

14.08 **LICENSEE** agrees in its practice of the **Licensed Patent Rights** to comply with all applicable **Government** regulations and guidelines including, for example, those relating to research involving human or animal subjects or recombinant DNA.

14.09 **LICENSEE** acknowledges that it is subject to and agrees to abide by the United States laws and regulations (including the Export Administration Act of 1979 and Arms Export Control Act) controlling the export of technical data, computer software, laboratory prototypes, biological material and other commodities. The transfer of such items may require a license from the cognizant agency of the U. S. Government or written assurances by **LICENSEE** that it shall not export such items to certain foreign countries without prior approval of such agency. **PHS** neither represents that a license is or is not required or that, if required, it shall be issued.

14.10 **LICENSEE** agrees to mark the **Licensed Products** or their packaging sold in the United States with all applicable U. S. patent numbers and similarly to indicate "Patent Pending" status. All **Licensed Products** manufactured in, shipped to or sold in other countries shall be marked in such a manner as to preserve **PHS** patent right in such countries.

14.11 By entering into this **Agreement, PHS** does not directly or indirectly endorse any product or service provided, or to be provided, by **LICENSEE** whether directly or indirectly related to this **Agreement**. **LICENSEE** shall not state or imply that this **Agreement** is an endorsement by the Government, **PHS**, any other **Government** organizational unit, or any **Government** employee. Additionally, **LICENSEE** shall not use the names of **NIH, ADAMHA, CDC**, or **PHS** or their employees in any advertising, promotional or sales literature without the prior written consent of **PHS**.

14.12 The Parties agree to attempt to settle amicably any controversy or claim arising under this **Agreement** or a breach of the **Agreement**, except for appeals of modification or termination decisions provided for in Article 13. **LICENSEE** agrees first to appeal any such unsettled claims or controversies to the Director of NIH, whose decision shall be considered the final agency decision. Thereafter, **LICENSEE** may exercise any administrative or judicial remedies that may be available.

14.13 Nothing relating to the grant of a License, nor the grant itself, shall be construed to confer upon any person any immunity from or defenses under the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this part shall not be immunized from the operation of state or Federal law by reason of the source of the grant.

PHS PATENT LICENSE AGREEMENT - EXCLUSIVE

SIGNATURE PAGE

FOR PHS:

Reid G. Adler, J.D.
Director
Office of Technology Transfer
National Institutes of Health

Mailing Address for Notices:

_____

Reid G. Adler, J.D.
Director
Office of Technology Transfer
National Institutes of Health
Box OTT
Bethesda, Maryland 20892

FOR **LICENSEE** (**Upon information and belief,** the undersigned expressly certifies or affirms on information or belief that the contents of any statements of **LICENSEE** made or referred to in this document are truthful and accurate.)

Name _____

Date _____

Title _____

Mailing Address for Notices:

_____

_____

_____

APPENDIX A - Patent or Patent Application

Patent or Patent Application:

APPENDIX B - Licensed Fields of Use and Territory

Licensed Territory:

Licensed Fields of Use:

APPENDIX C - Royalties

Royalties:

LICENSEE agrees to pay to **PHS** a noncreditable, nonrefundable license issue royalty in the amount of ___ _____.

LICENSEE agrees to pay to **PHS** a nonrefundable minimum annual royalty in the amount of _____ _____.

LICENSEE agrees to pay **PHS** earned royalties as follows:

LICENSEE agrees to pay **PHS** benchmark royalties as follows:

LICENSEE agrees to pay **PHS** Sublicensing Royalties as follows:

APPENDIX D - Modifications

PHS and **LICENSEE** agree to the following modifications to the Articles and Paragraphs of this **Agreement**:

APPENDIX E - Benchmarks

Model NIH/ADAMHA Material Transfer Agreement

National Institutes of Health
Alcohol, Drug Abuse and Mental Health Administration

MATERIAL TRANSFER AGREEMENT

This Material Transfer Agreement ("MTA") has been adopted for use by the National Institutes of Health ("NIH") and the Alcohol, Drug Abuse and Mental Health Administration ("ADAMHA") in all transfers of research material ("Research Material") whether NIH or ADAMHA is identified below as its Provider or Recipient.

1. Provider agrees to transfer to Recipient's investigator named below the following Research Material:

_____.

2. THIS RESEARCH MATERIAL MAY NOT BE USED IN HUMAN SUBJECTS. This Research Material will only be used for research purposes by Recipient's investigator in his/her laboratory, for the Research Project described below, under suitable containment conditions. This Research Material will not be used for commercial purposes such as screening, production or sale, for which a commercialization license may be required. Recipient agrees to comply with all Federal rules and regulations applicable to the Research Project and the handling of the Research Material.

2 (a). Are Research Materials of human origin? ____ Yes ____ No

2 (b). If Yes in 2(a), were Research Materials collected according to 45 CFR 46 "Protection of Human Subjects?" ____ Yes ____ No Please provide Assurance Number: _____

3. This Research Material will be used by Recipient's investigator solely in connection with the following research project ("Research Project") described with specificity as follows (use an attachment page if necessary):

_____

_____.

4. In all oral presentations or written publications concerning the Research Project, Recipient will acknowledge Provider's contribution of this Research Material unless requested otherwise. To the extent permitted by law, Recipient agrees to treat in confidence, for a period of three (3) years from the date of its disclosure, any of Provider's written information about this Research Material that is stamped "**CONFIDENTIAL,**" except for information that was previously known to Recipient or that is or becomes publicly available or which is disclosed to Recipient without a confidentiality obligation. Recipient may publish or otherwise publicly disclose the results of the Research Project, but if Provider has given **CONFIDENTIAL** information to Recipient such public disclosure may be made only after Provider has had thirty (30) days to review the proposed disclosure, except when a shortened time period under court order or the Freedom of Information Act pertains.

5. This Research Material represents a significant investment on the part of Provider, and is considered proprietary to Provider. Recipient's investigator therefore agrees to retain control over this Research Material, and further agrees not to transfer the Research Material to other people not under her or his direct supervision without advance written approval of Provider. Provider reserves the right to distribute the Research Material to others and to use it for its own purposes. When the Research Project is completed, or three (3) years have elapsed, whichever occurs first, the Research Material will be destroyed by Recipient or otherwise disposed of as mutually agreed by Provider and Recipient.

6. This Research Material is provided as a service to the research community. **IT IS BEING SUPPLIED TO RECIPIENT WITH NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** Provider makes no representations that the use of the Research Material will not infringe any patent or proprietary rights of third parties.

7. When Provider is the NIH/ADAMHA: Recipient shall retain title to any patent or other intellectual property rights in inventions made by its employees in the course of the Research Project. Recipient agrees not to claim, infer, or imply Governmental endorsement of the Research Project, the institution or personnel conducting the Research Project or any resulting commercial product(s). Recipient agrees to hold the United States Government harmless and to indemnify the Government for all liabilities, demands, damages, expenses and losses arising out of Recipient's use for any purpose of the Research Material.

8. When Recipient is the NIH/ADAMHA: The NIH/ADAMHA shall retain title to any patent or other intellectual property rights in inventions made by its employees in the course of the Research Project. The NIH/ADAMHA are not authorized to promise rights in advance for inventions developed through this Research Project, except under a Cooperative Research and Development Agreement ("CRADA") pursuant to the Federal Technology Transfer Act of 1986. Except as may be accorded through Paragraph 9, below,

Provider acquires no intellectual property rights under this MTA, but may apply for license rights to any patentable invention that might result from this Research Project. It is the intention of NIH/ADAMHA that Provider not be liable to NIH/ADAMHA for any claims or damages arising from NIH/ADAMHA's use of the Research Material; however, no indemnification is provided or intended.

9. Pursuant to their "Policy Statement on Cooperative Research and Development Agreements and Intellectual Property Licensing," NIH and ADAMHA may permit their investigators to enter into CRADAs (and thereby promise an option to acquire intellectual property rights) in exchange for the contribution of "essential research materials ... not otherwise reasonably available." If the Research Material transferred by this MTA is so certified below, Provider and the NIH/ADAMHA (when Recipient) investigator should submit a formal CRADA for NIH/ADAMHA approval. For nongovernmental entities that regularly provide research materials to NIH or ADAMHA, it is suggested that a master CRADA be negotiated under which a certification below will suffice to invoke the provisions of the CRADA. If Provider and Recipient otherwise decide to engage in a cooperative research or development project using the Research Material, a formal CRADA must also be negotiated. For general inquiries regarding CRADAs or NIH/ADAMHA technology transfer policies, contact the Office of Technology Transfer at (301) 496-7057.

For receipt of Research Material under this Paragraph, when a master CRADA governing material transfers is in effect between NIH or ADAMHA and Provider, the NIH/ADAMHA investigator must identify the CRADA by NIH/ADAMHA reference number: _____, and provide a more detailed description than in Paragraph 2, above, of the specific extent of activities within the overall Research Project to which the provisions of the CRADA will pertain (use an attachment page if necessary). Signature by the investigator and authorized official below constitutes certification that the Research Material transferred by this MTA is essential and not otherwise reasonably available for the following activities:

_____

_____

_____.

10. This MTA shall be construed in accordance with Federal law as applied by the Federal courts in the District of Columbia.

11. Any additional _____

_____

_____.

Date: _____ _____
Recipient's Investigator and Title

Date: _____ _____
authorized signature for Recipient and Title

Recipient's mailing address: _____

_____

_____

Date: _____ _____
Provider's Investigator and Title

Date: _____ _____
authorized signature for Provider and Title

Provider's mailing address: _____

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* U.S. G.P.O.:1992-342-299:60034