O'zbekiston Respublikasi Oliy Va O'rta Maxsus Ta'lim

Vazirligi Farg'onadavlat univrsiteti

Tabiiy fanlar fakulteti

Zoologiya va Biologiya kafedrasi

18.54A guruh 4-bosqich talabasi Rahmonov Murodjonning Biologik kimyo Va molekuluar Biologiya fanidan

"Nuklein kislotalar strukturalari" mavzusida tayyorlagan

Mustaqil ishi

NUKLEIN KISLOTALAR STRUKTURALARI

Tuuvchi:Rahmonov Murodjon

Reja

- 1. Nuklein kislotalar haqida umumiy tushuncha
- 2. Nuklein kislotalar tarkibi
- 3. Nukelin kislotalar strukturalari

- Nuklein kislotalar birinchi marta-1869-yil **G.F.Misher** tomonidan yiring hujayralarining yadrosidan ajratib olingan. Bu ajratib olingan tuzilma oqsillar bilan bir **nuk** hos

1889-yilda **G.Kossel** bu birikmalarga **"Nuklein kislotalar"**deb nomlashni taklif qildi. Chunki ular birinchidan hujayra yadrosidan ajratib olingan edi, ikkinchidan esa ularning eritmalarda reaksiya muxiti kislotali edi.

Nuklein kislotalar

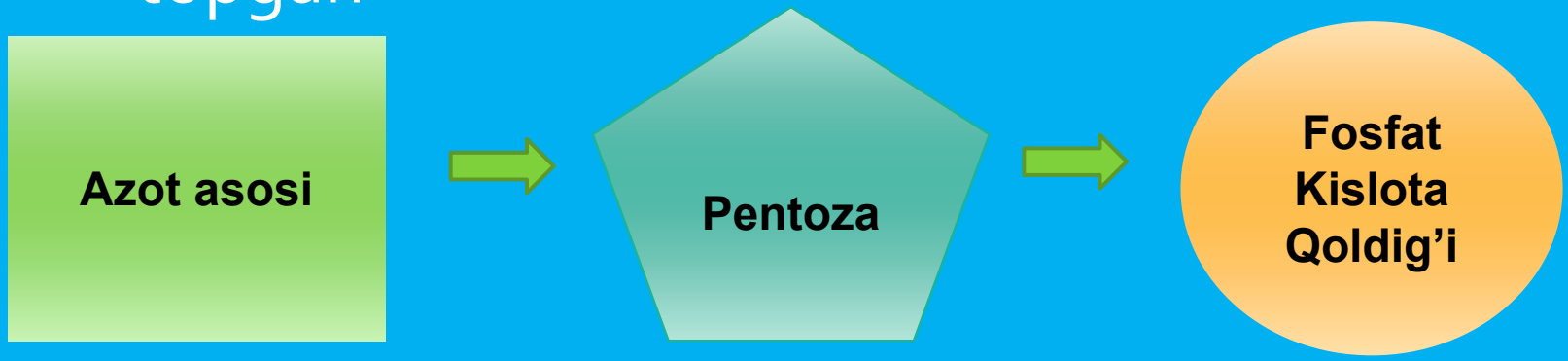
- Tirik organizmlar, shu jumladan viruslar uchun ham nuklein kislotalarning ahamiyati juda katta. Ular irsiy belgilarni nasldan-naslga o'tkazish, oqsil biosintezi kabi muhum hayotiy jarayonlarni amalga oshirishda faol ishtirok etadi.
- Nuklein kislotalar dastlab hujayra yadrosidan ajratib olinganligi sababli nuklein kislotalar (**nukleus-yadro)** deb ataladi. Hozirgi vaqtda nuklein kislotalar faqat yadroda emas, balki **xloroplast va mitoxondriyada** ham mavjudligi aniqlangan.

- Nuklein kislotalar-muhum biopolimerlar bo'lib, molekulyar massasi $5 \cdot 10^9$. Ular barcha tirik organizimlarda uchraydi va nafaqat irsiy axborotni saqlash va nasldan-naslga o'tkazish, balki boshqa bir qancha biofunksiyalarni amalga oshiradi. Nuklein kislotalarning monomeri-nukleotidlardir.

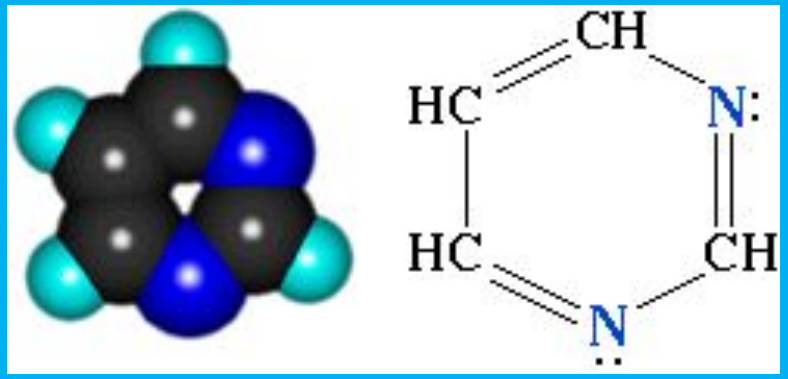
Nuklein kislatalar **chiziqli va halqasimon** ko’rinishlarda bo’lishi mumkin. Quydagi sxemada tabiatda uchraydigan nuklein kislotalarning farq qiluvchi tiplari ko’rsatilgan:

Nuklein kislotalarning tarkibi

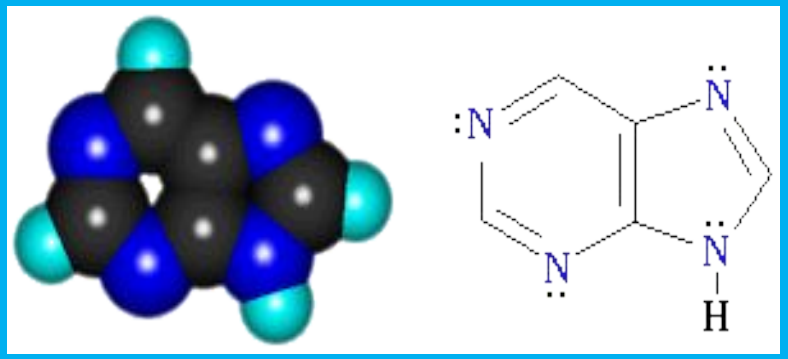
- Nuklein kislotalar yuqori biopolimerlardir, ular o’zaro fosfodiefir bog’lar yordamida bog’langan nukleotidlardan tashkil topgan. Har bir nukleotid azot asoslari qoldig’i , pentoza va fosfat kislota dan tashkil topgan

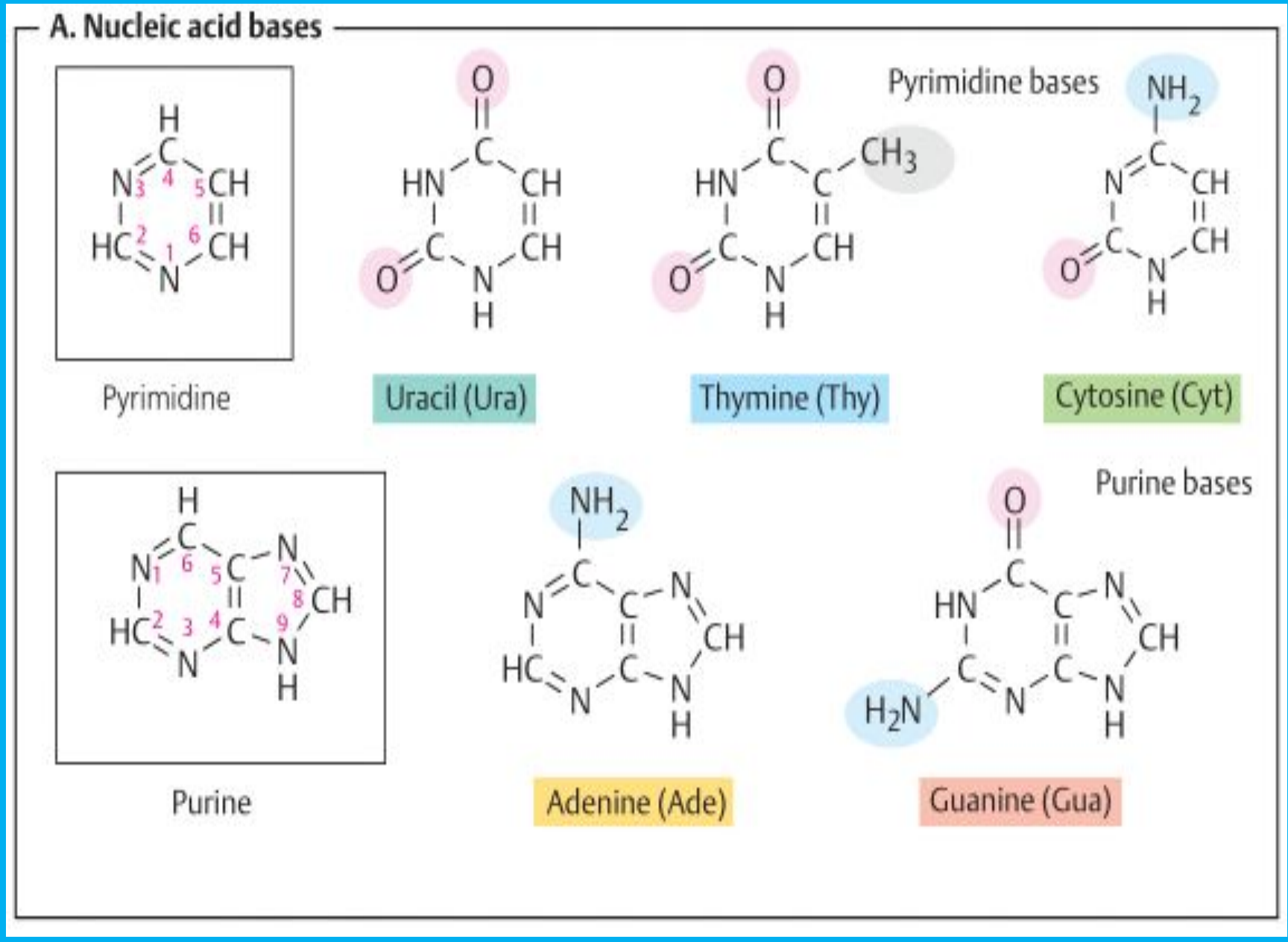


***Purin*-**
Adenin(A)
Guanin(G)

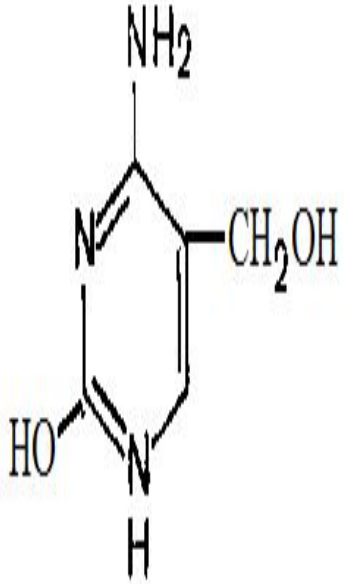


***Pirimidin*-Sitozin(C)**
Timin(T)
Uratsil(U)

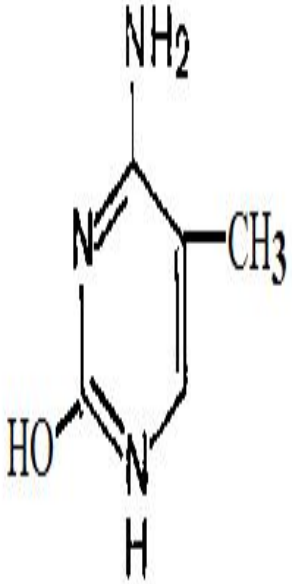



A. Nucleic acid bases
Pyrimidine
Pyrimidine bases
Uracil (Ura)
Thymine (Thy)
Cytosine (Cyt)
Purine
Purine bases
Adenine (Ade)
Guanine (Gua)

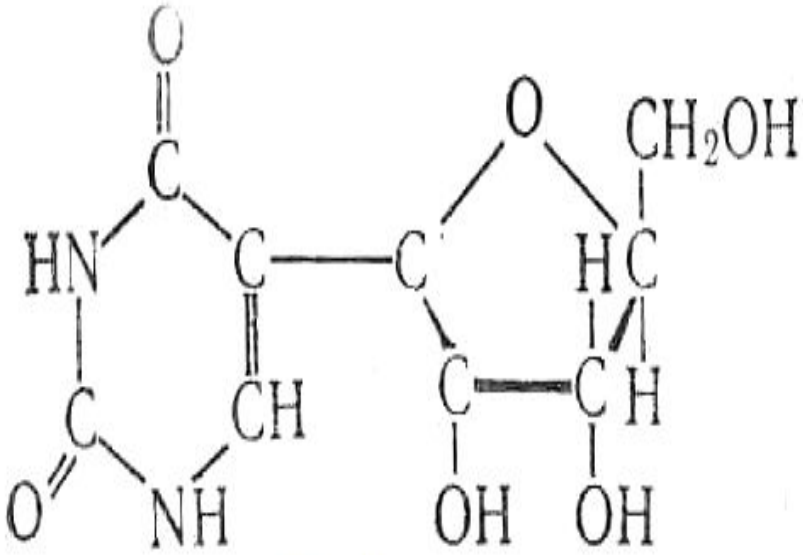
Bundan tashqari nuklein kislotalar tarkibida **minor** (kamdan-kam uchraydigan) azot asoslari uchraydi: **5-metil va 5-oksimetilsitozin, digidrouratsil, psevdouratsil, 1-metiluratsil** va boshqalar.



5-oksimetil-sitozin



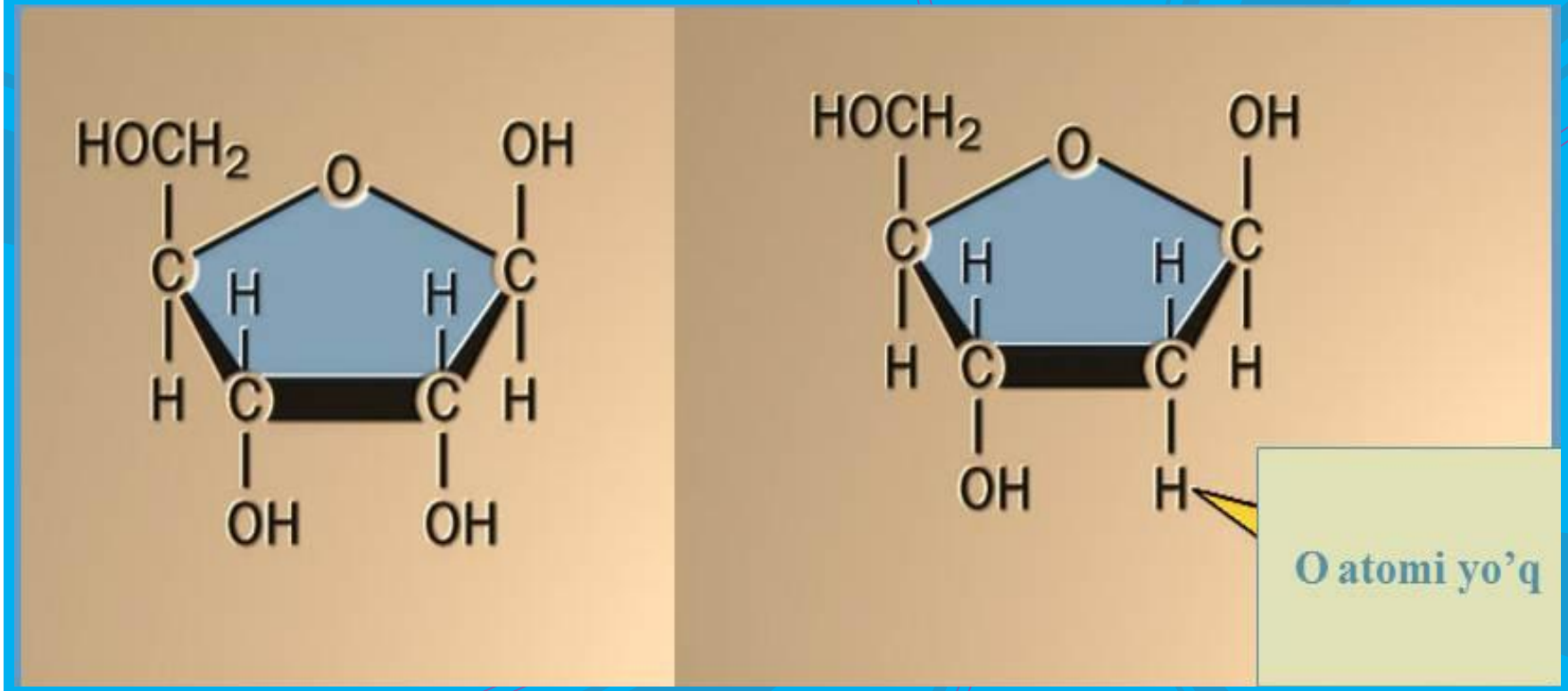
5- metil-sitozin



psevdouridin

(5-β-D- ribofuranozidtsitozin)

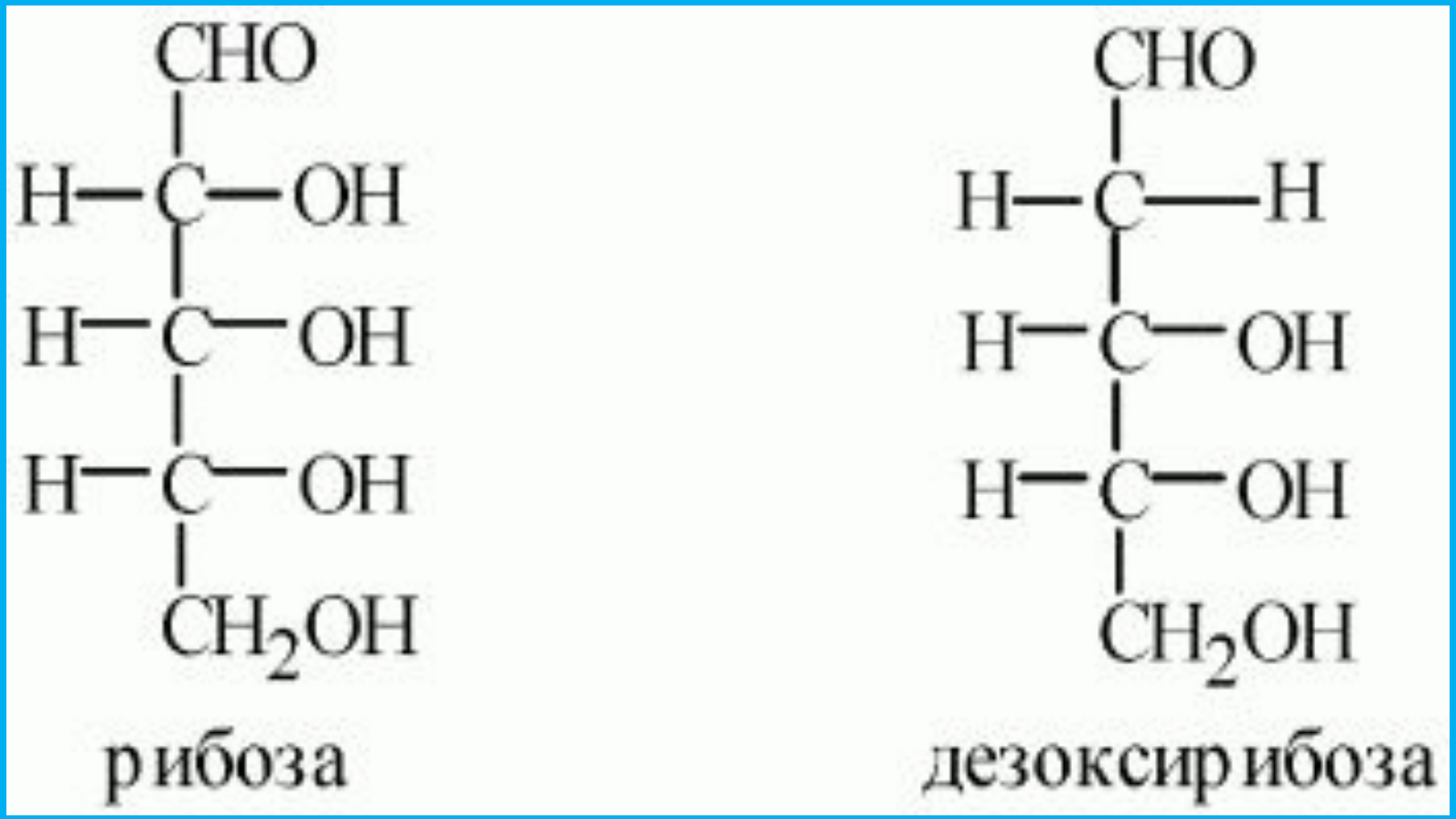
Pentozalar
Furan shakli



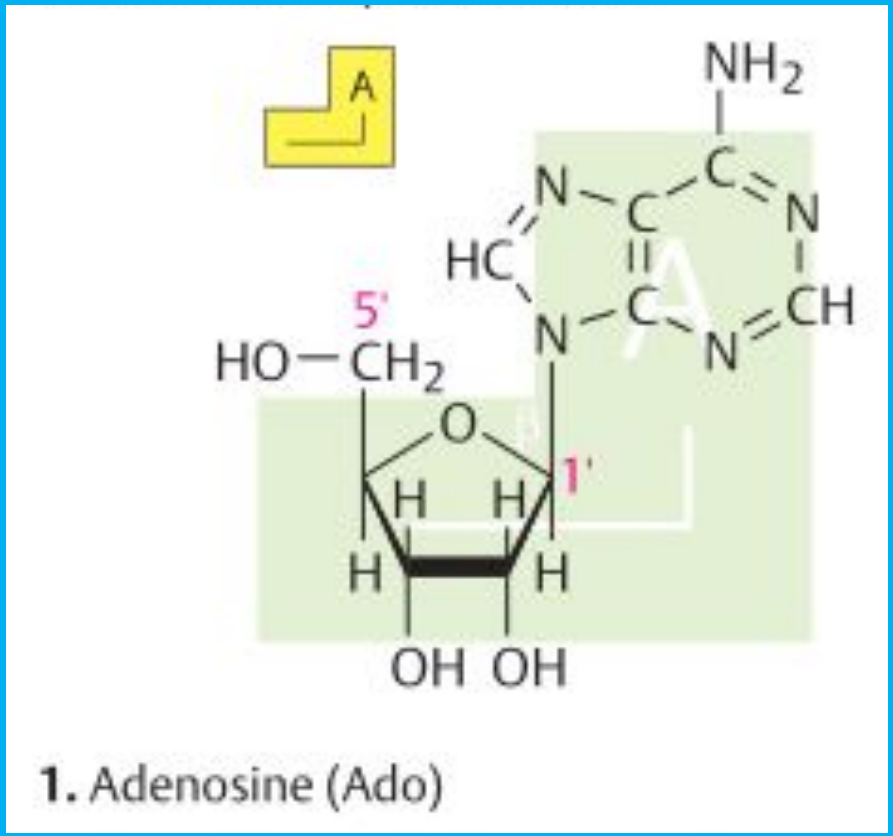
Riboza

Dezoksiriboza

Atsiklik shakli

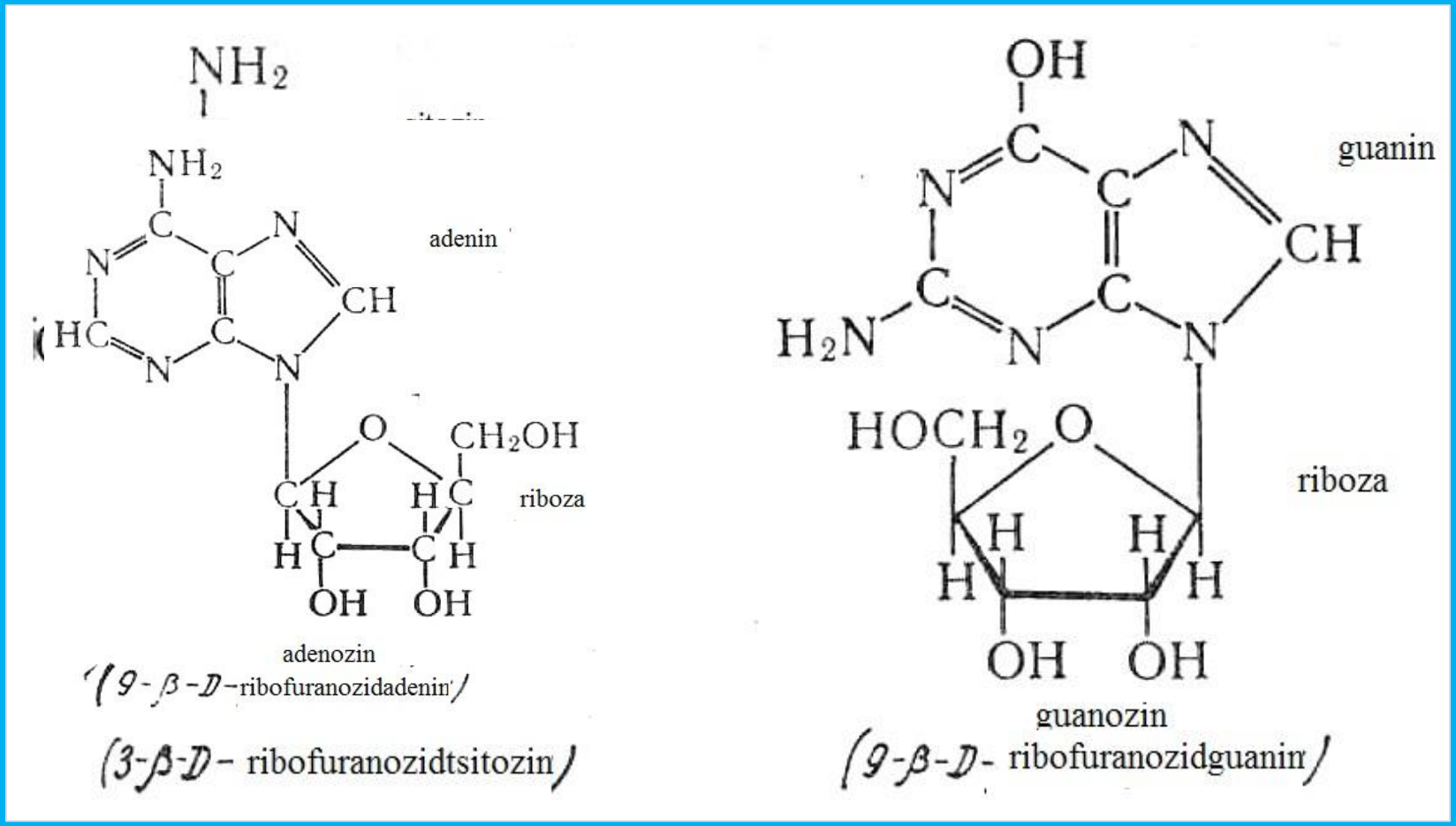


Azot asoslari uglevod komponentlari bilan **glikozid bog’** yordamida bog’lanib **nukleozid**larni hosil qiladi.

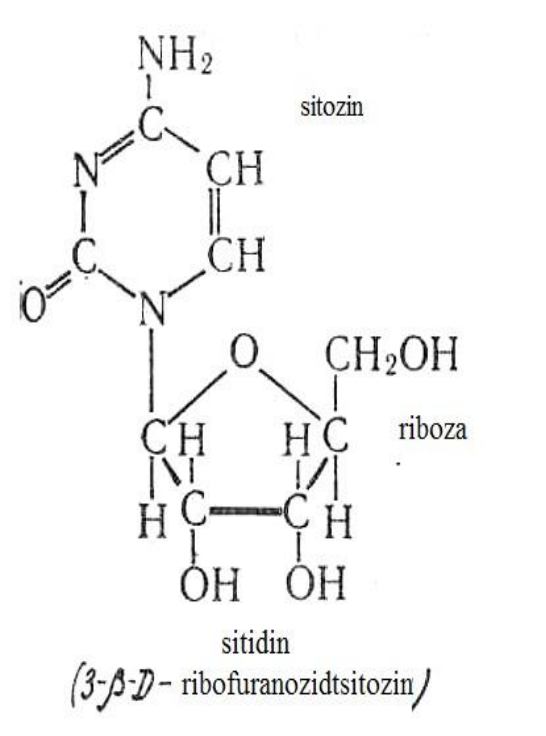


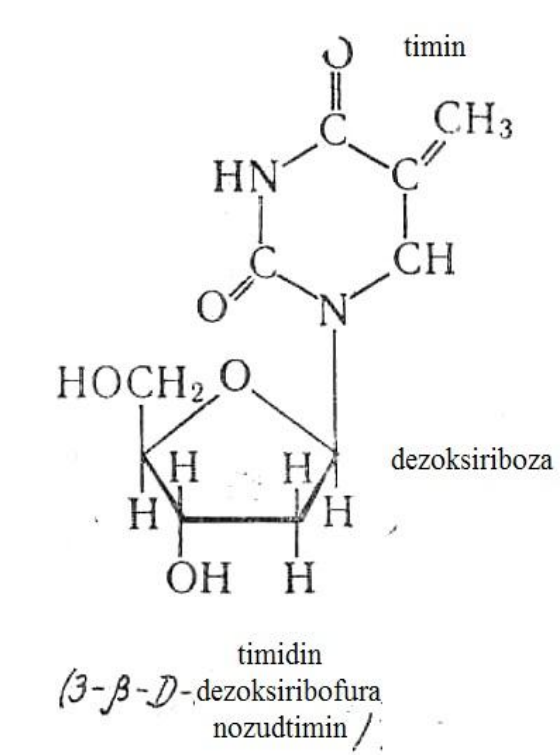
1. Adenosine (Ado)

Purin asoslari hosil qilgan nukleozidlar «ozin», qo’shimchasini oladi: Masalan: adenozin, guanozin.

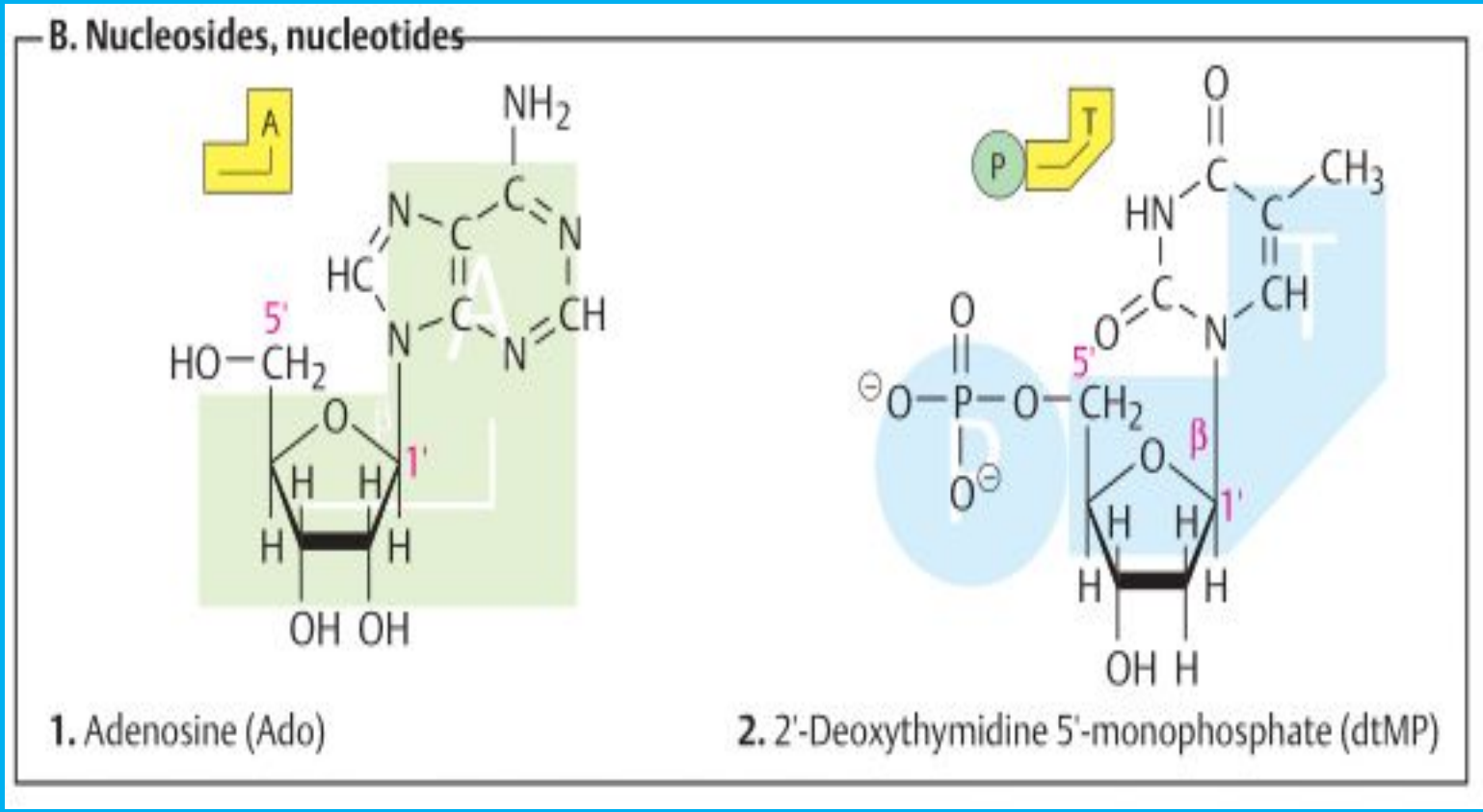


Pirimidin asoslari esa, «idin» qo’shimchasini oladi: Masalan: uridin, timidin va sitidin.



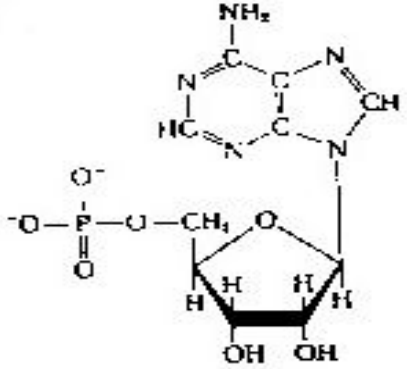


Nukleozidlar o’ziga fosfat kislotani biriktirib olishi natijasida nukleotidlarga aylanadi.

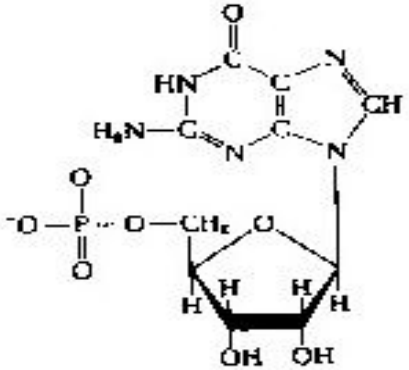


Fosfat kislota riboza va dezoksiribozaning **5´-uglerod** atomiga birikadi. Ular **monoosfatlar** deb ataladi. Nukleotidlarning nomi ular asosining nomiga **kislota** so’zini qo’shish bilan hosil bo’ladi. Masalan: **adenilat kislota, guanilat kislota** va hokazo. Nukleotidlar quyidagicha tuzilgan:

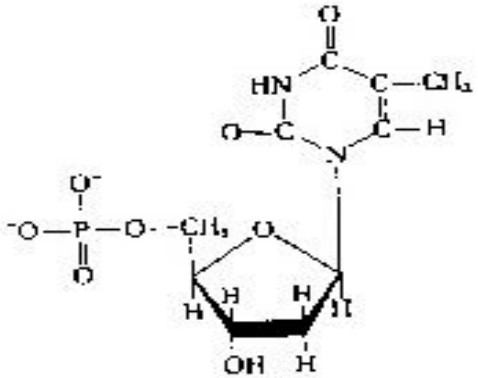
Monofosfatlar



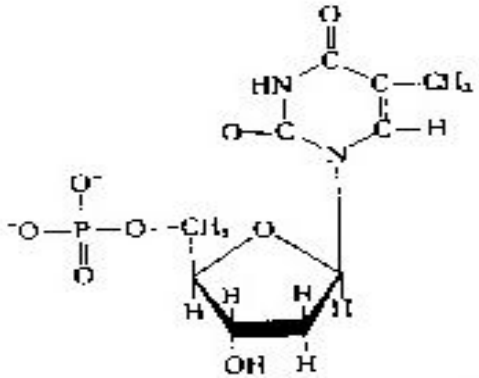
Adenilat, adenozin -5' monofosfat(AMF)



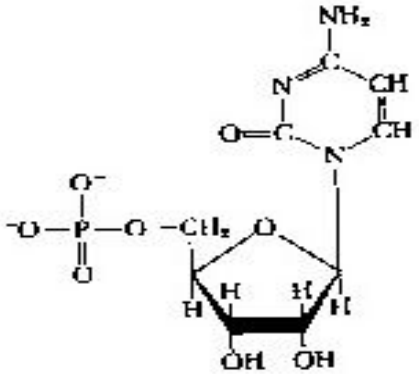
Guanilat, guanozin -5' monofosfat(GMF)



Uridilat, uridin -5' monofosfat(UMF)



Timidilat, timidin -5' monofosfat(TMF)

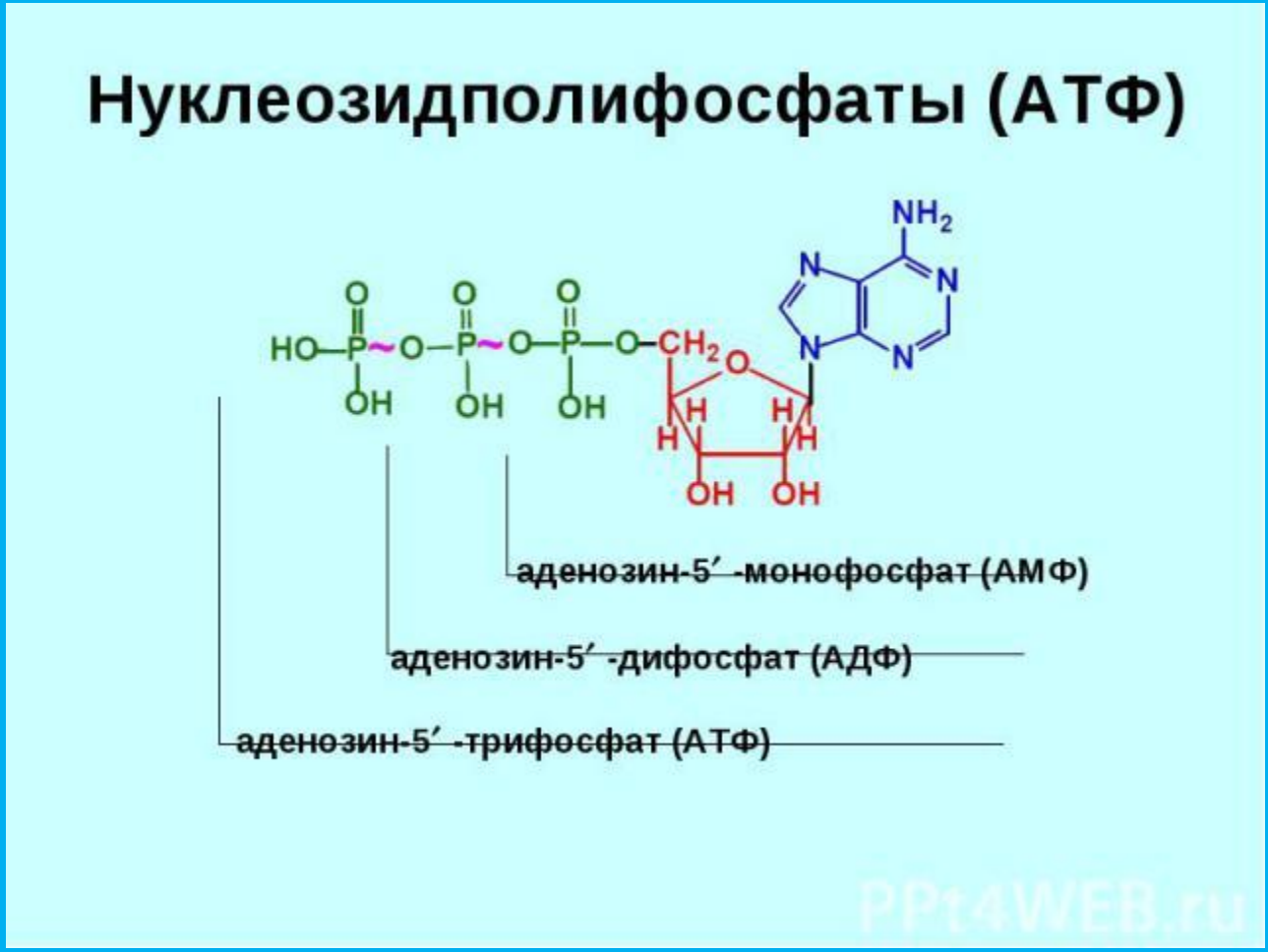


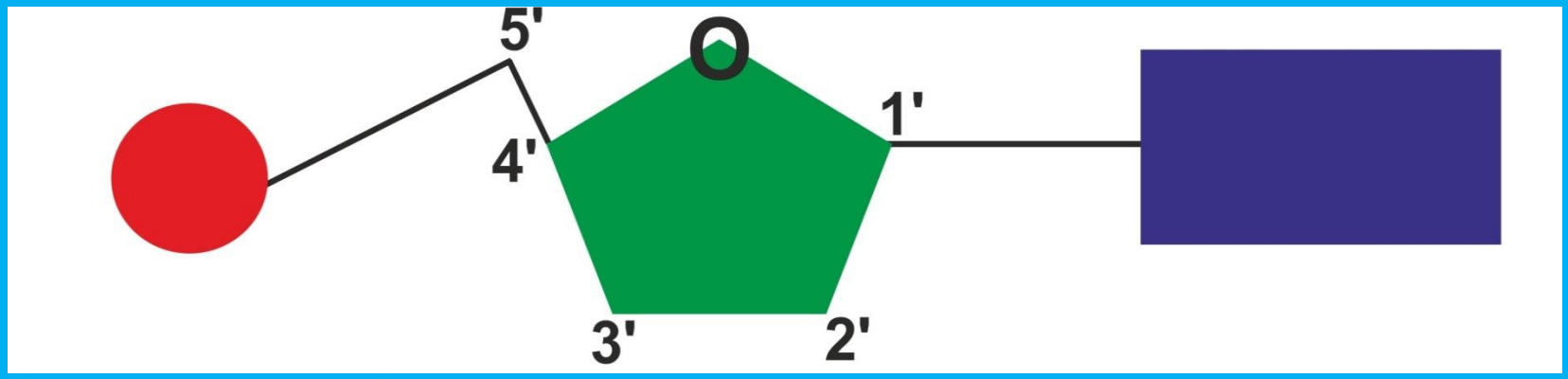
Sitidilat, sitidin -5' monofosfat(AMF)

Quyda nukleotidlarning nomenklaturasi keltirilgan

	Azot asoslari	Nukleozid	Mononuk-leotid	Qisqartma
Purin	Adenin	Adenozin	Adenozinmonofosfat	AMF
	Guanin	Guanozin	Guanozinmonofosfat	GMF
Pirimidin	Uratsil	Uridin	Uridinmonofosfat	UMF
	Sitozin	Sitidin	Sitidinmonofosfat	SMF
	Timin	Timidin	Timidinmonofosfat	TMF

Nukleozidpolifosfatlar (ATF)



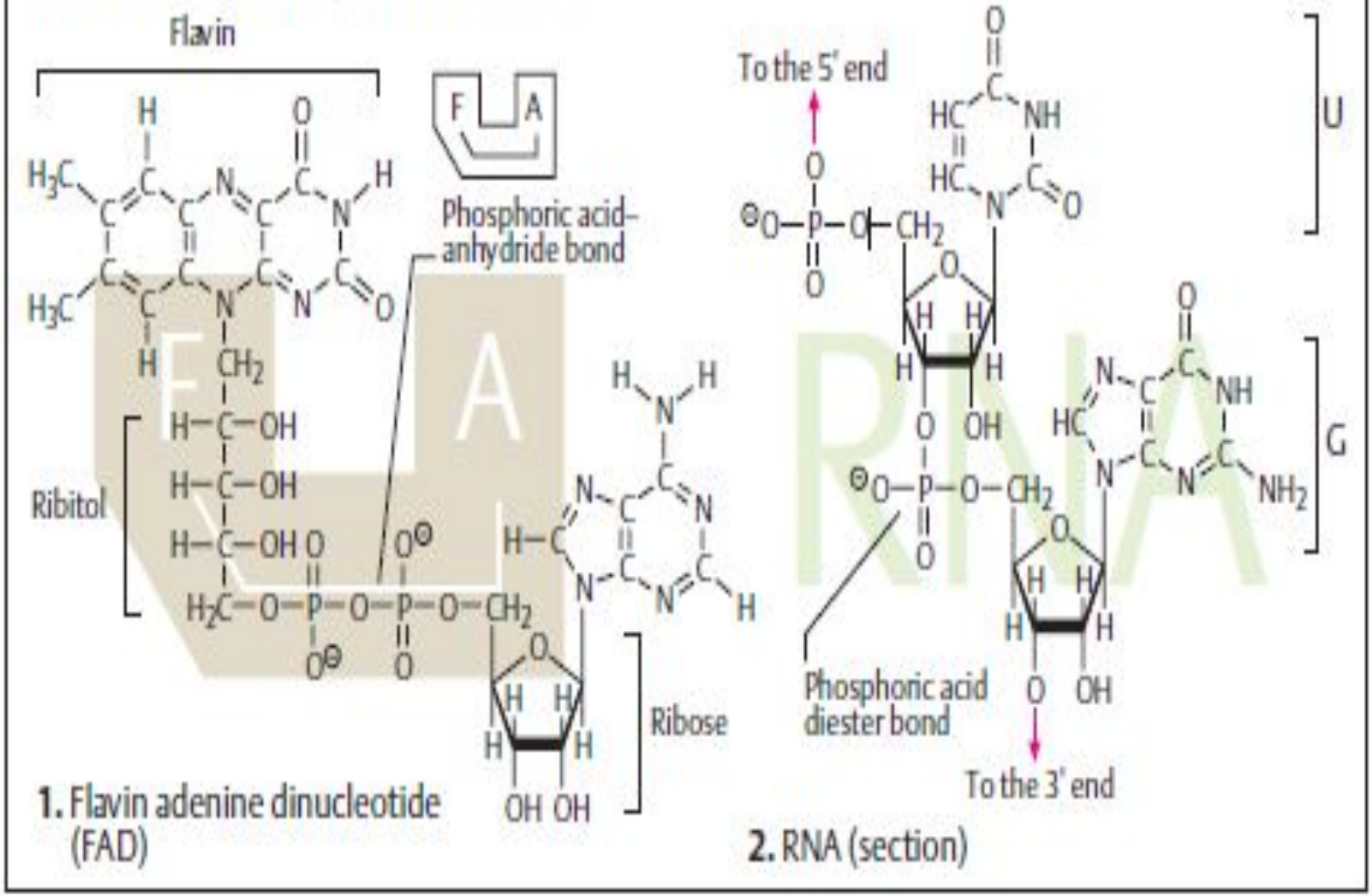


Fosfat kislota Pentoza Azot asosi

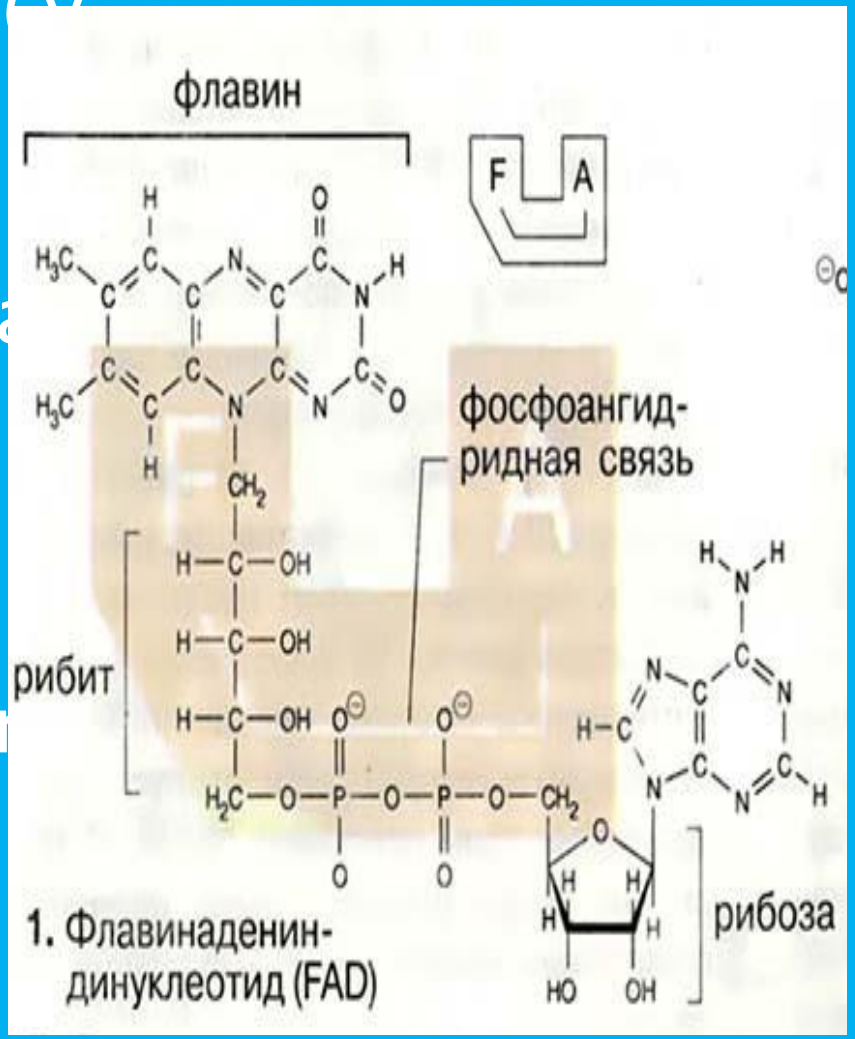
нуклеозид

нуклеотид

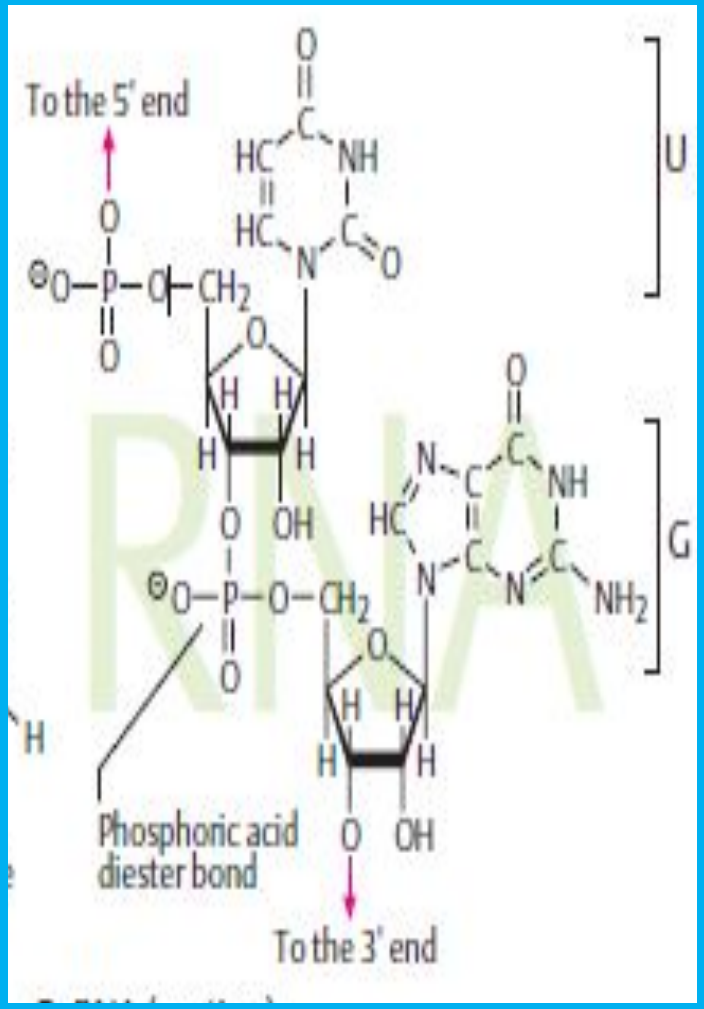
C. Oligonucleotides, polynucleotides



Oligonukleotidlar-(
unoncha “oligo” kichik, mayda)DNK yoki RNK ning qisq
fragmenti bo’lib, ularni kimyoviy sintez yoki bir muncha uzun bo’lga
polinukleotidlarni parchalash orqali olish mumkin.



Polinukleotidlar-(lot incha “poli“ ko’p, katta) nuklein kislotalar bo’lib ular azot asosi, uglevod komponenti va fosfat kislota qoldiqlaridan tashkil topgan. Nukleotidlardagi fosfat kislota qoldiqlari o’zaro **fosfodiefir bog’**



E'tiboringiz uchun raxmat!