

Ethics of cloning

Cloning is a process done by scientists to make exact genetic copies of a living organism. In nature certain organisms make clones through asexual reproduction such as single celled bacteria (National Geographic Society. 2019).

Scientists can clone within their laboratories, cloning genes which allow them to study and understand genes. Cloning a gene requires taking DNA from a living organism and putting it into bacteria or yeast (carrier). When the carrier reproduces a copy of that specific gene is copied (National Geographic Society. 2019).

There can be 2 types of human cloning, therapeutic and reproductive cloning. Therapeutic cloning refers to the development of stem cells from the cloned embryo. This method of cloning can be used to treat different diseases and disorders.

Reproductive cloning refers to producing an offspring with the exact same genetic make up of his/hers parents. Using somatic cell nuclear transfer technique to develop the embryo and an egg from a female donor, The nucleus of the egg cell is removed creating an enucleated egg. The individual being cloned acts as a somatic cell donor with the somatic cell containing DNA. The somatic cell is then fused with the enucleated egg in an artificial medium using electricity creating an embryo. The embryo is then placed in the mothers uterus until it's time to give birth; however, the success rate of this procedure is very low resulting in only one or two out of 1000 embryos reaching the world (Admin. 2012).

When it comes to the ethics of cloning, the idea is viewed that it is not a moral principle, and despite cloning animals, different individuals have different perspectives towards this topic.

However, within the medical field, there are arguments justifying that human cloning can have an impact in medicine especially in the future. Cloning can find new ways to recover from trauma, resolve fertility problems, reduce the impact of diseases in ways that vaccinations cannot, and can lead to new advances in medical science (FutureofWorking.com. 2019).

On the other hand, human cloning can prompt religious objections from religious leaders. They see life as a gift from God and bringing life into this world from a way other than sexual reproduction is an act against God. Viewing this technology being used as something that is replacing God's purpose (Frazzetto G. 2004).

Human cloning is not ethical considering the many issues with it. There is a small chance of constructing viable embryos which can increase the amount of miscarriages and abortions. Many knowing these both can have an emotional toll on women and families. If planting the embryos and pregnancy does succeed, there can still be other complications once the clone is born. Such that there are abnormalities or that the clone is deformed. If that is the case what then happens to clones, and will the individuals still want the clone. The purpose of cloning is to have an individual exactly identical to another human being including personality. However, personality is not necessarily linked to genetics and nature, nurture has an impact as well. There are many concerns and questions about the ethics of cloning, before and after the clone is born. Many factors to include for a decision like this one. (Degrees & Careers. n.d.).

A social viewpoint on this situation looks at human cloning and **availability of cloning technology and integration of clones into society**. Concerns about the cost of cloning, and who gets or should have access to this. More concerns about how cloning invalidates who someone is, their whole identity. Cloning can also increase the population but, there are already current issues with worldwide resource availability.

When it comes to human cloning there will for sure be legal concerns. With animal cloning there are concerns about who should be responsible, what level of oversight and accountability should be in place, and who should have the legal right to patent living organisms? (Andras, T. 2017).

In Canada under the section 5(1) and section 9 of the AHR Act, no individual should create a human clone by using any technique, or transplant a human clone into a human being or into any non-human life form or artificial device. Under the AHR Act, it is illegal to knowingly create a human clone, regardless of the purpose, including therapeutic and reproductive cloning. Although some countries may have laws that separate reproductive and therapeutic cloning.

In other countries such as United States, United Kingdom, Australia and several other countries, legislation exists banning human reproductive cloning but permitting human therapeutic cloning; additional non-binding agreements on human cloning have been ratified by the United Nations

Human clone refers to an embryo that, as a result of the manipulation of human reproductive material or an in vitro embryo, contains a diploid set of chromosomes obtained from a single – living or deceased – human being, fetus or embryo. (section 3 of the AHR Act) (Canada, H. 2020).

July 5 1996, at Roslin institute in Scotland Dolly the sheep was the first successful animal clone. Dolly was cloned using udder cells of a 6 year old ewe and was cultured in the lab using microscopic needles. Successfully creating a number of normal eggs they were planted into ewe surrogates which then 148 days later gave birth to Dolly.

This breakthrough drove scientists to realize that cloning can help with the production of genetically modified animals to be organ donors for humans, a possible way to preserve endangered species and a way to treat disorders and diseases. However, Dolly was diagnosed with arthritis in her leg in 2002 and raised questions regarding if the cloning was the cause. Of course this also raised concern when it came to human cloning and how there could also be many abnormalities that can occur (A&E Television Networks. 2010).

With that being said, we have yet to see a successful human clone produced, in 2002 there was word that the first human clone was born named Eve. Nevertheless these accusations were false due to the fact that there was no actual proof that Eve existed yet, that she was a clone (Palca, J. 2003).

References

20 advantages and disadvantages of cloning humans. FutureofWorking.com. (2019, December 23). Retrieved November 13, 2021, from <https://futureofworking.com/9-advantages-and-disadvantages-of-cloning-humans/>

- A&E Television Networks. (2010, February 9). Dolly the sheep becomes first successfully cloned mammal. History.com. Retrieved November 13, 2021, from <https://www.history.com/this-day-in-history/first-successful-cloning-of-a-mammal>
- Admin. (2012, February 15). Human cloning & its types: JLI Blog. JLI Blog | JLI is a pioneer in clinical research training and education. Retrieved November 13, 2021, from <https://www.jli.edu.in/blog/human-cloning-its-types/>
- Andras, T. (2017, September 28). Genetic Engineering & Religious Beliefs. Synonym. Retrieved November 13, 2021, from <https://classroom.synonym.com/genetic-engineering-religious-beliefs-12087133.html>
- Canada, H. (2020, February 5). Government of Canada. Canada.ca. Retrieved November 13, 2021, from <https://www.canada.ca/en/health-canada/services/drugs-health-products/biologics-radiopharmaceuticals-genetic-therapies/legislation-guidelines/assisted-human-reproduction/prohibitions-scientific-research-clinical-applications.html>
- Frazzetto G. (2004). Embryos, cells and God. EMBO reports, 5(6), 553–555. <https://doi.org/10.1038/sj.embor.7400175>
- National Geographic Society. (2019, July 8). Cloning. National Geographic Society. Retrieved November 13, 2021, from <https://www.nationalgeographic.org/encyclopedia/cloning/>
- Palca, J. (2003, December 30). Human clones: Where's baby eve? NPR. Retrieved November 13, 2021, from <https://www.npr.org/templates/story/story.php?storyId=1575178>
- Take online courses. earn college credit. Research Schools, Degrees & Careers. Study.com | Take Online Courses. Earn College Credit. Research Schools, Degrees & Careers. (n.d.). Retrieved November 13, 2021, from <https://study.com/academy/lesson/human-cloning-ethical-issues-legality.html#lesson-quiz-questions-cta>