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HUMAN CLONING
NO LOSS TO INDIVIDUALITY

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INTRODUCTION TO CLONING

TYPES OF CLONING

GENE CLONING

- It produces copies of genes or segments of DNA.
- The copies of genes created by different cloning techniques are inserted genetic material of carriers like bacteria, yeast cells, viruses, etc.
- These carriers are then put in reqd conditions in a laboratory to multiply.

THERAPEUTIC CLONING

- It produces embryonic stem cells for experiments aimed at creating tissues to replace injured or diseased tissues.
- It is also known as SOMATIC CELL NUCLEAR TRANSFER.
- There are two approaches for therapeutic cloning:

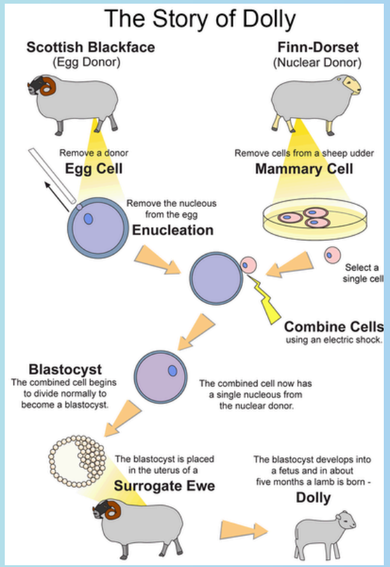
a)Taking a patient's somatic cells and fusing them with an egg cell that has had its nucleus removed which would further help in personalized medical treatments.

b)Creating a cloned embryo that is genetically identical, but then using the embryo to derive embryonic stem cells for the purpose of studying the development of diseases and testing potential treatments.

REPRODUCTIVE CLONING

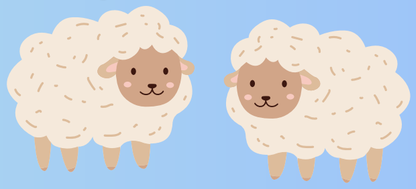
- Reproductive cloning produces copies of whole animals through SCNT.
- It has been successfully performed on various animal species, including sheep, cats, and dogs.
- While reproductive cloning has been used for scientific research and conservation efforts, such as cloning endangered species, there are currently no known instances of human reproductive cloning.

HISTORY AND PRESENT SCENARIO



DOLLY- the first mammal ever cloned
It was cloned in 1996 by using the SOMATIC CELL NUCLEAR TRANSFER technique. Dolly was cloned by Keith Campbell, Ian Wilmut and colleagues at the Roslin Institute,

'Mary had a little lamb'



The most notable example of human cloning research occurred in 2018, when Chinese researcher He Jiankui claimed to have used CRISPR gene editing technology to create the world's first gene-edited babies. The experiment was widely condemned by the scientific community and led to He Jiankui being sentenced to prison in China for his actions.

CLONING CONTRIBUTORS:

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Scalibility

BARRIERS

REGULATORY

- The legality of cloning varies widely by country, and in many cases, it is **completely illegal or heavily restricted**.
- There would need to be regulations around the ownership and control of genetic material and cloned individuals.

TECHNICAL

- Cloning requires **specialized laboratory techniques** and equipment, including the use of enucleated eggs, somatic cell transfer, and in vitro fertilization.
- The success rate of cloning is currently low, and many cloned animals and embryos have shown abnormalities and health problems.

ETHICAL

- Cloning raises many ethical concerns, including the potential exploitation of vulnerable individuals, the commodification of human life, and the potential for **unequal access** to this technology..
- Cloning raises significant questions about the meaning of identity, individuality, and uniqueness.

COUNTRY WISE ANALYSIS

ALLOWED HUMAN CLONING

USA

ALLOWED THERAPEUTIC CLONING

CHINA

SOUTH KOREA

ISRAEL

UK

THAILAND

JAPAN

NEW ZEALAND

SINGAPORE

Scientists Perspective

- The challenge of developing new technologies and understanding the biological mechanisms involved in cloning can be an exciting and intellectually stimulating pursuit
- Some scientists believe that cloning could be used to produce genetically identical stem cells for regenerative medicine, which could have a significant impact on the treatment of various diseases and injuries.

HUMAN CLONING
THE OBSCURED VIEW!!

PROS

Medical research: Cloning can be used to create genetically identical animals that can be used in medical research. This allows researchers to study diseases and develop treatments without putting human subjects at risk.

Reproduction: Cloning can be used to help preserve **endangered species** or revive extinct ones. It can also help to reproduce animals with desirable traits for agriculture
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Personalized medicine: Cloning can be used to create individualized treatments for **genetic diseases** by creating genetically identical cells that can be used for therapies

Genetic modification: Cloning can be used to create **genetically modified animals** for scientific or commercial purposes, such as producing proteins for pharmaceuticals

Organ transplantation: Cloning can be used to produce organs for transplantation that are genetically identical to the recipient, which could significantly reduce the risk of rejection.

CONS

Health risks: Cloning can result in a high incidence of **genetic abnormalities and health problems** in the cloned offspring, including developmental disorders, organ malfunction, and premature death. This can raise ethical concerns about the potential harm to the cloned individuals.

Social implications: Cloning could lead to social issues related to identity, family relationships, and psychological well-being. It could also lead to increased **inequality and discrimination**, as those who can afford cloning technology may have an unfair advantage over those who cannot.

Reproductive rights: Cloning could be seen as a violation of reproductive rights, as it could be used to create children without their consent or to impose genetic traits on offspring without their consent.

Environmental impact: Human cloning could also have a significant environmental impact, as it could lead to **increased resource consumption** and waste production, as well as potential harm to ecosystems.

Ethical concerns: Human cloning raises significant ethical concerns, including the possibility of creating a human being as a commodity or object for experimentation. It raises questions about the value and dignity of human life,.

Conclusion:

Every coin has two sides, and so does human cloning. Being **banned in more than 60 countries** of the world including some major countries like INDIA,UK and many more simply proposes how it's drawbacks are overpowering the boons it would indulge. **HUMAN CLONING** , bring with it many issues which we can't comply with ,in the present scenario but we can't say if our future brings us the the educational or evolutionary development , which might uncrack the major needs like **BRAIN REPLICATION** and thus worth adapting it !!!

REFERENCES

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scholar.google.com

Journals

Book: Who's afraid of human cloning

THANK YOU!