

Reproductive Strategies

Grade 11 Biology Ont.

Fill in the blanks

Methods Used in Agriculture

Selective breeding

Artificial insemination

Embryo transfer

1. _____: the process of breeding plants and animals for desirable traits. While sometimes imprecise, this strategy has produced many varieties of plants and animals.
2. _____: the transfer of (often processed) semen into a female's reproductive tract. As breeders make high-quality sperm from choice males widely available, stock improves.
3. _____: fertilizing an egg artificially and then transferring it into a recipient female. Embryos can be shipped more easily than animals.

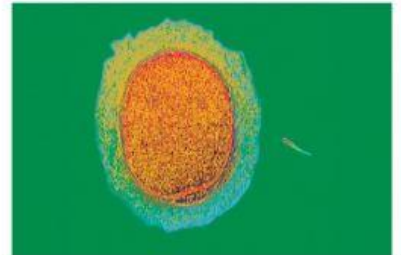
Assistive Reproductive Technologies for Humans

Drag and drop:

In vitro fertilization (IVF)

Artificial insemination

Pre-implantation genetic diagnosis



1. _____: sperm is collected and concentrated, then introduced into a woman's vagina.
2. _____: immature eggs are retrieved, joined with sperm in the lab, and embryos are inserted into the woman's uterus. This is an option for women with blocked Fallopian tubes.
3. _____: As an additional step to IVF, one of the cells of an embryo is removed and tested for specific genetic disorders before it is implanted in the uterus.

Cloning- Drag and Drop

copies

insulin

DNA

foreign

Gene cloning involves manipulating _____ to produce multiple _____ of a gene or another segment of DNA in _____ cells. The production of the protein _____ is an example of this process, which is as follows:

Drag and drop the labels in the diagram

Chromosomal DNA

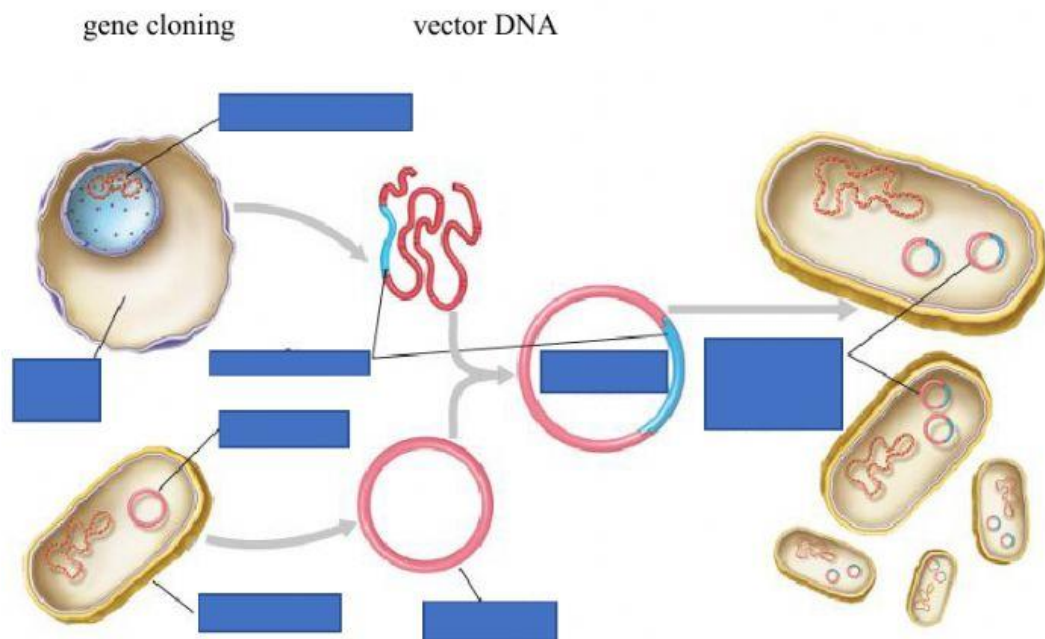
cell of interest

gene of interest

vector DNA

bacterial cell

recombinant DNA



Matching

Match the statement with the corresponding number to order the steps in cloning

2	Treat the bacterial cells so that they take in the recombinant DNA in a process called transformation . Cells now make many copies of the gene and thus produce a large amount of the protein.
5	Create recombinant DNA by inserting the insulin gene into the vector, using molecular agents to cut and join pieces together.
4	Choose an appropriate vector , such as a bacterial plasmid.
3	Isolate the insulin gene segment.
1	Harvest the insulin.

Drag and drop the label in the diagram

Somatic body cell
with desired genes

tissue culture

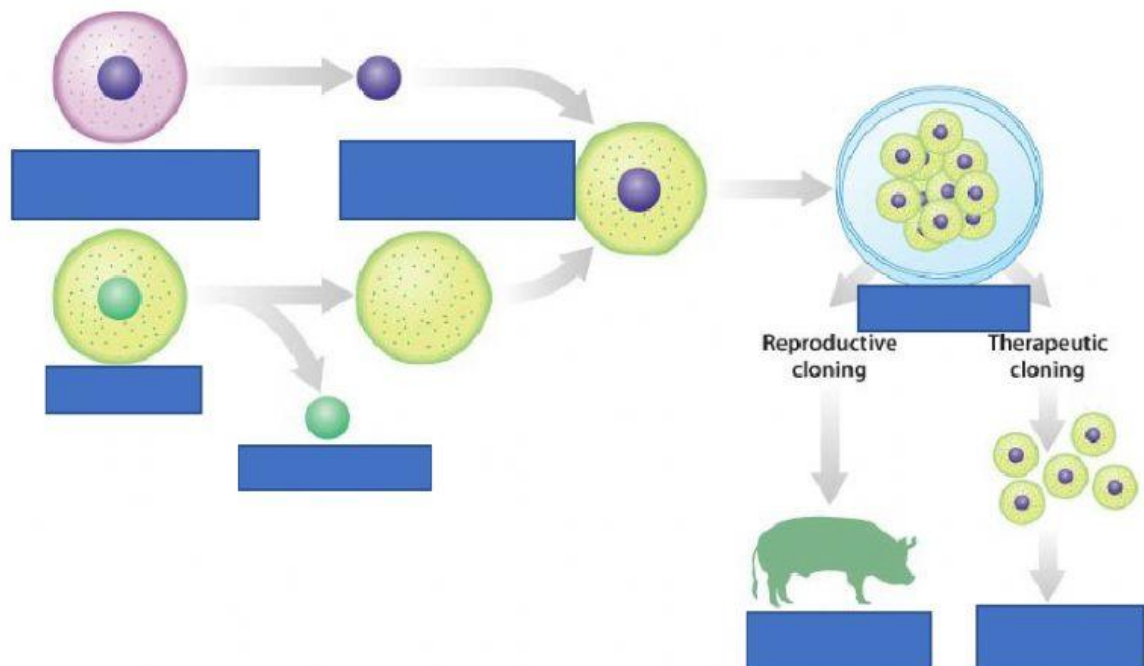
nucleus removed

nucleus fused with
denucleated egg cell

cell clones

surrogate female

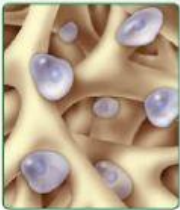
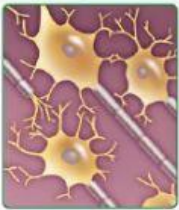
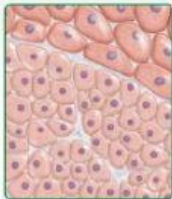
egg cell



Choose the correct term

- _____ involves producing genetically identical cells that are used to treat various diseases. The cloned cells are then used to grow new tissues and organs.
- _____ also involves production of cell clones, but with the aim of producing a genetically identical organism. Reproductive cloning in animals is rarely successful.
- Both use a process called _____. In this technique, an egg cell's nucleus is removed and replaced with the nucleus of a somatic cell of a donor.
- Scientists have discovered a way to use specialized adult cells called _____ that have been induced into a stem-cell-like state.

Match the diagram with the cells described to treat the disease stated.

	Cardiac cells for testing heart diseases
	Pancreatic cells for treating diabetes
	Nerve cells for treating neurological diseases
	Bone marrow cells for treating types of cancer

Transgenic Plant/Animal Applications

For each of the following, chose whether it belongs to plant, animal or an ethical issue

1. to increase the resistance to herbicides, insects, or viruses
2. the amount of money spent may be greater than the overall benefit
3. milk-producing can be modified to secrete silk for commercial use
4. to produce medicinal proteins such as insulin from the safflower plant for humans
5. herbicide-resistant could encourage the use of stronger herbicides, thus affecting the environment
6. transgenic milk-producing can produce medical proteins like human growth hormone
7. creation of super-weeds as species cross-reproduce, due to their herbicide genes
8. to increase the nutritional value of an organism such as golden rice
9. transgenic animals could successfully serve as organ donors for humans
10. not enough is known about the long-term effects of human consumption of transgenic foods and medicine