

April 27, 2020

1) Cloning

Warm-up:

How many embryos did it take to make Dolly?

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WHAT DO YOU KNOW ABOUT TRANSPLANTS?

Transplants

Many people need organ transplants - kidney, liver and even heart. Approximately 30 000 North Americans receive transplants each year. Twice as many are placed on waiting lists. Some die while waiting.

Scientists are trying to solve this problem. One option is to use organs from farm animals, pigs for instance. Pig organs can not be placed into humans currently because our bodies would reject the organ.

One solution being explored is injecting the pig embryo, inside the mother, with cells with human genes. The cells will divide and the human DNA will work in the pig's cells. If this worked, pig organs will not be rejected by the human body.

This is very controversial. **What do you think?**

Cloning from a plant cell

The first cloned plant cell came from the root tip of a carrot. The cell was put into a dish with growth hormones. The cells were then put into another dish without hormones. The cells started to specialize into root, stem and leaf cells.

Cloning Animals

Scientists have cloned animals too. For example, one egg from a frog was taken. The nucleus was removed and replaced by the cell nucleus from another frog. The cells divided and a frog was born. The new frog was a clone of the frog that donated the nucleus.

Mammal Cloning

Mammal clones have been created using the same kind of system as the frog.

Dolly was the first cloned sheep. What was different with Dolly is that adult cells were used instead of egg cells.

Cloning

- Watch the following about cloning and answer the questions while watching:

Clone Age Part 1

<https://www.youtube.com/watch?v=alFzScVI6c>

Clone Age Part 2

<https://www.youtube.com/watch?v=XSeA31YpNfw>

The Clone Age

1. What difference is there between the first successful cloning experiments of the 1950s and the more recent cloning of Dolly, the sheep?
2. Explain why some people feel that the development of human cloning is like the development of nuclear weapons.
3. Why would a clone be a good source for a blood, organ, or bone marrow transplant?
4. Describe the cloning process known as nuclear transfer.
5. What is the benefit of putting human genes into an animal's DNA?
6. Would a human clone be an exact duplicate - in every way - of the human it was cloned from? Why or why not?
7. Why do you think many world leaders have imposed a ban on human cloning experiments?
8. What might be some of the beneficial applications of cloning?

Attachments

Science 9 Lesson 23 -cloning.notebook

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