

Monday April 2, 2012

1) Notes on Cloning Plants and Animals

Warm-Up

How old was Dolly when she was put down?

7, 6 9/16, 1 1/2,

Celebrity Sheep Died at Age 6

Dolly, the first mammal to be cloned from adult DNA, was put down by lethal injection Feb. 14, 2003. Prior to her death, Dolly had been suffering from lung cancer and crippling arthritis. Although most Finn Dorset sheep live to be 11 to 12 years of age, postmortem examination of Dolly seemed to indicate that, other than her cancer and arthritis, she appeared to be quite normal. The unnamed sheep from which Dolly was cloned had died several years prior to her creation. Dolly was a mother to six lambs, bred the old-fashioned way.



Image credit: Roslin Institute Image Library
info taken from http://www.ornl.gov/sci/techresources/Human_Genome/elsi/cloning.shtml

Cloning

Cloning ^{is} in the natural process repeated daily in nature.
Most organisms make **exact copies** of themselves
through asexual reproduction.

Sometimes a parent splits in two, other times they
reproduce by budding or making runners.

After Watching the Video:

What benefits to humanity does human cloning offer?

Do these benefits outweigh the risks?

What risks are there with cloning?

Would you still create a clone of yourself?

Cloning Vocabulary

ethical: Relating to or involving questions of right and wrong

Context The idea of cloning humans and other animals raises ethical and moral concern.

genes: The building blocks of DNA, which serve as transmitters of hereditary characteristics

genetic engineering: The process of altering a living being's genes to create a desired effect

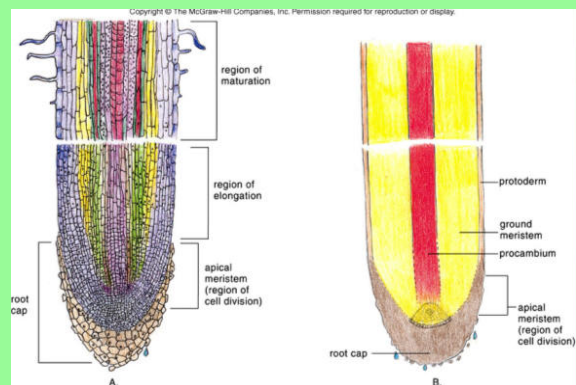
Context Genetic engineering may produce a redder tomato, a taller giraffe, or a cow that gives more milk.

transgenics: The process of replacing the nucleus of one animal's cell with the nucleus of a different animal's cell

Transgenics
Genetics.

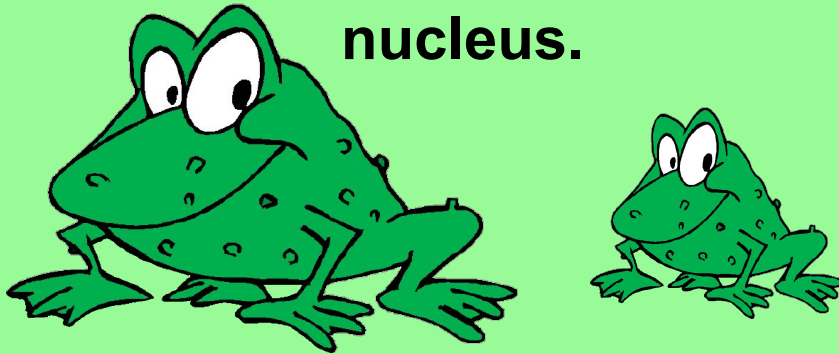
Cloning from a plant cell

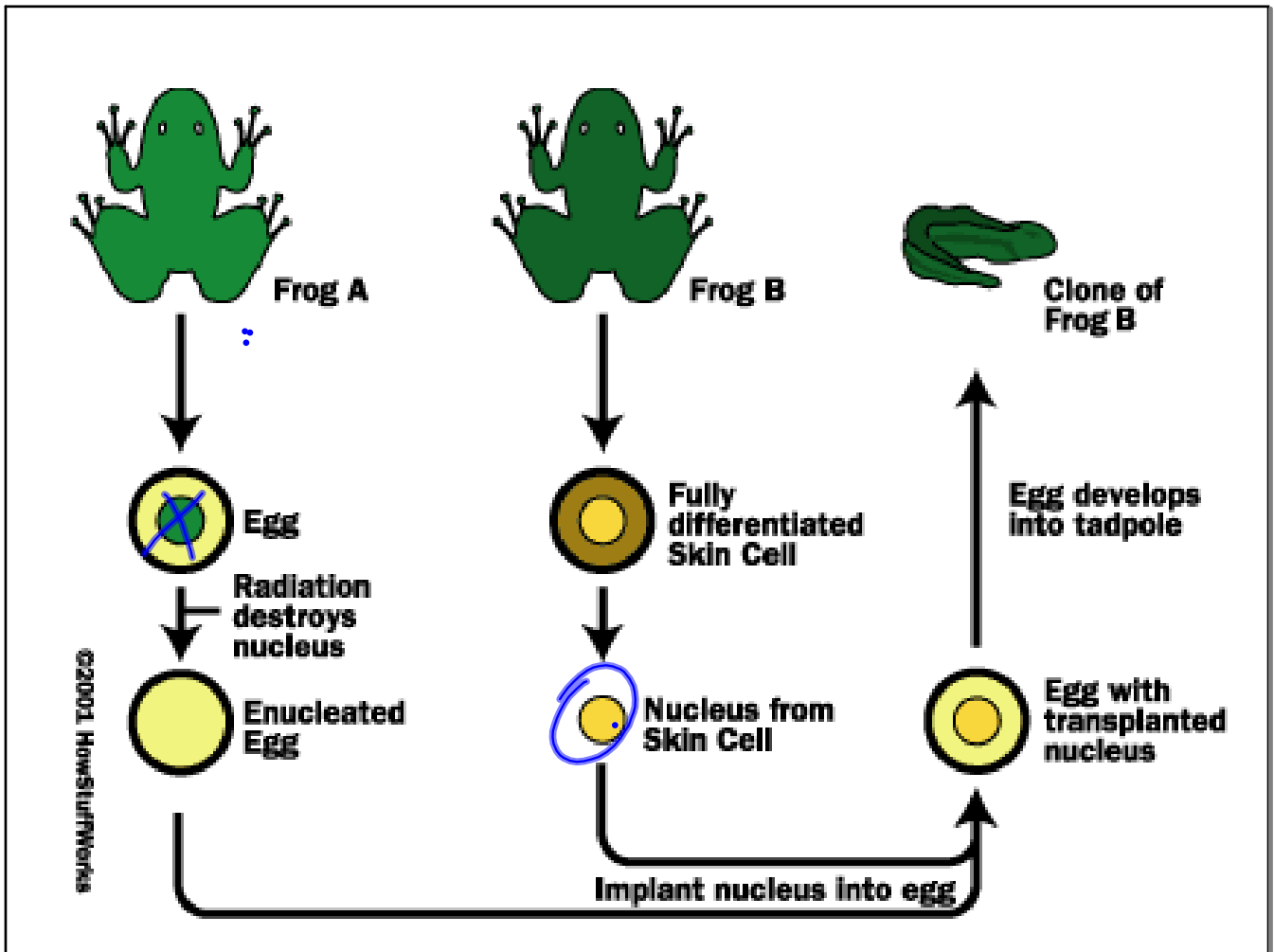
The first cloned plant cell came from the root tip of a carrot. The cell was put into a dish with growth hormones. The cells were then put into another dish without hormones. The cells started to specialize into root, stem and leaf cells.



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.

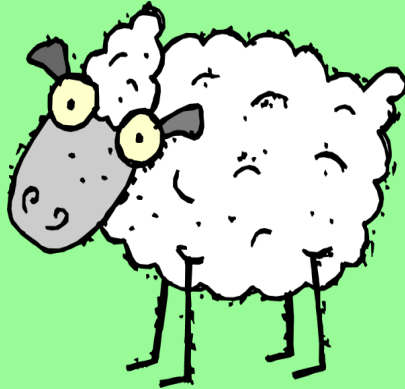




Mammal Cloning

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.

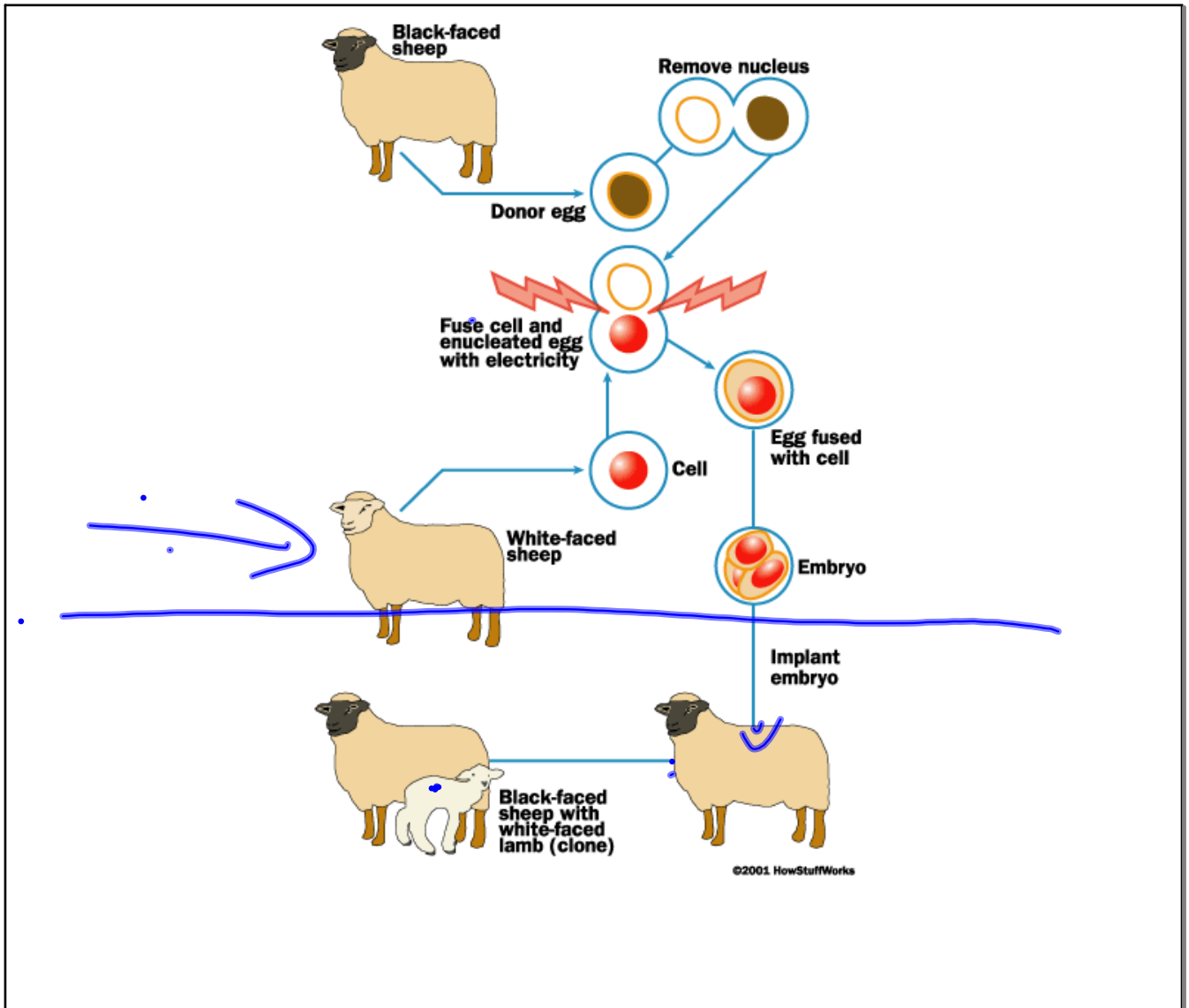


Cloning

Do understanding concept questions:

pg 197 1,2,3,4,6

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Answers pg 197 #1-6

1. Binary Fission occur when the mother cell divides into two identical daughter cells or clones.
2. Plants are cloned by taking a single cell near the root tip and putting it in a dish with growth hormones. The cells are then taken from that dish and put into another dish with no growth hormones. The cells will then start to specialize into roots, stems or leaves.
3. An enucleated cell is a cell without the nucleus.

4. Nuclear transplants are used to clone animals such as frogs by
 - a. taking the nucleus from an unfertilized egg cell (enucleated cell)
 - b. extracting a nucleus from a frog embryo
 - c. the nucleus from the frog embryo is then inserted into the unfertilized egg cell (enucleated cell).
 - d. this cell develops into an adult frog.

6. Dolly's cloning was unique because she was cloned from an adult cell not an embryonic cell.