Today's Plan

1) Clone Age Part II
2) Notes on Cloning Plants and Animals

Warm-up:

1. What was the worlds first cloned animal?

2. What was it named?

3. Despite years of research, over _____ of cloning attempts fail, even with extensive veterinary intervention.

Oct 17-4:48 PM

1. Sheep
2. Dolly
3. 95 %

Oct 17-4:50 PM

The Clone Age
Part 2

Oct 18-2:16 PM

After Watching the Video:

Fully explain the process of nuclear transplanting using the explanation from the video, as well as your own research

How could cloning be used beneficially (for good)?

If it was possible, would you make a clone of yourself? Do you think it is ethical (morally right)? Why or why not?

Oct 18-2:02 PM

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

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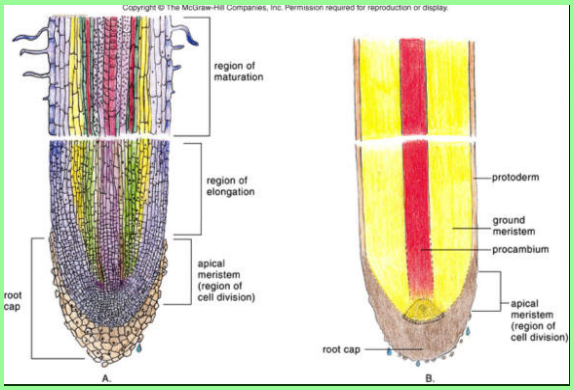
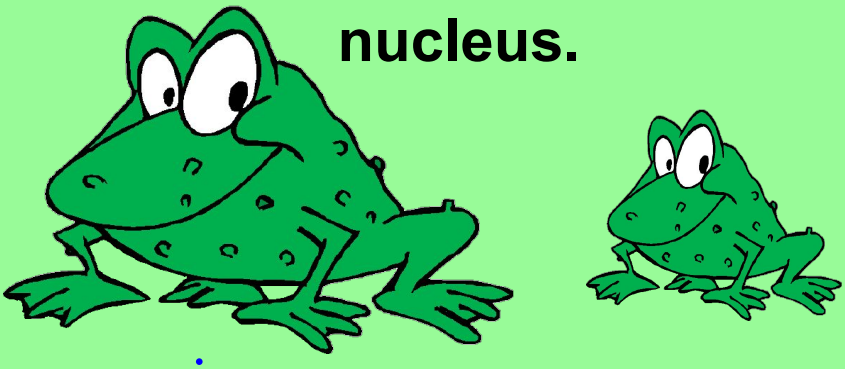
Cloning from a plant cell

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.

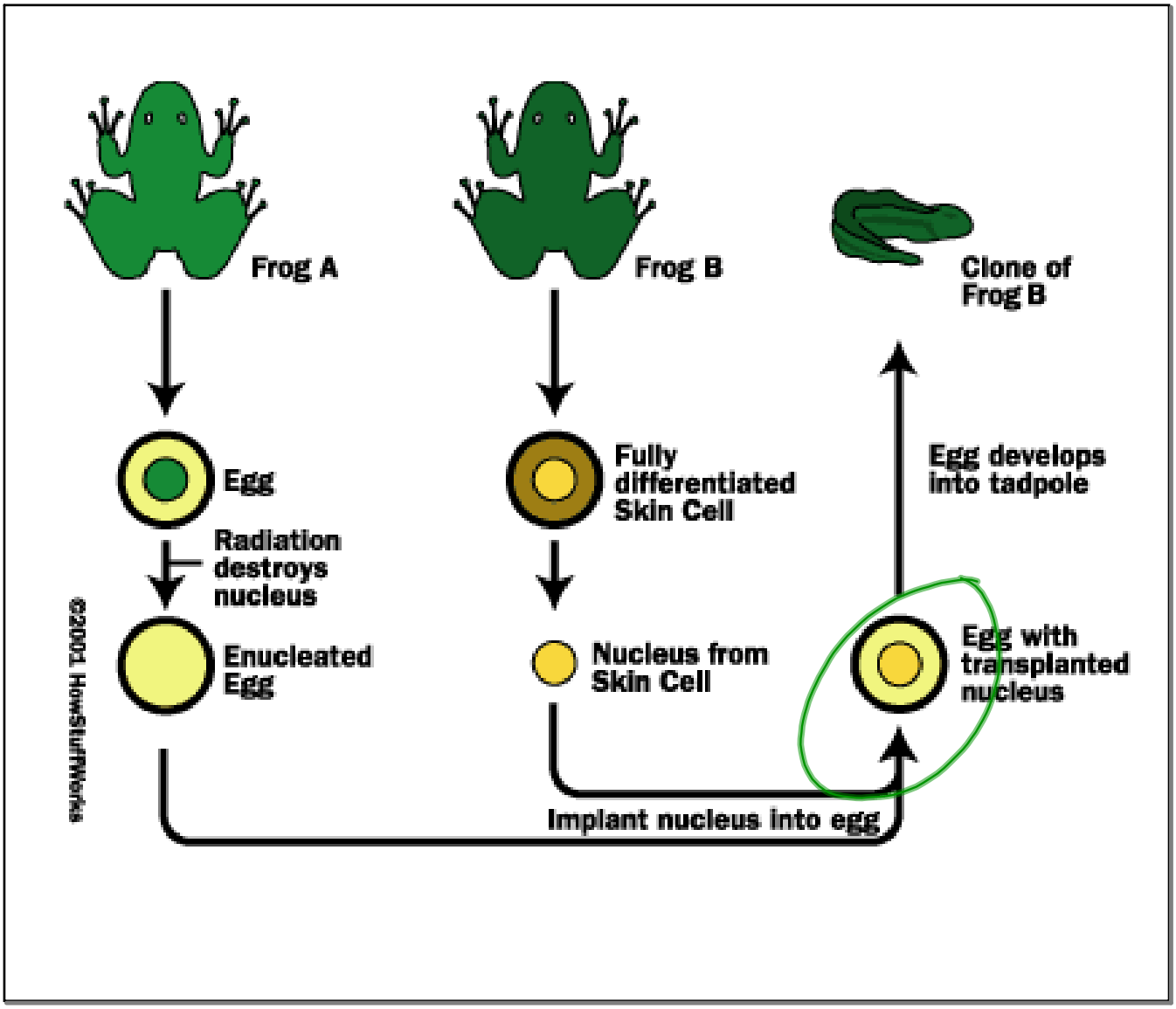


Cloning Animals

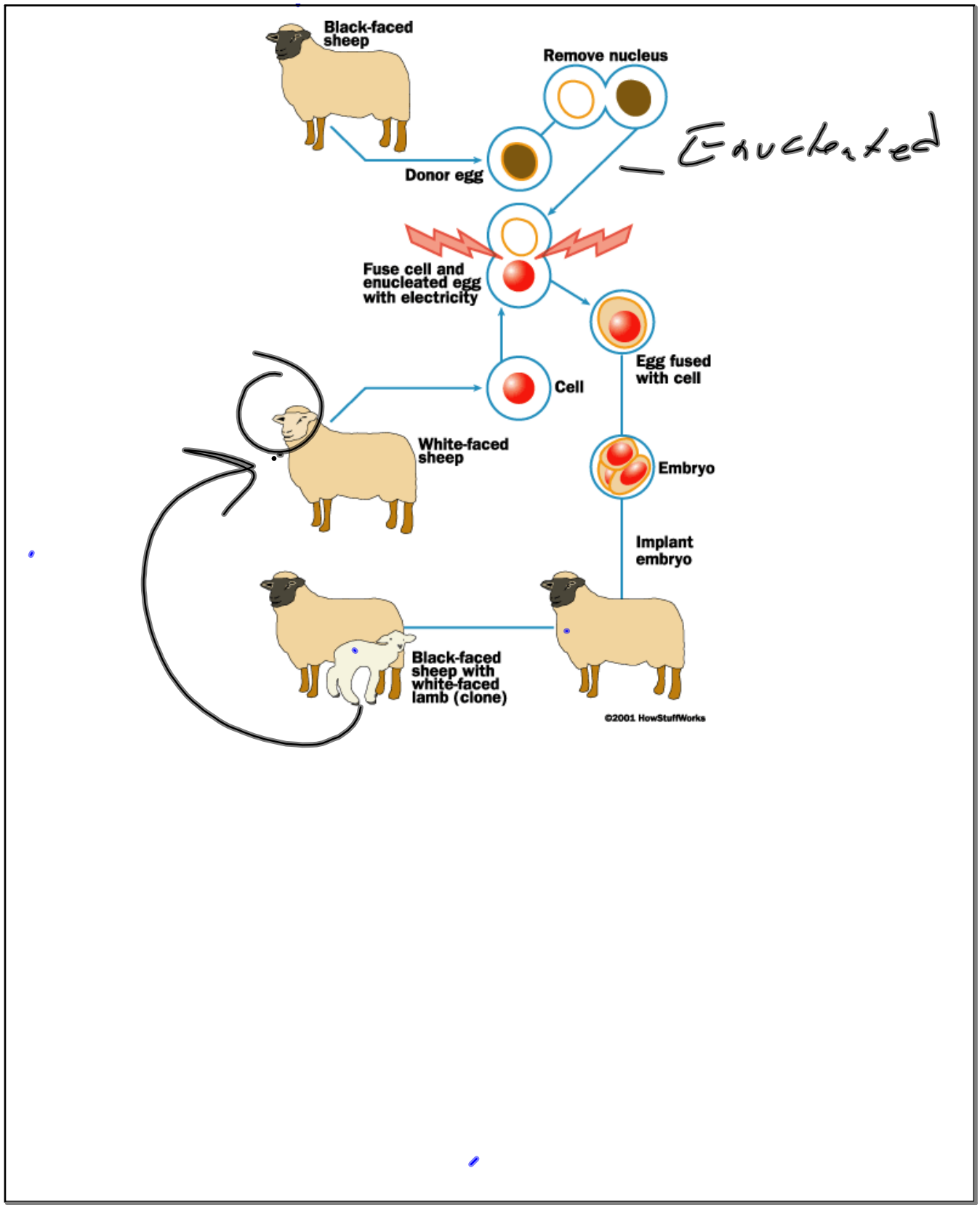
Scientists have cloned animals too. For example, one egg from a frog was taken. The nucleus was removed and replaced by the cell nucleus from another frog. The cells divided and a frog was born. The new frog was a clone of the frog that donated the nucleus.



Oct 8-3:09 PM


Frog A
Frog B
Clone of Frog B
Egg
Fully differentiated Skin Cell
Egg develops into tadpole
Radiation destroys nucleus
Enucleated Egg
Nucleus from Skin Cell
Egg with transplanted nucleus
Implant nucleus into egg
©2001 HowStuffWorks

Oct 12-3:01 PM


Black-faced sheep
Remove nucleus
Donor egg
Enucleated
Fuse cell and enucleated egg with electricity
Egg fused with cell
Cell
White-faced sheep
Embryo
Implant embryo
Black-faced sheep with white-faced lamb (clone)
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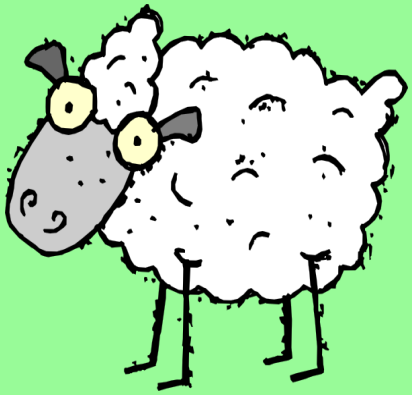
Oct 12-3:09 PM

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.



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Transgenics

Transport Genetics.

->Is transplanting the genetic information from one cell, belonging to one organism, into a cell belonging to another organism.

Cloning

Do understanding concept questions:

pg 197 1,2,3,4,6

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Sep 30-9:29 PM

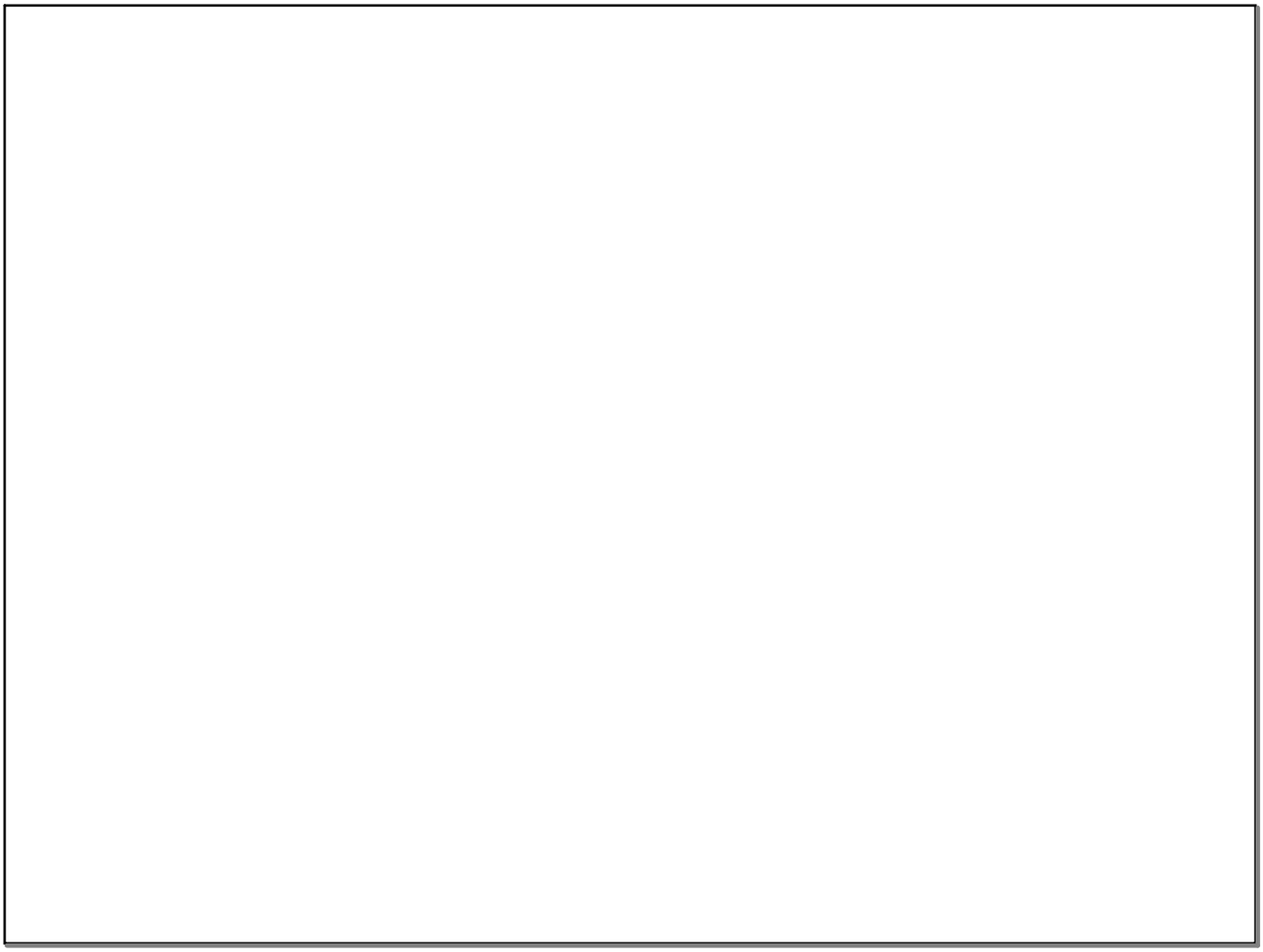
Answers pg 197 #1-6

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.

Oct 17-4:54 PM



Apr 2-8:24 AM

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 en embryonic cell.

Oct 17-5:09 PM