

Biotechnology WebQuest

WEBSITE #1: <http://www.pbs.org/wgbh/nova/sheppard/analyze.html>

1. DNA is unique for everyone with one exception. What would be an example of that exception? _____
2. What are DNA Fingerprints used for?
 - A) _____
 - B) _____

Part I: "It Takes A Lickin'!" (click on NOVA picture just below the paragraph)

3. What "crime" was committed? _____
4. What bodily fluid was removed from the "crime scene" to get the DNA? _____
5. How many suspects are there in this crime? _____
CLICK NEXT.

Part II: "DNA Fingerprinting at the NOVA Lab!" (Follow the steps and answer the questions below)

6. What does a Restriction Enzyme do? _____
7. What is Agarose Gel? _____
8. What is Electrophoresis? _____
9. Smaller fragments of DNA move _____ that longer strands.
10. Why do you need to place a nylon membrane over the gel? _____
11. Probes attach themselves to _____
12. Which chemical in your "Virtual Lab" is radioactive? _____
13. Sketch your DNA Fingerprint in the box to the right.
14. Based on your DNA Fingerprint... **WHO COMMITTED THE CRIME???** _____



WEBSITE #2: <http://www.amnh.org/ology/>

Click on the GENETICS tab to the left, then scroll down and Click on the Quest for the Perfect Tomato. Then click Food for Thought.

15. Give **two** examples of genetically modified foods.

WEBSITE #3: <http://www.pbs.org/wgbh/harvest/coming/coming.html>

Click on each of the foods on the table to see what research is being done to bioengineer the foods. List 3 foods and describe how they are being modified.

- 16) _____
- 17) _____
- 18) _____

WEBSITE #4: <https://learn.genetics.utah.edu/content/cloning/>

For each section, answer the questions.

What is Cloning?

19. Who is Dolly? _____
20. When a zygote divides into separate cells, it is called: _____
21. Somatic cells are also called _____.
22. In order to clone a gene, a gene is inserted into a _____.
23. In order to create an embryo from a somatic cell, the donor egg cell must have its _____ removed.

Is it Cloning? Or Not?

32. For each of the following scenarios, indicate YES (it is cloning) or NOT (it is not cloning).

- _____ Sperm taken from a male goat is combined with a female's egg in a Petri dish. The resulting embryo is implanted into the female's uterus to develop.
- _____ A sheep embryo, composed of 16 cells, is removed from the mother's uterus and separated into individual cells. Each cell is allowed to multiply, creating 16 separate embryos, which are then implanted in different female sheet to develop to maturity.
- _____ A cow with many desirable traits is stimulated with hormones to produce a number of egg cells. Each of these eggs is fertilized and implanted into a surrogate mother.
- _____ In vitro fertilization
- _____ Cell nuclei from an extinct woolly mammoth are placed into enucleated cow cells.

Cloning WebQuest

Click and Clone.

24. List all the materials needed to clone a mouse.

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25. Place the following steps in the box to the right in correct order.

26. There are two time gaps in the process of cloning. What are they? For example, what do you have to wait for?

27. What color will the cloned mouse be? _____
What is the name of this mouse? _____

- | | |
|-------|--|
| _____ | Stimulate cell division |
| _____ | Deliver baby |
| _____ | Remove & discard nucleus from egg cell |
| _____ | Isolate donor cells from egg donor & germ cell donor |
| _____ | Transfer somatic cell nucleus into egg cell |
| _____ | Implant embryo into surrogate mother |

Why Clone?

28. Why is cloning extinct animals problematic?

29. What are some reasons a person might want to clone a human?

Cloning Myths

30. Briefly describe in your own words, why CC the cat was not identical in color to Rainbow, even though she was a clone.

31. What is "nature vs. nurture"?