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# Cloning Review

Go to the Learn.Genetics site at <http://learn.genetics.utah.edu/>
Under the "Genetic Technology" Menu, Click on "Cloning"

Browse the articles at the site to find the answers to the following questions.

## What is Cloning?

1. Define Cloning: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What is the difference between natural twinning and artificial twinning?

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3. What is SCNT? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Click and Clone:

## 6. Place the following steps in the correct order

## \_\_\_\_\_\_\_\_Stimulate cell division\_\_\_\_\_\_\_\_Delivery of clone\_\_\_\_\_\_\_\_ Remove and discard the nucleus from the egg cell\_\_\_\_\_\_\_\_ Isolate donor cells from egg donor and somatic cell donor\_\_\_\_\_\_\_\_ Transfer the somatic cell nucleus into the egg cell\_\_\_\_\_\_\_\_ Implant embryo into a surrogate mother

## Why Clone?

10. List the four main reasons given on the page for justifying cloning:

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11. What is a stem cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. **Do you** think we should work to develop the technology to clone a human being (reproductive cloning) to make copies of humans? **EXPLAIN.**

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# Epigenetics and A Tale of Two Mice

1. Go to the website <http://www.pbs.org/wgbh/nova/body/epigenetics.html>
2. Click on “Launch Video” for the Epigenetics segment (**NOTE: you may instead read the transcript if you have no headphones!**), answer what you can of the questions below.
3. Click on the “A Tale of Two Mice” related link and launch the interactive or read the transcript for this segment as well to finish answering the questions

**QUESTIONS:**

1. Define “epigenome”
2. Which mouse in the example has the “healthiest” expression of genes – the brown or the yellow?
3. Approximately how many genes make up the human genome? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. If the genome is like the hardware of a computer, the epigenome would be like the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. In the mouse experiment, what happened when pregnant mothers were fed BPA?
6. Do identical twins express/regulate their genes in exactly the same way even though they have inherited the exact same alleles/genes from their parents?
7. Can we clearly say that our “health” is due solely to nature **or** nurture?
8. Why do you think we look to mice to experiment with so we can learn more about the roles of the genome and epigenome? Why don’t we experiment with humans (for example, feed pregnant women BPA)?
9. Explain what you have learned regarding the role of lifestyle, an individuals and their parents’, on the expression/regulation of an individual’s genes.