



Cloning Web Quest

Introductory Reading

Go to: <http://learn.genetics.utah.edu/content/tech/cloning/whatiscloning/>

1) What is cloning?

The first ever mammal to be cloned from an adult somatic cell (any cell other than sperm or egg) was Dolly the sheep in 1997. To make Dolly, researchers used a technique called **Somatic Cell Nuclear Transfer**. Researchers isolated a **somatic cell** from an adult female sheep. Next, they **transferred** (moving an object from one place to another) the **nucleus** (the enclosed compartment that contains all the information that cells need to form an organism) from that cell to an egg cell from which the nucleus had been removed. After a couple of chemical tweaks, the egg cell, with its new nucleus, was behaving just like a freshly fertilized zygote. It developed into an embryo, which was implanted into a surrogate mother and carried to term. The lamb, Dolly, was an exact genetic replica of the adult female sheet that donated the somatic cell nucleus to the egg. Our first activity will walk you through the steps of Somatic Cell Nuclear Transfer.

Source: <http://gslc.genetics.utah.edu/units/cloning/whatiscloning/>

Activity #1 Go to <http://learn.genetics.utah.edu/content/tech/cloning/clickandclone/>

→ **Your mission is to create a genetically identical clone of Mimi, a brown female mouse!**

2) Who are we cloning?

3) Who is the egg cell donor?

4) Who is the surrogate mother?

o **Step 1:** Isolate a donor _____ cell from Mimi, and a donor _____ cell from Megdo

o **Step 2:** Remove the _____ from the egg cell.

5) What is the term for removing the nucleus from the egg cell? _____

o **Step 3:** Transfer the somatic cell _____ (from _____ (who)) and transfer it to the enucleated egg cell (from _____).

6) Why do the new DNA and the egg cell need some time to adjust to one another?

o **Step 4:** Stimulate the egg cell to begin cell division (also known as _____).

7) How do we stimulate cell division?

8) After stimulating cell division we wait until the cell has divided a few times, creating a ball, or _____, of 16 cells in the petri dish.

o **Step 5:** Implant the embryo in the womb of _____ the surrogate mother.

▪ The embryo continues to increase in cell number and begins to _____ its cells into various _____ types. The pregnancy will continue for about 19 days.

o **Step 6:** Deliver the baby mouse clone of Mimi.

9) What color is the clone? _____

10) Why?

11) What is her name? _____