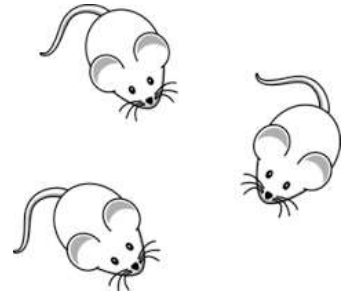


Name:

## Cloning

### Introduction

Clones are organisms that are exact genetic copies. Every single bit of their DNA is identical. Clones can happen naturally—identical twins are just one of many examples.



Many people first heard of cloning when Dolly the Sheep showed up on the scene in 1997. Artificial cloning technologies have been around for much longer than Dolly, though.

There are two ways to make an exact genetic copy of an organism in a lab: artificial embryo twinning and somatic cell nuclear transfer.

Artificial embryo twinning is a relatively low-tech way to make clones. As the name suggests, this technique mimics the natural process that creates identical twins. In nature, twins form very early in development when the embryo splits in two. Twinning happens in the first days after egg and sperm join, while the embryo is made of just a small number of unspecialized cells. Each half of the embryo continues dividing on its own, ultimately developing into separate, complete individuals. Since they developed from the same fertilized egg, the resulting individuals are genetically identical. Artificial embryo twinning uses the same approach, but it is carried out in a Petri dish instead of inside the mother. A very early embryo is separated into individual cells, which are allowed to divide and develop for a short time in the Petri dish. The embryos are then placed into a surrogate mother, where they finish developing. Again, since all the embryos came from the same fertilized egg, they are genetically identical.

Now, you are going to have a closer look at somatic cell nuclear transfer. You will try to clone your own organism using this method.

<http://learn.genetics.utah.edu/content/cloning/clickandclone/>

### Usefull terms:

*tools* – nástroje

*surrogate* – náhradný

*sharp x blunt* – ostrý x tupý

*adjust* – prispôbiť sa

*reboot* – opätovne zviazať

*womb* – maternica, lono

### Activity I: Take notes of cloning process

1. What kind of tools do you need to clone?

2. There are three mice provided in cloning. What is their role? (write name, colour and purpose)

3. Write the process of cloning step-by-step:

4. What is the colour of the cloned mouse (Mini-Mimi) and why?

5. What was the name of first survivor clone mouse?

**Activity II:** Answer the question (you can use the internet)

1. Why Dolly the Sheep is so famous?

2. What practical application may cloning provided?

3. Is human cloning forbidden?

4. What is your opinion on human cloning?