The Cloning of Mimi

As we previously discussed, cloning is a reproductive technology that produces genetically identical offspring, similar to asexual reproduction. The following interactive site will guide you through the steps involved in cloning a brown mouse named Mimi. In order to get started, here are the main characters involved:

Mimi-the brown mouse to be cloned
Megdo- the black mouse that will serve as the egg cell donor
Momi- the white mouse that will serve as the surrogate mother, who will grow the clone of Mimi

Step	Key Events
1	Somatic (body cell) is removed from the mouse to be cloned (Mimi) and an egg cell is removed from Megdo.
2	The nucleus is removed from the egg cell and discarded.
3	The nucleus is removed from the body cell donor and put into the empty egg cell.
4	The egg cell containing the somatic cell (body cell) nucleus is stimulated to start dividing by cleavage using hormones.
5	The blastula is put in the uterus of the surrogate (Momi)
6	The mouse pup clone is born.

Conclusions: (Answer on a separate sheet or the back of this one) *Use complete sentences*

1. Which mouse is most genetically similar to the clone? How do you know?
   Mimi, because she supplied the somatic cell nucleus.

2. Explain why Megdo (black mouse) and Momi (white mouse) are necessary for the cloning process.
   Megdo provided the egg cell and Momi is the surrogate.
3. Why was the nucleus removed from the egg cell donor Megdo? What was placed inside this enucleated egg cell?
   We do not want the genetic material from Megdo, we only want the genetic material from Mimi (the somatic cell nucleus from Mimi is put in the empty egg cell).
4. Discuss two possible advantages and disadvantages for cloning living organisms.
   Advantages- more food, better quality food, organ donor?
   Disadvantages- ethical issues, expensive, decreased life expectancy.
5. Would you clone yourself if possible? Why?

*Cloning is most similar to asexual reproduction as offspring is genetically identical to parent and the DNA from only one parent is involved.