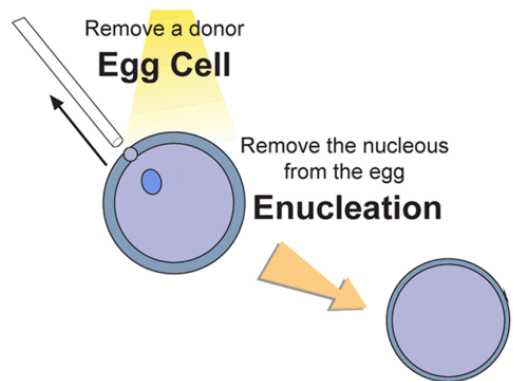


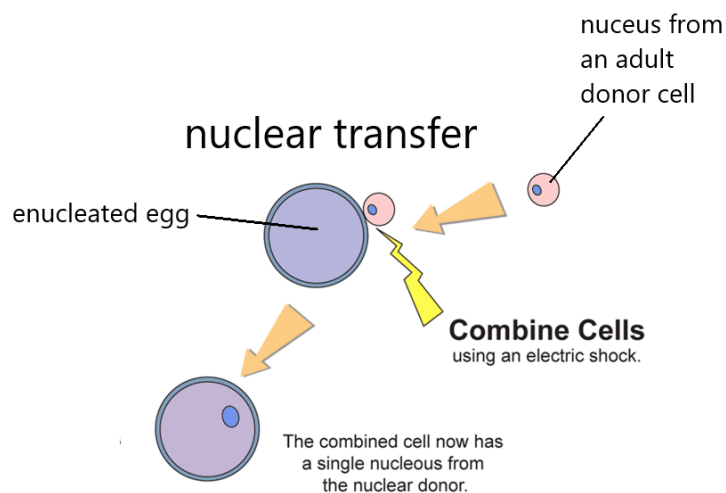
Cloning and Stem Cell Review

1. What is a clone?
2. If you were cloned in what ways would your clone be like you?
3. If you were cloned in what ways would your clone NOT be like you?
4. What type of twins are clones? How are they formed?
5. In 1970 John Gurdon came to what important conclusion regarding cloning with animals?
6. Define and/or draw a picture representing enucleation.
7. Define and/or draw a picture representing nuclear transfer.
8. Who was dolly?
9. Exactly how was Dolly proven to be a clone.
10. Explain the 2 major potential applications of human cloning.
11. What is your opinion on human cloning for reproductive purposes?
12. What is your opinion on human cloning for medical purposes?
13. What is a stem cell (two points)?
14. Explain the three potential applications of stem cells.
15. How are embryonic stem cells obtained?
16. How are fetal stem cells obtained?
17. Discuss some ethical concerns regarding obtaining stem cells from the above 2 methods.
18. Explain somatic cell nuclear transfer.
19. What is your opinion on Stem Cell research? Should it be conducted in Canada on embryonic stem cells and why or why not?

1. What is a clone?
Exact genetic duplicate of an organism
2. If you were cloned in what ways would your clone be like you?
all characteristic and traits controlled by your genes (eye color, blood type etc)
3. If you were cloned in what ways would your clone NOT be like you?
all characteristic and traits NOT controlled by your genes (books you read, things you've learned, memories etc)
4. What type of twins are clones? How are they formed?
Identical twins. Formed when a single egg fertilized by a single sperm divides forming an embryo which in turn splits into 2 separate embryos which each develop into a fetus and baby and later identical twin.
5. In 1970 John Gurdon came to what important conclusion regarding cloning with animals?
The egg was the key cell that needed to be used for successful adult animal cloning.
6. Define and/or draw a picture representing enucleation.



7. Define and/or draw a picture representing nuclear transfer.



8. Who was dolly?
A sheep that was the worlds first cloned mammal.

9. Exactly how was Dolly proven to be a clone.
DNA testing.
10. Explain the 2 major potential applications of human cloning.
 - 1) reproduction (making more individuals)
 - 2) medical purposes (cell, tissue, organ therapy)
11. What is your opinion on human cloning for reproductive purposes?
Answers vary
12. What is your opinion on human cloning for medical purposes?
Answers vary
13. What is a stem cell (two points)?
Cells that can divide
Cells that can differentiate into the various types of specialized cells (skin cells, blood cells etc)
14. Explain the three potential applications of stem cells.
Testing new drugs
Studying genetic diseases and prevention
Medical research and therapy (cell, tissue, organ therapy)
15. How are embryonic stem cells obtained?
From discarded human embryos from IVF clinics
16. How are fetal stem cells obtained?
From the fetal tissue of aborted fetuses
17. Discuss some ethical concerns regarding obtaining stem cells from the above 2 methods.
Both are considered morally questionable by many as in both cases a life is terminated
18. Explain somatic cell nuclear transfer.
Use the “Dolly Technique” of enucleation and nuclear transfer to create a blastocyst with the intent of harvesting the inner cell mass which contains the stem cells.
19. What is your opinion on Stem Cell research? Should it be conducted in Canada on embryonic stem cells and why or why not?
Answers Vary