

Answers pg 197 #1-6

1. Binary Fission occur when the mother cell divides into two identical daughter cells or clones.

2. Plants are cloned by taking a single cell near the root tip and putting it in a dish with growth hormones. The cells are then taken from that dish and put into another dish with no growth hormones. The cells will then start to specialize into roots, stems or leaves.

3. An enucleated cell is a cell without the nucleus.

4. Nuclear transplants are used to clone animals such as frogs by

- taking the nucleus from an unfertilized egg cell (enucleated cell)
- extracting a nucleus from a frog embryo
- the nucleus from the frog embryo is then inserted into the unfertilized egg cell (enucleated cell).
- this cell develops into an adult frog.

6. Dolly's cloning was unique because she was cloned from an adult cell not an embryonic cell.

2. DNA replication is required for cells to divide. The genetic material, regulating cell activity, must be found in each new cell.

3a. DNA replication

3b. The duplication of genetic material is needed for cell division since the material must be present in both daughter cells.

5. DNA replicates by separating/unzipping the two DNA strands and then each strand creates a copy of itself matching base pairs. A (adenine) pairs with T (thymine) and C (cytosine) pairs with G (guanine).

6. DNA fingerprinting: DNA is removed from the nucleus, special chemicals cut apart the DNA, segments of DNA are placed on a gel and pulled across the surface with an electrical current making bands of DNA.

8. Nuclear transplants occur when they take the nucleus from one cell and place it in another cell.

10. The cells of a salamander are not as specialized.

11. Stem cells are embryonic cells that have the ability to divide into different types of cells.

12. Cancer cells divide faster than normal cells and they can divide on their own

13. Viruses, radiation, exposure to chemicals.

14. Stop smoking, proper diet, reduce sunlight exposure.

15. Because scientists had believed that specialized cells couldn't be used for cloning.

19a. The immature cells are capable of cell division. This would permit the regeneration of cartilage in the end of long bones.

19b. People who have cartilage problems in their knees would be able to make new cartilage.

24. Answers will vary