Genetic engineering questions

Short Answer

1. What are structures C and D in Figure 13-1, and what is their significance?

2. What is a transgenic organism?

Essay

3. In what ways has selective breeding been useful to humans today and in the past?
**USING SCIENCE SKILLS**

4. **Interpreting Graphics** In Figure 13-2, what do the bands shown in B consist of?

5. **Interpreting Graphics** Which group of bands in Figure 13-2 moved faster, C or D? Why?

6. **Inferring** What is occurring in A in Figure 13-2?

7. **Inferring** In Figure 13-2, why are the bands in B moving toward the positive end of the gel?

8. **Drawing Conclusions** In Figure 13-2, were the three DNA samples shown in A identical? Explain your answer.
USING SCIENCE SKILLS

9. **Interpreting Graphics** In the cloning shown in Figure 13-4, which sheep is the source of the nucleus in the fused cell?

10. **Inferring** In Figure 13-4, why was the nucleus removed from the egg cell?

11. **Interpreting Graphics** Which animal in Figure 13-4 is a clone?

12. **Interpreting Graphics** In the cloning shown in Figure 13-4, which sheep provided an egg cell?

13. **Inferring** Which two animals in Figure 13-4 are genetically identical?
Genetic engineering questions
Answer Section

SHORT ANSWER

1. Structures C and D are the sticky ends of a DNA fragment, which allow the fragment to be inserted into a piece of DNA that has the same sticky ends.
2. A transgenic organism is an organism produced by genetic engineering that contains genes from another kind of organism.

ESSAY

3. Selective breeding has allowed humans to domesticate animals, such as horses, cats, and dogs, and to produce crop plants. It also has allowed humans to maintain and improve existing varieties of organisms and to produce new varieties.

OTHER

4. The bands consist of DNA fragments.
5. The bands in group D moved faster because they consist of smaller DNA fragments.
6. The restriction enzyme is cutting the DNA into fragments.
7. The bands consist of DNA, which is negatively charged.
8. No, the DNA samples were not identical because they produced different patterns of bands on the gel.
9. Sheep A
10. The nucleus was removed from the egg cell to make sure that all of the DNA in the clone is from a single sheep.
11. The lamb is a clone.
12. Sheep B
13. Sheep A and the lamb are genetically identical.