Name _____ Class _____ Date _____

Section 13–4 Applications of Genetic Engineering (pages 331–333)

TEKS FOCUS: 3F History of biology and contributions of scientists; **TEKS SUPPORT:** 6A Illustrate how information for specifying traits is carried in DNA

This section explains how transgenic organisms are made. It also describes what a clone is and how animal clones are produced.

Introduction (page 331)

1. How do scientists know that plants and animals share the same basic mechanisms of gene expression? _____

_____

Transgenic Organisms (pages 331–333)

2. What is a transgenic organism? _____

_____

_____

3. Describe how to make a transgenic organism. _____

_____

_____

_____

_____

4. Genetic engineering has spurred the growth of _____, a new industry that is changing the way we interact with the living world.

5. Circle the letter of each sentence that is true about transgenic microorganisms.

a. Transgenic bacteria will never produce useful substances for health and industry.

b. Transgenic bacteria produce human proteins cheaply and in great abundance.

c. People with insulin-dependent diabetes are now treated with pure human insulin.

d. In the future, transgenic organisms may produce the raw materials for plastics.

6. Is the following sentence true or false? Researchers are working on developing transgenic chickens that will be resistant to bacterial infections that can cause food poisoning. _____

7. List four ways in which transgenic animals have been used.

a. _____

b. _____

c. _____

d. _____

8. Many transgenic plants contain genes that produce a natural _____, so the crops do not have to be sprayed with pesticides.

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9. Circle the letter of each item that might soon be produced by transgenic plants.

a. human antibodies **c.** rot-resistant foods

b. plastics **d.** vitamin A-enriched rice

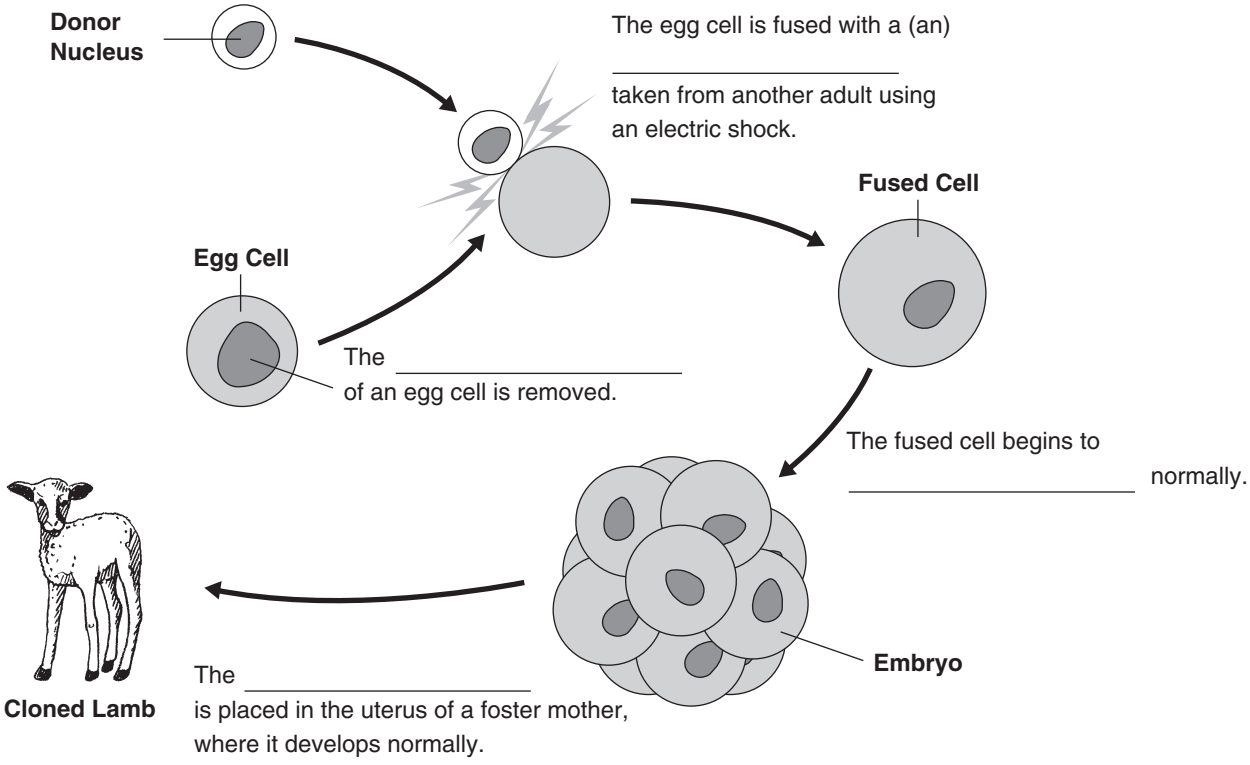
Cloning (page 333)

10. What is a clone? _____

_____

11. Is the following sentence true or false? For years, many scientists thought that it was impossible to clone bacteria. _____

12. Complete the sentences in the diagram below to show the steps in cloning a sheep.



13. Is the following sentence true or false? All cloned animals are also transgenic.

_____

14. What kinds of mammals have been cloned in recent years? _____

_____

_____