Name Date Class

Content Mastery

Chapter 13 Genetic Technology

Get the Big Picture

Study the paragraphs in the boxes and answer the questions.

Scientists have learned how to move genes from one organism to another. This process is called **genetic engineering.** Genetic engineering can be used to give an organism new traits. For example, certain bacteria have been developed with the ability to clean up oil spills. They can break down oil into harmless substances. Scientists also use genetically engineered bacteria to improve agriculture and to treat human disease.

1. In genetic engineering, what is moved from one organism to another one?

_____

2. Give two examples of how genetic engineering can help humans.

_____

_____

_____

_____

The human genome is made up of all the genes on the 46 human chromosomes. Scientists are now mapping the human genome. They intend to use this map to detect, treat, and cure genetic disorders. DNA fingerprinting is another use of this technology. Every person's DNA is unique. Therefore, DNA from blood, skin, or hair found at a crime scene may be compared with the DNA of a crime suspect. This evidence could give clues about the guilt or innocence of a suspect.

3. What is the human genome made of?

_____

_____

4. Why is the mapping of the human genome important?

_____

_____

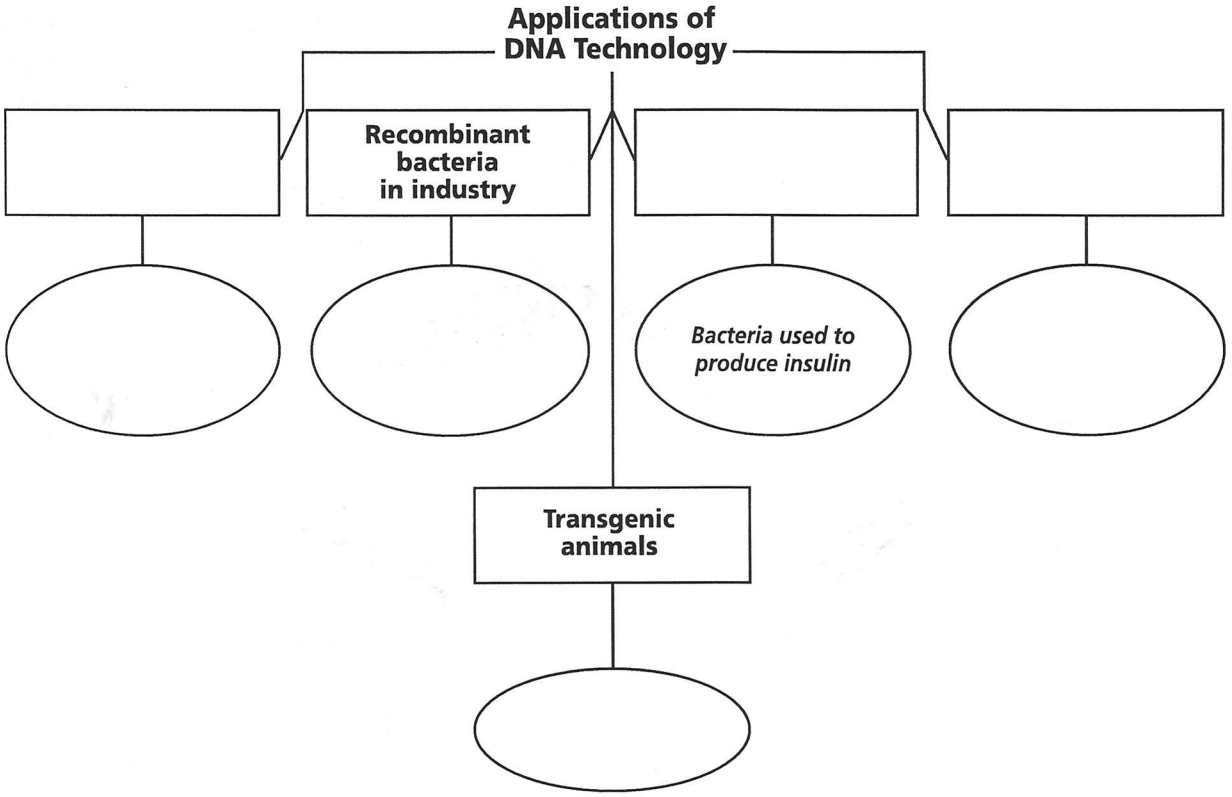
_____

_____

Section 13.1 Applied Genetics
Section 13.2 Recombinant DNA Technology

Complete the Idea Map

Find the red heading *Applications of DNA Technology* in Chapter 13 of your textbook. Then find the blue headings and fill in the rectangles in the idea map below. They describe ways that DNA technology can be used. Next, write an example of each use in the circle below it. Two rectangles and one circle have been filled in for you.



Use the idea map to answer the questions.

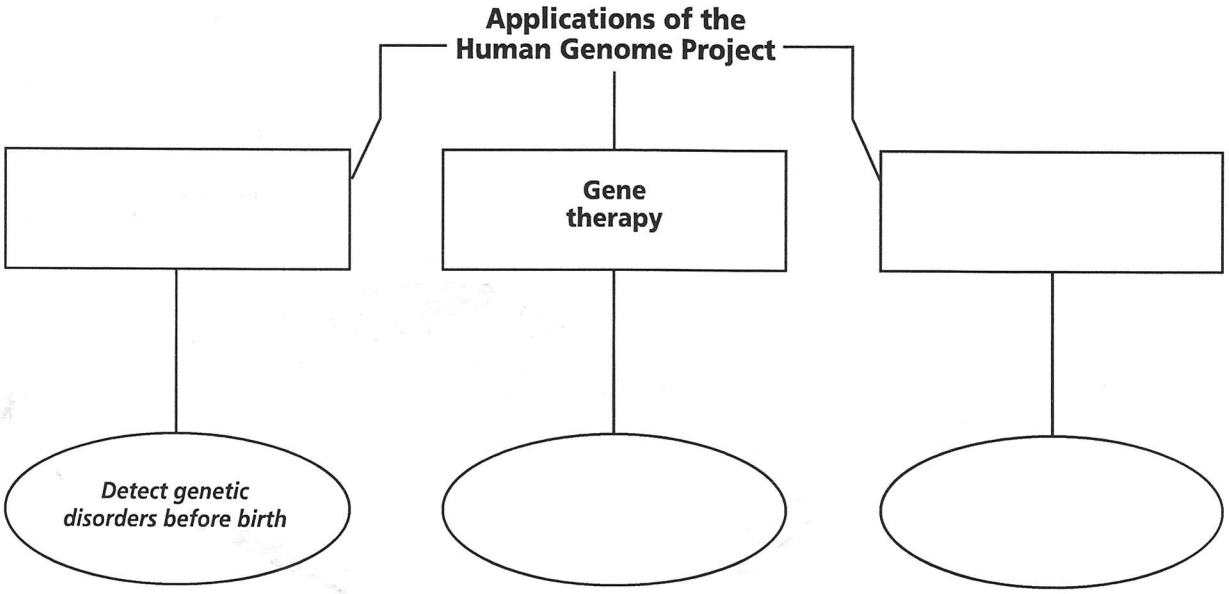
1. **True or false?** Some bacteria are used in industry to break down pollutants. _____
2. **True or false?** Bacteria are all harmful organisms that should be eliminated. _____
3. **True or false?** Some plants produce their own insecticides that keep pests away. _____
4. What is genetic technology?

_____

_____

Complete the Idea Map

Find the red heading *Applications of the Human Genome Project* in Chapter 13 of your textbook. Then find the blue headings and fill in the rectangles in the idea map that describe ways that the Human Genome Project can be used. Next, write an example of each use in the circle below it. One rectangle and one circle have been filled in for you.



Use the idea map to answer the questions.

1. **True or false?** Parents who want to know if their children may be genetically inclined towards certain disorders can have their children DNA fingerprinted before birth.

   _____

2. **True or false?** People suspected of particular types of crimes may have their DNA examined for evidence.

   _____

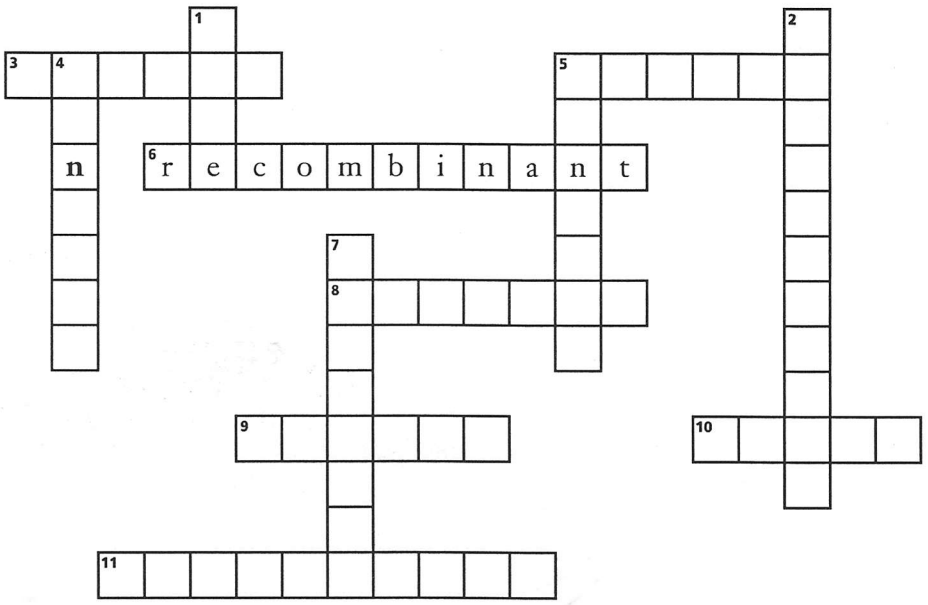
3. **True or false?** Some genetic disorders may be treated with proper detection and diagnosis.

   _____

Review the Vocabulary

Use the Chapter 13 vocabulary words to complete the crossword puzzle. One vocabulary word has been filled in for you.

- test cross
- clones
- gene splicing
- gene therapy
- genetic engineering
- human genome
- linkage map
- plasmid
- recombinant DNA
- restriction enzyme
- transgenic organism
- vector



Across

3. organisms that are genetically identical

5. the thousands of genes that make up the 46 human chromosomes

6. DNA made by connecting pieces of DNA from different sources

8. small ring of DNA

9. A mechanical or biological _____ is used to transfer DNA.

10. A test _____ involves an individual of unknown genotype and an individual of known genotype.

11. An organism that has been changed by genetic engineering is a(n) _____ organism.

Down

1. therapy that can be used to correct genetic disorders

2. enzymes used to cut DNA molecules

4. map showing the location of genes on a chromosome

5. engineering used to move genes from one organism to another

7. Gene _____ is used to reconnect pieces of DNA.