

Chapter 13 Genetic Engineering

Section 13–1 Changing the Living World (pages 319–321)

This section explains how people use selective breeding and mutations to develop organisms with desirable characteristics.

Selective Breeding (pages 319–320)

1. What is meant by selective breeding? _____

2. Circle the letter of each organism that has been produced by selective breeding.
 a. horses b. dogs c. cats d. potatoes
3. Who was Luther Burbank? _____

4. Complete the compare-and-contrast table of types of selective breeding.

SELECTIVE BREEDING

Type	Description	Examples
	Crossing dissimilar individuals to bring together the best of both organisms	
	The continued breeding of individuals with similar characteristics	

5. Is the following sentence true or false? Hybrids are often hardier than either of the parents. _____.
6. What two plant traits did Luther Burbank try to combine in his crosses?
 a. _____
 b. _____
7. Is the following sentence true or false? To maintain the desired characteristics of a line of organisms, breeders often use hybridization. _____
8. Most members of a breed are genetically _____.
9. What are the risks of inbreeding? _____

Increasing Variation (pages 320–321)

10. Why are biologists interested in preserving the diversity of plants and animals in the wild? _____

11. Is the following sentence true or false? The genetic variation that exists in nature is enough to satisfy the needs of breeders. _____
12. Breeders can increase the genetic variation by inducing _____, which are the ultimate source of genetic variability.
13. Circle the letter of an inheritable change in DNA.
a. variation b. trait c. mutation d. genotype
14. Is the following sentence true or false? Mutations cannot occur spontaneously.

15. Name two methods used by breeders to increase the rate of mutation.
a. _____ b. _____
16. Is it easy for breeders to produce mutants with desirable mutations? Explain.

17. Why are radiation and chemicals useful techniques for producing mutant bacteria?

18. Is the following sentence true or false? Scientists have produced bacteria that can digest oil. _____
19. What technique do scientists use to produce mutant plants? _____

20. Circle the letter of each sentence that is true about polyploidy.
a. Polyploid plants have many sets of chromosomes.
b. Polyploidy is usually fatal in animals.
c. Polyploidy produces new species of plants that are weaker and smaller than their diploid relatives.
d. Bananas and some citrus fruits are polyploid.