Name: _____ Class: _____ Date: _____ ID: A

Biology Chapter 13 Test: Genetics and Biotechnology

True/False
Indicate whether the statement is true or false.

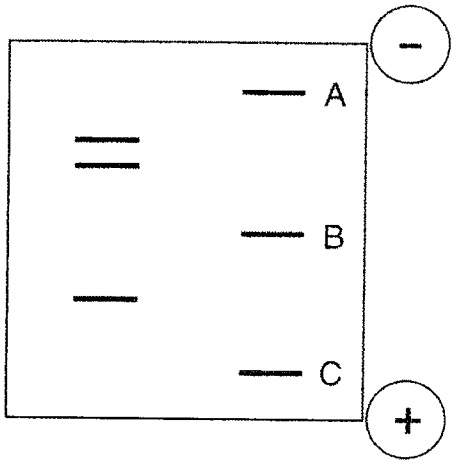

Figure 13-1

____ 1. In the electrophoresis gel shown in Figure 13-1, the DNA located in the band labeled C is longer than the DNA located in the band labeled A.

____ 2. Gene expression profiles between normal cells and cancer cells can be compared using microarray technology.

____ 3. The human genome is made up of 32 chromosomes.

____ 4. Microarray analysis of gene expression in a cell involves extracting the proteins from that cell.

____ 5. PCR is often used in forensic (crime-related) identification work because the samples found are usually contaminated.

____ 6. DNA fingerprinting can be used to identify the father of a child, but not the mother.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 7. In pea plants, inflated pods (*R*) are dominant to constricted pods (*r*). Which of the following is a cross between inflated pods and constricted pods?
a. *RR* X *RR*
b. *RR* X *Rr*
c. *RR* X *rr*
d. *Rr* X *Rr*

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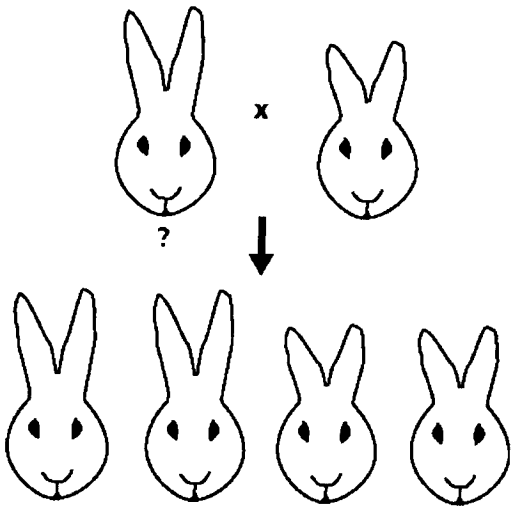

Figure 13-3

____ 8. What is the genotype of the unknown rabbit in Figure 13-3?
a. homozygous long ears
b. homozygous short ears
c. heterozygous
d. recessive

____ 9. What would be the result of the test cross in Figure 13-3 if the unknown were homozygous long ears?
a. 1/2 of the offspring would have long ears
b. all of the offspring would have long ears
c. all of the offspring would have short ears
d. 1/4 of the offspring would have short ears

____ 10. What must be on either end of any genetic material that is inserted into the cleaved DNA in Figure 13-4?

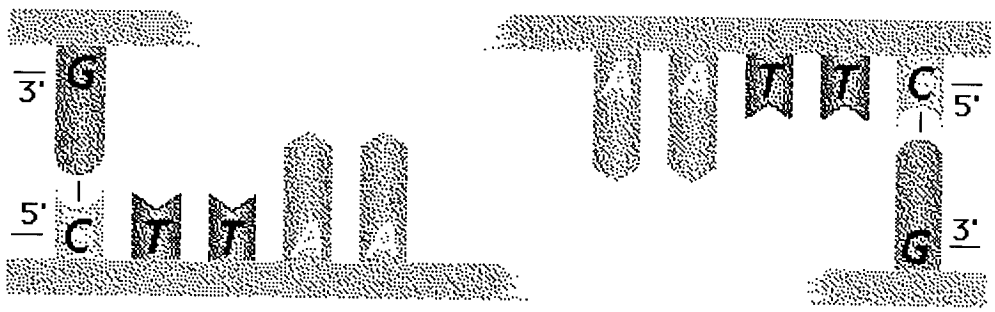

Figure 13-4

a. 5'AATT3'
b. 5'ATAT3'
c. 5'CCGG3'
d. 5'CGCG3'

Name: _____ ID: A

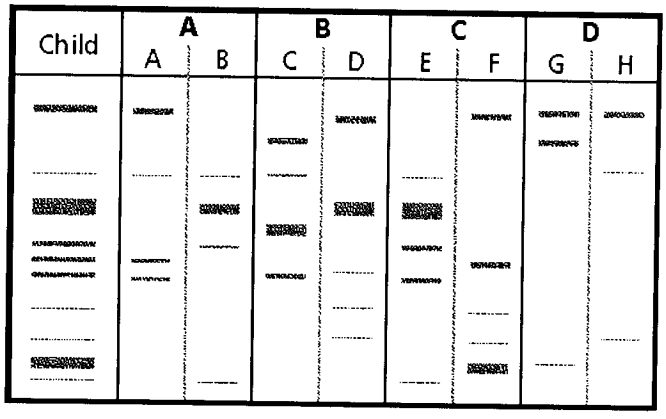

Figure 13-6

____ 11. According to Figure 13-6, which are the parents of the child?
a. A
b. B
c. C
d. D

____ 12. What genotypes are produced by a program of inbreeding?
a. only recessive homozygous
b. only dominant homozygous
c. only heterozygous
d. only homozygous

____ 13. The offspring of the cross-fertilization of pea plants with purple flowers and pea plants with white flowers are called
a. gametes.
b. hybrids.
c. pure breeds.
d. recessive breeds.

____ 14. The process by which plants are bred to produce larger fruits and a longer growing time is called
a. dominant breeding.
b. offspring breeding.
c. recessive breeding.
d. selective breeding.

____ 15. What is the name used to describe a cross between two varieties of a plant used in an attempt to create a new variety with traits from both parents?
a. cloning
b. hybridization
c. polyploid planting
d. selective breeding

____ 16. What is the name of the method whereby developing pure lines, breeders preserve desirable traits?
a. hybridization
b. inbreeding
c. cross pollination
d. mass selection

____ 17. What is the purpose of producing a line by inbreeding?
a. reducing the number of genes
b. reducing dominant traits
c. eliminating recessive traits
d. eliminating hidden variation

____ 18. In a test cross, if one parent's genotype is homozygous dominant,
a. all of the offspring will have the dominant phenotype.
b. 3/4 of the offspring will have the dominant phenotype.
c. 1/2 of the offspring will have the dominant phenotype.
d. 1/4 of the offspring will have the dominant phenotype.

____ 19. A DNA molecule containing regions from different sources is called
a. DNA ligase.
b. recombinant DNA.
c. restriction DNA.
d. template DNA.

____ 20. In which of these processes do scientists use restriction enzymes?
a. genetic engineering
b. hybridization
c. inbreeding
d. selective breeding

____ 21. What is the term used to describe the complete genetic information of a cell or organism?
a. clone
b. genome
c. haplotype
d. nucleotide

____ 22. The regions of DNA that are unique to each individual are the
a. nucleotide regions.
b. phosphate regions.
c. non-coding regions.
d. protein-coding regions.

____ 23. Regions of linked variations in the genome that can be associated with human diseases are known as
a. haplotypes.
b. plasmids.
c. coding regions.
d. non-coding regions.

____ 24. Santa Gertrudis cattle were developed by mating shorthorn beef cattle, who produce high quality beef, with *heat- and* insect-resistant Brahman cattle from India. The result of this cross are cattle that are resistant to heat and insects and also produce high-quality beef. This process is an example of
a. cloning.
b. genetic engineering.
c. hybridization.
d. inbreeding.

____ 25. A genetically engineered organism that contains a gene from another organism is called a
a. bacterial organism.
b. cloned organism.
c. genetic organism.
d. transgenic organism.