

Chapters 5 & 6 Study Guide (Meeker)**Modified True/False**

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

1. An organism's phenotype is its allele combinations. _____
2. The number of DNA bases along a gene specifies the type of protein that will be produced.

3. Traits that have many different phenotypes, such as height and skin color, are often controlled by a single gene. _____
4. The technique called cloning produces an organism that is genetically identical to its parent.

Completion

Complete each statement.

5. If a(n) _____ allele is present, its trait will appear in the organism.
6. A chart used to predict results of genetic crosses is known as a(n) _____.
7. In a cross between two hybrid *Tt* pea plants, _____ percent of the offspring will be *Tt*.
8. An organism that has two dominant or two recessive alleles is said to be _____ for that trait.
9. Alleles that are neither dominant nor recessive produce an inheritance pattern known as _____.
10. The process in which a parent cell divides twice to produce sex cells is called _____.
11. The genetic code is found in the order of nitrogen _____ along a gene.
12. A set of three bases codes for one specific _____ in a protein.
13. _____ RNA adds amino acids to a growing protein.
14. A section of DNA has the base sequence TGAG. The corresponding section of a messenger RNA molecule will have the base sequence _____.
15. When many genes control a trait, the trait will show a large number of _____.

Name: _____

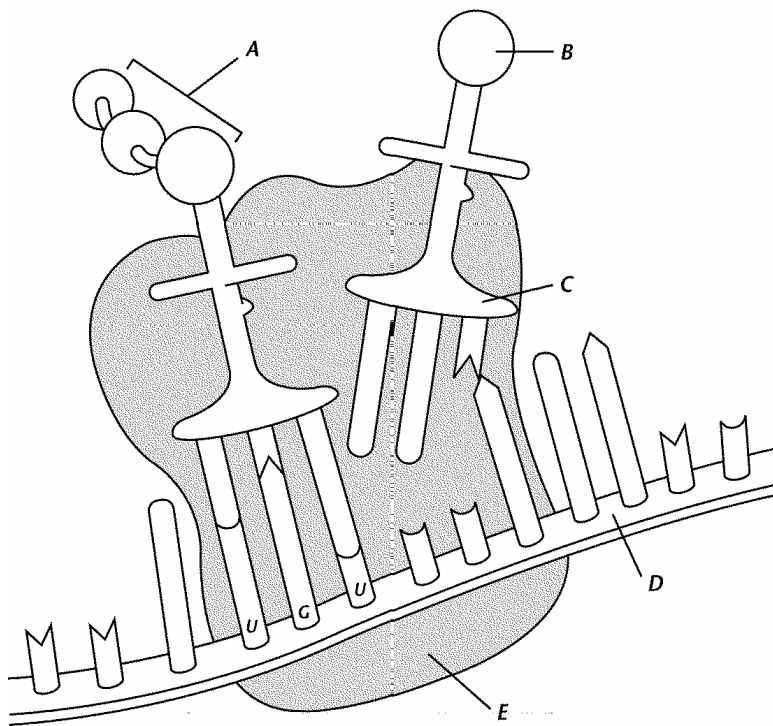
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16. A carrier is a person who has one _____ allele for a trait.
17. A karyotype can be used to diagnose the genetic disorder called _____.
18. A karyotype can be used to determine the number of _____ in a person's cells.
19. A gene from one organism is inserted into the DNA of another organism in the process known as _____.
20. If you see two DNA fingerprints that are exactly the same but come from different individuals, you know you are looking at the DNA fingerprints of _____.

Short Answer

Use the diagram to answer each question.

Protein Synthesis



21. In the "Protein Synthesis" figure, identify structure A and state what it is made of.

Name: _____

ID: A

22. In the “Protein Synthesis” figure, identify structures B and C.

23. In the “Protein Synthesis” figure, identify structure D and state where it is made.

24. In the “Protein Synthesis” figure, identify structure E and describe its function.

25. What does the notation AA mean to geneticists?

26. What is the probability of producing a tall pea plant from a genetic cross between two hybrid tall pea plants?

27. What does a Punnett square show?

28. An organism’s physical appearance is its

29. An organism’s genotype is its

30. An organism that has two identical alleles for a trait is

Name: _____

ID: A

31. What are chromosomes are made up of?

32. What determines the genetic code?

33. What does messenger RNA do during protein synthesis?

34. What do transfer RNA molecules do during protein synthesis?

35. Where does protein synthesis take place?

36. Which nitrogen base in RNA is not part of DNA?

37. What are multiple alleles?

38. Why does height in humans have such a wide variety of phenotypes?

39. Which combination of sex chromosomes results in a male human being?

Name: _____

ID: A

40. On what chromosomes do you find the sex-linked genes?

41. When you're talking about genetic disorders, what is a carrier?

42. The Human Genome Project's main goal has been to identify the DNA sequence of every gene in the human genome. How might knowing this be useful in gene therapy?

43. What causes genetic disorders?

44. What causes hemophilia?

45. What genetic disorder results in abnormally shaped blood cells?

46. How does a geneticist use pedigrees?

47. What is a pedigree?

48. What is a karyotype?

Name: _____

ID: A

49. Why are sex-linked recessive traits (like colorblindness and hemophilia) more common in males than in females?

Essay

50. Explain why Mendel's cross of purebred tall and short pea plants resulted in only tall plants.
51. Explain the function of meiosis.
52. A person with blood type AB has the alleles I^A and I^B . A person with blood type O has the alleles ii . Is it possible for a person with blood type AB to have a child with blood type O? Explain why or why not.
53. Is it possible for a son to inherit an allele on an X chromosome from his father? Explain why or why not.

Chapters 5 & 6 Study Guide (Meeker) Answer Section

MODIFIED TRUE/FALSE

1. F, genotype
2. F, order
3. F, many genes
4. T

COMPLETION

5. dominant
6. Punnett square
7. 50
fifty
8. homozygous
9. codominance
10. meiosis
11. bases
12. amino acid
13. Transfer
14. ACUC
15. phenotypes
16. recessive
17. Down syndrome
18. chromosomes
19. genetic engineering
20. identical twins.

SHORT ANSWER

21. A is a protein. It is made of amino acids.
22. B is an amino acid. C is a transfer RNA molecule.
23. D is a messenger RNA molecule. It is made in the nucleus.
24. E is a ribosome. It is the site where proteins are made.
25. Two dominant alleles
26. three out of four, 75%
27. All the possible outcomes of a genetic cross
28. phenotype
29. genetic makeup
30. homozygous
31. many genes joined together.
32. the order of nitrogen bases along a gene

33. copies the coded message from the DNA and carries it into the cytoplasm
34. carry amino acids and add them to the growing protein
35. on the ribosomes in the cytoplasm of the cell
36. uracil
37. three or more forms of a gene that code for a single trait
38. Height is controlled by at least four genes.
39. XY
40. the X and Y chromosomes.
41. A person who has one recessive and one dominant allele for a trait.
42. Knowing the DNA sequence of the entire human genome may make it easier for doctors to identify defective alleles in an individual and to treat some genetic disorders.
43. DNA mutations or changes in chromosomes.
44. A recessive allele on the X chromosome.
45. sickle-cell disease
46. to trace the inheritance of traits in humans
47. a chart that tracks which members of a family have a particular trait
48. a picture of the chromosomes in a cell
49. Genes for the sex-linked traits only exist on the X chromosome, not on the Y chromosome. So, if a male inherits a recessive allele from his mother for one of those traits, he will have the trait. If a female inherits the same recessive allele from one parent, it might be masked by a dominant allele from the other parent.

ESSAY

50. Each of the offspring inherited an allele for height from each parent. Each offspring had one allele for tall stems and one allele for short stems. The allele for tall stems is dominant. Since each offspring inherited a dominant allele for tall stems, each plant had tall stems.
51. Meiosis ensures that each sex cell gets half the number of chromosomes in a body cell. If meiosis did not occur, the sperm cell and the egg cell would each have the same number of chromosomes as a body cell. When the two cells combined, the offspring would have twice the normal number of chromosomes.
52. No, it is not possible. A person with blood type O receives one allele from each parent. The offspring of a person with blood type AB would inherit either an I^A or an I^B allele. A person with blood type O must inherit an i allele from each parent.
53. It is not possible because males only have one X chromosome, which always comes from the mother.