

Chapter 01 A Brief History

Multiple Choice Questions

1. Which of the following scientists provided definitive evidence for the chromosomal theory?

- A. Mendel
- B. Morgan**
- C. McClintock
- D. Miescher
- E. Avery

*Bloom's Level: 1. Remember
Section 01.01*

2. Who conducted the X-ray diffraction studies of DNA?

- A. Franklin and Wilkins**
- B. Miescher and McClintock
- C. Watson and Crick
- D. Meselson and Stahl
- E. Avery and Beadle

*Bloom's Level: 1. Remember
Section 01.02*

3. The chromosomal theory of inheritance holds that

- A. chromosomes vary in size.
- B. the number of chromosomes vary in individuals.
- C. chromosomes contain histone proteins.
- D. genes are arranged in a linear order on chromosomes.**
- E. chromosomes condense during mitosis.

*Bloom's Level: 1. Remember
Section 01.01*

4. Evidence that physical recombination occurs between two chromosomes was provided by
- A. McClintock and Creighton.
 - B. Watson and Crick.
 - C. Avery, McLeod and McCarthy.
 - D. Hershey and Chase.
 - E. Miescher and Morgan.

Bloom's Level: 1. Remember
Section 01.01

5. During an experiment with *Drosophila*, it was discovered that all females had red eyes. A conclusion based on this observation would be:
- A. the gene for eye color is located on the X chromosome.
 - B. the eye color phenotype is sex-linked.
 - C. the females are homozygotes.
 - D. the gene for eye color is located on an autosome.
 - E. choices the gene for eye color is located on the X chromosome and the eye color phenotype is sex-linked are both correct.

Bloom's Level: 5. Evaluate
Section 01.01

6. Which of the following is true about wild-type organisms?
- A. They are always found in the wild.
 - B. They are free of all mutations.
 - C. They are also referred to as standard-types.
 - D. They carry no recessive genes.
 - E. None of the choices is correct.

Bloom's Level: 1. Remember
Section 01.01

7. Some genes located on the same chromosome do not show perfect linkage because
- A. they are too close together.
 - B. they are interrupted by other genes.
 - C.** crossover events occur between homologous.
 - D. some genes are deleted.
 - E. too many alleles are present.

Bloom's Level: 2. Understand
Section 01.01

8. Which of the following statements is not true regarding genetic mapping?
- A. Genes are arranged in a linear order on chromosomes.
 - B. Recombination occurs between chromosomes.
 - C. There is a mathematical relationship between the distance separating two genes and the recombination frequency.
 - D. Mapping is used to establish the location of genes relative to each other.
 - E.** Mapping is used to determine the composition of a gene.

Bloom's Level: 2. Understand
Section 01.02

9. Which of the following was demonstrated by Frederick Griffith?
- A. Nuclein was the possible genetic material.
 - B.** A genetic trait can be transferred from one organism to another.
 - C. Genes are linked.
 - D. Crossing over occurs between chromosomes.
 - E. Protein is a major component of nuclein.

Bloom's Level: 1. Remember
Section 01.01

10. The relationship between genes and enzymes was shown by
- A. Watson and Crick.
 - B.** Beadle and Tatum.
 - C. Avery and McLeod.
 - D. Morgan and Mendel.
 - E. Miescher and Stern.

Bloom's Level: 1. Remember
Section 01.02

11. The early notion of one-gene/one-enzyme was not true because of which of the following?
- A. An enzyme can be composed of more than one polypeptide.
 - B. Many genes contain the information for making polypeptides that are not enzymes.
 - C. The end products of some genes are not polypeptides.
 - D.** A. an enzyme can be composed of more than one polypeptide, and B. many genes contain the information for making polypeptides that are not enzymes, and C. the end products of some genes are not polypeptides are all correct.
 - E. Only An enzyme can be composed of more than one polypeptide and many genes contain the information for making polypeptides that are not enzymes are correct.

Bloom's Level: 2. Understand
Section 01.02

12. Which of the following is not a product of transcription?
- A. RNA
 - B.** DNA
 - C. rRNA
 - D. tRNA
 - E. mRNA

Bloom's Level: 2. Understand
Section 01.02

13. Which of the following would not be considered a mutation?
- A. permanent replacement of guanine with thymine in a DNA strand
 - B. deletion of a gene segment
 - C. insertion of an intron in the middle of an exon
 - D. permanent replacement of cytosine with adenine
 - E.** crossing over of two gene regions during meiosis

Bloom's Level: 2. Understand
Section 01.01

Fill in the Blank Questions

14. The experimental system used to look at the relationship between genes and enzymes was _____.
- neurospora**

Bloom's Level: 1. Remember
Section 01.02

15. Amino acids are specified by triplet bases called _____.
- codons**

Bloom's Level: 1. Remember
Section 01.02

16. During translation, the genetic code in mRNA is "read" by _____.
- ribosomes**

Bloom's Level: 1. Remember
Section 01.02

17. The process of making RNA from DNA is called _____.
transcription

Bloom's Level: 1. Remember
Section 01.02

18. Crossing over between two homologous chromosomes occurs during _____.
meiosis

Bloom's Level: 1. Remember
Section 01.01

19. _____ induced mutations by x-ray.
Muller

Bloom's Level: 1. Remember
Section 01.02

20. Organisms are grouped into three domains called _____, _____, and _____.
bacteria, eukaryota, and archea

Bloom's Level: 1. Remember
Section 01.03

21. The process of making a gene product is called _____.
gene expression

Bloom's Level: 1. Remember
Section 01.02

True / False Questions

22. A conclusion from Mendel's experiments was that inheritance was due to the blending of traits.

FALSE

*Bloom's Level: 2. Understand
Section 01.01*

23. Mendel concluded from his work with the garden pea that inheritance is particulate.

TRUE

*Bloom's Level: 2. Understand
Section 01.01*

24. The term phenotype refers to the whole set of observable characteristics of an organism.

TRUE

*Bloom's Level: 2. Understand
Section 01.01*

25. Offsprings of original parents are the second filial generation.

FALSE

*Bloom's Level: 1. Remember
Section 01.01*

26. Heterozygotes have two copies of the same allele.

FALSE

*Bloom's Level: 2. Understand
Section 01.01*

27. A dominant phenotype is one that is always observed.

TRUE

*Bloom's Level: 2. Understand
Section 01.01*

28. The alternate form of a gene is called an allele.

TRUE

*Bloom's Level: 1. Remember
Section 01.01*

29. Two genes that are very close together on a chromosome are more likely to undergo recombination.

FALSE

*Bloom's Level: 2. Understand
Section 01.01*

30. Semiconservative replication occurs because one original DNA strand acts as a template for the synthesis of a new strand.

TRUE

*Bloom's Level: 2. Understand
Section 01.01*