

Chapter 01 Overview of Genetics

1. The basic unit of heredity is the _____.
 - A. Individual
 - B. Gene
 - C. Macromolecule
 - D. Trait
 - E. None of the answers are correct
2. Which of the following acts to accelerate chemical reactions in a cell?
 - A. Nucleic acids
 - B. Lipids
 - C. Carbohydrates
 - D. Enzymes
 - E. None of the answers are correct
3. The building blocks of DNA are the _____.
 - A. Amino acids
 - B. Carbohydrates
 - C. Enzymes
 - D. Nucleotides
 - E. Lipids
4. The structure of a cell than contains the genetic information is called a _____.
 - A. Nucleotide
 - B. Genetic code
 - C. Chromosome
 - D. Nucleic acids
 - E. None of the answers are correct
5. If a carbohydrate is going to be broken down for energy, which of the following molecules would be directly involved in the breakdown?
 - A. Catabolic enzymes
 - B. Nucleotides
 - C. Anabolic enzymes
 - D. Lipids
 - E. Chromosomes

6. RNA is formed by the process of _____.
- A. Transcription
 - B. Translation
 - C. Both transcription and translation
 - D. None of the answers are correct
7. A characteristic that an organism displays is called _____.
- A. A gene
 - B. A chromosome
 - C. DNA
 - D. Gene expression
 - E. A trait
8. If a geneticist is studying the prevalence of a trait in a species, they are at the _____ level of study.
- A. Population
 - B. Organismal
 - C. Cellular
 - D. Molecular
9. The study of the processes of transcription and translation is at the _____ level of biological organization.
- A. Population
 - B. Organismal
 - C. Cellular
 - D. Molecular
10. Variation at the molecular level of a gene is called a(n) _____.
- A. Nucleotide
 - B. Chromosome
 - C. Allele
 - D. Trait
 - E. None of the answers are correct
11. Genetic variation is ultimately based upon which of the following?
- A. Morphological differences
 - B. Small variations in nucleotide sequence of the DNA
 - C. Carbohydrate content of the cell
 - D. Translation

12. A species that contains two copies of each chromosome is called _____.
A. A genetic mutation
B. A morph
C. Haploid
D. Diploid
E. Alleles
13. A cell that makes up the body structure of an organism and is diploid is _____.
A. A gamete
B. A somatic cell
C. An allele
D. Rare
E. A sperm cell
14. In many organisms, one set of chromosomes comes from the maternal parent, while the other set comes from the paternal parent. Similar chromosomes in these sets are said to be _____.
A. Morphs
B. Alleles
C. Haploid
D. Homologues
E. Physiological traits
15. In humans, gametes are different than other cells of the body in that they are _____.
A. Diploid
B. Haploid
C. Genetic mutations
D. Morphs
E. None of the answers are correct
16. Which of the following is correct regarding natural selection?
A. It is based on competition for resources
B. Beneficial traits are passed on to the next generation
C. It enables a species to become better adapted to its environment
D. It may drastically change a species over time
E. All of the answers are correct
17. Change in a population over time is called biological evolution.
True False

18. Studies the effects of loss-of-function mutations.
- A. Population genetics
 - B. Transmission genetics
 - C. Molecular genetics
19. Uses a genetic cross to determine patterns of inheritance.
- A. Population genetics
 - B. Transmission genetics
 - C. Molecular genetics
20. Studies the relationship between genetic variation and the environment.
- A. Population genetics
 - B. Transmission genetics
 - C. Molecular genetics
21. Began with the work of Gregor Mendel in the 19th century.
- A. Population genetics
 - B. Transmission genetics
 - C. Molecular genetics
22. Studies how the forces of nature have influenced the spread of traits.
- A. Population genetics
 - B. Transmission genetics
 - C. Molecular genetics
23. Genetics is the branch of the biological sciences that deals with both _____ and _____.
- _____
24. DNA stores the information needed for the synthesis of cellular _____.
- _____
25. _____ is the use of a gene sequence to synthesize a functional protein.
- _____

26. Gene expression involves the process of _____ and _____.

27. _____ influence the physical appearance of an organism.

28. A variation of a gene is called an _____.

29. The differences in inherited traits among individuals in a population is called _____.

30. Three populations of an organism, each with drastically different external markings, but still members of the same species, would be called _____.

31. Both genes and the _____ influence the traits of an organism.

32. Sexual reproduction increases the genetic _____ of a species.

33. The changes in the genetic makeup of a population over time is called _____.

34. Science is conducted using a process called the _____.

35. List the four general classes of molecules are that necessary for cellular function.

36. Distinguish between catabolic and anabolic enzymes.

37. Distinguish between morphological and physiological traits.

38. Distinguish between hypothesis-based science and discovery-based science.

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TRUE

18. Studies the effects of loss-of-function mutations.
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 - B. Transmission genetics
 - C. Molecular genetics**
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23. Genetics is the branch of the biological sciences that deals with both _____ and _____.
heredity, variation
24. DNA stores the information needed for the synthesis of cellular _____.
Proteins
25. _____ is the use of a gene sequence to synthesize a functional protein.
Gene expression

26. Gene expression involves the process of _____ and _____.
transcription, translation
27. _____ influence the physical appearance of an organism.
Morphological traits
28. A variation of a gene is called an _____.
Allele
29. The differences in inherited traits among individuals in a population is called _____.
Genetic variation
30. Three populations of an organism, each with drastically different external markings, but still members of the same species, would be called _____.
Morphs
31. Both genes and the _____ influence the traits of an organism.
Environment
32. Sexual reproduction increases the genetic _____ of a species.
Variation
33. The changes in the genetic makeup of a population over time is called _____.
biological evolution
34. Science is conducted using a process called the _____.
scientific method
35. List the four general classes of molecules are that necessary for cellular function.
Nucleic acids, proteins, carbohydrates, lipids
36. Distinguish between catabolic and anabolic enzymes.

Catabolic enzymes break down molecules and are associated with energy-generating processes. Anabolic enzymes are involved in the formation (synthesis) of larger molecules.

37. Distinguish between morphological and physiological traits.

A physiological trait is associated with a metabolic pathway and influences the ability of an organism to function. A morphological trait is associated with the physical appearance of the organism.

38. Distinguish between hypothesis-based science and discovery-based science.

Hypothesis-based science gathers data to support or refute a proposed explanation for a phenomenon. Discovery-based science gathers data without a preconceived explanation for the data.