

Genetics Fundamentals

Genetics · Answer Key · 20 Questions

1. What is the primary function of messenger RNA (mRNA)?

- A) To carry genetic information from DNA to ribosomes**
- B) To synthesize proteins directly
- C) To store genetic information in the nucleus
- D) To transport amino acids to ribosomes

2. Which of the following is a characteristic of a recessive allele?

- A) It only expresses its trait when in homozygous form**
- B) It always expresses its trait, even in heterozygous form
- C) It is always located on the X chromosome
- D) It can only be passed down from the mother

3. What is the process by which DNA makes a copy of itself?

- A) Replication**
- B) Transcription
- C) Translation
- D) Mutation

4. A segment of DNA that codes for a functional product, such as a protein or RNA molecule, is called a:

- A) Gene**
- B) Chromosome
- C) Allele
- D) Genome

5. In the DNA double helix, adenine (A) always pairs with which nucleotide?

- A) Thymine (T)**
- B) Guanine (G)
- C) Cytosine (C)
- D) Uracil (U)

6. What is the term for the observable physical characteristics of an organism?

- A) Phenotype**
- B) Genotype
- C) Karyotype
- D) Chromotype

7. Meiosis is a type of cell division that results in:

A) Four daughter cells with half the number of chromosomes as the parent cell

B) Two daughter cells with the same number of chromosomes as the parent cell

C) Four daughter cells with the same number of chromosomes as the parent cell

D) Two daughter cells with half the number of chromosomes as the parent cell

8. What is the genetic makeup of an individual, referring to the specific alleles they possess?

A) Genotype

B) Phenotype

C) Karyotype

D) Gene pool

9. Which nitrogenous base is found in RNA but not in DNA?

A) Uracil

B) Thymine

C) Adenine

D) Guanine

10. The complete set of genetic material present in a cell or organism is known as the:

A) Genome

B) Gene

C) Chromosome

D) Allele

11. When two different alleles for a gene are present in an individual, and both contribute to the phenotype, this is called:

A) Codominance

B) Incomplete dominance

C) Dominance

D) Epistasis

12. What are the building blocks of DNA and RNA?

A) Nucleotides

B) Amino acids

C) Fatty acids

D) Monosaccharides

13. The process of synthesizing proteins from the information encoded in mRNA is called:

- A) Translation**
- B) Transcription
- C) Replication
- D) Duplication

14. What is the name for a permanent change in the DNA sequence?

- A) Mutation**
- B) Recombination
- C) Segregation
- D) Independent assortment

15. In humans, the sex chromosomes that determine femaleness are:

- A) XX**
- B) XY
- C) XO
- D) YY

16. A trait that is controlled by a gene located on the X chromosome is called:

- A) Sex-linked**
- B) Autosomal
- C) Mitochondrial
- D) Y-linked

17. The unit of heredity that is transferred from a parent to offspring and determines some characteristic of the offspring is a:

- A) Gene**
- B) Chromosome
- C) Allele
- D) Nucleotide

18. What is the specific region of DNA where replication begins called?

- A) Origin of replication**
- B) Replication fork
- C) Telomere
- D) Centromere

19. The complete set of genes or genetic material present in a cell or organism is referred to as the:

- A) Genome**
- B) Genotype
- C) Gene pool
- D) Chromosomal set

20. What are the two main types of nucleic acids found in living organisms?

- A) DNA and RNA**
- B) Proteins and carbohydrates
- C) Lipids and nucleic acids
- D) Amino acids and nucleotides