

# Fundamentals of Genetics

Genetics · Answer Key · 18 Questions

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## 1. What is the primary function of DNA within a cell?

- A) Producing ATP energy
- B) Storing genetic instructions**
- C) Breaking down waste products
- D) Synthesizing lipids

## 2. Which nitrogenous base pairs specifically with adenine in a DNA molecule?

- A) Guanine
- B) Cytosine
- C) Thymine**
- D) Uracil

## 3. What is the physical structure of a DNA molecule commonly known as?

- A) Single helix
- B) Triple helix
- C) Double helix**
- D) Beta-pleated sheet

## 4. In humans, how many pairs of chromosomes are typically found in a standard somatic cell?

- A) 22
- B) 23**
- C) 46
- D) 48

## 5. What term refers to the specific physical location of a gene on a chromosome?

- A) Allele
- B) Locus**
- C) Genome
- D) Trait

## 6. What are the units of heredity that are passed from parents to offspring?

- A) Proteins
- B) Genes**
- C) Ribosomes
- D) Enzymes

**7. Who is widely considered the father of modern genetics for his work with pea plants?**

- A) Charles Darwin
- B) Gregor Mendel**
- C) Louis Pasteur
- D) James Watson

**8. Which process results in the creation of two genetically identical daughter cells?**

- A) Meiosis
- B) Mitosis**
- C) Fertilization
- D) Transcription

**9. What is the term for an alternative form of a specific gene?**

- A) Allele**
- B) Genotype
- C) Phenotype
- D) Mutation

**10. Which molecule carries genetic information from the DNA to the ribosome for protein synthesis?**

- A) tRNA
- B) rRNA
- C) mRNA**
- D) DNA polymerase

**11. What is the term for the observable physical or biochemical characteristics of an organism?**

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

**12. Which sex chromosomes determine a biological male in humans?**

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

**13. What is the term for a permanent alteration in the DNA sequence that makes up a gene?**

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

**14. What are the three components that make up a nucleotide?**

- A) Sugar, phosphate, and base**
- B) Sugar, protein, and lipid
- C) Base, acid, and water
- D) Nitrogen, oxygen, and carbon

**15. Which of the following is an example of a polygenic trait in humans?**

- A) Blood type
- B) Color blindness
- C) Skin color**
- D) Cystic fibrosis

**16. What process involves the division of cells to produce gametes with half the number of chromosomes?**

- A) Mitosis
- B) Meiosis**
- C) Binary fission
- D) Budding

**17. What is the complete set of genetic material present in an organism called?**

- A) Chromosome
- B) Genome**
- C) Phenome
- D) Proteome

**18. Which sugar is found in the backbone of DNA?**

- A) Glucose
- B) Fructose
- C) Ribose
- D) Deoxyribose**