

**Genetics, 6e (Brooker)**

**Chapter 1 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

Answer: B

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 1. Remember

Learning Outcome: 01.01.01 Describe the biochemical composition of cells

Accessibility: Keyboard Navigation

2) A variation of a gene is called a(n) \_\_\_\_\_.

- A) species
- B) morph
- C) genome
- D) allele
- E) proteome

Answer: D

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.01 Outline how the expression of genes leads to an organism's traits.

Accessibility: Keyboard Navigation

3) 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

Answer: D

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 2. Understand

Learning Outcome: 01.01.02 Explain how proteins are largely responsible for cell structure and function.

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4) The building blocks of DNA are the \_\_\_\_\_.

- A) amino acids
- B) carbohydrates
- C) enzymes
- D) nucleotides
- E) lipids

Answer: D

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 1. Remember

Learning Outcome: 01.01.03 Outline how DNA stores the information to make proteins

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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

Answer: A

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 2. Understand

Learning Outcome: 01.01.02 Explain how proteins are largely responsible for cell structure and function.

Accessibility: Keyboard Navigation

6) RNA is formed by the process of \_\_\_\_\_.

- A) transcription
- B) translation
- C) both transcription and translation
- D) None of the answers are correct

Answer: A

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 1. Remember

Learning Outcome: 01.01.03 Outline how DNA stores the information to make proteins

Accessibility: Keyboard Navigation

7) A characteristic that an organism displays is called \_\_\_\_\_.

- A) a gene
- B) a chromosome
- C) DNA
- D) gene expression
- E) a trait

Answer: E

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.01 Outline how the expression of genes leads to an organism's traits.

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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

Answer: A

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.01 Outline how the expression of genes leads to an organism's traits.

Accessibility: Keyboard Navigation

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

Answer: D

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.01 Outline how the expression of genes leads to an organism's traits.

Accessibility: Keyboard Navigation

10) Alternate versions of a specific gene are called \_\_\_\_\_.

- A) nucleotides
- B) chromosomes
- C) alleles
- D) traits
- E) none of the answers are correct

Answer: C

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.01 Outline how the expression of genes leads to an organism's traits.

Accessibility: Keyboard Navigation

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

Answer: B

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.02 Define genetic variation.

Accessibility: Keyboard Navigation

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

Answer: D

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.04 Describe how genes are transmitted in sexually reproducing species.

Accessibility: Keyboard Navigation

- 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

Answer: B

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.04 Describe how genes are transmitted in sexually reproducing species.

Accessibility: Keyboard Navigation

- 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) homologs  
E) physiological traits

Answer: D

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.04 Describe how genes are transmitted in sexually reproducing species.

Accessibility: Keyboard Navigation

- 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

Answer: B

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.04 Describe how genes are transmitted in sexually reproducing species.

Accessibility: Keyboard Navigation

- 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

Answer: E

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.05 Explain the process of evolution.

Accessibility: Keyboard Navigation

- 17) \_\_\_\_\_ is the use of a gene sequence to synthesize a functional protein.
- A) Loss-of-function mutation
  - B) Gene expression
  - C) The human genome project
  - D) Proteomics
  - E) None of the answers are correct

Answer: B

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 2. Understand

Learning Outcome: 01.01.03 Outline how DNA stores the information to make proteins

Accessibility: Keyboard Navigation

- 18) The differences in inherited traits among individuals in a population are called \_\_\_\_\_.
- A) species variation
  - B) genetic mutations
  - C) genetic variation
  - D) natural selection
  - E) none of the answers are correct

Answer: C

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.02 Define genetic variation.

Accessibility: Keyboard Navigation

19) Three populations of an organism, each with drastically different external markings, but still members of the same species, would be called \_\_\_\_\_.

- A) homologs
- B) mutants
- C) communities
- D) alleles
- E) morphs

Answer: E

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Define genetic variation.

Accessibility: Keyboard Navigation

20) The changes in the genetic makeup of a population over time is called \_\_\_\_\_.

- A) homologous recombination
- B) model organisms studies
- C) genetic crosses
- D) biological evolution
- E) hypothesis testing

Answer: D

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.05 Explain the process of evolution.

Accessibility: Keyboard Navigation

21) Change in a population over time is called biological evolution.

Answer: TRUE

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.05 Explain the process of evolution.

Accessibility: Keyboard Navigation

22) Gene expression involves the process of transcription and translation.

Answer: TRUE

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 2. Understand

Learning Outcome: 01.01.03 Outline how DNA stores the information to make proteins

Accessibility: Keyboard Navigation

23) Sexual reproduction decreases the genetic variation of a species.

Answer: FALSE

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.04 Describe how genes are transmitted in sexually reproducing species.

Accessibility: Keyboard Navigation

24) Which of the following studies the effects of loss-of-function mutations?

A) Population genetics

B) Transmission genetics

C) Molecular genetics

Answer: C

Section: 01.03

Topic: Fields of Genetics

Bloom's: 2. Understand

Learning Outcome: 01.03.01 Compare and contrast the three major fields of genetics: transmission, molecular, and population genetics.

Accessibility: Keyboard Navigation

25) Which of the following uses a genetic cross to determine patterns of inheritance?

A) Population genetics

B) Transmission genetics

C) Molecular genetics

Answer: B

Section: 01.03

Topic: Fields of Genetics

Bloom's: 2. Understand

Learning Outcome: 01.03.01 Compare and contrast the three major fields of genetics: transmission, molecular, and population genetics.

Accessibility: Keyboard Navigation



26) Which of the following studies the relationship between genetic variation and the environment?

- A) Population genetics
- B) Transmission genetics
- C) Molecular genetics

Answer: A

Section: 01.03

Topic: Fields of Genetics

Bloom's: 2. Understand

Learning Outcome: 01.03.01 Compare and contrast the three major fields of genetics: transmission, molecular, and population genetics.

Accessibility: Keyboard Navigation

27) Which of the following began with the work of Gregor Mendel in the 19th century?

- A) Population genetics
- B) Transmission genetics
- C) Molecular genetics

Answer: B

Section: 01.03

Topic: Fields of Genetics

Bloom's: 1. Remember

Learning Outcome: 01.03.01 Compare and contrast the three major fields of genetics: transmission, molecular, and population genetics.

Accessibility: Keyboard Navigation

28) Which of the following studies how the forces of nature have influenced the spread of traits?

- A) Population genetics
- B) Transmission genetics
- C) Molecular genetics

Answer: A

Section: 01.03

Topic: Fields of Genetics

Bloom's: 1. Remember

Learning Outcome: 01.03.01 Compare and contrast the three major fields of genetics: transmission, molecular, and population genetics.

Accessibility: Keyboard Navigation

29) \_\_\_\_\_ influence the physical appearance of an organism.

- A) Morphological traits
- B) Physiological traits
- C) Behavioral traits

Answer: A

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 1. Remember

Learning Outcome: 01.02.01 Outline how the expression of genes leads to an organism's traits.

Accessibility: Keyboard Navigation

30) DNA stores the information needed for the synthesis of cellular \_\_\_\_\_.

- A) proteins
- B) carbohydrates
- C) lipids

Answer: A

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 2. Understand

Learning Outcome: 01.01.03 Outline how DNA stores the information to make proteins

Accessibility: Keyboard Navigation

31) Both genes and the \_\_\_\_\_ influence the traits of an organism.

- A) genome
- B) environment
- C) population

Answer: B

Section: 01.02

Topic: The Relationship Between Genes and Traits

Bloom's: 2. Understand

Learning Outcome: 01.02.03 Discuss the relationship between genes and traits.

Accessibility: Keyboard Navigation

32) The class of macromolecules that are primarily responsible for catabolic and anabolic activities in a cell are

- A) nucleic acids.
- B) proteins.
- C) lipids.
- D) carbohydrates.

Answer: B

Section: 01.01

Topic: The Molecular Expression of Genes

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Explain how proteins are largely responsible for cell structure and function.

Accessibility: Keyboard Navigation

33) What is the difference between hypothesis testing and discovery-based research?

- A) Hypotheses can be validated or invalidated while discovery-based research relies more on collection and analysis of data without a hypothesis.
- B) Discovery-based science can be validated or invalidated while hypothesis based research relies more on collection and analysis of data.
- C) There is only one type of experimental approach, both terms describe the same approach.
- D) Hypothesis-based research results in believable science while discovery-based research results in unreliable conclusions.

Answer: A

Section: 01.04

Topic: The Science of Genetics

Bloom's: 2. Understand

Learning Outcome: 01.04.01 Discuss how genetics is an experimental science.

Accessibility: Keyboard Navigation

34) A scientist observes two new birds that appear to be morphologically similar. In order to explain these observations, which strategy should the scientist employ as a first step?

- A) Propose a hypothesis
- B) Relate structure and function
- C) Analyze data
- D) Use statistics

Answer: A

Section: 01.04

Topic: The Science of Genetics

Bloom's: 3. Apply

Learning Outcome: 01.04.02 Outline different strategies for solving problems in genetics.

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