Chapter 01 Overview of Genetics

Student: _____

1. The basic unit of heredity is the _____.
   A. Individual
   B. Gene
   C. Macromolecule
   D. Trait
   E. None of the answers are correct

2. A variation of a gene is called a(n) _____.
   A. species
   B. morph
   C. genome
   D. allele
   E. proteome

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

4. The building blocks of DNA are the _____.
   A. Amino acids
   B. Carbohydrates
   C. Enzymes
   D. Nucleotides
   E. Lipids

5. The structure of a cell that contains the genetic information is called a _____.
   A. Nucleotide
   B. Genetic code
   C. Chromosome
   D. Nucleic acids
   E. None of the answers are correct

6. 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

7. RNA is formed by the process of _____.
   A. Transcription
   B. Translation
   C. Both transcription and translation
   D. None of the answers are correct

8. A characteristic that an organism displays is called _____.
   A. A gene
   B. A chromosome
   C. DNA
   D. Gene expression
   E. A trait

9. 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

10. The study of the processes of transcription and translation is at the _____ level of biological organization.
   A. Population
   B. Organismal
   C. Cellular
   D. Molecular

11. 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

12. 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

13. A species that contains two copies of each chromosome is called _____.
   A. A genetic mutation
   B. A morph
   C. Haploid
   D. Diploid
   E. Alleles

14. 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

15. 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

16. 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

17. 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

18. _____ 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. Proteonomics
    E. None of the above

19. The differences in inherited traits among individuals in a population are called _____.
    A. species variation
    B. genetic muations
    C. genetic variation
    D. natural selection
    E. None of the above

20. 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

21. Which one of the following is NOT one of the general classes of macromolecules that are necessary for cellular function?
    A. Nucleic acids
    B. Proteins
    C. Ions
    D. Carbohydrates
    E. Lipids

22. 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

23. Change in a population over time is called biological evolution.
    True False

24. Genetics is the branch of the biological sciences that deals with both heredity and variation.
    True False

25. Science is conducted using a process called the scientific method.
    True False

26. Gene expression involves the process of transcription and translation.
    True False

27. Sexual reproduction decreases the genetic variation of a species.
    True False

28. Which of the following studies the effects of loss-of-function mutations?
    A. Population genetics
    B. Transmission genetics
    C. Molecular genetics

29. Which of the following uses a genetic cross to determine patterns of inheritance?
    A. Population genetics
    B. Transmission genetics
    C. Molecular genetics

30. Which of the following studies the relationship between genetic variation and the environment?
    A. Population genetics
    B. Transmission genetics
    C. Molecular genetics

31. Which of the following began with the work of Gregor Mendel in the 19^{th} century
    A. Population genetics
    B. Transmission genetics
    C. Molecular genetics

32. 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

33. _____ influence the physical appearance of an organism.
    A. Morphological traits
    B. Physiological traits
    C. Behavioral traits

34. DNA stores the information needed for the synthesis of cellular _____.
    A. proteins
    B. carbohydrates
    C. lipids

35. Both genes and the _____ influence the traits of an organism.
    A. genome
    B. environment
    C. population

Chapter 01 Overview of Genetics Key

1. The basic unit of heredity is the _____.
   A. Individual
   B. Gene
   C. Macromolecule
   D. Trait
   E. None of the answers are correct

Bloom's Level: 2. Understand
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Inheritance

2. A variation of a gene is called a(n) _____.
   A. species
   B. morph
   C. genome
   D. allele
   E. proteome

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

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

Bloom's Level: 2. Understand
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: General

4. The building blocks of DNA are the _____.
   A. Amino acids
   B. Carbohydrates
   C. Enzymes
   D. Nucleotides
   E. Lipids

Bloom's Level: 1. Remember
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

5. The structure of a cell that contains the genetic information is called a _____.
   A. Nucleotide
   B. Genetic code
   C. Chromosome
   D. Nucleic acids
   E. None of the answers are correct

Bloom's Level: 2. Understand
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

6. 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

Bloom's Level: 4. Analyze
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: General

7. RNA is formed by the process of _____.
A. Transcription
B. Translation
C. Both transcription and translation
D. None of the answers are correct

Bloom's Level: 2. Understand
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

8. A characteristic that an organism displays is called _____.
A. A gene
B. A chromosome
C. DNA
D. Gene expression
E. A trait

Bloom's Level: 1. Remember
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

9. 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

Bloom's Level: 3. Apply
Learning Outcome: 01.03: Understand the four principle levels of genetic study: molecular, cellular, organismal, and population.
Section: 01.01
Topic: Evolution-Population Genetics

10. The study of the processes of transcription and translation is at the _____ level of biological organization.
A. Population
B. Organismal
C. Cellular
D. Molecular

Bloom's Level: 5. Evaluate
Learning Outcome: 01.03: Understand the four principle levels of genetic study: molecular, cellular, organismal, and population.
Section: 01.01
Topic: Molecular Biology

11. 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

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Molecular Biology

12. 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

Bloom's Level: 5. Evaluate
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

13. A species that contains two copies of each chromosome is called _____.
A. A genetic mutation
B. A morph
C. Haploid
D. Diploid
E. Alleles

Bloom's Level: 1. Remember
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Molecular Biology

14. 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

Bloom's Level: 1. Remember
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Molecular Biology

15. 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

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

16. 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

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Molecular Biology

17. 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

Bloom's Level: 4. Analyze
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Evolution-Population Genetics

18. _____ 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. Proteonomics
E. None of the above

Bloom's Level: 2. Understand
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

19. The differences in inherited traits among individuals in a population are called _____.
A. species variation
B. genetic muations
C. genetic variation
D. natural selection
E. None of the above

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

20. 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

Bloom's Level: 5. Evaluate
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

21. Which one of the following is NOT one of the general classes of macromolecules that are necessary for cellular function?
A. Nucleic acids
B. Proteins
C. Ions
D. Carbohydrates
E. Lipids

Bloom's Level: 4. Analyze
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: General

22. 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

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Evolution-Population Genetics

23. Change in a population over time is called biological evolution.
TRUE

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Evolution-Population Genetics

24. Genetics is the branch of the biological sciences that deals with both heredity and variation.
TRUE

Bloom's Level: 3. Apply
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Inheritance

25. Science is conducted using a process called the scientific method.
TRUE

Bloom's Level: 2. Understand
Learning Outcome: 01.04: Recognize the three major fields of genetics (transmission, molecular, and population) and the general characteristics of each field.
Section: 01.02
Topic: General

26. Gene expression involves the process of transcription and translation.
TRUE

Bloom's Level: 3. Apply
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

27. Sexual reproduction decreases the genetic variation of a species.
FALSE

Bloom's Level: 5. Evaluate
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

28. Which of the following studies the effects of loss-of-function mutations?
A. Population genetics
B. Transmission genetics
C. Molecular genetics

Bloom's Level: 4. Analyze
Learning Outcome: 01.04: Recognize the three major fields of genetics (transmission, molecular, and population) and the general characteristics of each field.
Section: 01.02
Topic: Inheritance

29. Which of the following uses a genetic cross to determine patterns of inheritance?
A. Population genetics
B. Transmission genetics
C. Molecular genetics

Bloom's Level: 4. Analyze
Learning Outcome: 01.04: Recognize the three major fields of genetics (transmission, molecular, and population) and the general characteristics of each field.
Section: 01.02
Topic: Inheritance

30. Which of the following studies the relationship between genetic variation and the environment?
A. Population genetics
B. Transmission genetics
C. Molecular genetics

Bloom's Level: 4. Analyze
Learning Outcome: 01.04: Recognize the three major fields of genetics (transmission, molecular, and population) and the general characteristics of each field.
Section: 01.02
Topic: Inheritance

31. Which of the following began with the work of Gregor Mendel in the 19^{th} century
A. Population genetics
B. Transmission genetics
C. Molecular genetics

Bloom's Level: 3. Apply
Learning Outcome: 01.04: Recognize the three major fields of genetics (transmission, molecular, and population) and the general characteristics of each field.
Section: 01.02
Topic: Inheritance

32. 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

Bloom's Level: 4. Analyze
Learning Outcome: 01.04: Recognize the three major fields of genetics (transmission, molecular, and population) and the general characteristics of each field.
Section: 01.02
Topic: Inheritance

33. _____ influence the physical appearance of an organism.
A. Morphological traits
B. Physiological traits
C. Behavioral traits

Bloom's Level: 5. Evaluate
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

34. DNA stores the information needed for the synthesis of cellular _____.
A. proteins
B. carbohydrates
C. lipids

Bloom's Level: 2. Understand
Learning Outcome: 01.01: Understand the key biological molecules that are associated with the study of genetics.
Section: 01.01
Topic: Molecular Biology

35. Both genes and the _____ influence the traits of an organism.
A. genome
B. environment
C. population

Bloom's Level: 2. Understand
Learning Outcome: 01.02: Understand the relationships between genes and traits and the types of traits that are studied by geneticists.
Section: 01.01
Topic: Inheritance

Chapter 01 Overview of Genetics Summary

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