Name Date Class

Chapter 12

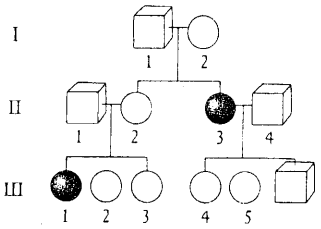
Patterns of Heredity and Human Genetics

Reinforcement and Study Guide

Section 12.1 Mendelian Inheritance of Human Traits

In your textbook, read about making a pedigree.

Examine the pedigree to the right. Then answer the following questions.



1. Is the trait being studied in the pedigree recessive or dominant? How do you know?

_____

_____

_____

_____

_____

2. Are II-1 and II-2 carriers of the trait? How do you know?

_____

_____

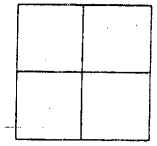
3. What is the probability that II-1 and II-2 will produce an individual with the trait being studied? Draw a Punnett square to show your work.

_____

_____

_____

_____



4. What is the likely genotype of II-4 for the trait being studied in the pedigree?

_____

In your textbook, read about simple recessive heredity and simple dominant heredity.

For each item in Column A, write the letter of the matching item from Column B.

Column A	Column B
_____ 5. Recessive disorder that results from the absence of an enzyme required to break lipids down	**a.** cystic fibrosis
_____ 6. Lethal genetic disorder caused by a dominant allele	**b.** simple dominant traits
_____ 7. Most common genetic disorder among white Americans	**c.** Tay-Sachs disease
_____ 8. Recessive disorder that results from the absence of an enzyme that converts one amino acid into another one	**d.** Huntington's disease
_____ 9. Tongue curling and Hapsburg lip	**e.** phenylketonuria

Name Date Class

Chapter 12

Patterns of Heredity and Human Genetics, *continued*

Reinforcement and Study Guide

Section 12.2 When Heredity Follows Different Rules

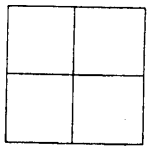
In your textbook, read about complex patterns of inheritance.

Answer the following questions.

1. Complete the Punnett square for a cross between a homozygous red-flowered snapdragon (*RR*) and a homozygous white-flowered snapdragon (*R'R'*). Give the genotype and phenotype of the offspring in the F_1 generation.

Key
RR - red
R'R' - white
RR' - pink

F_1



genotype: _____

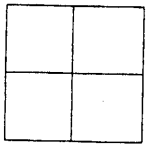
phenotype: _____

2. When traits are inherited in an incomplete dominance pattern, what is true of the phenotype of the heterozygotes?

_____

3. Complete the Punnett square for a cross between two pink-flowered (*RR'*) F_1 plants. Give the phenotype ratio of the offspring in the F_2 generation.

F_2



phenotype ratio: _____

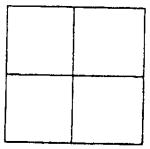
4. In what type of inheritance are both alleles expressed equally?

_____

5. Complete the Punnett square for a cross between a black chicken (*BB*) and a white chicken (*WW*). Give the phenotype of the offspring in the F_1 generation.

Key
BB - black
WW - white
BW - checkered

F_1



phenotype: _____

For each statement below, write true or false.

_____ **6.** Traits controlled by more than two alleles are said to have multiple alleles.

_____ **7.** Multiple alleles can be studied only in individuals.

_____ **8.** In humans, there are 23 pairs of matching homologous chromosomes called autosomes.

_____ **9.** Two chromosomes called the sex chromosomes determine the sex of an individual.

_____ **10.** The sex chromosomes of a human male are XX, and the sex chromosomes of a human female are XY.

_____ **11.** Traits controlled by genes located on sex chromosomes are called sex-linked traits.

_____ **12.** The first known example of sex-linked inheritance was discovered in pea plants.

In your textbook, read about environmental influences.

Answer the following questions.

13. What characteristics of an organism can affect gene function?

_____

_____

14. Do the internal environments of males and females differ? Explain.

_____

_____

15. What are some environmental factors that can influence gene expression?

_____

_____

16. Give two examples of how an environmental factor can affect the expression of a phenotype.

_____

_____

In your textbook, read about multiple alleles in humans.

Complete the table by filling in the missing information.

Genotypes	Human Blood Groups Surface Molecules	Phenotypes
1. I^AI^A *or* I^Ai	A	
2. I^BI^B *or* I^Bi		B
3.	A and B	AB
4.	none	

Complete each statement.

5. Blood groups are a classic example of _____ inheritance in humans.

6. The alleles _____ are always both expressed.

7. The alleles I^A and I^B are _____ , meaning they are always both expressed.

8. I^A and I^B are dominant to _____ .

9. Blood typing is necessary before a person can receive a _____ .

10. A child who inherits I^A from his mother and I^B from his father will have type _____ blood.

11. A child whose parents both have type O blood will have type _____ blood.

12. If a woman with blood type A has a baby with blood type AB, a man with blood type O _____ be the father.

13. Blood tests _____ be used to prove that a certain man is the father of a child.