

Name _____ Date _____ Class _____

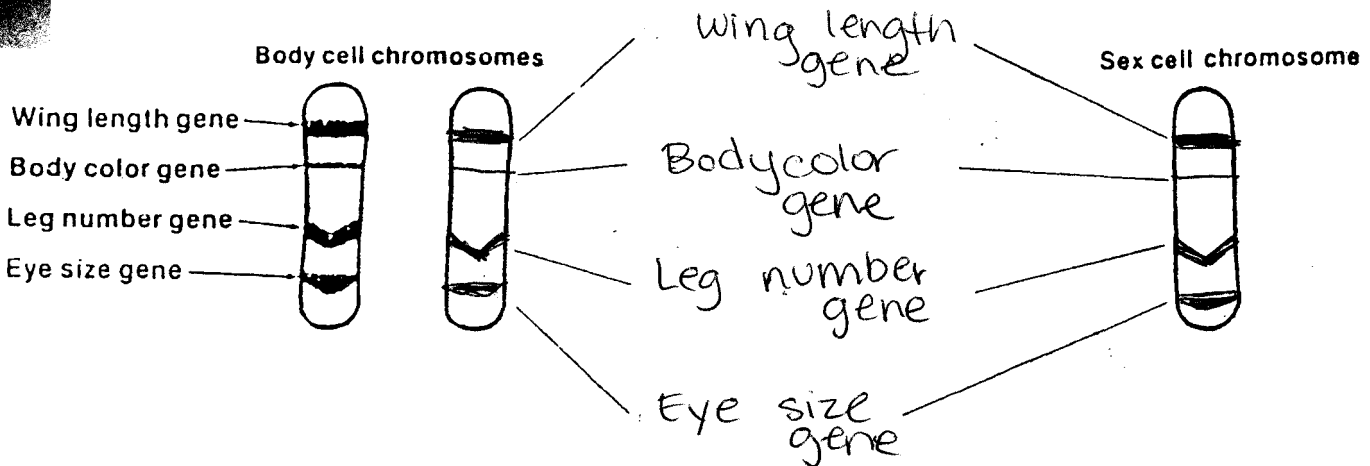
GENETICS, HOW AND WHY

In Section 26:1 of your textbook, read about genes and how they are passed to offspring.

1. Examine the drawings of horsefly chromosomes below. Complete the table by filling in the information about the chromosomes.

	Body cell	Sex cell
Number of chromosomes present	12	6
Can the chromosomes be put in pairs? (yes or no)	yes	no

2. a. Genes are often shown as lines on a chromosome. Examine the diagrams below of a pair of body cell chromosomes and a sex cell chromosome of a horsefly. Complete the diagrams by drawing the genes on the unmarked chromosomes and labeling them by trait.



- b. How many genes for wing length are present in this body cell? 2
- c. How many genes for wing length are present in this sex cell? 1

3. In dogs, black fur is dominant to brown fur. Write the color each dog will be if the dog is:

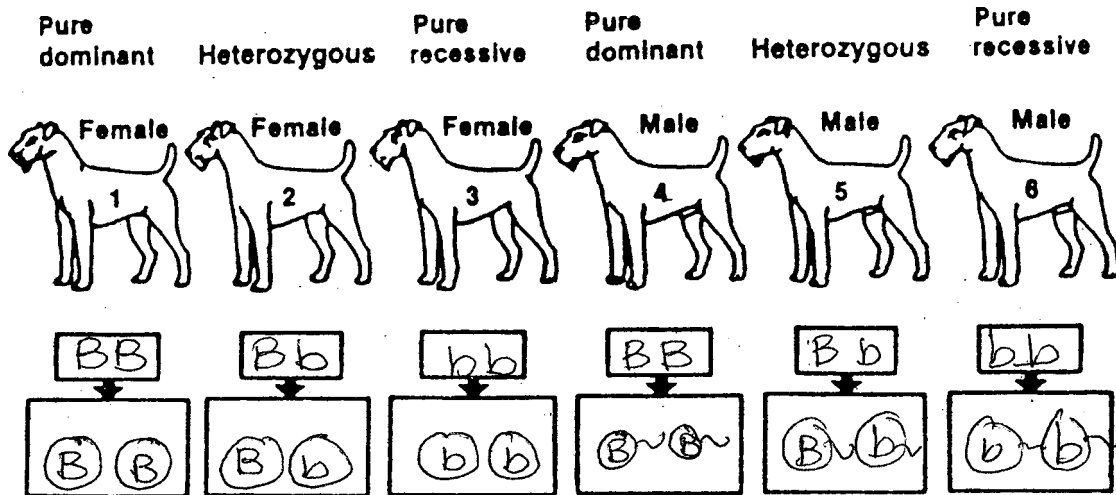
homozygous pure dominant black homozygous pure recessive brown heterozygous black

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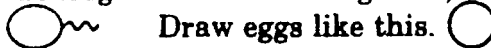
EXPECTED AND OBSERVED RESULTS

In Section 26:2 of your textbook, read about possible combinations of eggs and sperm.

1. Here are six dogs. In the small box below each dog, write the genes present in the body cells of that dog. Use the letters *B* for black and *b* for brown.



In the large boxes in the diagrams, draw 2 sex cells below each dog. Draw sperm like this.



Complete the drawings by marking the genes *B* or *b* on the sex cells you have drawn.

2. The following table shows possible results of mating the dogs. Complete the table.

Mother	Father	Possible gene in eggs	Possible gene in sperm	Gene combinations in fertilized eggs	Likely fur color of 4 puppies
Dog 1	Dog 4	B B	B B	BB BB BB BB	4 black
Dog 1	Dog 5	B B	B b	BB BB Bb Bb	4 black
Dog 2	Dog 4	B b	B B	BB Bb BB Bb	4 black
Dog 2	Dog 5	B b	B b	BB Bb Bb bb	3 black 1 brown
Dog 3	Dog 5	b b	B b	Bb Bb bb bb	2 black 2 brown
Dog 3	Dog 6	b b	b b	bb bb bb bb	4 brown

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VOCABULARY

Review the new words used in Chapter 26 of your textbook. Then, answer these questions.

1. Below each of the following words are choices. Circle the choices that are examples of each of those words.

a. Dominant gene

D e k L N o R S

b. Recessive gene

M n d F G i k P

c. ~~Pure dominant~~ Homozygous Dominant

AA Gg KK ll pp Rr TT

~~Pure recessive~~ Homozygous Recessive

ee Ff HH Oo qq Uu ww

e. Offspring combinations in which dominant gene *must* show

AA Dd EE ff Jj RR Ss

f. Offspring combinations in which recessive gene *must* show

aa Gg Ff KK Oo PP ss tt

2. Fill in the blanks below using these choices: dominant, genes, genetics, heterozygous, ^{homozygous} pure, recessive, chromosomes, Punnett square.

a. Chromosomes have parts that determine traits. These parts are genes.b. A person having two genes that are alike is said to be homozygous.c. A gene that prevents others from showing is said to be dominant.d. A gene that may not show up even though it is there is said to be recessive.e. Long rod-shaped bodies inside a cell's nucleus are called chromosomes.f. One who studies how traits are passed on is studying genetics.g. A person with one dominant and one recessive gene for a trait is heterozygous.h. A way to show which genes can combine when an egg and sperm join is a Punnett square.

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EXPECTED AND OBSERVED RESULTS

In Section 26:2 of your textbook, read about the work done by Gregor Mendel in genetics.

10. Mendel made the following crosses with pea plants. Complete the Punnett squares and answer the questions about each cross:

	R	R
r	Rr	Rr
r	Rr	Rr

1

	R	R
R	RR	RR
r	Rr	Rr

2

	R	r
R	RR	Rr
r	Rr	rr

3

	R	r
r	Rr	rr
r	Rr	rr

4



- a. He crossed a red flowered R plant with a white flowered r plant. His results were 126 red flowered plants and 122 white flowered plants. Which of the Punnett squares above best shows the parents and offspring that could give these results? square 4
- b. He crossed a red flowered plant with a white flowered plant. His results were 307 red flowered plants and 0 white flowered plants. Which of the Punnett squares above best shows the parents and offspring that could give these results? square 1
- c. He crossed a red flowered plant with a red flowered plant. His results were 306 red flowered plants and 110 white flowered plants. Which of the Punnett squares above best shows the parents and offspring that could give these results? square 3
- d. He crossed a red flowered plant with a red flowered plant. His results were 300 red flowered plants and 0 white flowered plants. Which of the Punnett squares above best shows the parents and offspring that could give these results? square 2