

## Heredity Web Quest

### DNA from the Beginning – Mendelian Genetics

Go to <http://www.dnafb.org/dnafb/1/concept/index.html>

*Children resemble their parents*

**Read the text and answer the following questions**

1. How have useful traits been accumulated in plants and animals over the centuries?  
\_\_\_\_\_
2. Was there a scientific way to predict the outcome of a cross between two parents? \_\_\_\_\_
3. Who determined that individual traits are determined by discrete "factors"? In what year?  
\_\_\_\_\_
4. These "factors" are now known as \_\_\_\_\_.
5. Summarize what Mendel did? \_\_\_\_\_  
\_\_\_\_\_

**Click on *Animation* at the bottom of the page. Move through the animation and answer the following questions.**

1. Why did Mendel work with pea plants? \_\_\_\_\_  
\_\_\_\_\_

The next question deals with how pea plants self-fertilize

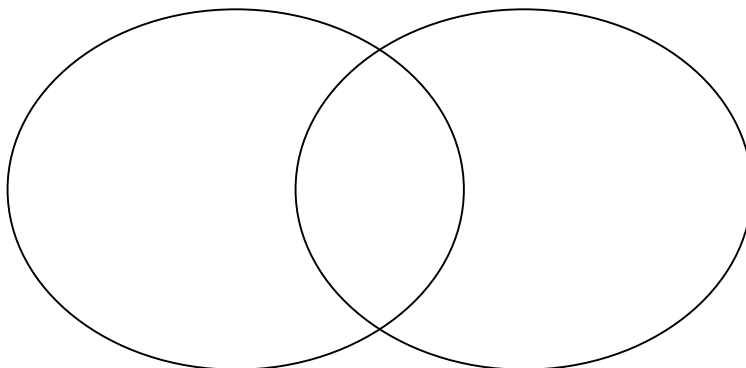
4. A) In the flower the male sex part is the \_\_\_\_\_.
- B) What does it drop inside the immature flower? \_\_\_\_\_
- C) Name the female sex part? \_\_\_\_\_
- D) What are the sex cells that develop there? \_\_\_\_\_
- E) What fertilizes the eggs? \_\_\_\_\_
- F) Why do you think this is called self-fertilization? \_\_\_\_\_

The next question deals with how pea plants cross-fertilize

5. Summarize how cross-fertilization is accomplished?  
\_\_\_\_\_  
\_\_\_\_\_
- Why is it different from self-fertilization?  
\_\_\_\_\_

Self-fertilization

Cross-fertilization



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On the right menu bar click on number 2 "*Genes come in pairs*". Then at the bottom click on *Animation*.

Click through the animation and answer the following questions

1. What is a phenotype? \_\_\_\_\_
2. What are the seven pairs of traits Mendel worked with in pea plants?
  - a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_
  - e. \_\_\_\_\_ f. \_\_\_\_\_ g. \_\_\_\_\_
3. Explain what Mendel reasoned from the existence of yellow and green seed colors

\_\_\_\_\_

4. What is an allele? \_\_\_\_\_
5. What is a genotype? \_\_\_\_\_
6. If a pea plant has the two alleles YY. What is its phenotype? \_\_\_\_\_  
What is its genotype? \_\_\_\_\_

On the right menu bar click on number 3 "*Genes don't blend*". Then at the bottom click on *Animation*.

Click through the animation.

2. What observations did Mendel make and what problem did he have to solve?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

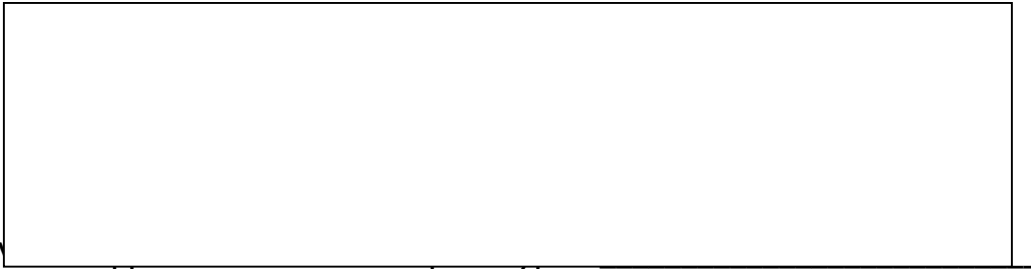
On the right menu bar click on number 4 "*Genes don't blend*". Then at the bottom click on *Animation*.

Click through the entire animation. Answer the following using the type of diagram that is found in the animation

1. Diagram the cross & offspring between pure-bred green with pure-bred yellow.

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3. Diagram the cross between two heterozygous plants ( $Yy \times Yy$ )



On the right menu bar click on number 5 "*Gene inheritance follows rules*". Then at the bottom click on *Animation*.

Click through the animation.

1. Explain Mendel's law of segregation

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2. Draw a Punnett square showing the heterozygous cross of two yellow seeds  $Yy \times Yy$ .



Which genotype gives the green phenotype? \_\_\_\_\_ Which genotype gives the yellow phenotype? \_\_\_\_\_

Give an example from above that explains the 3 to 1 ratio.

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Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Heredity Web Quest

### Part 2 – Problem Sets & Tutorials

Go to [http://www.biology.arizona.edu/mendelian\\_genetics/mendelian\\_genetics.html](http://www.biology.arizona.edu/mendelian_genetics/mendelian_genetics.html)

Take out a piece of scratch paper. Diagram the problem on a Punnett square before looking at the tutorial. Good Luck!

Click on *Monohybrid Cross*. Do problem set #1-13. Use the tutorial to help you understand the problem.

Click on *Dihybrid Cross*. Do problem set #1-9. Use the tutorial to help you understand the problem.

Click on *Sex-linked Inheritance I*. Do problem set #1-10. Use the tutorial to help you understand the problem.