

Name: \_\_\_\_\_ Hr: \_\_\_\_\_

## **Mendelian Basics Genetics Webquest**

Go to the following address: <http://www.dnaftb.org/1/>

**Children Resemble Their Parents**, will appear.

### **ANSWER ALL QUESTIONS.**

1. What did Mendel call "genes"?

**Click on Animation at the top of the page. Click on the arrow (next) in the bottom right hand corner to continue through the animation.**

2. Why did Mendel choose pea plants for his work?(give at least 2 reasons)

- 1.
- 2.

To "cross fertilize" Mendel did the following: "I opened the \_\_\_\_\_ flower. Then I cut off the \_\_\_\_\_ before they matured and \_\_\_\_\_ the pollen. After the flower matured. I \_\_\_\_\_ its pistil with \_\_\_\_\_ from another plant." This is cross fertilization.

**Click on Bio at the top of the page and learn more about Mendel.**

3. John Gregor Mendel is often called Father of \_\_\_\_\_. He lived from \_\_\_\_\_ to \_\_\_\_\_. Through his work with pea plants, Mendel discovered the basic laws of \_\_\_\_\_ and was able to recognize the mathematical \_\_\_\_\_ from one generation to the next.

4. Mendel's Laws of Heredity are known as: (list of the names of all three)

**In the top right hand corner, click on concept 2, Genes Come in Pairs.**

1. Define "pure-bred" plants. (Hint: Look at the last sentence on this page.)

**Click on Animation at the top of the slide. Use the arrow in the bottom right to continue through the animation.**

1. What is a phenotype?

2. These are \_\_\_\_\_ and \_\_\_\_\_ traits (such as flower position and \_\_\_\_\_ length), \_\_\_\_\_ traits (like \_\_\_\_\_ & \_\_\_\_\_), and seed traits, such as \_\_\_\_\_, \_\_\_\_\_, and seed coat color. There are a total of \_\_\_\_\_ traits and each has \_\_\_\_\_ phenotypes.

3. What are the phenotypes of pod color? And what are the phenotypes of seed shape?

4. In the experiment, Mendel explains to you, he tests seed \_\_\_\_\_. Green seeds and yellow seeds are \_\_\_\_\_.

5. Each form of a gene is called an \_\_\_\_\_ and a pair of alleles written together is called a \_\_\_\_\_.

6. What is the genotype of a **purebred** green seed?

**Click on Bio at the top of the page. Read about *The Man, the Monk.***

7. Where is the Augustinian Monastery located where Mendel did his work?

While at the university, Mendel took courses in \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. He also taught \_\_\_\_\_ science. Mendel spent \_\_\_\_\_ years conducting his experiments from \_\_\_\_\_ to \_\_\_\_\_. He published his results in \_\_\_\_\_.

**Click on concept 3, *Genes don't Blend*, in the upper right hand corner.**

1. How are pea plant characteristics different than mixing paint colors?

**Click on Animation at the top of the page.**

2. When Mendel crossed two purebred parents, the offspring did not appear mixed. Instead, what did he observe in the hybrid offspring?

**Click on concept 4, *Some Genes are Dominant* on the right side of the page.**

1. What did Mendel propose for the reason that only one trait showed up in his hybrid plants? (Hint: look at the 2<sup>nd</sup> paragraph.)

**Click on Animation at the top of page.**

1. When Mendel crossed purebred yellow peas with purebred green peas, what happened?

2. What is the 4 possible **genotype (letters)** of the offspring that resulted from the cross between a purebred green plant and a purebred yellow plant?

3. Peas can be yellow if they have two \_\_\_\_\_ alleles or one \_\_\_\_\_ and one \_\_\_\_\_ allele. Green peas must have \_\_\_\_\_ copies of the green \_\_\_\_\_.

4. What are the 4 possible **genotypes (letters)** of offspring when you cross 2 heterozygous plants?

5. Most of the offspring will be \_\_\_\_\_ in color but the green \_\_\_\_\_ reappears in this generation. In this case, the yellow phenotype is \_\_\_\_\_ and the green phenotype is \_\_\_\_\_.

**Click on Concept 5, Genetic Inheritance follows Rules on the right side of the page.**

1. What problem was presented when Mendel proposed that each trait is determined by a pair of genes? (Hint: Look at the first paragraph.)

Mendel deduced that \_\_\_\_\_ cells contained only \_\_\_\_\_ parental gene each \_\_\_\_\_. Mendel found that different \_\_\_\_\_ from parents resulted in specific \_\_\_\_\_ of \_\_\_\_\_-to- \_\_\_\_\_ traits.

**Click on Animation at the top of the page.**

1. Each parent can produce \_\_\_\_\_ types of gametes.

2. How are alleles selected to go into gametes? \_\_\_\_\_

3. What are Punnett squares used for?

4. Make the Punnett square that results from a cross of heterozygous pea plants.

5. What are the genotypes possible in the offspring?

6. What phenotypes do these genotypes represent?

7. What is the ratio of yellow peas to green peas?

**Click on Problem at the top of the page.**

8. Define dihybrid cross.

9. The plant in the problem is heterozygous for both two traits. What are the traits? What is the plant's genotype? What is the plant's phenotype?

10. What are the gamete combinations for this plant?

**Continue to click through the problem until you get to the ratio for the 4 phenotypes.**

11. Give an example of a Tall, Yellow genotype. How many offspring are Tall and Yellow?
  
12. Give an example of a short, yellow genotype. How many offspring are short and yellow?
  
13. Give an example of a tall, green genotype. How many offspring are tall and green?
  
14. Give an example of a short, green genotype. How many offspring are short and green?
  
15. Mendel's Law of Independent Assortment states that \_\_\_\_\_ separate independently of one another in meiosis when forming gametes.

**Click on Concept 6, *Genes are real things* on the right side of the page.**

**Click on Animation at the top of the page.**

1. What tool helped to make Mendel's Laws of Heredity more acceptable in the early 1900s?
  
2. By the 1870s, we saw that in some cells, the nucleus was replaced by distinctive \_\_\_\_\_ . Cells from different species have a different number of \_\_\_\_\_ . Scientists began to think that chromosomes carried the units of \_\_\_\_\_ .