

Mendel Webquest

Website: Go to the following website <http://www.dnafb.org> and click on **Classical Genetics**

1. Click on and Read through “**Children Resemble their Parents**” and then go through the animation.
 - a. Why do we resemble our parents?

 - b. Who was Gregor Mendel?

 - c. In which year did Gregor Mendel make his important discovery?

 - d. List three reasons Gregor Mendel used pea plants to study inherited traits.

 - e. What are the male part and female parts of a flower?

 - f. Distinguish between self-fertilization and cross-fertilization.

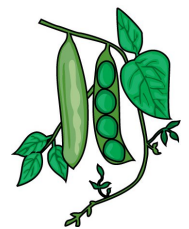
2. Click on “**Genes come in pairs**” to answer the following questions. You will also have to read through the animation to answer the questions.
 - a. What did Mendel mean when he said that each trait, in a pea plant, had alternative forms?

 - b. Pure-bred plants have two copies of the _____ gene for each trait.

 - c. List the seven pea plant traits that Mendel observed while doing these experiments
 - 1) _____
 - 2) _____
 - 3) _____
 - 4) _____
 - 5) _____
 - 6) _____
 - 7) Seed Coat Color

 - d. Define phenotype-

 - e. List the two phenotypes for the following traits:
Height (stem length): can be _____ or _____
Seed shape: can be _____ or _____
Seed Color can be _____ or _____
Seed Coat Color: can be _____ or _____



3. Read through “**Some genes are dominant**” and the animation.

- a. The terms dominant and recessive describe the behavior of trait options. Distinguish between these two terms.
 - i. Dominant-

 - ii. Recessive-

- b. In some of Mendel’s experiments, he mated two yellow peas and evaluated the offspring. He found that some of the offspring were yellow and some were green. How did he explain this result?

- c. When Mendel mated a green pea plant (yy) with a Yellow pea plant (YY), what was the genotype (the letters) and the phenotype (visible color) of the offspring?

- d. When Mendel mated a yellow pea plant (Yy) with a yellow pea plant (Yy), what were the genotype and phenotype of the offspring?

4. Read through “**Genetic inheritance follows rules**” and the animation.

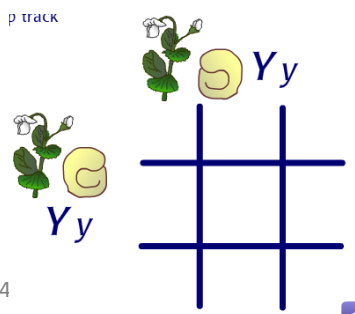
- a. Why would it be a problem if parents passed on both copies of their gene pairs to their offspring?

- b. How is this problem solved?
- c. What is a gamete?
- d. What is Mendel’s Law of Segregation?

- e. What is used to keep track of the gametes and possible offspring combinations?

- f. Who invented this tool?

g. Follow along with the animation – complete the following Punnett square



h. **Label** the parts of this diagram that represent the parent’s traits. **Label** the parts of the diagram that represent the possible traits of the offspring.

- i. Interpreting results:** Out of four possible gene combinations:
- i. how many of the offspring are predicted to be YY? _____ (this is the genotype)
What color would they be? _____ (this is the phenotype)
 - ii. how many of the offspring are predicted to be Yy? _____
What color would they be? _____
 - iii. how many of the offspring are predicted to be yy? _____
What color would they be? _____

Vocabulary Review – Use the webquest, notes or textbook to help you match the vocabulary term to its definition. *vocab terms may be used once or twice. ALL will be used.*

- ___ 1. Father of Genetics
- ___ 2. Inherited characteristics that can differ from person to person.
- ___ 3. States that some alleles are dominant and others are recessive
- ___ 4. The pairs of alleles present in a hybrid organism are
- ___ 5. Tool used to predict the outcome of a mating.
- ___ 6. Only one copy of this allele must be present to see this trait
- ___ 7. A segment of DNA that encodes information for a specific trait.
- ___ 8. Term referring to the alternate variations in a trait (ex. Brown hair vs blond hair)
- ___ 9. An organism's genetic make-up
- ___ 10. Organism that has two different copies of an allele
- ___ 11. Organism that has two of identical copies of an allele
- ___ 12. The pairs of alleles present in a pure-bred organism are
- ___ 13. When an organism produces gametes, the two alleles separate from one another so that each gamete carries only one allele.
- ___ 14. Physical appearance of an organism
- ___ 15. Two copies of this trait must be present to see this trait.

- A. Allele
- B. Dominant
- C. Gene
- D. Genotype
- E. Gregor Mendel
- F. Heterozygous
- G. Homozygous
- H. Law of Segregation
- I. Phenotype
- J. Punnett Square
- K. Principle of Dominance
- L. Recessive
- M. Trait

16. Explain or sketch the relationship between DNA, genes, chromosomes and traits.