Name	Date	

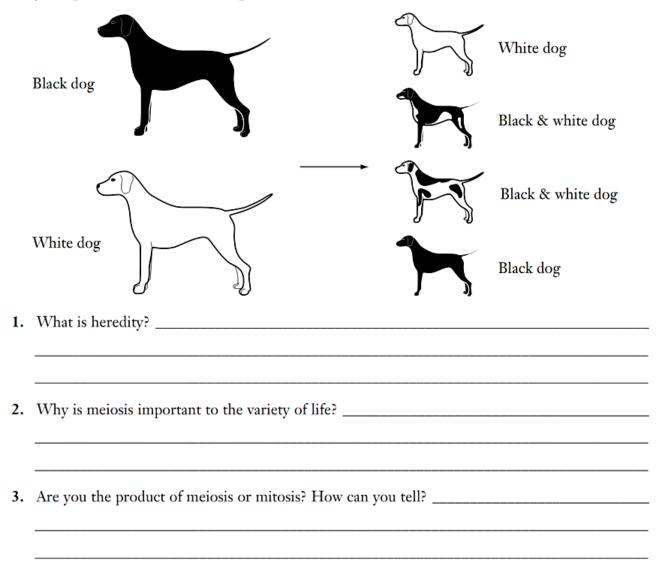
WU: Mendel's Law of Heredity

## **Get the Big Picture**

What would the world be like if there were no meiosis? Think about it. Meiosis lets the genetic information from one cell combine with the genetic information from another cell to make a new and different cell. Without meiosis, all cells and organisms would be the same.

Gregor Mendel observed the results of meiosis for many years before he understood what he was seeing. He observed that tall plants came from short plants, wrinkled peas came from smooth peas, and much more. The process of the passing on of traits that results in a variety of offspring in each new generation is called **heredity**.

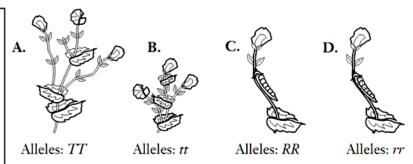
Study the picture and answer the questions.



## Study the Diagrams

Use the diagram and the paragraph in the box to answer the questions.

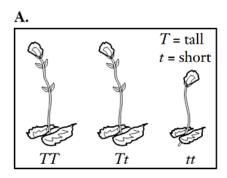
Each of these pea plants has a different trait. Each trait is controlled by a pair of alleles that make up a gene for that trait. All genes of an organism make up a genotype. A genotype can be represented by its alleles. Letters such as *T* or *t* represent different alleles.

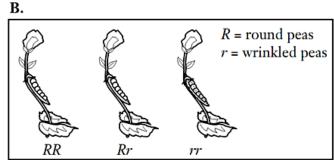


- 1. What are the genotypes of the plants in the diagram? The first one is filled in for you.
  - a. tall plant \_\_\_\_\_ TT
    - **c.** round pea \_\_\_\_\_\_

  - b. short plant \_\_\_\_\_ d. wrinkled pea \_\_\_\_\_

Use the diagrams and paragraph in the box to answer the questions.





The allele for tallness (T) makes two of the three plants in diagram A tall. The allele for tallness is a dominant allele. The trait with a dominant allele will show up over a trait with a recessive allele. This means that plants with the dominant allele for tallness will be tall even if they also have a recessive allele for shortness.

- 2. Will the peas in diagram B that have the genotype Rr be round or wrinkled? Explain your answer.
- **3.** In diagram B, what shape will the peas with the genotype *rr* have? Explain your answer.