

# Mendel and His Peas

Heredity - The passing of genetic traits from \_\_\_\_\_ to \_\_\_\_\_.

## Who Was Gregor Mendel?

- Gregor Mendel was born in \_\_\_\_\_ in 1822.
- Mendel entered a monastery when he was 21 years old.
- He was very involved in scientific research at the monastery, where he frequently worked in the \_\_\_\_\_.

## Unraveling the Mystery:

- From working in the garden, Mendel noticed that patterns of \_\_\_\_\_ were not always clear. Frequently a \_\_\_\_\_ that appeared in one generation (parents) would not show up in the next generation (offspring).
- Though not a professional scientist, Mendel decided to conduct an experiment to learn more about inheritance patterns.
- Mendel decided to study only one kind of organism. He had studied \_\_\_\_\_ \_\_\_\_\_

before, so he decided on that organism for his experiment.

- Garden peas were a good choice for his experiment for multiple reasons:
  - They grow \_\_\_\_\_
  - Many different varieties (visible traits) available
  - Able to \_\_\_\_\_-pollinate
  - Can also \_\_\_\_\_-pollinate
- It was important that the peas were self-pollinating because Mendel was able to make sure that he used only \_\_\_\_\_ plants. True-breeding plants produce offspring that have all of the same visible traits as the parent.
- Because the pea plants could also be cross-pollinated, Mendel was able to breed, or \_\_\_\_\_, different pea plants.
- Mendel studied only one \_\_\_\_\_ at a time  
EX: seed shape, plant height, flower color

### Mendel's First Experiments:

- In his first experiment, Mendel chose plants that were true-breeding for \_\_\_\_\_

different characteristics. Each characteristic had \_\_\_\_\_ varieties (traits).

EX: He crossed purple-flowered plants with white-flowered plants.

➤ The offspring from these crosses are called *first-generation* plants.

➤ \_\_\_\_\_ of the first-generation plants exhibited only one of the two traits. The other trait disappeared.

EX: For flower color, ALL of the first-generation plants had purple flowers.

➤ Mendel called the trait that appeared in the first generation the \_\_\_\_\_ *trait*.

He called the trait that disappeared in the first generation the \_\_\_\_\_ *trait*.

Dominant trait - The trait observed in the \_\_\_\_\_ generation when parents that have different traits are bred.

Recessive trait - A trait that reappears in the \_\_\_\_\_ generation after disappearing in the first generation when parents with different traits are bred.

### Mendel's Second Experiments:

➤ Mendel then allowed the first-generation plants to \_\_\_\_\_-pollinate.

- In the offspring of these plants (second generation) the \_\_\_\_\_ trait reappeared along with the dominant trait.
- Mendel counted the number of plants that had each trait in the second generation.
- The \_\_\_\_\_ trait did not show up as often as the \_\_\_\_\_ trait for any of the seven characteristics he studied.
- Mendel determined that the ratio of dominant to recessive traits in the second generation was \_\_\_\_\_ (for every three purple-flowered plants, there was one white-flowered plant, etc.)
- Mendel realized that his results could only be explained if each plant had \_\_\_\_\_ sets of instructions for each \_\_\_\_\_.
- One set of instructions is donated from each \_\_\_\_\_.
- Mendel was not able to efficiently communicate his results. It was until after his death, more than 30 years later, that his work was rediscovered and the door to modern \_\_\_\_\_ was opened.