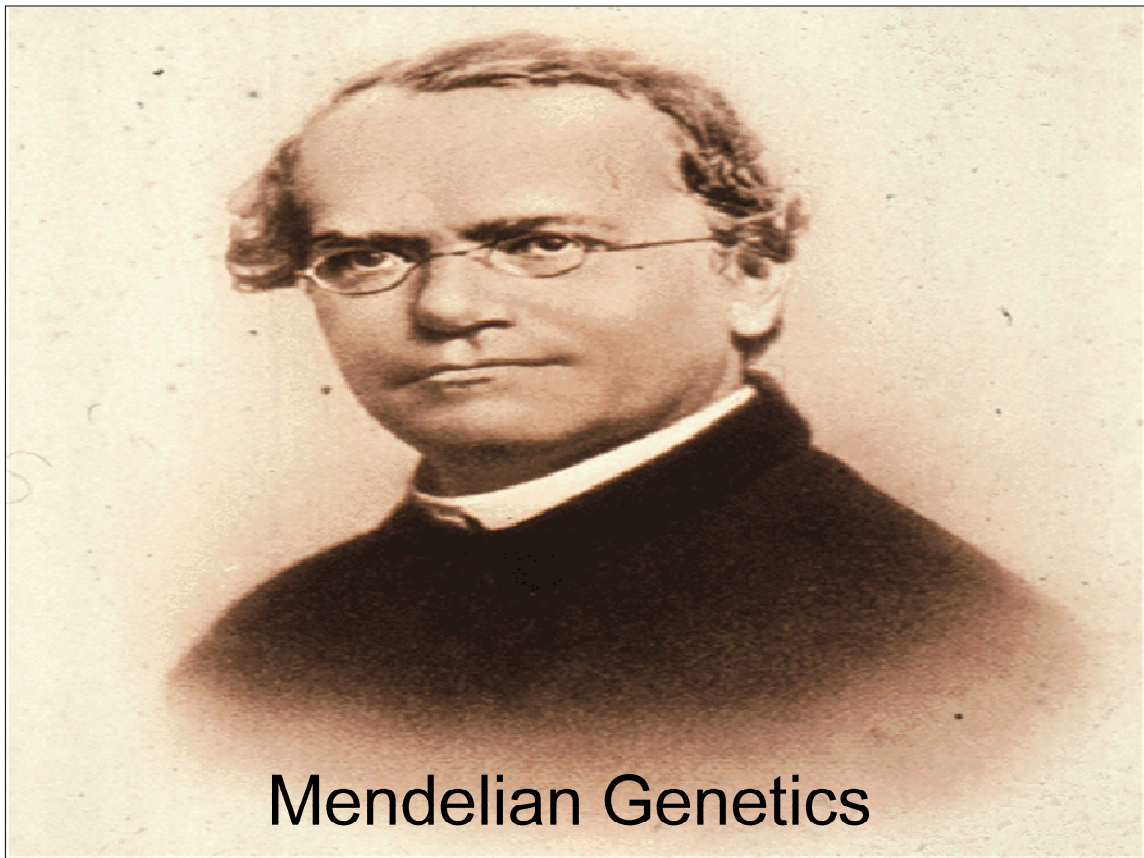


**Standard**: Students will analyze how biological traits are passed on to successive generations.

**Element**: Using Mendel's laws, explain the role of meiosis in reproductive variability.

**EQ**: Who was Gregor Mendel?



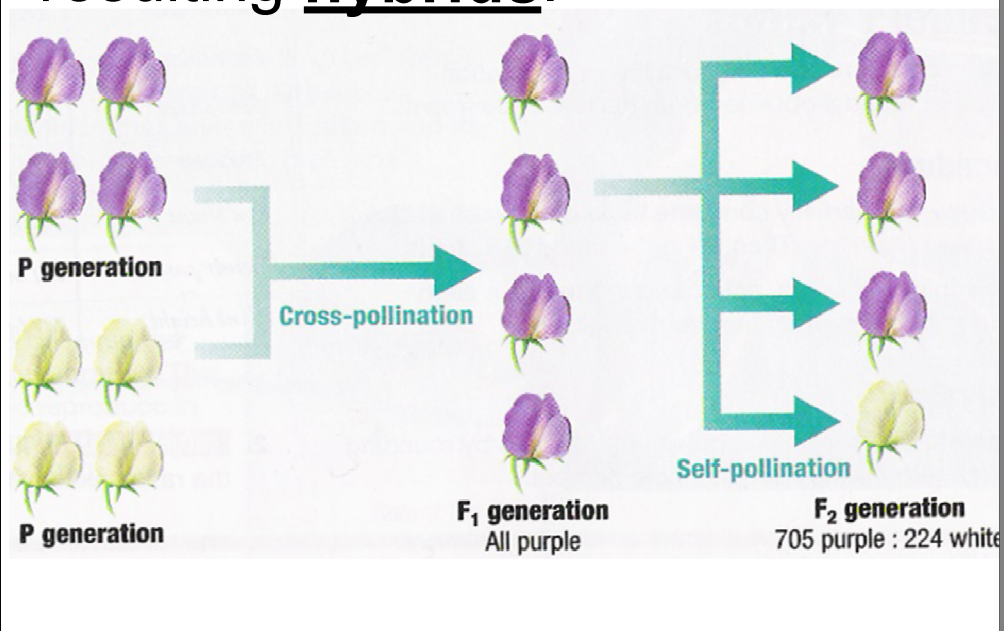
Mendelian Genetics

In the 1800's **Gregor Mendel** did breeding experiments with the garden pea plant.

Mendel was the first to develop rules to predict patterns of **heredity**.

Modern **genetics** is based on his explanations for these patterns of heredity.

Mendel crossed pea plants with different **traits** and studied the resulting **hybrids**.



Different traits result from different versions of genes called **alleles**.

- Each individual has **two** alleles for a given character, one from each parent.
- We will represent each allele with a letter.

For example, in pea plants:

- For the character of flower color, the plant can have one of two traits: Purple flowers or white flowers.
- The allele for purple flowers is a capital **P**, because that trait is dominant. The allele for white flowers is a lowercase **p**, because that is the recessive trait.

- A **dominant** trait will be expressed whenever the dominant allele is present. It only takes one dominant allele for that trait to be expressed.  $PP$   $Pp$
- A **recessive** trait will only be expressed if there is no dominant allele present, so there must be two recessive alleles for that trait to be expressed.  $pp$