

# Medelian Genetics

Section 10.2

# How Genetics Began

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- ▶ **Gregor Mendel**
  - ▶ Austrian monk and plant breeder
  - ▶ 1866 – published research on inheritance
  - ▶ Looked at pea plants
- ▶ The passing on of traits to the next generation is called **inheritance or heredity**
- ▶ Mendel chose pea plants because:
  - ▶ Self-fertilizing
  - ▶ Easily cross-pollinated by hand
  - ▶ Usually produce offspring with only one form of a trait



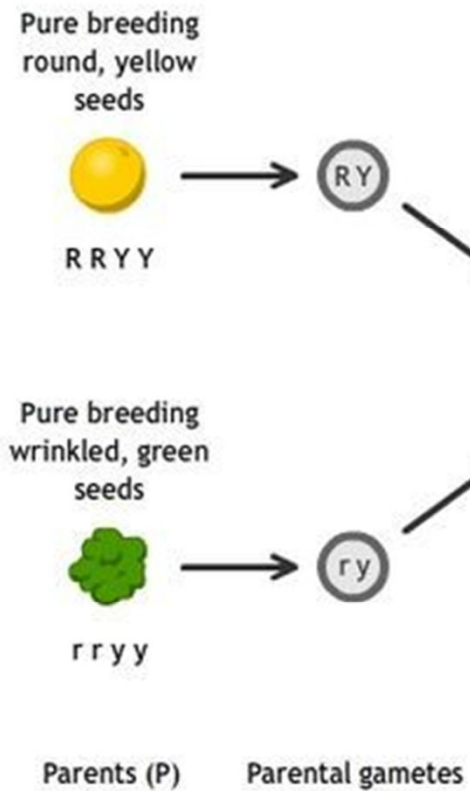
# The Inheritance of Traits

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- ▶ Mendel observed that some pea plants produced the same traits each generation
  - ▶ Example: some always made green seeds, some always made yellow seeds
- ▶ To figure out why – he cross pollinated the plants
  - ▶ Taking male gamete from green seed plant
  - ▶ Placing male gamete in female organ of yellow seed plant
  - ▶ The beginning generation was then called the **P (parent) generation**



# The Inheritance of Traits



# The Inheritance of Traits

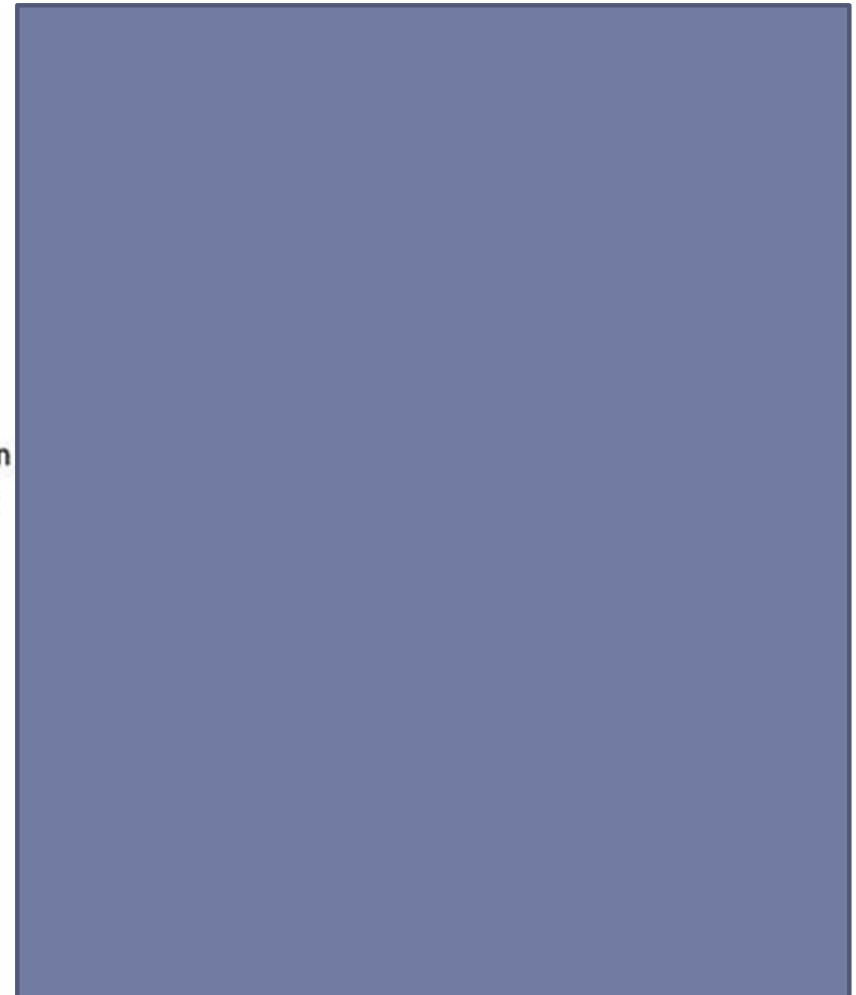
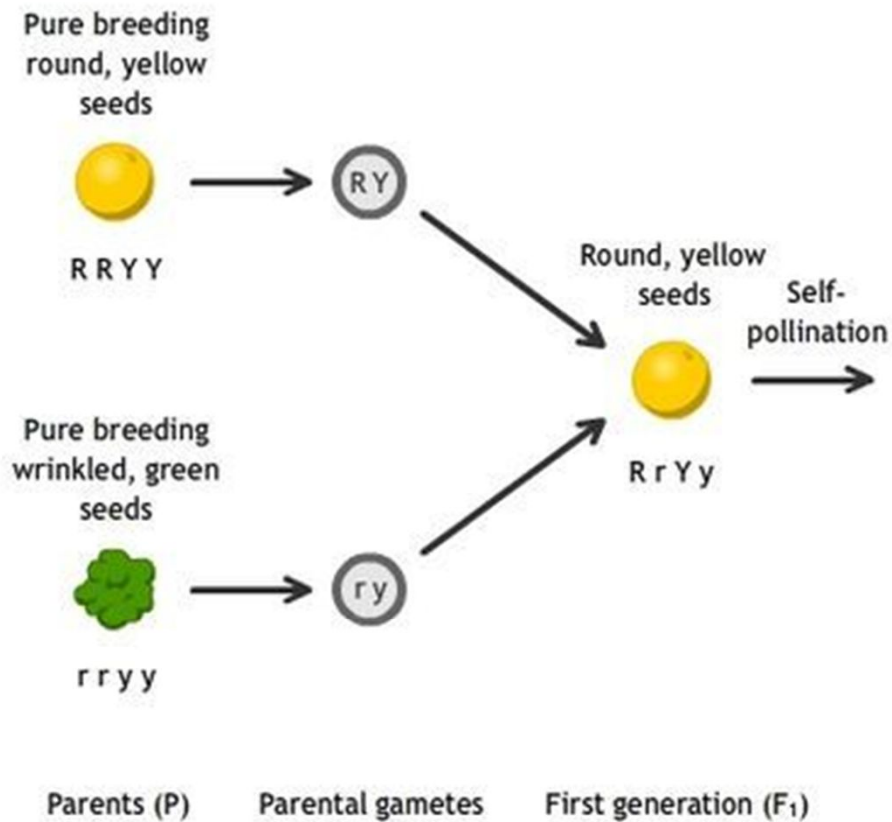
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## ▶ F<sub>1</sub> and F<sub>2</sub> Generations

- ▶ All the resulting offspring were yellow seeds
- ▶ The first offspring from the P generation is called the **F<sub>1</sub> (first filial) generation**
- ▶ the green seed trait seemed to disappear in this generation
- ▶ To determine if the green seeds traits were gone:
  - ▶ Allowed the F<sub>1</sub> generation to self fertilize
  - ▶ The resulting offspring were the **F<sub>2</sub> (second filial) generation**
  - ▶ 6022 were yellow, 2001 were green = a 3:1 ratio
  - ▶ Every trait he studied in this generation was a 3:1 ratio
- ▶ *Question: Which generation are your grandparents? Parents? You?*



# The Inheritance of Traits



Second generation ( $F_2$ )

# The Inheritance of Traits

