



Growing Dwarf Pea Plants and Observing Mendelian Genetics



OVERVIEW

Gregor Mendel used pea plants to discover the basic laws of inheritance. In this experiment, you will grow dwarf (short) and tall pea plants, cross them, and observe the traits in the offspring. You will record and analyze your results to see how traits are passed from one generation to the next.

Key Idea

Traits are controlled by factors (genes) that are inherited. Some traits are dominant, and others are recessive.



MATERIALS

- Dwarf pea seeds (TT)
- Tall pea seeds (tt)
- Pots or cups (at least 10)
- Potting soil
- Watering can
- Labels or plant markers
- Ruler (cm/inch)
- Notebook or data sheet
- Pencil

Note: Dwarf (T) is dominant over tall (t).

TT = dwarf (homozygous dominant)

tt = tall (homozygous recessive)

Tt = dwarf (heterozygous)



PROCEDURE

- Plant the Parental Generation (P):**
 - Plant 3–5 dwarf (TT) seeds in separate pots.
 - Plant 3–5 tall (tt) seeds in separate pots.
 - Label the pots **P: Dwarf (TT)** and **P: Tall (tt)**.
- Grow and Observe:**
 - Water plants regularly and place them in a sunny location.
 - Observe growth and record plant height weekly.
 - Confirm that dwarf plants are short and tall plants are tall.
- Make the Cross (Produce F₁ Generation):**
 - When plants are flowering, carefully transfer pollen from a dwarf (TT) plant to a tall (tt) plant using a small paintbrush or cotton swab.
 - Do the reverse cross as well (tall to dwarf).
 - Allow pods to form and mature.
 - Collect seeds from the pods. These are your F₁ seeds.
- Grow the F₁ Generation:**
 - Plant 8–10 of the F₁ seeds.
 - Observe and record plant height.
- (Optional) Make the F₁ Self Cross to Produce F₂:**
 - Allow the F₁ plants to self-pollinate.
 - Collect seeds and plant 15–20 F₂ seeds.
 - Observe and record the ratio of dwarf to tall plants.



DATA TABLE (Fill in as you observe)

Generation	Parent Plants (Cross)	Number Planted	Number Dwarf	Number Tall	Dwarf : Tall Ratio	Notes / Observations
P (Parental)	Dwarf (TT) Tall (tt)					
F ₁ (First Filial)	TT × tt					
F ₂ (Second Filial)	F ₁ self-cross					



ANALYSIS QUESTIONS

1. What were the phenotypes (traits) of the P generation? _____
2. What was the phenotype of all the F₁ plants? Why do you think this happened? _____
3. What was the ratio of dwarf to tall plants in the F₂ generation? _____
4. What pattern do your results show? How does this relate to Mendel's law of segregation? _____



Think Like a Scientist: Be patient, observe carefully, keep good records, and look for patterns in your data.