

Which of the following genotypes is homozygous dominant?

- 1) Bb
- 2) bB
- 3) bb
- 4) BB

PROMETHEAN

Which of the following represents the phenotype of an organism?

- 1) BB
- 2) brown eyes
- 3) homozygous dominant
- 4) monohybrid

PROMETHEAN


Gregor Mendel: "Father of Genetics"

- Studied pea plants
 - breeding different shapes, color, textures
 - Proved principles of heredity

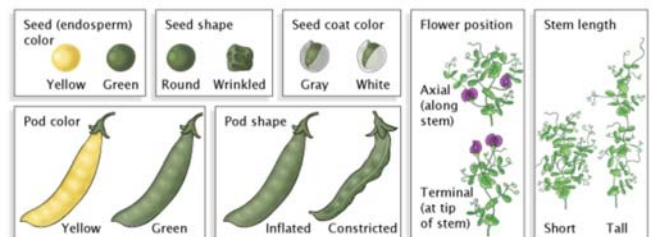
Heredity: Characteristics passed down from parents to offspring

















Intro to Mendel















heritable substance
"elementen." 

Pea Traits:

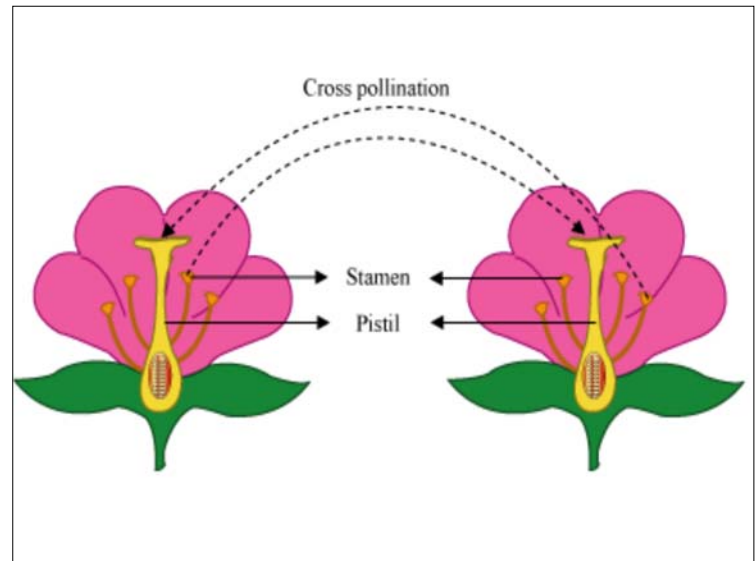


Pure Breeding vs. Hybrid

Mendel's 7 Traits of Pea Plants						
Seed color	Seed shape	Pod shape	Pod color	Flower color	Stem length	Flower position
						
Dominant Form						
						
Recessive Form						

Traits of Mendel's Pea Plants				
Character	Dominant trait	Recessive trait	F ₂ Generation Dominant:Recessive	Ratio
Flower color	 Purple	 White	705:224	3.15:1
Flower position	 Axial	 Terminal	651:207	3.14:1
Seed color	 Yellow	 Green	6022:2001	3.01:1
Seed shape	 Round	 Wrinkled	5474:1850	2.96:1
Pod shape	 Inflated	 Constricted	882:299	2.95:1
Pod color	 Green	 Yellow	428:152	2.82:1
Stem length	 Tall	 Dwarf	787:277	2.84:1

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Check your knowledge

Genotype vs. Phenotype

B = brown eyes **b = blue eyes**

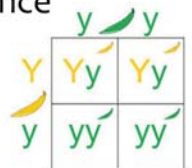
What would the genotype be for an individual who is heterozygous? **Bb**

What would the phenotype be for an individual who is heterozygous? **brown eyes**

If a person has blue eyes, what is their genotype? **bb**

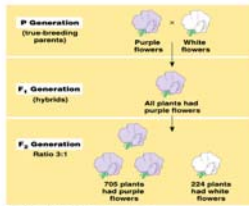
Monohybrid Cross:

- Determine probability of offspring inheriting **1 trait**
- Determine Genotype & Phenotype possibilities due to allele combinations
 - **Genotype** = genetic make up
 - **Phenotype** = physical appearance



Monohybrid Cross:

- Parent Generation crossed together
 - “P” generation
- Offspring of Parent Generation
 - “F1” Generation
- Offspring F1 crossed with another F1
 - “F2” Generation



STEPS TO CREATE A MONOHYBRID CROSS:

1. Create a Key $R = \text{brown hair}$ $r = \text{blonde hair}$
2. Write out the cross $Rr \times rr$
3. Show the Punnett Square
4. Write the Genotype & Phenotype Results

$(\frac{2}{4}) 50\% Rr$ brown hair
 $(\frac{2}{4}) 50\% rr$ blonde hair