The Inheritance of Traits

- Mendel realized that there must be two forms of each trait
  - One for green seeds, one for yellow seeds
- Mendel determined the trait was controlled by an **allele**
  - Alternative form of a gene, passed on from generation to generation
  - The gene for seed color are different forms of the same gene
- Mendel called the form of the trait that appeared in F_1 – DOMINANT
- The trait masked in F_1 is called - RECESSIVE

The Inheritance of Traits

- When the F_1 generation self fertilized, the recessive green trait was masked – it did NOT disappear
- He believed the yellow seed trait was dominant and "over shadowed" the green seed trait
- The dominant allele is represented by a capital letter
  - Yellow seed trait = Y
- The recessive allele is represented by a lowercase letter
  - Green seed trait = y
  - Yes they are the same letter!
  - Can only show this traits if you have TWO copies of the recessive trait

The Inheritance of Traits

List of seven pairs of contrasting characters in pea plant

Character	*Dominant*	*Recessive*
1. Stem length	Tall	Dwarf
2. Flower position	Axial	Terminal
3. Pod shape	Inflated	Constricted
4. Pod colour	Green	Yellow
5. Seed shape	Round	Wrinkled
6. Cotyledon colour	Yellow	Green
7. Seed coat colour	Grey	White

- What do you think you could label the dominant and recessive of each trait?

Heterozygous vs Homozygous

Heterozygous

- Two different alleles for a trait
- Example: Yy
- Dominant trait will be observed

Homozygous

- Two of the same alleles for a trait
- Example: YY or yy
- Could be dominant (YY) or recessive (yy)

The Inheritance of Traits

Genotype

- Organisms allele pairs
  - Yy
  - yy
  - YY
- The outward appearance might not reflect this pairing
  - YY and Yy are both yellow!

Phenotype

- Organisms outward appearance
- What is looks like
- You can't tell what the pair is UNLESS it's a recessive gene
  - YY and Yy = yellow
  - yy = can only be green