Genetics Vocabulary

Chapter 6
Why do offspring differ from their parents?
Vocab Words
Quiz Friday

1. Traits
2. Genetics
3. Gene
4. Allele
5. Homozygous
6. Heterozygous
7. Genome
8. Genotype
9. Phenotype
10. Dominant
11. Recessive
Distinguishing characteristics that are inherited, such as eye color or leaf shape
Traits

- Widow's peak or not?
- Can roll the tongue or not?
- Which thumb is on the top?
- Length of second toe? Is it longer than your big toe or not?
- Little finger straight or crooked?
- Ear lobe hangs free
- Ear lobe attached
- Darwin's point
- No Darwin's point
- Front teeth close together
- Front teeth with a definite gap
Heredity

The passing of genetic traits from parent to offspring.

Children look similar to their parents because of the traits they inherit.
The study of biological inheritance patterns and variation in organisms.

(The study of how genes are passed on and expressed in offspring)
Gene

* A piece of DNA that provides a set of instructions to a cell to make a certain protein.
* Any alternative forms of a gene that may occur
* Each parent gives one allele—they may be the same, they may be different
**Homozygous vs Heterozygous**

**Homozygous**

* Two of the same alleles
  * Represented by two letters of the same case (AA, aa, BB, bb)

**Heterozygous**

* Two different alleles
  * Represented by two letters of different cases (Aa, Bb)
* All of an organism’s genetic material
* 100% unique UNLESS you have an identical twin
Genotype vs. Phenotype

Genotype
* The genetic makeup of specific genes

Phenotype
* Physical characteristics or traits of an individual
Genotype vs. Phenotype

The diagram illustrates the relationship between genotype (Bb, bb) and phenotype in a cross-breeding scenario. The paternal genotype (pollen) can be either BB (B) or Bb (b), while the maternal genotype (pistil) can be B (B) or b (b). The resulting phenotypes are as follows:

- BB: The offspring will have a phenotype that is determined by the dominant allele B, resulting in a purple flower.
- Bb: The offspring will have a phenotype that is a combination of the dominant and recessive alleles, resulting in a purple flower.
- bb: The offspring will have a phenotype that is determined by the recessive allele b, resulting in a white flower.
Dominant vs. Recessive

**Dominant**

* Allele that is expressed when present, even if there is only one copy (simple dominance)
  * Represented by capital letters (A, B)

**Recessive**

* Allele that is only expressed when two copies are present
  * Represented by lowercase letters (a, b)
Dominant and Recessive

<table>
<thead>
<tr>
<th>Pollen</th>
<th>B</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>BB</td>
<td>Bb</td>
</tr>
<tr>
<td>b</td>
<td>Bb</td>
<td>bb</td>
</tr>
</tbody>
</table>
Don’t Make the Mistake

* Dominant does not equal stronger or better, it just means the allele is shown when present
* It also doesn’t mean that trait is necessarily more prominent in a population
  * Huntington’s Disease
  * Some forms of polydactyly
BINGO Tomorrow

* I will give you definitions or examples and you’ll choose the right words