**Dihybrid Crosses**

* A cross that deals with two different genes or traits
* Example: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mendel did not only study the genetic inheritance of a single trait, he also studied the inheritance of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with a single cross
* Instead of a punnett square containing 1 trait with two alleles, it now has \_\_\_\_\_ traits with \_\_\_\_\_ alleles.
* Mendel’s Law of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_was created from his study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crosses; this law states that genes assort independently; one gene doesn’t \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the inheritance of another.
  + All factors have an \_\_\_\_\_\_\_\_\_ possibility of being donated to the offspring.
  + A a B b
* A yellow round, seed, genotype YyRr, produces the following gametes:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Y = yellow
* y = green
* R = round
* r = wrinkled
* To calcuate the offspring of a cross between YyRr and YyRr we use a Punnett Square:



* A dihybrid cross between two heterozygous parents will always produce a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *phenotypic* ratio.
* In the example:
  + \_\_\_\_ Yellow Round
  + \_\_\_\_ Yellow wrinkled
  + \_\_\_\_ green Round
  + \_\_\_\_ green wrinkled
* A generic ratio for any dihybrid heterozygous cross:
  + 9 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* A parent is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ if it produces only one gamete for a specific trait. It is *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*
  + YYRR is true breeding for yellow, round seeds
  + yyrr is true breeding for green wrinkled seeds
* A cross between two true breeding parents will always produce only \_\_\_\_\_ possible offspring .
  + YYrr x yyRR → YyRr
  + YYRR x yyRR → YyRR

**EXAMPLE:**

*A homozygous individual for tongue rolling and widows peak (both dominant) mates with an individual who cannot roll their tongue and does not have a widows peak. Calculate the phenotypic & genotypic ratio of the offspring of both the F1 and the F2 generations.*