

Mendel's Work (cont'd)...

- his work with the F1 and F2 generations showed that when two different variations of a trait are crossed, **only the dominant form is expressed** (his “**Law of Dominance**”)
- he also concluded...a “**Law of Segregation**”...
 1. Each parent has two “**factors**” (*we now call them “**genes**”*)for a trait (D and R)
 2. These separate into different gametes, one given to each offspring
 3. Each offspring gets 1 from each parent...makes their pair

other conclusions include...

The genes / factors for one trait are inherited as a unit ...the “Unit Theory of Inheritance”, the genes / factors for one trait are inherited separately (independently) from other traits...his “Law of Independent Assortment”

We use letters to represent the genes for a trait, capitals representing dominant alleles, lower case represents recessive :

Ex. TT = homozygous dominant
 Tt = heterozygous (hybrid)
 tt = homozygous recessive

The probability of inheriting any one allele is $\frac{1}{2}$, or 50 %. The probability of inheriting any particular two letter set is the product of each letter,

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \text{ or } 25 \%$$

= the “**product rule**”...

each independent probability is multiplied to get an answer

ex. the chances of having 3 daughters is $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$, or $\frac{1}{8}$ (one in eight)

Predictions on the outcomes of crosses are figured out using punnett squares...