***Incomplete Dominance, Codominance, Multiple Alleles NOTES AND CFU BLAST!***

**Review: Dominant/Recessive**

* One allele is dominant over the other (capable of masking the recessive allele)

**PP = purple Pp = purple pp = white**

**Review Problem: Dominant/Recessive**

* In pea plants, purple flowers (P) are dominant over white flowers (p) show the cross between two heterozygous plants.

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GENOTYPES:

Genotypic ratio:

PHENOTYPES:

Phenotypic ratio:

**Incomplete Dominance**

* A third (new) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ appears in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ condition.
* Flower Color in 4 O’clocks

**RR = red** **rr = white** **Rr = pink**

Some Alleles Are Related Through Incomplete Dominance

Dominance relationships may differ, but the Principle of Segregation remains the same.

Incomplete dominance = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CFU Problem: Incomplete Dominance**

* Show the cross between a pink and a white flower.

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GENOTYPES:

Genotypic ratio:

PHENOTYPES:

Phenotypic ratio:

**Codominance**

* The heterozygous condition, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* Sickle Cell Anemia in Humans

**NN = normal cells SS = sickle cells NS = some of each**

**rr = white** **Rr = pink**

**CFU Problem: Codominance**

* Show the cross between an individual with sickle-cell anemia and another who is a carrier but not sick.

GENOTYPES:

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Genotypic ratio:

PHENOTYPES:

Phenotypic ratio:

**Multiple Alleles**

The human ABO blood group illustrates another genetic phenomenon – codominance AND multiple alleles.

* There are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Blood type in humans
* Blood Types?
  + Type **A**, Type **B**, Type **AB**, Type **O**
* Blood Alleles?
  + A, B, O (in book – IA, IB, I)
* Many genes are present in 3 or more versions (alleles) – this is known as multiple alleles.
* The human ABO blood group is determined by three alleles (*IA*, *IB*, and *i*) of a single gene.

Codominance occurs when the phenotype associated with each allele is expressed in the heterozygote.

* A and B are codominant
  + AA = Type \_\_\_\_\_\_\_\_
  + BB = Type \_\_\_\_\_\_\_\_
  + AB = Type \_\_\_\_\_\_\_\_
* A and B are dominant over O
  + AO = type \_\_\_\_\_\_\_\_
  + BO = type \_\_\_\_\_\_\_\_
  + OO = type \_\_\_\_\_\_\_\_

**CFU Problem: Multiple Alleles**

* Show the cross between a mother who has type O blood and a father who has type AB blood.

GENOTYPES:

Genotypic ratio:

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PHENOTYPES:

Phenotypic ratio:

**CFU Problem: Multiple Alleles**

* Show the cross between a mother who is heterozygous for type B blood and a father who is heterozygous for type A blood.

GENOTYPES:

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Genotypic ratio:

PHENOTYPES:

Phenotypic ratio:

**Dihybrid Inheritance!**

Are Different Characters Like Color and Shape Inherited Together or Inherited Independently?

Mendel performed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to find out.

Mendel’s conclusion: Different characters are inherited independently.

Mendel’s conclusion: Different characters are inherited \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



Note that we’re simultaneously applying the Principles of Segregations and Independent Assortment.

The Independent Alignment of Different Pairs of Homologous Chromosomes At Meiosis Accounts for the Principle of Independent Assortment

The alignment of one pair of homologs is independent of any other.

Principle of Independent Assortment: The assortment of one pair of genes into gametes is independent of the assortment of another pair of genes.

**What Works for Peas Also Works for Humans (Guided Practice)**

Consider a cross between parents heterozygous for both deafness and albinism.

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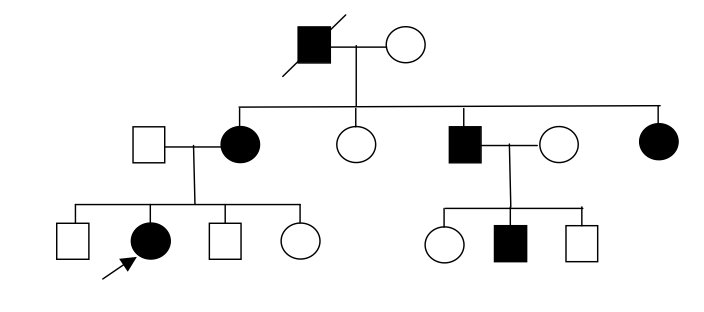
**Other ways to determine inherited traits!**

**Determining parental genotypes**

-Pedigree test- test in which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the parents

-the \_\_\_\_\_\_\_\_ are for \_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_ are for \_\_\_\_\_\_\_\_\_\_\_\_

-if the symbol has been \_\_\_\_\_\_\_\_\_\_\_ it says the person is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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