

Intro to Genetics: Gregor Mendel & Harry Potter



Objective 1: I CAN DEFINE GENETICS

What is Genetics?

- "Genetics is the study of _____ the process in which a parent passes certain _____ onto their children."
- Children _____ their biological parents' genes
 - These genes express specific _____
 - For example... physical characteristics, natural talents, and genetic disorders.



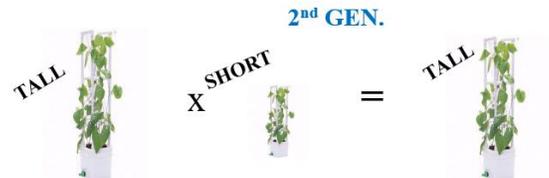
Gregor Mendel: The Father of Genetics

- The _____ started with Gregor Mendel and his pea plant garden.
- He was an Austrian Monk that lived in the mid-1800s.
- He _____ and how they passed their genetic information on to produce different pea plants.

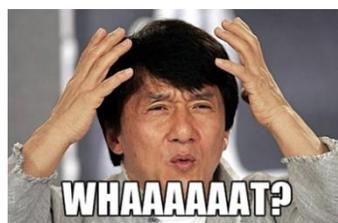
- Mendel's _____ between _____ pea plants resulted in _____ pea plants. His cross between _____ pea plants yielded _____ pea plants.



- Mendel's _____ between _____ pea plants and _____ pea plants resulted in _____ pea plants

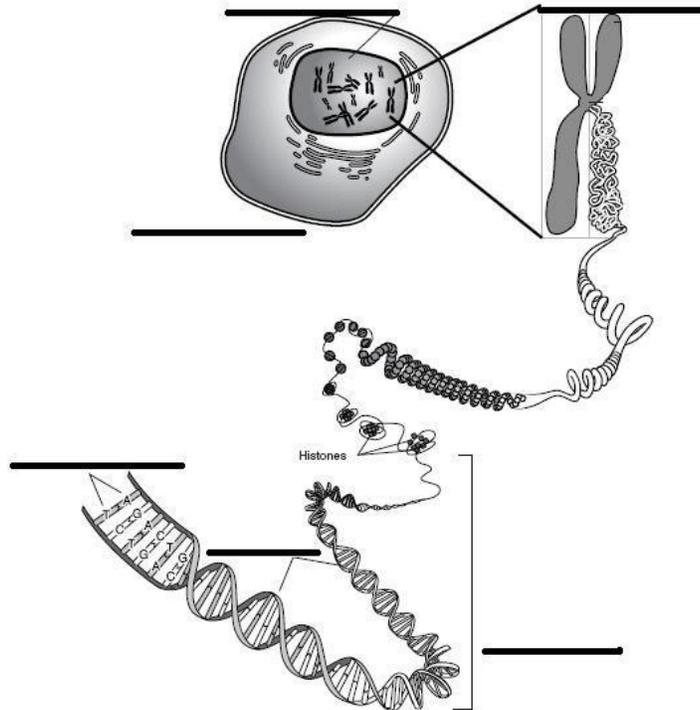
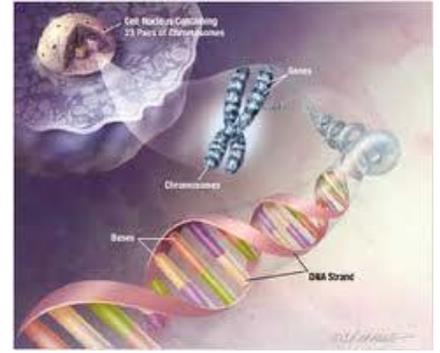


- Mendel then crossed the _____ generation _____ pea plants and ended up with _____



Genes

- Mendel's work led him to the understanding that _____ such as plant height _____ of information _____ by a single set of information.
- _____ are carrying the information
- Chromosomes are _____ and divided into sections called _____.



Genetic Concepts

- _____ describes how some traits are passed from parents to their children.
- The _____ are expressed by _____, which are _____
 - Genes are found on _____
 - Humans have _____ (46 total) of chromosomes
 - _____

Objective 2: I can describe genes and traits.

Small sections of DNA are responsible for a "trait". These small sections are called "genes".

- _____ - A segment of DNA that codes for a specific trait
- _____ - A characteristic an organism can pass on to its offspring through DNA

Objective 3: I can describe how dominant genes mask recessive genes

- _____ - A gene that is _____ expressed and hides others
- _____ - A gene that is _____ expressed when a dominant gene isn't present
- A _____ gene _____ mask a recessive gene.
 - Example - A "widows peak" is dominant, not having a widows peak is recessive.
 - If one parent contributes a gene for a widow's peak, and the other parent doesn't, the offspring will have a widow's peak.



Objective 4: I can define homozygous, heterozygous, and alleles

- All _____ have _____ copies of _____, _____ contributed by the father, _____ contributed by the mother.
- _____ - Two copies of the same gene (ie. – BB)
- _____ - Two different copies of the gene (ie.- Bb)
- _____-Each _____ of a given gene, expressed as either an _____

Applying Genetics to the *Harry Potter* Characters



- _____ are used as symbols to designate genes
 - _____ letters are used for dominant genes (B)
 - _____ letters are used for recessive genes (b)
- Genes always exist in pairs (BB, Bb, bb)
- A genetic trait can be described in two ways:
 - _____ are observable (_____) traits resulting from which genes are expressed.
 - Ex., hair color, a talent, sickle cell disease, etc.
 - A _____ consists of two letters that represent a _____ pair that results in a phenotype.

Example: Freckles

- Two possible _____ for freckles are:
 - **Has Freckles** (observable/what is seen)
 - **No freckles** (observable/what is seen)
- A _____ for freckles is represented by two alleles in one of the genes that causes freckles.
 - The possible alleles using the first letter of the trait "f" are:
 - **F** (_____) = **Has Freckles**
 - **f** (_____) = **No freckles**

Question: Using **F** and **f**, what are possible **genotypes** of the allele pair for freckles?

Genotype (alleles inherited from parents)	=====	Phenotype (physical appearance)
_____	=====	_____
_____	=====	_____
_____	=====	_____

Example: Hair Color

In one of the genes that determines hair color, red hair is _____ to brown hair.

Question: Using **R** (brown hair) and **r** (red hair) alleles, what possible genotypes of the allele pair are there?

Genotype (alleles inherited from parents)	=====	Phenotype (physical appearance)
_____	=====	_____
_____	=====	_____
_____	=====	_____