

Genetics Vocab – Unit 4

- Genetics- Branch of Biology that deals with heredity.
- Gregor Mendel - Experimented with sweet pea plants in the 1800's: known as the "Father of Genetics."
- Trait- Characteristics an individual receives from their parents.
- Gene- Carries instructions responsible for gene expression of traits: a pair of inherited genes controls the trait.
- Alleles- Traits passed down from a parent to the offspring
- Homozygous - Two alleles of a pair that are identical (BB or bb) (Purebred)
- Heterozygous - Two alleles of a pair that are different (Bb) (hybrid)
- Dominant - The controlling allele; distinguished by a capital letter (Bb)
- Recessive - The hidden allele; distinguished by a lowercase letter (bb)
- Genotype - Pair of alleles that shows genetic makeup of the organism (represented by the letter)
- Phenotype - Physical trait of an organism determined by the genotype (the description of the letters)
- Monohybrid - Cross involving one trait
- Dihybrid - Cross involving two traits
- Punnett Square - Graphic organizer used to show probable results of a genetic cross.
- Pedigree - Graphic organizer used to map genetic traits between generations
- Karyotype - Chart of an organism's chromosome pairs used to determine sex of an offspring or chromosomal abnormalities.
- Test Cross - Mating of an individual of unknown genotype with an individual with a known genotype, can help determine the unknown genotype of the parent.
- Law of Dominance - The dominant allele will prevent the recessive allele from being expressed. The recessive allele will appear when it is paired with another recessive allele in its offspring
- Law of Segregation - Homologous pairs of chromosomes are separated during Meiosis (when gametes are formed). Each gamete has only one chromosome from each homologous pair.
- Law of Independent Assortment - Traits are inherited independently of each other when gametes are formed (Anaphase II in Meiosis)
- Mutation - A change of the DNA sequence within a gene or chromosome of an organism resulting in the creation of a new character or trait not found in the parental type.
- Sex Linked Traits - Traits that are linked (found on) to the sex determining chromosomes.
- Crossing Over - Process occurring during meiosis (Prophase I) wherein two non-sister chromatids of a homologous pair of chromosomes exchange segments of DNA..

- Gene Mutation - Permanent change in the DNA sequence that makes up a gene
- Nondisjunction - Failure of homologous chromosome or sister chromatids to separate properly during cell division
- Sex Chromosomes - A chromosome in the genome that is involved in the determination of the sex of the offspring, as well as the development of sexual characteristics in an organism. It occurs in pairs in somatic cells while singly in sex cells (gametes).
- Codominant - A phenotypic in which both alleles are expressed in the heterozygote. Both alleles are dominant.
- Meiosis - process that consists of two cell divisions, but only one chromosome replication (sometimes called reduction division); occurs only in sex organs (gonads: testes and ovaries) to produce sex cells (gametes; sperm and eggs).
- Patterns of Inheritance - Various ways traits are inherited from parents to offspring.
- Autosomal Inheritance Patterns - Traits that are inherited from non sex determining chromosomes (autosomes).
- Incomplete Dominance - phenotype of a heterozygote is intermediate between the two homozygous parents; neither allele is dominant, but combine to display a new trait (ex: red flower + white flower = pink flower)
- Fertilization - joining of the sperm and egg.
- Polygenic Inheritance - one trait controlled by many genes (ex: hair color, skin color); genes may be on the same or different chromosomes
- Autosome - A chromosome that is not directly involved in sex determination..
- Somatic cells - Any cell in a multicellular organism that has the diploid number of chromosomes.
- Diploid (2n) - The normal number of chromosomes found in an organism's cells. For humans the diploid or 2n number is 46.
- Haploid (n) - One half of the normal number of chromosomes found in an organism's gametes. The haploid (n) number of chromosomes in the human sperm and egg is 23.
- Cystic Fibrosis - Cystic fibrosis is a disease passed down through families that causes thick, sticky mucus to build up in the lungs, digestive tract, and other areas of the body.