Biology Key Terms

Genetics

Trait - a feature that an organism displays that is inherited
Genetics - the study of the traits of organisms
Heredity - passing traits from one generation to the next
Self-pollinated - plants whose pollen can normally pollinate only its own eggs
Cross pollinated - plants whose pollen is artificially transferred to another plant
Purebred (or true breeding) - organisms that have alleles for one specific trait Gregor Mendel - is known as the father of modern genetics
P generation, or parents - the two organisms whose genes produce offspring.
F1 generation - the offspring from parents.
F2 generation - the offspring produced by crossing two F1 individuals.
Principle of Dominance and Recessiveness - One factor in a pair may mask the effect of the other
Principle of Segregation - The two factors for a characteristic separate during the formation of eggs and sperm
Principle of Independent Assortment - The factors for different characteristics are distributed to reproductive cells independently
Probability - the likely outcome a given event will occur from random chance
Phenotype - the external appearance of an organism, refers to the physical appearance of the individual.
Genotype - the genetic makeup of an organism, refers to the alleles an individual receives at fertilization.

Homozygous dominant - genotypes possess two dominant alleles for a trait (TT).
Homozygous recessive - genotypes possess two recessive alleles for a trait (tt).
Heterozygous - genotypes possess one of each allele for a particular trait (Tt). The allele not expressed in a heterozygote is a recessive allele.
Punnett Square - a chart drawn to determine the probable results of a genetic cross
Monohybrid cross - a cross between individuals with one pair of contrasting genes.(i.e., height)
Dihybrid cross - a cross between individuals with two pairs of contrasting genes. (i.e., height and color)
Testcross - cross used to test if an organism is homozygous dominant (ex: AA) or heterozygous dominant (Aa); unknown (A?) is crossed with a known homozygous recessive (aa) to determine it's genotype.
Complete dominance - a pattern of inheritance where heterozygous offspring display dominant phenotype
Incomplete dominance - a pattern of inheritance where heterozygous offspring show trait intermediate between two parental phenotypes
Lethal alleles - a genetic defect that causes 100% mortality in the offspring
Co-dominance - a pattern of inheritance in which both alleles of a gene are expressed in a heterozygote
Sex-linked traits - have genes located on a sex chromosome (X or Y in humans)
Sex-linked inheritance - because the gene in question is on a sex chromosome, both sexes do not show the same probability for inheritance of a trait. For instance, X-linked traits would show two alleles for females (X^aX^a) whereas males only have one allele (X^aY) that is expressed as phenotype.

Multiple-allele traits - are controlled by three or more alleles of the same gene
Polygenic traits - are controlled by two or more genes
Pleiotropy - one gene results in multiple (seemingly unrelated) phenotypes.
Sex-influenced traits - are located on autosomes, but express themselves differently in the sexes because of sex hormones
Pedigree - graphic method of illustrating inheritance of genetic traits within several generations of families
Carrier - an individual that does not express, but carries the trait/allele for a phenotype (usually a disorder)
Sex-linked disorders - mutations of a chromosome located on a sex chromosome; disorder occurs more frequently in males since they have only one X and if it is defective, the individual expresses the disorder; females would need two defective X chromosomes to express the disorder; i.e., color blindness, Duchenne's Muscular Dystrophy, hemophilia
Co-dominant disorder - a single dominant allele will cause some phenotypic disorder, but not the life threatening condition; sickle cell anemia
Dominant Allele Disorders - genetic mutations in a dominant allele; a single dominant allele causes the disorder; i.e., Huntington's Disease & Achondroplasia
Recessive Allele Disorders - genetic mutations in recessive alleles; two recessive alleles are required to express the disorder
Chromosomal disorders - mutations in which an entire chromosome pair fails to separate properly in meiosis; results in one or three of the homolog; i.e., Turner Syndrome, Down Syndrome, Klinefelter's Syndrome