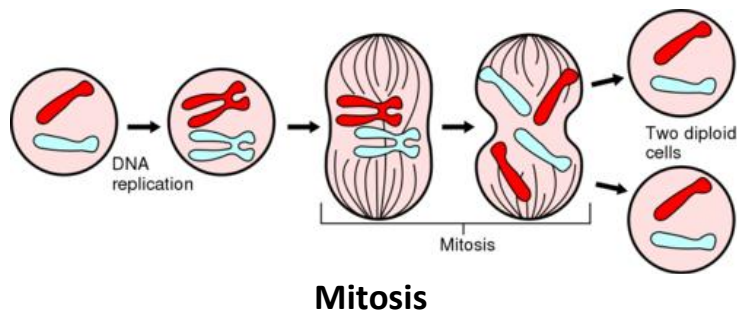
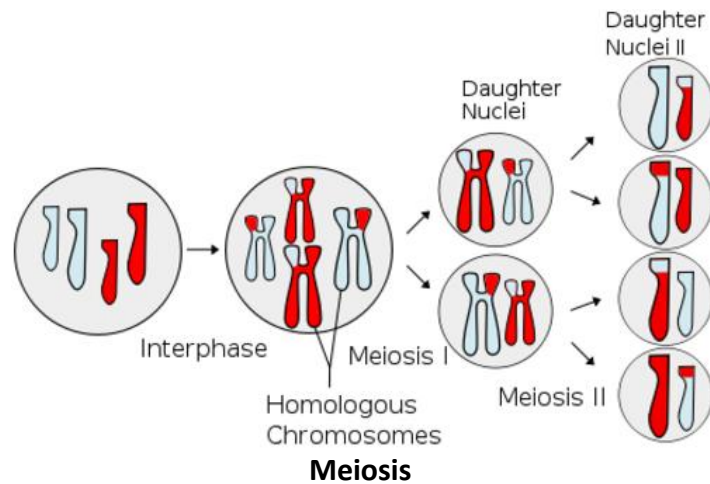


Meiosis & Mitosis

	Meiosis	Mitosis
Occurs in:	Humans, animals, plants, fungi	all organisms
Number of Daughter Cells produced:	4	2
Creates:	Sex cells only: Female egg cells or Male sperm cells	Makes everything other than sex cells
Definition:	A type of cellular reproduction in which the number of chromosomes are reduced by half through the separation of homologous chromosomes in a diploid cell.	A process of asexual reproduction in which the cell divides in two producing a replica, with an equal number of chromosomes in haploid cell
Produces:	four haploid daughter cells	two diploid daughter cells
Steps:	The steps of meiosis are Interphase, Prophase I, Metaphase I, Anaphase I, Telophase I, Prophase II, Metaphase II, Anaphase II and Telophase II.	The steps of mitosis are Interphase, Prophase, Metaphase, Anaphase, Telophase and Cytokinesis
Discovered by:	Oscar Hertwig	Walther Flemming
Type of Reproduction:	Sexual	Asexual
Genetically:	different	identical
Cytokinesis:	Occurs in Telophase I & Telohpase II	Occurs in Telophase
Number of Divisions:	2	1
Pairing of Homologues:	Yes	No
Function:	sexual reproduction	Cellular Reproduction & general growth and repair of the body
Chromosome Number:	Reduced by half	Remains the same
Karyokenesis:	Occurs in Interphase I	Occurs in Interphase
Crossing Over:	Mixing of chromosomes	Does not occur
Centromeres Split:	The centromeres do not separate during anaphase I, but during anaphase II	The centromeres split during Anaphase
Occurrence of Crossing Over:	Yes	No



Diploid vs Haploid

	Diploid	Haploid
Cell Division and Growth:	During the process of reproduction, haploid cells (male and female) unite to form a diploid zygote, which divide by mitosis to give rise to more diploid cells.	Haploid cells are a result of the process of meiosis, a type of cell division in which diploid cells divide to give rise to haploid germ cells.
Organisms:	Humans and most animal cells are diploid organisms.	Algae and fungi are examples of organisms that are mostly haploid during their life cycle. Male bees, wasps and ants are also haploid.
Examples:	Spermatogonium cell	Human sex cells. (Sperm and ova)
About:	Diploid cells contain two complete sets (2n) chromosomes.	Haploid cells have half the number of chromosomes (n) as diploid - i.e. a haploid cell contains only one complete set of chromosomes.

Recombinant DNA technology:

<https://facultystaff.richmond.edu/~lrnyenjbio554/lectnotes/chapter14.pdf>

Alleles -

One of the pair or a group of genes that occupy a specific chromosome at a specific position. Different possible characteristics for one trait

Breeding values -

Values placed on an animal that determines the degree to which a certain trait will be passed on to offspring

Coefficient of determination -

Displays how strong a correlation may be between two variables

Correlation -

Degree to which two traits are related

Covariance -

Measures the variance between two random variables

Dominant -

One allele that masks another for a specific trait

Epistasis -

One gene suppresses the expression of another

Forkline -

A method that involves determining the ratios for different pairings of alleles to give rise to the final genotypes and ratios for certain qualities of future offspring

Genotype -The actual genetic code for a trait

Heterozygous -

Having two different alleles for one particular trait (one dominant and one recessive)

Homologous -

Having the same genetic traits (loci) as another chromosome (identicals)

Homozygous -

Having two identical alleles for one particular trait on both chromosomes (both either dominant or recessive)

Incomplete dominance -

Two alleles provide for a blending effect to provide for a phenotype that is not exact to either

Multiple alleles -

Set of three or more alleles. Only two of the set will be present in a diploid organism

Phenotype -

The physical or outward appearance of the genotype

Punnett Square -

Used to determine the possible genotypes of future offspring by using a series of squares

Quantitative inheritance -

A group of nonallelic genes that each comprise a small amount of expression for a specific physical trait

Recessive -

The allele that will be masked and not expressed, unless there is no dominant allele present

Regression -

Relationship of the mean value of one variable and the corresponding value of an independent variable

Sex-influenced -

A trait that is present in both sexes, but is more easily expressed in one sex over the other

Sex-limited -A trait that is visible in only one sex

Sex-linked -A trait that is carried on a sex chromosome, usually the X-chromosome

Standard deviation -

Measures the amount of variation within a certain distribution. Square root of variance

Variance -The amount of variation between the mean and a certain individual