

## **Mitosis and Meiosis Vocabulary**

***These terms relate to the Production of body cells: Mitosis***

**Surface area to volume ratio** - the amount of surface covering an object (or a cell) compared to the volume contained within; as surface to volume ratio decreases in cells, division becomes necessary

**Cell Division** - the process of creating two new cells

**Mitosis** - when the nucleus itself divides into two new nuclei

**Cytokinesis** - when the rest of the cell divides to form two new daughter cells

**Chromatin** - when the DNA inside the nucleus appears as disorganized, long strands

**Chromosomes** - when the DNA coils tightly, shortens and thickens prior to mitosis

**DNA molecule** - another name for a chromosome; contains the genes

**Replication** - the process of chromosomes making exact duplicates

**Sister chromatids** - the two sides of the "X" formed by replicated chromosomes

**Centromere** - a central protein bundle that connects sister chromatids

**Autosomes** - all chromosomes except for the sex chromosomes

**Genes** - codes within DNA that specify a particular trait

**Alleles** - two alternate forms of each gene (such as blue eyes or brown eyes)

**Somatic cells** - All of the body cells

**Gametes** - sperm and egg cells, also referred to as sex cells

**Diploid number** - the total number of chromosomes in normal body cells; two matching homologs of each kind

**Cell cycle** - the entire life cycle of the parent cell

**Interphase**- the cell is carrying out its normal everyday cell activities as well as preparing for the Mitotic phase

**G<sub>1</sub> and G<sub>2</sub> phases** - gap phases; G<sub>1</sub> is mostly growth and development G<sub>2</sub> occurs after replication of chromosomes and involves replication of additional organelles and membranes in preparation for cell division

**S phase** - synthesis of new DNA; also called replication

**Prophase** -the first phase of mitosis characterized by a disappearance of the nuclear membrane and nucleolus

**Spindle basket** - This structure will assist in pulling apart the doubled chromosomes

**Metaphase** - the second phase of mitosis where all of the doubled chromosomes move to the center of the cell, called the equator

**Anaphase** - the third phase of mitosis where the spindle fiber shorten from the poles, pulling the doubled chromosomes apart from each other, toward the poles of the cell

**Telophase** - the final phase of mitosis characterized by the separated chromosomes reaching the poles of the cell. The nuclear membrane and nucleolus begins to reappear around each set of chromosomes

**Cell plate** - a structure which eventually forms a cell wall that begins to grow out from the center and merely separates the two daughter cells

**Microtubule** - organizing center which performs the job of the centriole in plants

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***These terms refer specifically to meiosis***

**Genetic recombinations** - different ways chromosomes can provide variation in the species depending on which chromosomes are inherited and whether or not crossing over occurs

**Sex chromosomes** - in humans, XY designates a male; XX designates a female

**Crossing over** - each chromatid may exchange a part of itself with its homolog as it crosses over the other during late prophase I or early metaphase I of meiosis

**Homologous pairs** - matching chromosomes that each came from either the father or the mother; homologs code for different versions of the same genes

**Meiosis** - the division of a nucleus that results in four nuclei with one half the original number of chromosomes; used to produce gametes

**Haploid number** - one half the total number of chromosomes in a normal body cell; one of each kind of homolog

**Oogenesis** - meiosis that produces eggs (ova)

**Ovum** - an egg resulting from oogenesis

**Spermatogenesis** - meiosis that produces sperm

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***These terms relate to testing of the fetus for any genetic disorder:***

**Nondisjunction Mutations** - improper separation of sister chromatids may result in a cell having one too many chromosomes (trisomy) or not having one of a certain chromosome (monosomy)

**Karyotype** - a photograph of an individual's chromosomes

**Amniocentesis** - when a long needle withdraws fluid around fetus; some of the embryo's cells that have sloughed off into the fluid will be collected and examined

**Chorionic Villi Testing** - scraping a few cells from villi of the placenta which connect fetus to mother in the uterus

**Ultrasound** - images formed by sound waves can be converted into pictures of the uterus to determine gross structural abnormalities of the fetus; this is a safe and non-invasive procedure