Mitosis and Meiosis

Cell Division and Reproduction

MITOSIS

- Process of one cell making two new identical daughter cells
- Both new cells will have same number of chromosomes as original cell
- Both new cells with have DNA code as original cell
INTERPHASE: Cell is doing what cells need to do to survive, nucleus visible but no chromosomes are visible.

PROPHASE: Nuclear membrane disappears, DNA replicates and...
MITOSIS

• **METAPHASE**: Spindle fibers form at opposite sides of chromosomes; chromosomes line up in center of cell.

EARLY ANAPHASE: Spindle fibers attach to chromosomes; pull one chromosome set to each side of cell.
MITOSIS

• LATE ANAPHASE: Chromosomes are at opposite sides of the cell; spindle fibers disappear

MITOSIS

• TELOPHASE: New cell membrane forms between chromosome sets; two new cells formed; each ½ size of original cell
MITOSIS

- One large cell makes two smaller cells with same number of chromosomes; allows organisms to grow

MEIOSIS

- One large cell will produce 4 smaller cells
- Each cell will have $\frac{1}{2}$ the normal number of chromosomes
- Cells produced will fuse together during sexual reproduction
- May be called egg and sperm or + and -
MEIOSIS

- Looks like two versions of mitosis
- DNA does not duplicate second time through prophase
- 1 cell makes two identical cells, then each of these makes two cells with ½ the normal number of chromosomes

MEIOSIS

- Egg cell and sperm cell combine to form zygote (new organism)
- ½ chromosomes in egg + ½ chromosome in sperm = NEW ORGANISM WITH RIGHT NUMBER OF CHROMOSOMES
**MEIOSIS**

- **One cell makes 4 reproductive cells**

**Meiotic Division 1**

- Parent cell
- Chromosomes pair and remain together
- Two daughter cells

**Meiotic Division 2**

- Prophase 1
- Chromosomes do not align
- Metaphase 1
- Homologous chromosomes align at the equatorial (metaphase) plate
- Metaphase 2
- Centromeres divide
- Four daughter cells

DNA does not replicate.