Science 9 Biology Notes Lesson 3 Name:

*Cell Cycle & Mitosis!*

Objectives: By the end of the lesson you should be able to:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cell Division Rates:

* Cells divide at different rates:
  + Brain cells: every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + RBC: every \_\_\_\_\_\_\_\_\_\_\_\_
  + Skin cells: every \_\_\_\_\_\_\_\_\_\_\_\_
  + Liver cells: every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Stomach lining: every \_\_\_\_\_\_\_\_\_\_!
  + Intestinal lining: every \_\_\_\_\_\_\_\_\_\_\_\_\_\_!

Cell Division:

* When a cell reaches the point at which the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is no longer able to sustain the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the cell divides!
* By dividing, the cell produces 2 new, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells with an adequate amount of cell membrane to maintain the cytoplasm

Types of Cells:

Body Cells (AKA \_\_\_\_\_\_\_\_\_\_\_)

* Make up all body \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* In each cell there are \_\_\_\_\_\_\_\_\_ chromosomes
* There are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of chromosomes
* One of each pair comes from each \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (i.e. 23 from mom and 23 from dad for a total of 46)

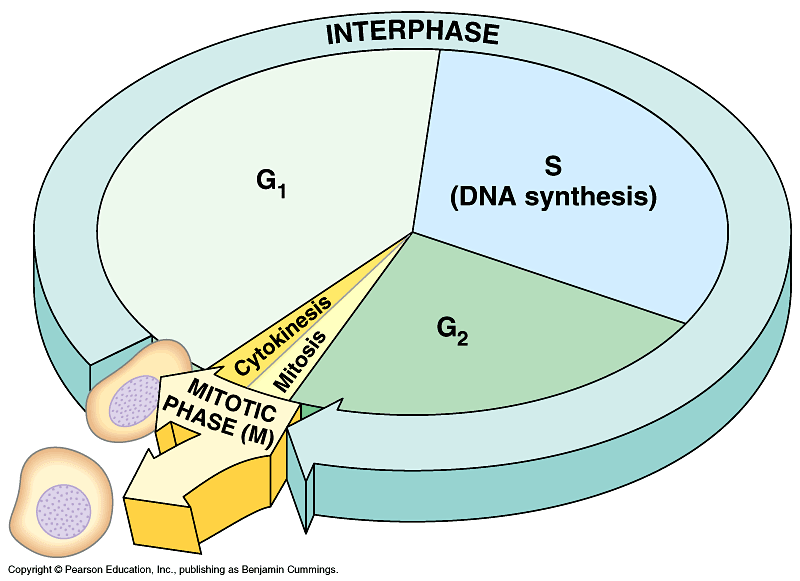
Sex Cells (AKA \_\_\_\_\_\_\_\_)

* Make up \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (egg and sperm only)
* Contain \_\_\_\_\_\_\_ chromosomes
* WHY?

Cell Division:

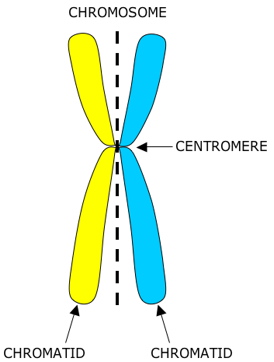
* Both of these cells have to reproduce and \_\_\_\_\_\_\_\_\_\_\_\_\_ but they do it in very different ways
* Body Cell Division = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Sex Cell Division = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(more on this next class!)*

Somatic Cells:

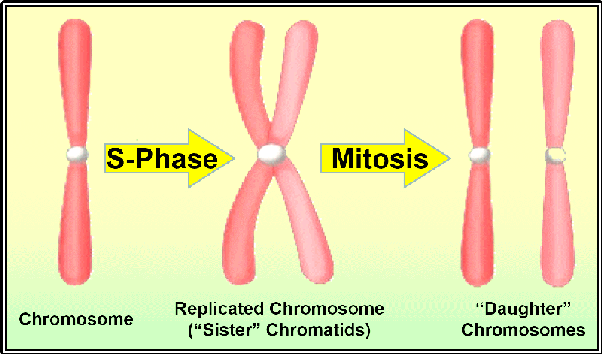
* Life cycle of a\_\_\_\_\_\_\_\_\_\_\_\_ cell
* Has 3 stages: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cell Cycle:

1. Interphase
   * Growth and prep
   * DNA rep
   * Growth and prep
2. Mitosis
3. Cytokinesis



Mitosis:

* Division of the\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and its contents
* Makes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that are \_\_\_\_\_\_\_\_\_ to the parent cell
* Has 4 stages:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cell Cycle:

Order of events:

Interphase

Prophase

Metaphase

Anaphase

Telophase

Cytokinesis

**Stages of Mitosis**:

**Prophase**

* Chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and become visible
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ move to poles and make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Nuclear membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Metaphase**

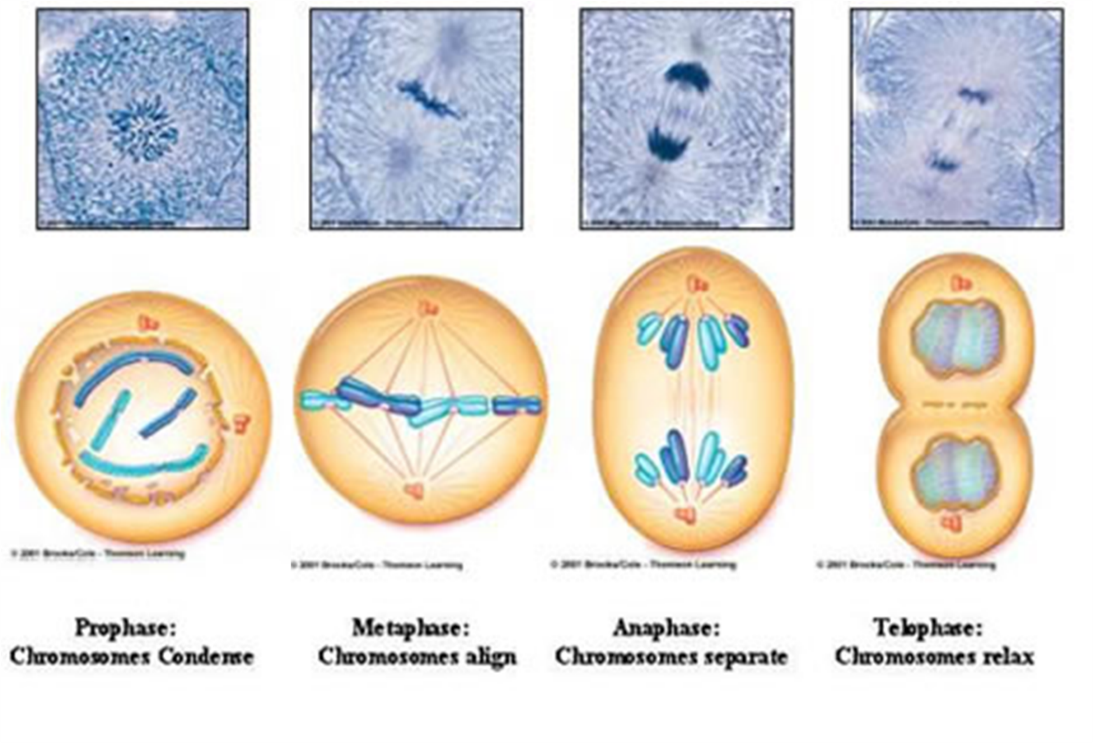
* Chromosomes line up along \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Anaphase**

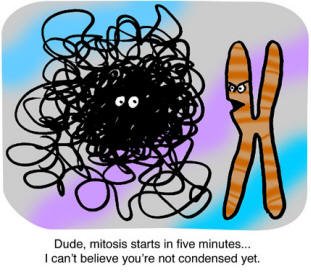
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pull chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_and towards the poles

**Telophase**

* Nuclear envelope \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ around each set of chromosomes
* Chromosome begin to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ break down



**Cytokinesis**:

* The cells \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forming two new daughter cells that are identical to the parent cell