Unit 5 (Ch. 9 & 10.1) Cellular Reproduction Notes

Cell Cycle

According to the cell theory, cells come from ___Preexisting cells____.

The _____Cell Cycle__________ is the life of the cell.

Cell Cycle (3 Main Stages)

- Interphase
- Mitosis (Prophase, Metaphase, Anaphase, Telophase)
- Cytokinesis

![Cell Cycle Diagram]

* Approximately 24 hours to complete cell cycle for average cell

**Interphase**—1st Stage of Cell Cycle

Cells spend ____most____ of their life in Interphase.

Cells perform their ___functions/jobs___ during Interphase.

Cells ___grow___ and the ___organelles___ double during ____G_s____ of Interphase.

___DNA replication (DNA copied)___ occurs during ____S____ of Interphase.

Cells continue to grow and prepare to divide during ____G_2____ of Interphase.

There are 3 checkpoints in the cell cycle regulated by ____cyclins____ and ____CDK enzymes____.

Cell nucleus is visible and DNA is in string-like form called ___Chromatin____.
Mitosis (4 Phases: Prophase, Metaphase, Anaphase, Telophase) – 2nd Stage of Cell Cycle

Division of the cell’s nucleus.

The DNA copies/chromosomes are separated in 4 main phases...

Mitosis creates **2 genetically identical body cells (somatic cells)**.

Mitosis is important for **growth** and **repair** of an organism. (adds cells to living organism)

**Prophase**

Chromosomes each have **2 sister chromatids** from DNA replication in S of Interphase.

Centrioles begin **to move apart to opposite poles of cell**

Nuclear membrane **breaks down** and the **nucleus/nucleolus** disappears.

Chromatin condenses into visible chromosomes.

Spindle apparatus begins to form from the **centrioles** at both poles of the cell. The spindle attaches to the **centromeres** of the chromosomes.

**Metaphase**

Chromosomes each consisting of two sister chromatids attach to the spindle apparatus and align along the **equator** or middle of the cell.

Centrioles are at opposite poles of the cell.

“Meet in Middle” Phase

“Marriage” Phase
Sister chromatids (chromosomes) separate and move toward opposite poles of the cell.

**Anaphase**

"Divorce" Phase

Sister Chromatids (Chromosomes)

**Telophase**

Sister Chromatids (chromosomes) reach the poles of the cell.

Nucleus and Nucleolus reform at each end of the cell.

Chromosomes/DNA returns to the string-like form called Chromatin.
Cytokinesis – 3rd Stage of Cell Cycle

Division of the cell’s **cytoplasm**.

Cytokinesis in Animal Cells vs Plant Cells:
In animal cells, a **cleavage furrow** forms and **pinches** the cell into **2** cells.
In plant cells, a **cell plate** forms from the **Golgi apparatus** and joins to the **plasma membrane**.

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6. Cytokinesis
   Cell Splits into 2 cells

1. **Interphase** “I”
2. **Prophase** “Promised”
3. **Metaphase** “Mother”
4. **Anaphase** “A”
5. **Telophase** “Telephone”
6. **Cytokinesis** “Charlie”

RESULTS OF CELL CYCLE (MITOSIS)

- 2 **identical** body (somatic) cells with the **same** number of **chromosomes**. In humans, there are **46** chromosomes in each body/somatic cell.

- Important for **growth** and **repair** of living organisms.