Chapter 3 Section 3: The Cell Cycle

* **cell cycle**-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The cell cycle begins when the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Before a cell divides, it makes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **DNA**-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

* **chromosomes**-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How does a cell make more cells?

* + It depend on whether it is prokaryotic (no nucleus) or eukaryotic (nucleus).

**Prokaryotic**

* They are not as complex as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells.
  + For example, bacteria has ribosomes and a single strand of DNA, but no membrane enclosed organelles.
* **binary fission**-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* It results in two cells that each contain one copy of the circle of DNA.

Eukaryotic

* More complex than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells
* Contain more \_\_\_\_\_\_\_\_ than prokaryotic cells
* Different eukaryotic cells have different numbers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The number of chromosomes is not related to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the organism:
* Potato \_\_\_\_\_\_
* Fruit flies \_\_\_\_\_\_
* Humans \_\_\_\_\_\_
* Look at page 43, figure 2. These pairs are made up of similar chromosomes called

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

**3 Stages of the Eukaryotic Cell**

1st Stage: **Interphase**

Cell \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its organelles and chromosomes.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-the two copies are called this.

* + The chromatids are held together at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + The chromatids twist and coil, then condense into an \_\_\_\_\_ shape.

2nd Stage: **Mitosis**

* **mitosis**-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + It is divided into \_\_\_\_\_ phases.
  + It makes sure that each new cell gets a copy of each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Phase 1: Prophase**

* Mitosis begins. The nuclear membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Chromosomes condense into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ structures.

**Phase 2: Metaphase**

* The chromosomes line up along the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell. Homologous chromosomes (similar) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Phase 3: Anaphase**

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ separate and move to opposite sides of the cell.

**Phase 4: Telophase**

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms around each set of chromosomes, and the chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is complete.

3rd Stage: **Cytokinesis**

* This is the division of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* For animal cells and other eukaryotes that do not have cell walls:
  + this occurs at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + The cell membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inward to form a groove that eventually divides.
* Eukaryotic cells that have a cell wall (plants, algae, and fungi):
  + form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the middle of the cell.
  + After the cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a new cell wall forms where the cell plate was.