Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_KEY\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 5: Cellular Reproduction***-Lesson 1*

***Introduction to Cellular Growth and Reproduction***

*Opening Questions*

1. Do you think that organisms contain the same cells from the time they form/are born to the time they die? \_\_\_\_\_\_\_\_\_\_
2. What types of cells in our body, if any, do you think need to reproduce? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Do you think that all cells divide and reproduce in the same way? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What do you think would happen if our cells could not divide and reproduce? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Notes*

* All living organisms are made up of and organized into cells
* **Key Point 1:** All of the cells of the **body** of an organism, except for **reproductive (sex) cells**, are known as **somatic cells**
  + Soma means “body”
  + Examples: **Skin cells, muscle cells, blood cells, nerve cells**
* Cells have a size limit based on the ratio of surface area to volume
* **Key Point 2:** Once cells reach their size limit, **they must either stop growing or divide**
  + Most cells will divide
* New cells can only come from previously existing cells
* **Key Point 3:** The cell cycle is **the process of growth and division by which all eukaryotic cells (except sex cells) reproduce**
* **Key Point 4:** Groups of **cells** that function together are known as **tissues**. Groups of **tissues** that function together are known as **organs**
  + **Cells** 🡪 **tissues** 🡪 **organs**
  + Example: Muscle cells 🡪 cardiac muscle tissue 🡪 heart (organ)
* **Key Point 5:** Cells must reproduce in order to **replace dead or dying cells** so that **tissues and organs can continue functioning properly**
  + Cell division and reproduction makes sure that all parts of an organism are healthy

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 5: Cellular Reproduction***-Lesson 1*

***Introduction to Cellular Growth and Reproduction***

*Opening Questions*

1. Do you think that organisms contain the same cells from the time they form/are born to the time they die? \_\_\_\_\_\_\_\_\_\_
2. What types of cells in our body, if any, do you think need to reproduce? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Do you think that all cells divide and reproduce in the same way? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What do you think would happen if our cells could not divide and reproduce? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Notes*

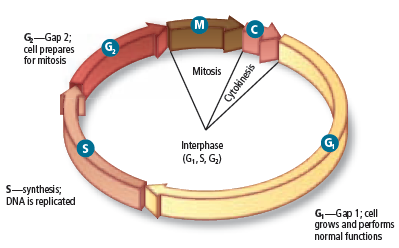
* All living organisms are made up of and organized into cells
* **Key Point 1:** All of the cells of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of an organism, except for **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, are known as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + Soma means “body”
  + Examples: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Cells have a size limit based on the ratio of surface area to volume
* **Key Point 2:** Once cells reach their size limit, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + Most cells will divide
* New cells can only come from previously existing cells
* **Key Point 3:** The cell cycle is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **Key Point 4:** Groups of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that function together are known as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. Groups of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that function together are known as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**🡪 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** 🡪 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + Example: Muscle cells 🡪 cardiac muscle tissue 🡪 heart (organ)
* **Key Point 5:** Cells must reproduce in order to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_** so that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + Cell division and reproduction makes sure that all parts of an organism are healthy

**Unit 5: Cellular Reproduction***-Lesson 2*

***The Cell Cycle***

*Notes:*

* **Key Point 1:** The cell cycle occurs in 3 consecutive stages: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



* **Key Point 2:** During interphase: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and makes proteins needed for cell division
  + Cells spend most of their time in interphase, so it is the longest stage
* **Key Point 3:** Interphase can be divided into **\_\_\_\_\_\_\_** specific sub-stages
  + G1 (1st Gap): **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and makes proteins called histones
    - Most of interphase is G1
  + S (Synthesis): **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** so that each new cell will have a copy of the same DNA
  + G2 (2nd Gap): the cell prepares for mitosis and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Beginning: G1 🡪 S

* **Key Point 4:** During mitosis, the cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to each new daughter cell being formed
  + Each new cell then has a copy of the same DNA
* **Key Point 5:** During cytokinesis, the cell actually **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Review Questions*

1. What are somatic cells?
2. List three different examples of somatic cells:

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

1. What two options does a cell have once it reaches its maximum size?
2. What is the cell cycle?
3. What type of cell does not reproduce through the cell cycle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Place the terms *organ*, *tissue*, and *cell* in order from the smallest level of organization to the largest

🡪 🡪

1. How are cells, tissues, and organs related?
2. Why do cells divide and reproduce?