

WINK SHEET— Cell Reproduction and Differentiation

Theme: The cells of multicellular organisms repeatedly divide to make more cells for growth and repair. During embryonic development, a single cell gives rise to a complex, multicellular organism through the processes of both cell division and differentiation.

Expectations:

- * Construct models to explain how the processes of cell division and cell differentiation produce and maintain complex multicellular organisms.
- * Develop and use models to exemplify the changes that occur in a cell during the cell cycle (including changes in cell size, chromosomes, cell membrane/cell wall, and the number of cells produced) and predict, based on the models, what might happen to a cell that does not progress through the cycle correctly.
- * Construct explanations for how the cell cycle is monitored by check point systems and communicate possible consequences of the continued cycling of abnormal cells.
- * Construct scientific arguments to support the pros and cons of biotechnological applications of stem cells using examples from both plants and animals.
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Objectives: On a scale of 0-5, with 0 being “I know absolutely nothing” and 5 being “I am exceptionally confident in my ability,” please rank your understanding of each objective at the end of the unit.

- ____ Summarize the characteristics of the stages of the cell cycle
- ____ Identify the stage of the cell cycle based on a description or image
- ____ Sequence the stages of the cell cycle including Mitosis
- ____ Recognize the structure of a chromosome
- ____ Recall the events that happen in each phase of the cell cycle
- ____ Illustrate the phases of the cell cycle with pictures and words
- ____ Explain the purpose of each event in each phase of the cell cycle to the survival of the cell or organism
- ____ Differentiate between internal and external factors that control cellular growth and division
- ____ Classify how the breakdown of regulatory processes results in tumor growth
- ____ Differentiate between Benign and Malignant Tumors
- ____ Cells are organized in Multicellular organisms into Tissues and Organs
- ____ Stem cells can differentiate into different cell types

Textbook: We will be covering pages 150-160; 662 in your textbook. Please mark which statements apply to your use of the textbook on this unit.

- ____ I read the entire reading for this chapter
- ____ I read part of the reading for this chapter
- ____ I used the textbook to assist in my understanding of vocabulary from this unit
- ____ I used the textbook to assist in my understanding of the objectives
- ____ We have a text book?
- ____ Other _____

Vocabulary:

- Cell Cycle
- Interphase
- G1
- Synthesis
- G2
- Chromatid
- Centromere
- Chromosome
- Mitosis
- Prophase
- Metaphase
- Anaphase
- Telophase
- Cytokinesis
- Cleavage furrow
- Cell Plate
- Cancer
- Malignant Tumor
- Benign tumor
- Internal Signal
- External signal
- Checkpoint
- Cell division
- Differentiation
- Stem Cells

Activities

- Onion Root Mitosis Lab
- Faces of Cancer
- Stem Cell article analysis