UNIT: *Cell Cycle and Cancer*

QUIZ DATE:

CLASS OBJECTIVES:

Cell Cycle / Phases of Mitosis

- Chromatin vs. chromosomes – what is difference, when is it found in the cell?
- Why the cell must divide to create more cells?
- What are the three phases of the cell cycle in eukaryotic cells?
- What percent of the cell cycle does interphase make up?
- What happens during the G1, S and G2 phases of interphase?
- Sketch and describe the events happening during each phase of mitosis, including descriptions of the amount of DNA and chromosomes in the cell
- What are kinetochores and kinetochore microtubules?
- How is cytokinesis different between plant and animal cells?
- In animal cells, how is the cleavage furrow formed? In plant cells, how is the cell plate formed?
- When are the three checkpoints during the cell cycle? What occurs at each of the 3 checkpoints during the cell cycle?

Cancer

- Define cancer, tumor and metastasis.
- Contrast benign and malignant tumors.
- Describe how cancer arises, referring to accumulation of mutations over time.
- What is the relationship between oncogenes and cancer?
- Describe the role of tumor suppressors.
- How are cancer cells different than normal cells in terms of density dependency, anchorage dependency and the number of divisions that a cell can go through?

ASSESSMENT STATEMENTS:

2.5.1 Outline the stages in the cell cycle, including interphase (G_1, S, G_2), mitosis and cytokinesis.

2.5.2 State that tumours (cancers) are the result of uncontrolled cell division and that these can occur in any organ or tissue.

2.5.3 State that interphase is an active period in the life of a cell when many metabolic reactions occur, including protein synthesis, DNA replication and an increase in the number of mitochondria and/or chloroplasts.

2.5.4 Describe the events that occur in the four phases of mitosis (prophase, metaphase, anaphase and telophase).

2.5.5 Explain how mitosis produces two genetically identical nuclei.

2.5.6 State that growth, embryonic development, tissue repair and asexual reproduction involve mitosis.

KEY TERMS:

- anaphase
- anchorage dependent
- benign
- cancer
- carcinogen
- cell plate
- chemotherapy
- chromatin
- chromosome
- cleavage furrow
- cytokinesis
- density dependent
- G1
- G2
- interphase
- kinetochore
- kinetochore microtubule
- malignant
- matastases
- metaphase
- mitosis
- non-kinetochore microtubule
- oncogene
- prophase
- radiotherapy
- S phase
- telophase
- tumor
- tumor suppressor
- undifferentiated
- G0
- G1 checkpoint
- G2 checkpoint
- M checkpoint
- apoptosis