Biology I Unit 3c Study Guide

Bio1u3csg (Cell Reproduction and Cancer)

Big Idea/Question: *"If cells come only from preexisting cells (Cell Theory), where do cancer cells come from?"*

Web Reference: National Cancer Institute: http://www.cancer.gov/

Study Objectives (things to learn)

1. **Describe the structure of a chromosome. P. 151-153**
   a. What is a chromosome made of?
   b. What role to histones play? What role does the centromere play?
   c. Is DNA always in the form of a chromosome? Explain.
   d. How many chromosomes does a human cell normally contain? How many autosomes? Sex chromosomes?
   e. Explain the difference between diploid and haploid.
2. **Describe the phases and processes of the cell cycle (the cells life cycle) p. 154 – 155**
   a. Describe cell division in prokaryotes.
   b. Create a pie chart showing the stages of the cell cycle. Include all of the following on your diagram: **mitosis, S phase, cytokinesis, G_2 phase, cell division, interphase, G_1 phase**
3. **Explain how gene mutation can result in uncontrolled cell division (cancer). p. 158 – 159**
   a. Describe the three checkpoints that help control cell division in normal cells.
   b. How can certain internal and/or external factors increase the chances of developing cancer?
   c. List some of the statistics and facts regarding cancer in the US.
4. **Compare and contrast the processes of mitosis and meiosis. p. 156 - 158 and 161 – 164**
   a. Describe the stages of mitosis.
   b. Compare cytokinesis in animal cells with cytokinesis in plant cells.
   c. Compare the end products of meiosis with those of mitosis.
   d. Summarize the events of meiosis I and meiosis II.
   e. Explain how crossing-over results in genetic recombination and uniqueness?

Things to do:

- Read: from chapter 8 (pg151-164)
- Notebook: **10pts**
  - Notes on Study Objectives (right side)
  - Summaries/Reflections on study objectives (left side)
  - Cell Reproduction Worksheet (back side of study guide)
- Lab: Analyzing Mitosis in Onion Root Tips **10pts**
- Practice Test (3c) **(online; take as many times as you need)**
- 3c Unit Test **20pts**

Terms to be familiar with:

interphase sister chromatids cytokinesis prophase mitosis metaphase anaphase telophase gamete diploid haploid homologous chromosomes cell division gene cancer benign malignant asexual reproduction binary fission centromere chromosome histone sexual reproduction

Misconceptions:

- *The replicated state of chromosomes is the most common state since that is what state they are in when most visible.* **More time is spent in the G1 phase when chromosomes are unreplicated.**
- *Mitosis is the same as cell division.* **Mitosis refers strictly to the division of the nucleus and cytokinesis refers to the division of the cytoplasm. The two together make up cell division**.

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