Bio 13.3

Goals

- View mitotic cells under a microscope
- Count and predict the number of the cells in each stage of cell division

Plan: Lab

Biology
Identifying stages of mitosis

Name_____ Hour_____

The goal in this lab is to estimate the amount of time that is spent in each stage of mitosis. You will want to work in groups.

First task: Set up a microscope with a mitosis slide. Bring the slide into focus and increase powers as is comfortable.

Sketch a typical cell.

Now move the slide around until you find a cell undergoing mitosis. Sketch it below and make a guess as to the stage of mitosis it is in (prophase, metaphase, anaphase, or telophase).

Second task: Move the slide around systematically and count how many cells are undergoing each phase of mitosis. Tally your results below.

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Use the information from the survey to make a guess as to what percent of time is spent in each phase of mitosis. You may use a calculator.

Based on the number of cells not undergoing mitosis, devise a strategy for estimating the percent of the cell's cycle which is taken up by any phase of mitosis. Carry out your strategy to make an estimate.

Are the mitotic cells found in higher numbers in some parts of the root? (This is a challenging problem). Make a guess and then check to see if it is the case with a different mitosis slide.

Bio 13.2

Goals
* Describe major portions of the cell cycle and what is occurring in them

Plan
Mitosis under the microscope (post lab discussion) (5 min)
Review the cell cycle generally (5 min)
Video: Cell Cycle (Overview, Interphase) (10 min)
Checkpoints in the cell cycle (10 min)
Video: Cell Cycle and Mitosis (5 min)
Cell cycle stop points: stem cells (10 min)
Video: Cell differentiation (10 min)
Why specialize? Stem cell therapy (10 min)
Video: Examples of stem cell therapy (5 min)

HW: Video: Examples of stem cell therapy…write down and describe how this could be useful in the future

Bio 13.3

Goals
* Connect checkpoints and malfunctions to cancer origins
* Describe the process of cancer formation generally

Plan
Review steps of mitosis (5 min)
Video: Mitosis (Amoeba sisters) (10 min)
Fill in from Wednesday (5 min)
Video: Oncogenetics
How and why cells specialize (5 min)
Video: Cellular specialization (10 min)
Epigenetics: Histone winding and methylation (10 min)
Video: What is epigenetics
Asexual reproduction methods (Binary fission, budding)
Video: What is asexual reproduction (5 min)
Binary fission details (10 min)

Video:
Cell cycle and check points (10 min)