Mitosis and the Cell Cycle

Introduction:

Imagine what would happen if every cell in a multicellular organism did exactly the same thing. If this were the case, we would fail to exist. Cells in a multicellular organism must function like the members of a team with each member having a specific job or specialty but that works in conjunction with the other members of the team. So how do we become multicellular? This occurs through repeated rounds of cell division. Cell division can be divided into two stages: 1) mitosis or nuclear division and 2) cytokinesis or division of the cytoplasm. These processes of a dividing cell however, only constitute a small percentage of the cell cycle. During the remainder of the cell cycle called interphase, growth, chromosome synthesis, and routine cellular functions occur such that the particular cell performs its duties for the team.

In this investigation, you will observe the stages of mitosis using prepared slides of onion root tips. Furthermore, you will measure the percentage of time required for different stages of mitosis and the cell cycle.

Problem/Hypothesis:

Formulate a hypothesis to answer the question:

Which stage of the cell cycle do multicellular organisms spend most of their time in; interphase, mitosis, or

Procedure and Results:

chromatin.

Part A: Diagram the stages of mitosis

1) View the prepared slides of the onion root tip which have been set up. Do not touch the microscope except the fine focus knob!! Draw the stages of mitosis and cell cycle in the spaces below and label. Note: Make sure to draw the stage which matches the appropriate description in the box below the space. Also be sure to label which stage is present.

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During this phase the cell increases in size and the DNA is replicated. The chromosomes are dispersed in the nucleus and appear as a	During this phase, the chromosomes condense and the nuclear envelope begins to disappear. Chromosomes attach to the	During this phase the condensed chromosomes move to the spindle equator. The chromosomes are attached to the spindle at their centromere.	Centromeres split and the sister chromatids separate and move to opposite poles.	During this phase, the daughter chromosomes arrive at the opposite poles. The nuclear envelope begins to reform

centromere.

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Conclusion:

1) Which stage of the cell cycle do i	multicellular organisms spend	most of their time in	; interphase, mitosis, or
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Was your hypothesis correct?		10	