

5:12a The Cell Cycle

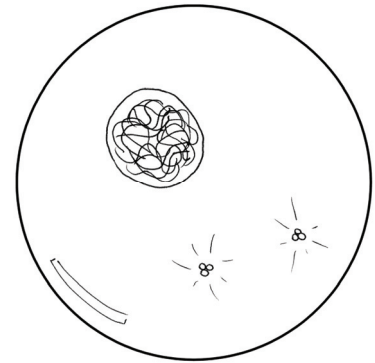
A Form of Cellular Reproduction

What is the Cell Cycle?

- A cell goes through certain changes as it goes through life.
- These changes are called the cell cycle.
- The cell cycle contains 3 main steps.
 1. Interphase
 2. Mitosis
 3. Cytokinesis

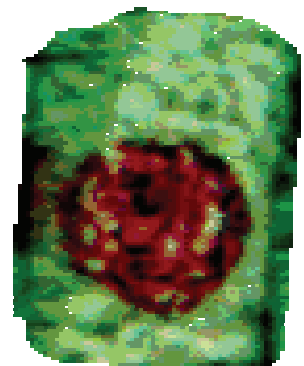
Interphase

- G₁ Phase: During this stage the cell is carrying on its everyday activities.
- If the cell's surface to volume ratio gets too big then the cell must get ready to divide.
- S-phase: The chromosomes duplicate themselves.
- G₂ phase: The rest of the cell's organelles are reproduced.
- Interphase is the longest phase of the cell cycle.



Mitosis (nuclear division)

- Mitosis is considered nuclear division as the steps only refer to the contents of the nucleus.
- There are 4 steps.
 - Prophase
 - Metaphase
 - Anaphase
 - Telophase



5:12b The Cell Cycle

Prophase

- The nucleus disappears
- The chromatid pairs are joined by a centromere.
- The thread-like spindle fibers appear.
- The centrioles move toward the poles.

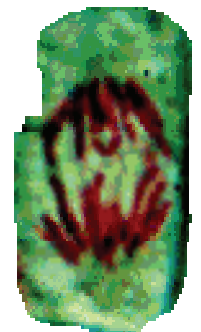
Metaphase

- The shortest stage of mitosis.
- The chromatid pairs line up along the equator (center) of the cell.
- Why does this occur?
- So that each new cell will receive one chromatid from the pair.



Anaphase

- The chromatid pairs separate and the separated chromosomes move in opposite directions.
- The spindle fibers contract and somehow pull them toward the poles.



Telophase

- The cell begins to separate.
- The nuclei begin to reappear.
- The spindle fibers disappear.



5:12c The Cell Cycle

Cytokinesis

- Here the cell separated into 2 daughter cells.
- Each cell is identical in the type and number of chromosomes it contains.
- If a cell containing 46 chromosomes undergoes mitosis, how many chromosomes does each of its daughter cells contain?
 - > 46.
- Where did the extra 46 chromosomes come from?
 - > The S phase of the cell cycle.

Types of Reproduction

1. Asexual (reproduction without sex)

Examples:

- a). Fission
- b). Regeneration
- c). Budding

2. Sexual (reproduction using gametes)

Examples:

- a). Male gamete (sperm)
- b). Female gamete (egg)