

Section 4: Overview of the Cell Cycle

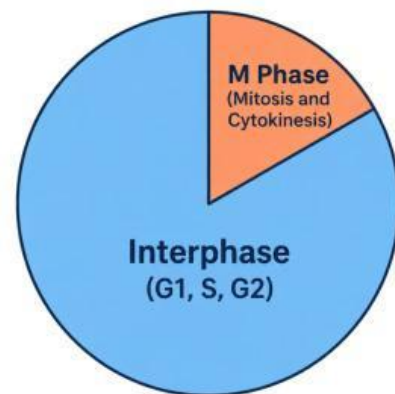
Learning Objective: Describe the primary events that occur within each major stage of the eukaryotic cell cycle: Interphase (G1, S, G2), Mitosis, and Cytokinesis.

Key Vocabulary: cell cycle, interphase, Gap 1 (G1), Synthesis (S phase), Gap 2 (G2), M phase, mitosis, cytokinesis.

The **cell cycle** is a sequence of events that cells undergo as they grow and divide. It is divided into two primary phases: **Interphase** and the **M Phase** (Cell Division).

Cells spend approximately 90% of their total life cycle in Interphase, performing normal metabolic duties and preparing for reproduction.

- **Gap 1 (G1):** The cell grows rapidly
- **Synthesis (S Phase):** Synthesizes DNA (copies DNA)
- **Gap 2 (G2):** More growth to prepare for division



1. Match each cell cycle stage to its corresponding primary event. Write the matching letter in the right-hand column:

1. G1 Phase _____	A. Division of the cytoplasm into two independent cells
2. S Phase. _____	B. Rapid cell growth
3. G2 Phase _____	C. Division of the cell nucleus and segregation of chromosomes
4. Mitosis. _____	D. Growth for final preparation for division
5. Cytokinesis. _____	E. Complete replication of all DNA

2. Interpret the cell cycle pie chart above to answer the following questions:

a) During which stage does the cell spend most of its time?

b) If an epithelial (skin) cell has a 10-hour total cycle time and spends about 90% of its cycle in Interphase, approximately how many hours does it spend in Interphase? Type A, B, C, or D

A. 1 hour

B. 5 hours

C. 9 hours

D. 10 hours

a) Why is accurate DNA replication during the S phase completely essential before a cell begins mitosis? Type A, B, C, or D

A. It gives the cell extra time to make more cytoplasm before dividing.

B. It ensures each daughter cell can receive a complete, accurate set of genetic information.

C. It causes the chromosomes to disappear permanently.

D. It allows the cell to divide without separating its chromosomes.

4. Label the stages of the cell cycle in the numbered boxes. Use each word from the word bank once.

Drag and Drop: M phase • S • G2 • G1. Interphase

Cell Cycle

