

Comprehension Questions - Module 10: Cell Cycle

Cell Division Overview

1. Explain why cell division is essential for life and describe its roles in growth, repair, and reproduction.
2. Compare and contrast cell division in prokaryotes and eukaryotes.
3. What is the relationship between cell division and the cell cycle?

Cell Cycle Phases

1. Describe the phases of the cell cycle (G₁, S, G₂, M) and what happens in each phase.
2. Explain the difference between interphase and mitosis.
3. How do cells prepare for division during interphase?

Chromosomes and Chromatin

1. Compare and contrast chromosomes, chromatin, and chromatids.
2. Explain how DNA is packaged in eukaryotic cells and why this packaging is important.
3. Describe the structure of a chromosome and identify its key components.

Mitosis

1. Describe the phases of mitosis and the key events that occur in each phase.
2. Explain how mitosis ensures that each daughter cell receives an identical set of chromosomes.
3. Compare and contrast mitosis in plant and animal cells.

Cell Cycle Regulation

1. Explain how the cell cycle is regulated and why this regulation is critical.
2. Describe the role of checkpoints in the cell cycle and what happens if they fail.
3. How do growth factors and other signals control cell division?

Cancer and Cell Division

1. Explain how cancer relates to uncontrolled cell division.
2. Describe how understanding the cell cycle helps in cancer treatment.