# IB Bio Quiz Cell Division PDF

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**During which phase of mitosis do chromosomes align at the cell equator?**

- ◯ Prophase
- ◯ Metaphase
- ◯ Anaphase
- ◯ Telophase

**Which of the following statements about the cell cycle are true?**

- ☐ The G1 phase is primarily for DNA replication.
- ☐ Cyclins are proteins that regulate the cell cycle.
- ☐ The S phase is when DNA replication occurs.
- ☐ Cytokinesis is part of the M phase.

**Explain the role of checkpoints in the cell cycle and discuss how they contribute to preventing cancer.**

**What is the primary function of the S phase in the cell cycle?**

- ◯ Cell growth
- ◯ DNA replication
- ◯ Preparation for mitosis
- ◯ Cytokinesis

**Which processes occur during interphase?**

- [ ] DNA replication
- [ ] Chromosome condensation
- [ ] Cell growth
- [ ] Nuclear envelope breakdown

**Describe the process of binary fission in prokaryotes and compare it to mitosis in eukaryotes.**

**Which phase of the cell cycle is characterized by the preparation for mitosis?**

- ◯ G1 phase
- ◯ S phase
- ◯ G2 phase
- ◯ M phase

**Which of the following are components of the mitotic spindle?**

- [ ] Microtuules
- [ ] Centrosomes
- [ ] Chromatin
- [ ] Actin filaments

**Discuss how mutations in genes regulating the cell cycle can lead to cancer. Provide examples of specific genes involved.**

**What is the primary difference between cytokinesis in plant cells and animal cells?**

- ◯ Plant cells form a cleavage furrow, while animal cells form a cell plate.
- ◯ Animal cells form a cleavage furrow, while plant cells form a cell plate.
- ◯ Both plant and animal cells form a cleavage furrow.
- ◯ Both plant and animal cells form a cell plate.

**What are the key features of prophase in mitosis?**

- ☐ Chromosomes condense
- ☐ Nuclear envelope dissolves
- ☐ Chromosomes align at the equator
- ☐ Spindle fibers form

**Explain the significance of cyclins and cyclin-dependent kinases (CDKs) in the regulation of the cell cycle.**

**During which phase of mitosis do sister chromatids separate and move to opposite poles?**

- ◯ Prophase
- ◯ Metaphase
- ◯ Anaphase
- ◯ Telophase

**Which of the following occur during telophase?**

- [ ] Chromosomes de-condense
- [ ] Nuclear envelopes reform
- [ ] Spindle fibers disappear
- [ ] Chromosomes align at the equator

**Describe the process of cytokinesis in animal cells and explain how it differs from mitosis.**

**Which phase of mitosis is characterized by the reformation of the nuclear envelope?**

- ◯ Prophase
- ◯ Metaphase
- ◯ Anaphase
- ◯ Telophase

**Which of the following are true about cancer cells?**

- [ ] They have uncontrolled cell division.
- [ ] They always form benign tumors.
- [ ] They can metastasize to other parts of the body.
- [ ] They are regulated by normal cell cycle checkpoints.

**Analyze the role of the mitotic spindle in ensuring accurate chromosome segregation during cell division.**

**In which phase of the cell cycle does the cell spend the majority of its time?**

- ◯ G1 phase
- ◯ S phase
- ◯ G2 phase
- ◯ M phase

**Which events occur during anaphase of mitosis?**

- ☐ Chromosomes condense
- ☐ Sister chromatids separate
- ☐ Chromosomes move to opposite poles
- ☐ Nuclear envelope reforms

**Critically discuss the differences between mitosis and meiosis in terms of their purpose and outcomes.**

**Which of the following best describes the function of CDKs in the cell cycle?**

- ◯ They break down cyclins.
- ◯ They activate cyclins.
- ◯ They phosphorylate target proteins to regulate the cycle.
- ◯ They are degraded at the end of the cell cycle.

**Which of the following are involved in the regulation of the cell cycle?**

- ☐ Cyclins
- ☐ CDKs
- ☐ Actin filaments
- ☐ Checkpoints

**Explain how the cell cycle is altered in cancer cells and the implications of these changes for treatment strategies.**

**What is the primary role of checkpoints in the cell cycle?**

- ◯ To initiate DNA replication
- ◯ To ensure the cell is ready to proceed to the next phase
- ◯ To degrade cyclins
- ◯ To form the mitotic spindle

**What are the functions of the G1 phase in the cell cycle?**

- ☐ DNA replication
- ☐ Cell growth
- ☐ Organel duplication
- ☐ Chromosome segregation

**Evaluate the impact of environmental factors on the regulation of the cell cycle and the potential development of cancer.**