

Exercise walk-through

4.5

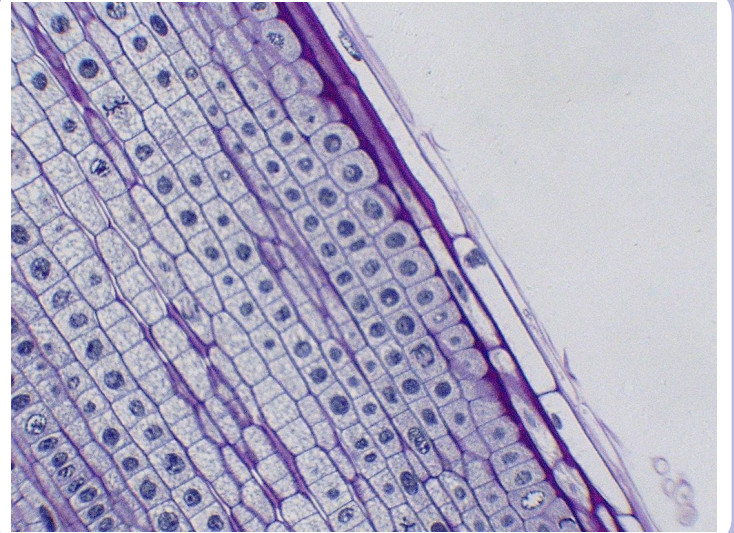
Cell Cycle

AP Biology

The cell cycle

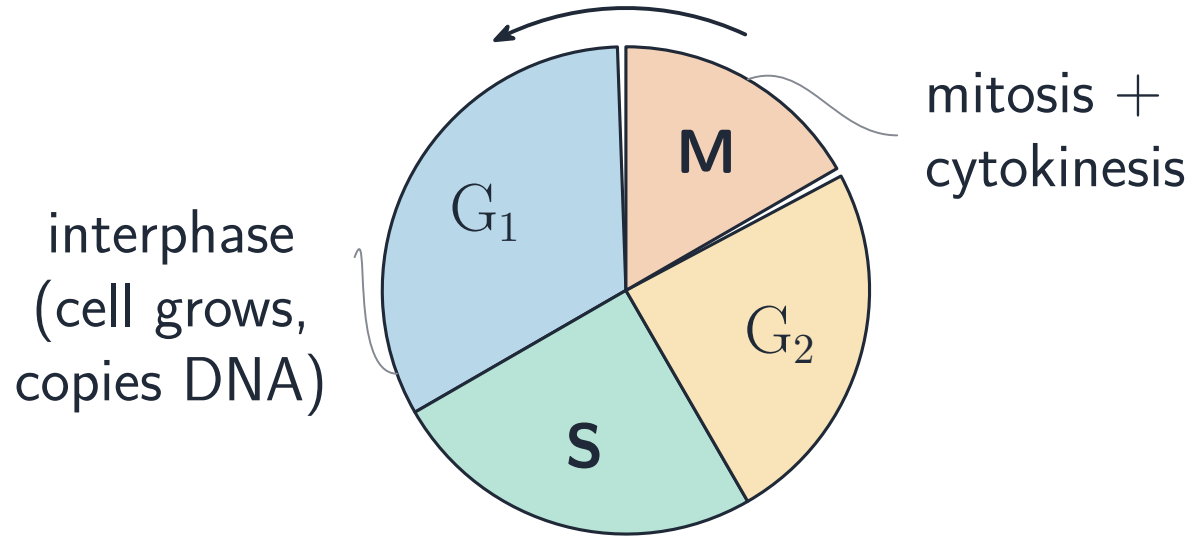
- **interphase** – grow and copy DNA
- **mitosis** (M) – split the nucleus: **P**rophase, **M**etaphase, **A**naphase, **T**elophase
- **cytokinesis** – split the cytoplasm

Two identical **diploid** **daughter cells** ; n divisions $\Rightarrow 2^n$ cells.



Mitosis produces two identical daughter nuclei

The cell cycle: interphase



The cell cycle: interphase, then mitosis and cytokinesis

Exercises 2.1-2.3

2.1 In which phase is DNA replicated?

[1]

2.2 What happens during G1?

[1]

2.3 What does cytokinesis do?

[1]

Exercises 2.1-2.3

2.1 In which phase is DNA replicated? [1]

2.1

- S phase
-

2.2 What happens during G1? [1]

2.2

- The cell grows and carries out its normal functions
-

2.3 What does cytokinesis do? [1]

2.3

- It divides the cytoplasm, splitting the cell into two

Exercise 3.1

3.1 DNA replication occurs during

[1]

☐

A G1

B S phase

C G2

D mitosis

Exercise 3.1

3.1 DNA replication occurs during

[1]

☐

A G1

B S phase

C G2

D mitosis

3.1 B

- S phase

Exercise 3.2 (a)

3.2 A cell completes S phase.

(a) State how its amount of DNA compares to before S phase.

[1]

Exercise 3.2 (a)

3.2 A cell completes S phase.

(a) State how its amount of DNA compares to before S phase.

[1]

(a)

- It has doubled

Exercise 3.2 (b)

3.2 A cell completes S phase.

(b) Explain what mitosis and cytokinesis then achieve.

[3]

Exercise 3.2 (b)

3.2 A cell completes S phase.

(b) Explain what mitosis and cytokinesis then achieve. [3]

(b)

- Mitosis separates the copied chromosomes into two identical nuclei, and cytokinesis splits the cytoplasm, producing two identical daughter cells

Exercise 3.3

3.3 Explain why DNA must be copied before mitosis, not after.

[2]

Exercise 3.3

3.3 Explain why DNA must be copied before mitosis, not after. [2]

3.3

- Each daughter cell needs a full copy of the DNA; copying it first (in S) ensures there are two complete sets for mitosis to separate