LAB MANUAL: 9th Edition

LABORATORY EXERCISE 6
THE CELL CYCLE

Figure Labels

FIG. 6.1

1. Prophase
2. Metaphase
3. Anaphase
4. Telophase and cytokinesis

FIG. 6.2

1. Chromosome (chromatid)
2. Centromere
3. Centriole
4. Spindle fiber (microtubules)

Critical Thinking Application Answer

Interphase. Even in rapidly dividing cells interphase is the most prevalent because it requires the longest period of time for growth and duplication of cell structures.

Laboratory Report Answers

PART A

Table:

Stage	Major Events Occurring
Interphase	Growth, duplication of cell structures, and normal metabolism take place.
Prophase	Nuclear envelope disappears; chromatin fibers condense, forming chromosomes (paired chromatids); centrioles move to opposite sides of the cell.
Metaphase	Chromosomes align midway between centrioles.
Anaphase	Microtubules pull chromosomes toward centrioles.
Telophase	Chromosomes elongate and become chromatin fibers; nuclear envelopes reappear.
Cytoplasmic division	Cell membrane constricts, dividing cell into new cells (daughter cells).

PART B

(sketches)

PART C

1. Each new cell contains identical chromosomes.
2. They may be slightly different in size and numbers of organelles.
3. Mitosis involves the division of the nuclear contents and the distribution of identical sets of chromosomes to the new cells; cytoplasmic division (cytokinesis) involves the division of the cytoplasm and cytoplasmic organelles.

PART D (figure 6.5*a–d*)

a. Metaphase
b. Telophase
c. Prophase
d. Anaphase

PART E (figure 6.5*a–d*)

1. Chromosome (chromatid)
2. Cytokinesis (cleavage furrow)
3. Cell membrane
4. Nuclear envelope
5. Centrioles/centrosome
6. Spindle fibers (microtubules)