LABORATORY EXERCISE 5
CELL STRUCTURE AND FUNCTION

Instructional Suggestions

1. Instead of preparing cheek cell slides, you may want to have students prepare slides of plant cells using *Elodea* leaves or onion skin.
2. If live frogs are available, you may want to pith the frogs and have students prepare wet mounts using small samples of the ciliated epithelium that lines the oral cavity. They also can prepare smears of frog blood and stain the cells with methylene blue, and prepare wet mounts of sperm cells from the testes of the male frogs. You then might provide students with prepared slides of human ciliated epithelium, blood, and sperm cells and have the students compare the frog cells with the human cells.

Figure Labels

FIG. 5.1

1. Flagellum
2. Centrioles
3. Golgi apparatus
4. Smooth endoplasmic reticulum
5. Nucleus
6. Nuclear envelope
7. Mitochondrion
8. Ribosomes
9. Cell membrane
10. Cilia

Critical Thinking Application Answers

The outer body surface is the same tissue as inside the cheek, however outer surface cells are dead from drying out.

Laboratory Report Answers

PART A

1. a
2. g
3. k
4. l
5. i
6. f
7. c
8. b
9. d
10. e
11. h
12. j

PART B

1. (sketch)
2. The wet-mount cells look like shells or "ghosts." The stained cells made the nucleus and other cellular components more clearly visible.
3. Yes. The stained cheek cells are essentially the same size and shape; however, the process of cell removal may cause many of the cells to become folded and distorted.

PART C

1. (sketches)
2. They should always notice cytoplasm, nucleus, nuclear envelope, and cell membrane
3. Answers will vary.

PART D (FIG. 5.4)

1. Ribosomes
2. Nuclear envelope
3. Golgi apparatus
4. Mitochondrion (cross section)
5. Chromatin
6. Mitochondria
7. Endoplasmic reticulum
8. Nuclear envelope
9. Nucleolus
10. Chromatin
11. Answers will vary.
12. Only nonliving cells can be observed, and only sections of a cell can be observed