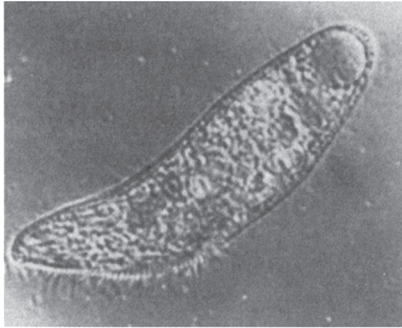
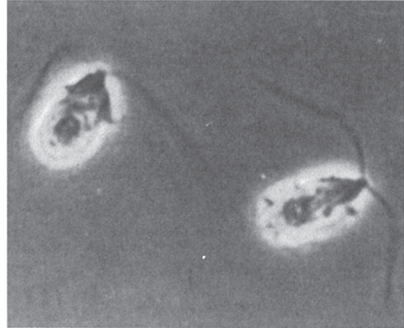




(a)



(b)



(c)

**Figure 2.8.** Protozoa. (a) An amoeba, *Amoeba proteus*. Magnification, 125X. (b) A ciliate, *Blepharisma*. Magnification, 120X. (c) A flagellate, *Dunaliella*. Magnification, 1900X. (With permission, from T. D. Brock, K. M. Brock, and D. M. Ward, *Basic Microbiology with Applications*, 3d ed., Pearson Education, Upper Saddle River, NJ, 1986, p. 40.)

move using their flagella. *Trypanosomes* move by flagella and cause a number of diseases in humans. The *ciliates* move by motion of a large number of small appendages on the cell surface called *cilia*. The *sporozoans* are nonmotile and contain members that are human and animal parasites. These protozoa do not engulf food particles, but absorb dissolved food components through their membranes. Protozoa cause some diseases, such as malaria and dysentery. Protozoa may have a beneficial role in removing bacteria from waste water in biological waste-water treatment processes and helping to obtain clean effluents. Microscopic pictures of some protozoa are presented in Fig. 2.8.

## 2.2. CELL CONSTRUCTION

### 2.2.1. Introduction

Living cells are composed of high-molecular-weight polymeric compounds such as proteins, nucleic acids, polysaccharides, lipids, and other storage materials (fats, polyhydroxybutyrate, glycogen). These biopolymers constitute the major structural elements of living