

CHAPTER 7 TOUR OF THE CELL



Figure 7.0 Fluorescent stain of cell

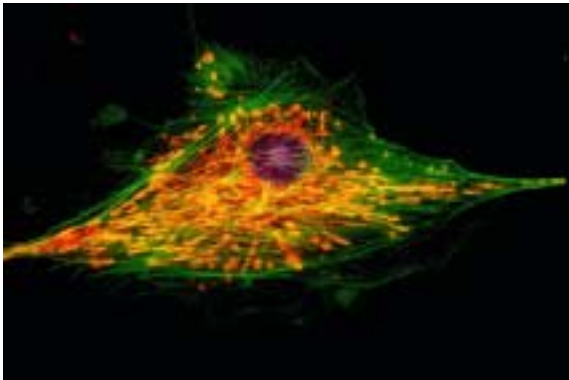
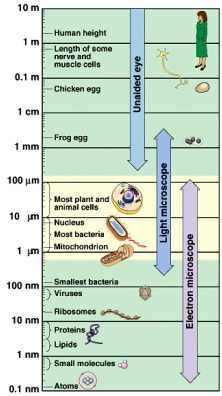


Figure 7.1 The size range of cells



Copyright © Pearson Education, Inc., publishing as Benjamin Cummings.

Table 7.1 Different Types of Light Microscopy: A Comparison

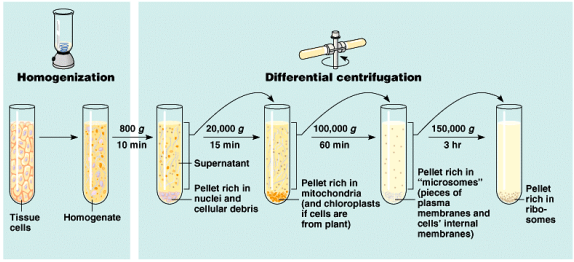
Type of Microscopy	Light Micrographs of Rat Liver Check Epithelial Cells	Type of Microscopy
Brightfield (transmitted specimen) These light micrographs through specimens and are normally prepared or artificially stained, large for bright contrast.		Phase contrast. Enhances contrast in specimens of cells by amplifying or inducing its density within specimen, especially useful for observing living, unprepared cells.
Brightfield (reflected specimens). Reflected light rays reflect off surfaces, but more intense produced from cells that have been prepared.		Differential interference contrast (DIC) (Nomarski). Like phase contrast microscopy, it uses optical modifications to magnify differences in density.
Fluorescence. Shows the location of specific molecules in the cell. Fluorescent molecules absorb blue to near-ultraviolet light and re-emit and emit longer-wavelength visible light. The fluorescent molecules are either naturally in the specimen or have been added by tagging the molecules of interest with fluorescent molecules.		Confocal. Uses laser and optical systems for "optical sectioning." Cells show higher contrast in certain depth of focus and images are generated along and before the selected plane of focus appear black rather than grey. This microscopy is typically used with fluorescently stained specimens, as in the examples here.

Copyright © Pearson Education, Inc., publishing as Benjamin Cummings.

Figure 7.2 Electron micrographs



Figure 7.3 Cell fractionation



Copyright © Pearson Education, Inc., publishing as Benjamin Cummings.

PROKARYOTIC CELLS

- **KINGDOM MONERA/BACTERIA**
- . **NO ORGANIZED NUCLEUS**
- . **DNA/SINGLE STRANDED**
- . **NO MAJOR ORGANELLES**
- . **NO DOUBLE MEMBRANE**
- . **SPECIALIZED DNA/PLASMIDS**
- . **CAPSULE, CARBOHYDRATE**

BACTERIA

- **CYANOBACTERIA/BLUE GREEN**
- **MYCOPLASMA/small bacteria**
- **HELPFUL, HARMLESS, PATHOGENIC**
- **METHANOBACTERIA/ANCIENT**
- **ANEROBIC - OXYGEN, AEROBIC +O2**
- **PLASMIDS/SPECIAL STRNADS OF DNA, USED IN BIOGENETIC EXPTS.**

Figure 7.4 A prokaryotic cell

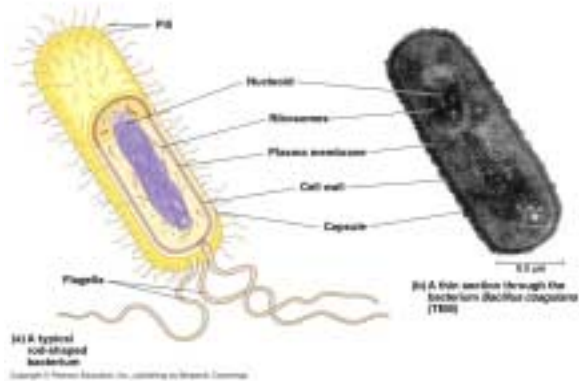


Figure 7.4x1 *Bacillus polymyxa*

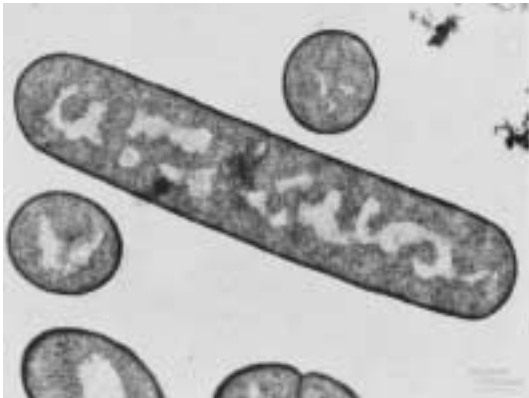
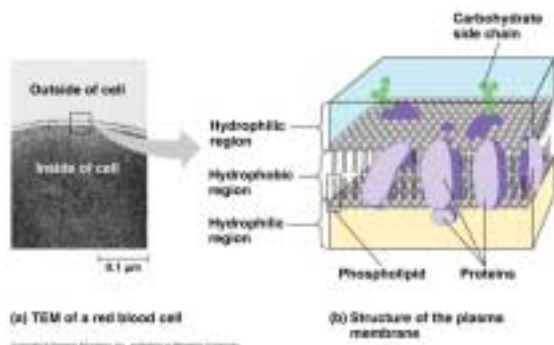


Figure 7.4x2 *E. coli*



Figure 7.6 The plasma membrane



EUKARYOTIC CELL

- ORGANIZED NUCLEUS
- DNA/DOUBLE STRANDED
- ORGANELLES DEFINED
- DOUBLE CELL MEMBRANE/DOUBLE MEMBRANE AROUND ORGANELLES
- DOMAIN EUKARYA: KINGDOMS/ PROTISTA, FUNGI, PLANTAE AND ANIMALIA

Figure 7.7 Overview of an animal cell

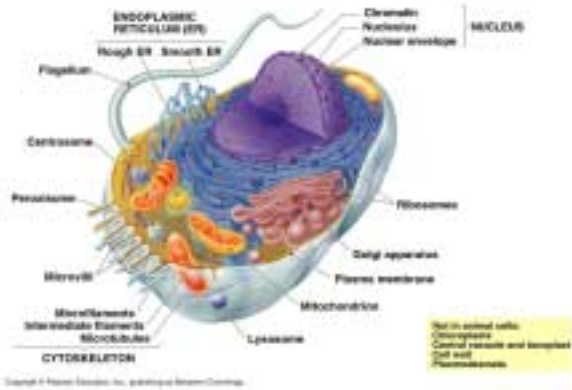


Figure 7.8 Overview of a plant cell

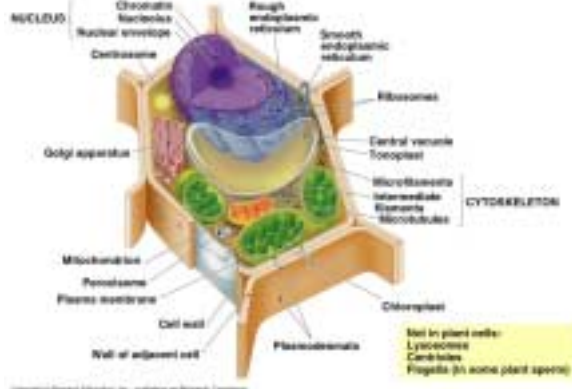


Figure 7.9 The nucleus and its envelope

