

# Cytology

## The study of the Cell

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## Cell Theory and Structure

3.1 A generalized animal cell showing the principal organelles. Since most cells of the body are highly specialized, they have structures that are different from those shown here. **© 2004**

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## Plasma Membrane

Figure 3.1 The plasma membrane of a cell. The membrane is a phospholipid bilayer with various proteins and receptors embedded in it.

- **Functions**
- **Selectively permeable barrier.**
- **Site of Hormone Receptors**
- **Recognition of the environment of the cell and antigens.**
- **Cell-to-cell Interaction**

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Figure 4.8A Rough endoplasmic reticulum

- **RER contain Ribosomes and is active in protein and steroid synthesis**
- **Cholesterol and Drug detoxification**
- **Synthesis of other membrane systems and the Golgi Complex. A Golgi Complex is actually a specialized form of RER**

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## Golgi Apparatus

Figure 4.10B Lysosome formation and function

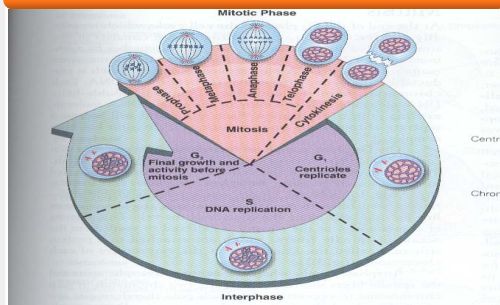
- **The Golgi complex is a dynamic system involved in processing and modifying secretion produced in ER and therefore very prominent in**

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## Components of the Nuclear Apparatus

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## The Cell Cycle



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## Mitochondria

Mitochondria harvest chemical energy from food



Figure 4.18 The mitochondrion

Chapter 4 A Tour of the Cell

- Energy production center of the cells
- Glucose is obtained from the nutrients.
- Krebs Cycle in the matrix
- Oxidative phosphorylation through the electron transport chain in the membranes of

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## Other cellular structures

- **Cytoplasmic Inclusions** comprise accumulations of material which are not constant such as food vacuoles, pigments e.g melanin and secretory granules.
- The cytoskeleton constituting of microfilaments and microtubules
- Cilia and flagella with a (9+2) arrays for movement
- Cell surfaces such as tight junction and desmosomes for protection support and communication

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