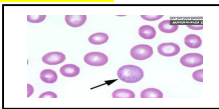


# Eukaryotic Cell

## Ribosomes

**Function:** makes proteins

- ✓ most numerous
- ✓ small particles of RNA and proteins
- ✓ some remain free within the cytosol, others attach to the rough endoplasmic reticulum
- ✓ **NOT** surrounded by membrane like other organelles
- ✓ cells active in protein synthesis are packed with ribosomes



## Endoplasmic Reticulum

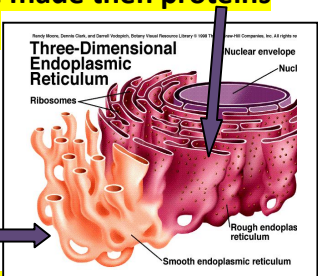
**Function:** intracellular highway

(path which molecules move throughout cell)

### Rough Endoplasmic Reticulum

**Function:** site where ribosomes are made then proteins get transported to other locations

- ✓ packed with ribosomes, giving it a rough appearance
- ✓ abundant in cells that produce large amounts of proteins for export



### Smooth Endoplasmic Reticulum

**Function:** 1. involved in synthesis of steroids  
2. involved in synthesis of membrane lipids  
3. regulates calcium levels in muscle cells  
4. detoxification of drugs

- ✓ does **NOT** have ribosomes on surface

## Golgi Apparatus

**Function:** modifies, sorts and packages proteins (post office)

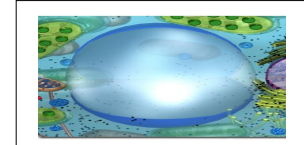
- ✓ receives protein from the rough E. R.
- ✓ convex shape, appears to have pancake shape sacs
- ✓ proteins are shipped to their final destination from here



## Vacuoles

**Function:** storage

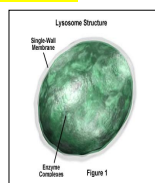
- ✓ sac-like structures that can store water, salts, proteins and carbohydrates
- ✓ plant cells have single, large central vacuole filled with liquid
- ✓ pressure allows plants to support heavy structures such as leaves and flowers
- ✓ found in some unicellular organisms and some animals
- ✓ paramecium contains a **contractile vacuole** to pump water in and out of the cell



## Lysosomes

**Function:** filled with enzymes which break things down (suicide sacs)

- ✓ breaks down lipids, carbohydrates and proteins into small molecules for use by rest of the cell
- ✓ breakdown useless organelles
- ✓ breakdown viruses and bacteria
- ✓ common in cells of animals, fungi, and protists, rare in plant cells (called **leukoplasts** in plant cells)
- ✓ play important role in early development in some organisms



## Cilia and Flagella

**Function:** assists in movement

**Cilia** hair-like organelles, extend from surface of cell or organism to assist in movement

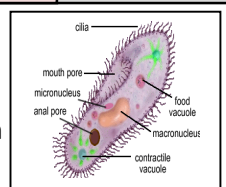
- ✓ propels the cell or material through the organism
- ✓ found on surface of organisms

Ex. cilia lining respiratory tract traps particles and debris from air inhaled and sweeps it back up into throat

**Flagella** hair-like organelles, long and less numerous on a cell (tail)

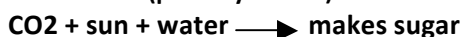
- ✓ **whip-like tail** is used for movement

Both **cilia** and **flagella** have same internal structure which



## Chloroplasts

**Function:** capture energy from sunlight and convert to chemical energy (photosynthesis)



- ✓ surrounded by 2 membranes
- ✓ contains green pigment (**chlorophyll**)
- ✓ encloses flattened membranous sacs (**thylakoids**)
- ✓ **have their own DNA**

