

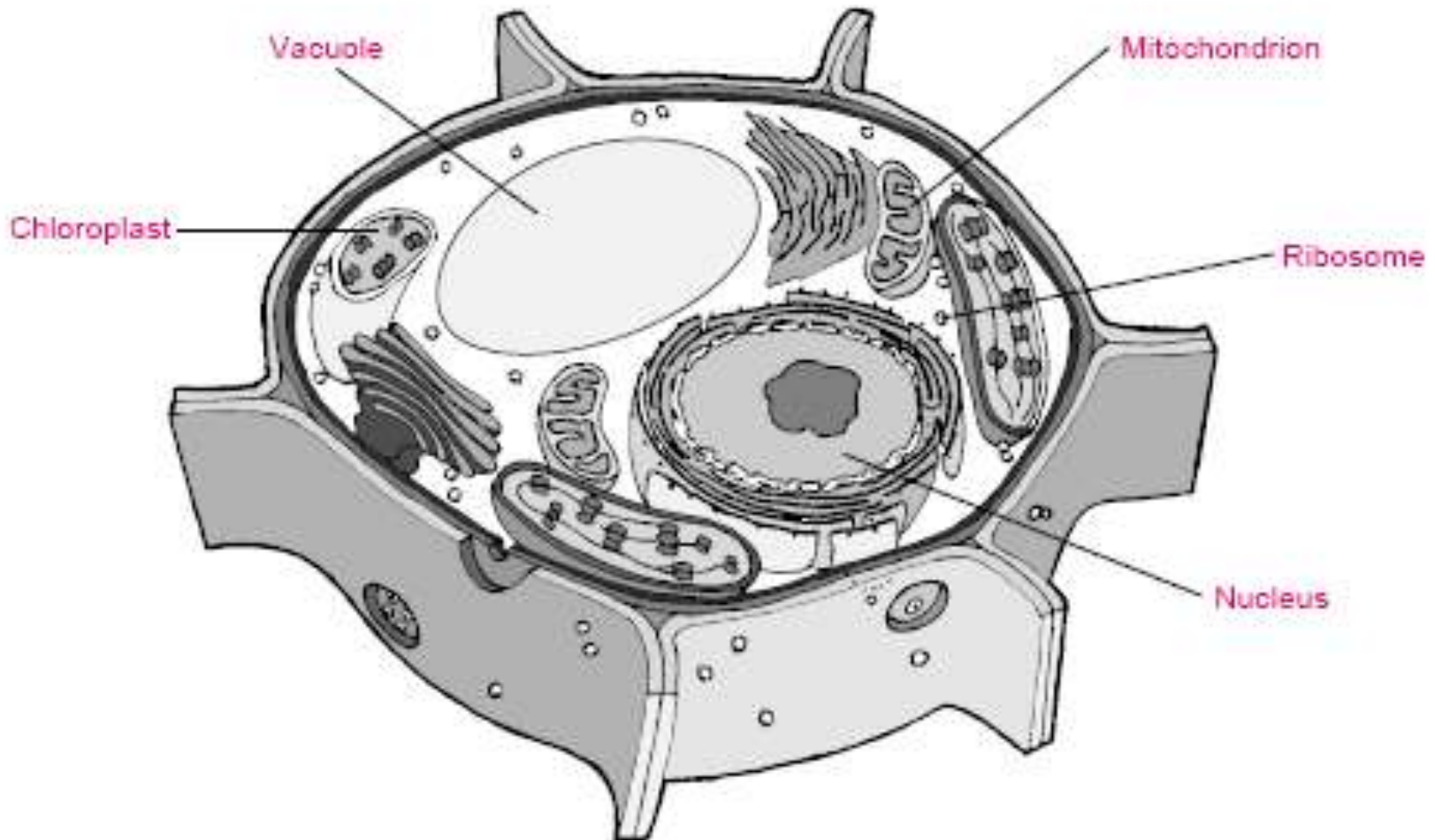
Eukaryotic Cell Structure



Comparing a Cell to a Factory It

- ▶ What is an organelle?
- ▶ is a structure in eukaryotic cells that acts as if it is a specialized organ.

Cell Diagram

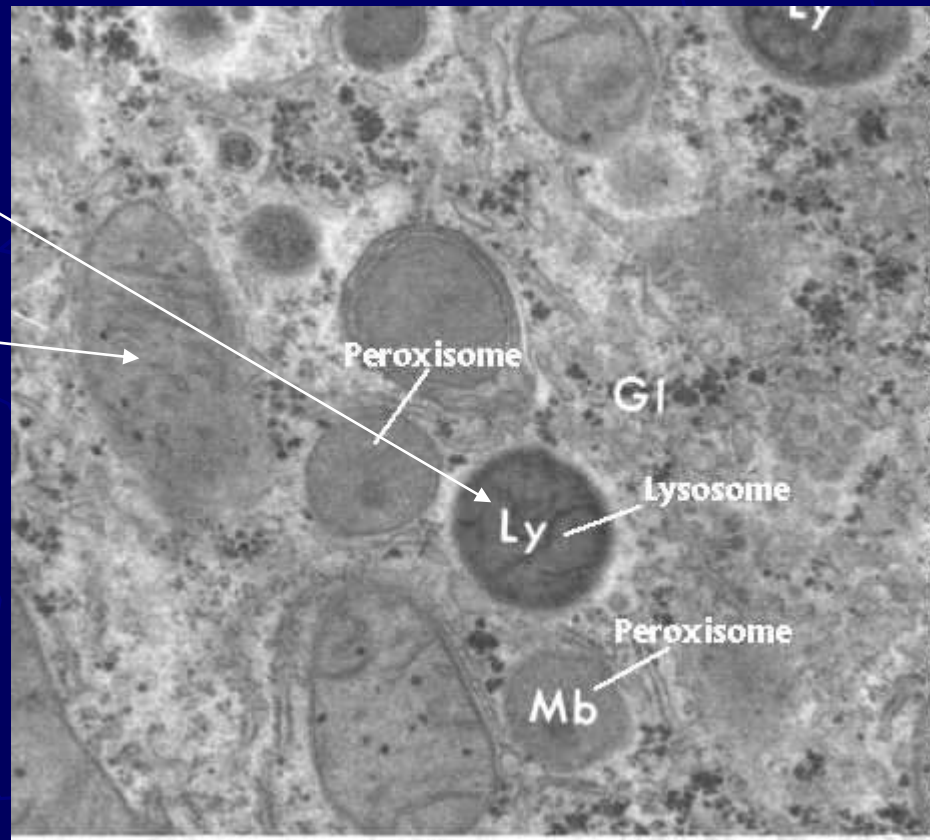


Animal Cells Contain

▶ Lysosomes

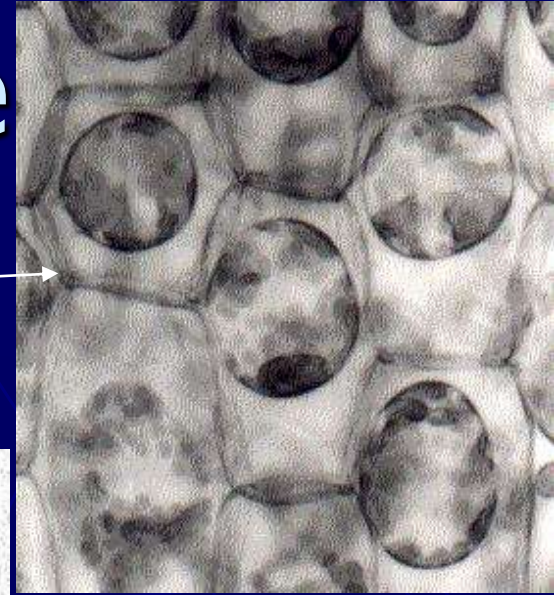
▶ Mitochondria

▶ E.R.

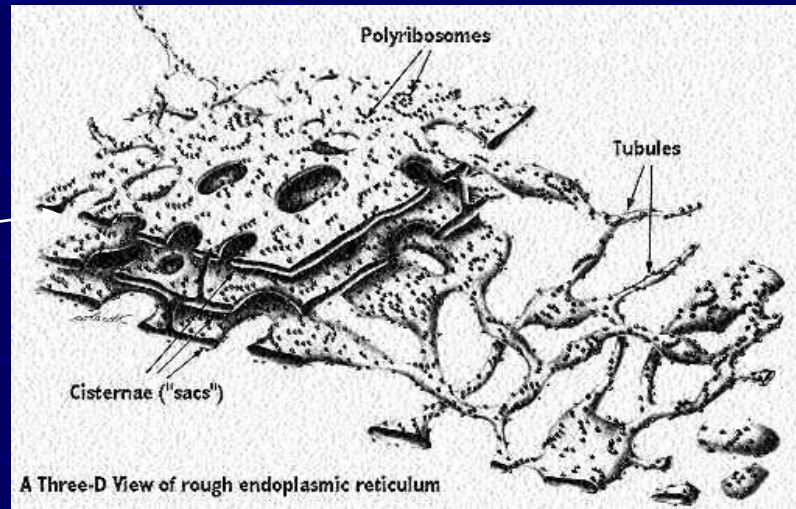


Plant Cells Have

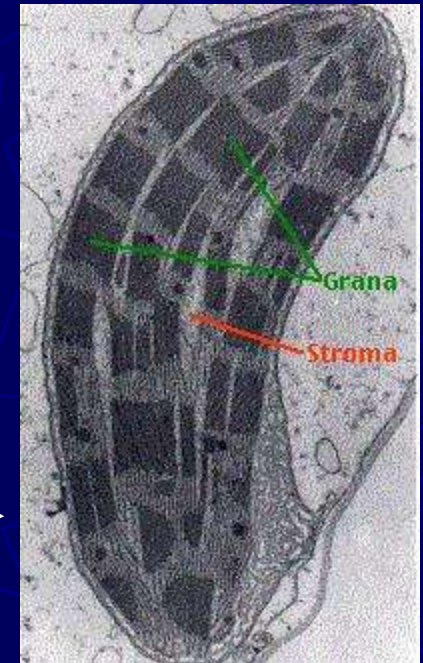
▶ Cell Wall



▶ E.R.

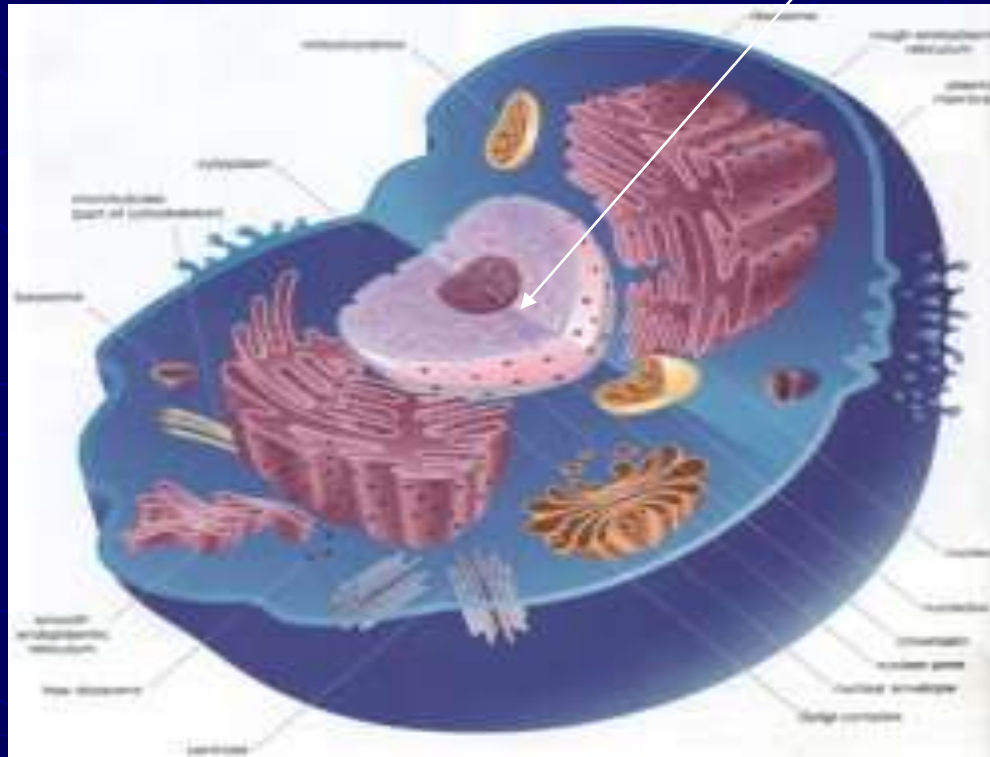


▶ Chloroplast



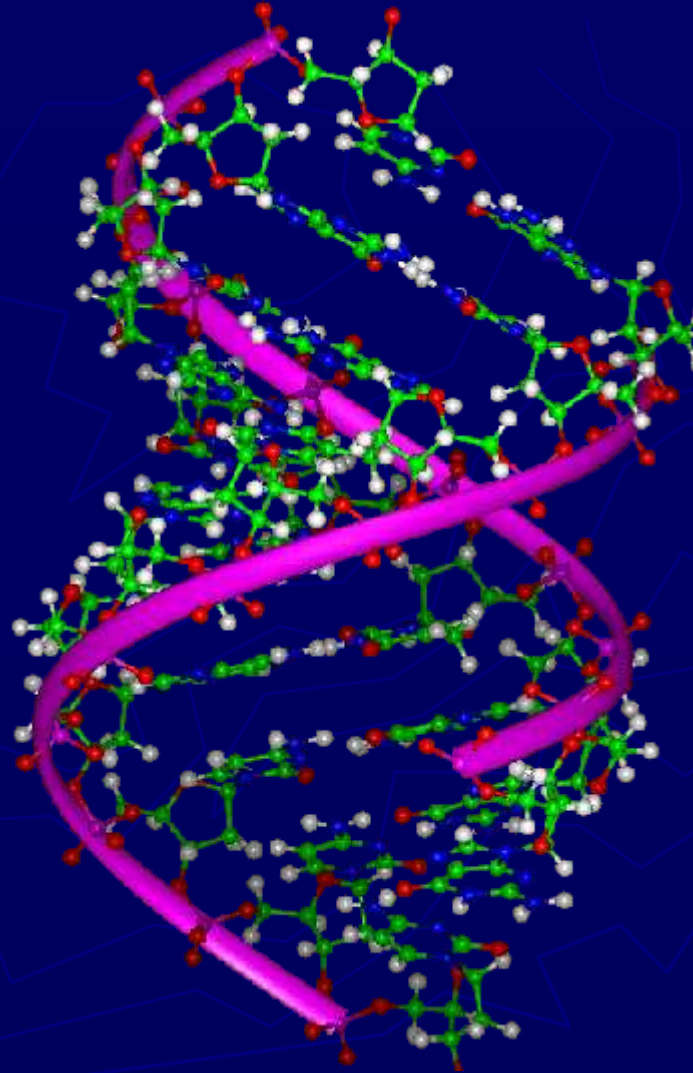
What is the function of the nucleus?

- ▶ It is the control center of the cell.



What important molecule does the nucleus contain?

▶ DNA



The granular material visible within the nucleus is called

▶ Chromatin



What does chromatin consist of?

It consists of DNA bound to protein.

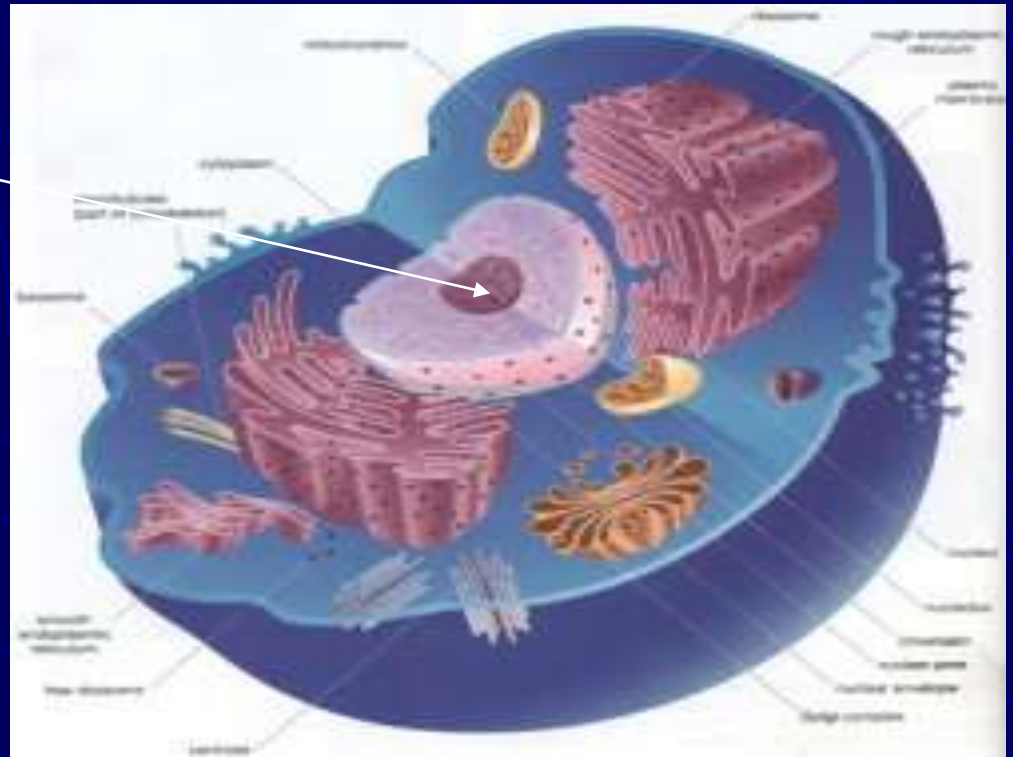


What are chromosomes?

- ▶ **They are distinct, threadlike structures formed of condensed chromatin that contain genetic information that is passed from one generation of cells to the next.**

Most nuclei contain a small, dense region known as the

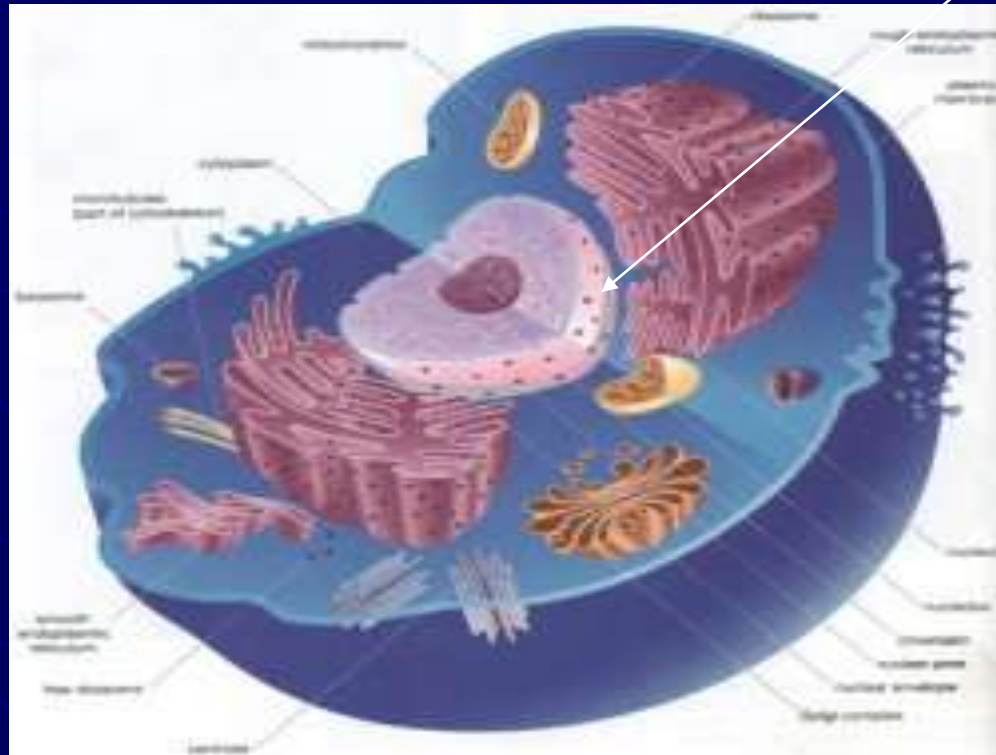
▶ nucleolus



What occurs in the nucleolus?

- ▶ This is where the assembly of ribosomes begins.

What is the nuclear envelope?



- ▶ It is a double-membrane layer that surrounds the nucleus.

Ribosomes

- ▶ What are ribosomes?
- ▶ Ribosomes are small particles of RNA and protein found throughout the cytoplasm that are involved in protein synthesis.

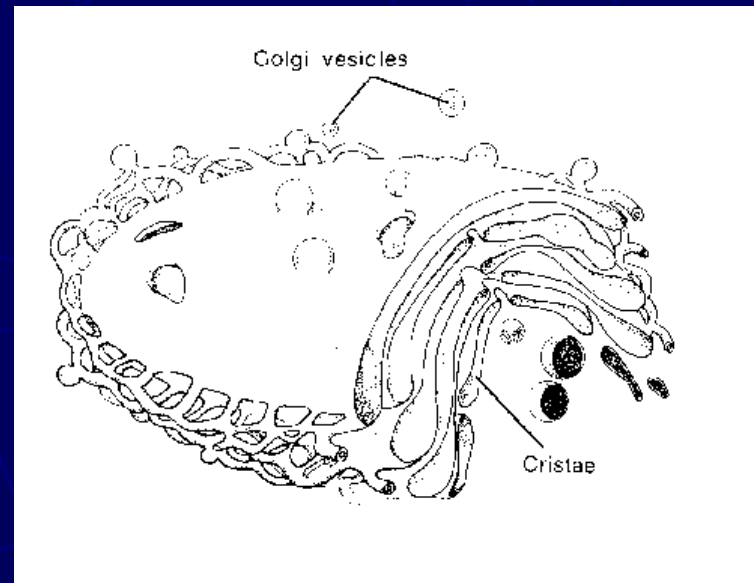


Endoplasmic Reticulum

- ▶ What is the difference between rough ER and smooth ER?
- ▶ Ribosomes are found on the surface of rough ER. There are no ribosomes on smooth ER.

Golgi Apparatus

- ▶ The Golgi apparatus is like a customization shop, where the finishing touches are put on proteins before they are ready to leave the cell “factory.”



Lysosomes

- ▶ **b.** They break down organelles that have outlived their usefulness.
- ▶ **d.** They contain enzymes that break down lipids, carbohydrates, and proteins.

Vacuoles

- ▶ What are vacuoles?
- ▶ Vacuoles are saclike structures that store materials such as water, salts, proteins, and carbohydrates.

Central Vacuole

- ▶ What is the role of the central vacuole in plants?
- ▶ When the central vacuole is filled with liquid, the pressure within the vacuole supports the heavy structures of the plant, such as leaves and flowers.

Vacuole

- ▶ How does the contractile vacuole in a paramecium help maintain homeostasis?
- ▶ By contracting rhythmically, the contractile vacuole pumps excess water out of the cell.

True or False

- ▶ Is the following sentence true or false?
- ▶ Both chloroplasts and mitochondria are enclosed by two membranes.
- ▶ True

Chloroplast and Mitochondria

- ▶ Chloroplasts and mitochondria contain their own genetic information in the form of

Small DNA molecules

Chloroplast and Mitochondria

- ▶ Biologist Lynn Margulis has suggested that mitochondria and chloroplasts are descendants of what kind of organisms?
- ▶ They are descendants of ancient prokaryotes.

Cytoskeleton

- ▶ What is the cytoskeleton?
- ▶ It is a network of protein filaments that helps the cell to maintain its shape.



Cytoskeleton

STRUCTURES OF THE CYTOSKELETON

Structure	Description	Functions
Microtubules	Hollow tubes of tubulins	Maintain cell shape, help build cilia and flagella, form centrioles in cell division
Microfilaments	Threadlike structures made of actin	Support the cell, help cells move

Ribosome

- ▶ Small particle of RNA and protein that produces protein following instructions from nucleus

Endoplasmic reticulum

- ▶ An internal membrane system in which components of cell membrane and some proteins are constructed



Golgi apparatus

- ▶ Stack of membranes in which enzymes attach carbohydrates and lipids to proteins

Lysosome

- ▶ Filled with enzymes used to break down food into particles that can be used

Vacuole

- ▶ Saclike structure that stores materials



Chloroplast

- ▶ Organelle that uses energy from sunlight to make energy-rich food.

Mitochondrion

- ▶ Uses energy from food to make high energy compounds

