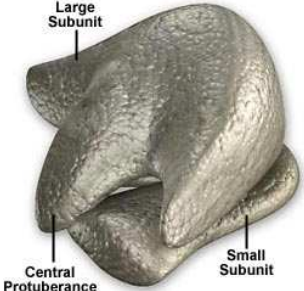


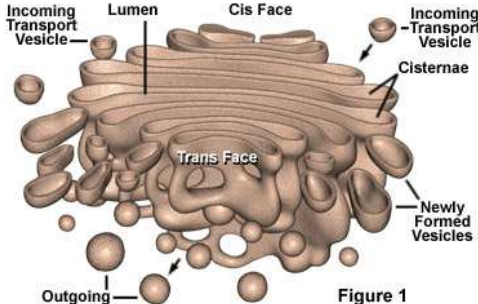

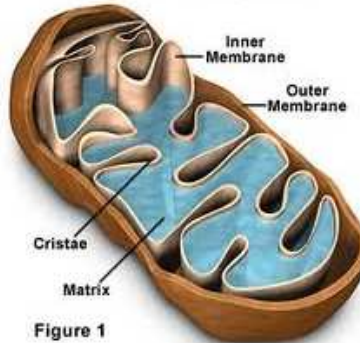
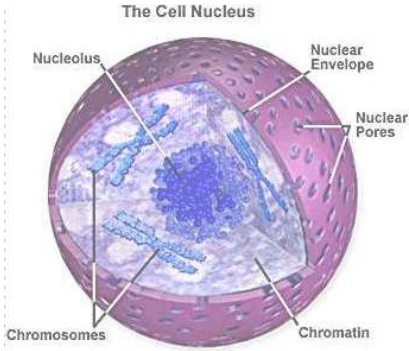
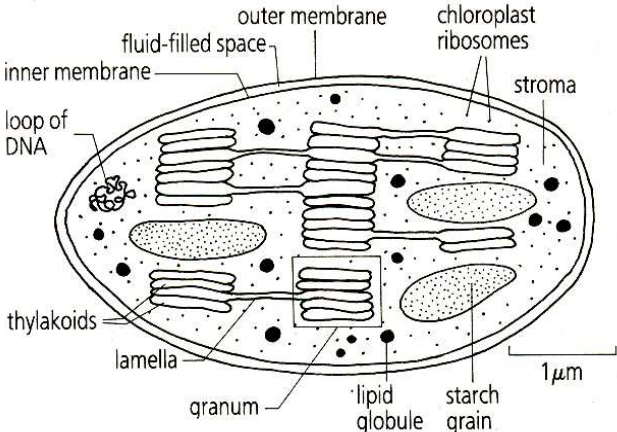
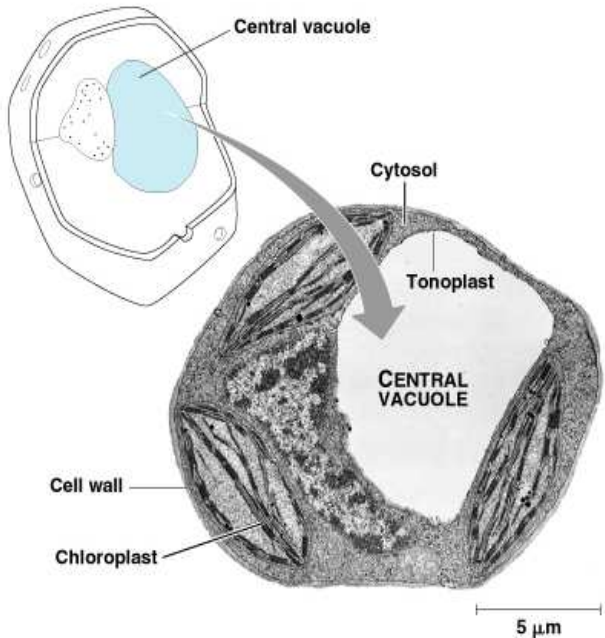



### Cell Organelles – summary table

Name of organelle (shape and size)	Structure	Function	Diagram	Plant / animal cell
Ribosome (20-30nm)	The smallest organelle in the cell (visible only with the electron microscope). It is made of ribosomal RNA and protein. Larger and smaller subunits.	It is involved in a process called translation in which proteins are formed.	<p style="text-align: center;">Ribosome Structure</p>  <p style="text-align: center;">Figure 1</p>	Both
Endoplasmic reticulum (ER)  ROUGH	It's a system with of membranes within the cytoplasm, which enclose a space known as the lumen.  It has ribosomes on its surface.	It is involved in the production of secretory proteins.		Both
Endoplasmic reticulum (ER)  SMOOTH	It's a system with of membranes within the cytoplasm, which enclose a space known as the lumen.  It has no ribosomes on its surface.	Detoxification of drugs and lipid synthesis (including phospholipids and steroids) etc.		Both

<p>Golgi Apparatus</p>	<p>It's a series of flattened membranous sacs (cisternae) looking like a stack of Pita bread.</p> <p>It's dynamic structure as vesicles are constantly being added from the ER, and new vesicles are budding off.</p> <p>Cells may have a few to several hundred of these structures.</p>	<p>It receives vesicles full of protein from the ER, then may be modified and packaged into vesicles which may transport them to other organelles or to the plasma membrane for secretion.</p> <p>Ex.: protein +carbohydrates → glycoprotein</p>	<p style="text-align: center;"><b>The Golgi Apparatus</b></p>  <p style="text-align: right;">Figure 1</p>	<p>Both</p>
<p>Lysosome (25nm - 1um)</p>	<p>It's vesicle that contain many different digestive enzymes (digestive system of the cell).</p>	<p>It breaks down all the major groups of macromolecules in the cell.</p> <p>It's function include the digestion of worn out organelles and matter taken in the cell.</p> <p>Another function – destruction of cells.</p> <p>Ex.: blood cells engulf bacteria.</p>		<p>Animal</p>
<p>Mitochondrion (sing.)</p> <p>Mitochondria (pl.)</p> <p>(1 mm to 4 mm in length and 0.2 mm to 1.0 mm in diameter. )</p>	<p>Structure contains - double membrane (inner and outer), cristae, which increase the surface area, matrix (it contains ribosomes (it synthesize the proteins coded for by the mitochondrial DNA) and a loop of genetic material).</p> <p>It's semi-autonomous organelle that grows and reproduces within the cytoplasm.</p>	<p>Function - aerobic respiration (production of energy (ATP)). Organic molecules are broken down to release energy in the form of ATP.</p>	<p style="text-align: center;"><b>Mitochondria Inner Structure</b></p>  <p style="text-align: right;">Figure 1</p>	<p>Both</p>

Nucleus	Double membrane with pores; nucleolus inside;	Contains DNA and organise all cell's life processes.	 <p>The diagram illustrates the structure of a cell nucleus. It is a spherical organelle with a thick, double-layered nuclear envelope. Small nuclear pores are visible on the surface. Inside, a dense, dark nucleolus is present. Chromatin is shown as a mass of DNA fibers, and several X-shaped chromosomes are also depicted.</p>	Both
Chloroplast (An approximate width of 2.0 mm to 4.0 mm and an approximate length of 5.0 mm to 10.0 mm)	Double membrane (inner and outer), thylakoids (with photosynthetic pigments – chlorophyll), which structure granums, stroma.  It has its own ribosomes, loop of DNA.	Function – photosynthesis.	 <p>This diagram shows a chloroplast, an oval-shaped organelle. It has a double membrane consisting of an outer membrane and an inner membrane, which encloses a fluid-filled space. Inside, there is a circular loop of DNA. The internal space is filled with stroma, which contains small chloroplast ribosomes. Stacks of flattened, disc-like thylakoids are shown, connected by thin structures called lamella. Individual thylakoids are labeled as granum. Other structures include lipid globules and starch grains. A scale bar indicates 1 μm.</p>	Plants

<p>Sap Vacuole (no basic shape or size)</p>	<p>It's filled mostly of water. Tonoplast – its membrane.</p>	<p>It is used to store many things in different plant cells (ex.: organic compounds, ions, waste products, pigments, water etc.).</p> <p>Also, it takes up water and pushes against the cell wall, which prevents further uptake of water in the cell (turgor pressure).</p>	 <p>The diagram illustrates the structure of a plant cell. It shows a cross-section of a cell with a large central vacuole (light blue) surrounded by a thin layer of cytosol (grey). The vacuole is bounded by a membrane called the tonoplast. The cell is enclosed by a thick cell wall. A chloroplast is visible in the cytosol. A scale bar at the bottom right indicates 5 μm.</p>	<p>Plants</p>
<p>Cell Wall (10 nm thick)</p>	<p>It's made of microfibrils cellulose.</p>	<p>It's a rigid structure that supports the plant cell and gives it a specific shape.</p> <p>It provides a strong completely permeable boundary around the outside of the plant cell. (everything can pass through)</p>	 <p>The micrograph shows a group of plant cells under a microscope. The cell walls are clearly visible as thick, yellowish-brown lines forming a network. The cells themselves are filled with a lighter, more translucent material.</p>	<p>Plants</p>