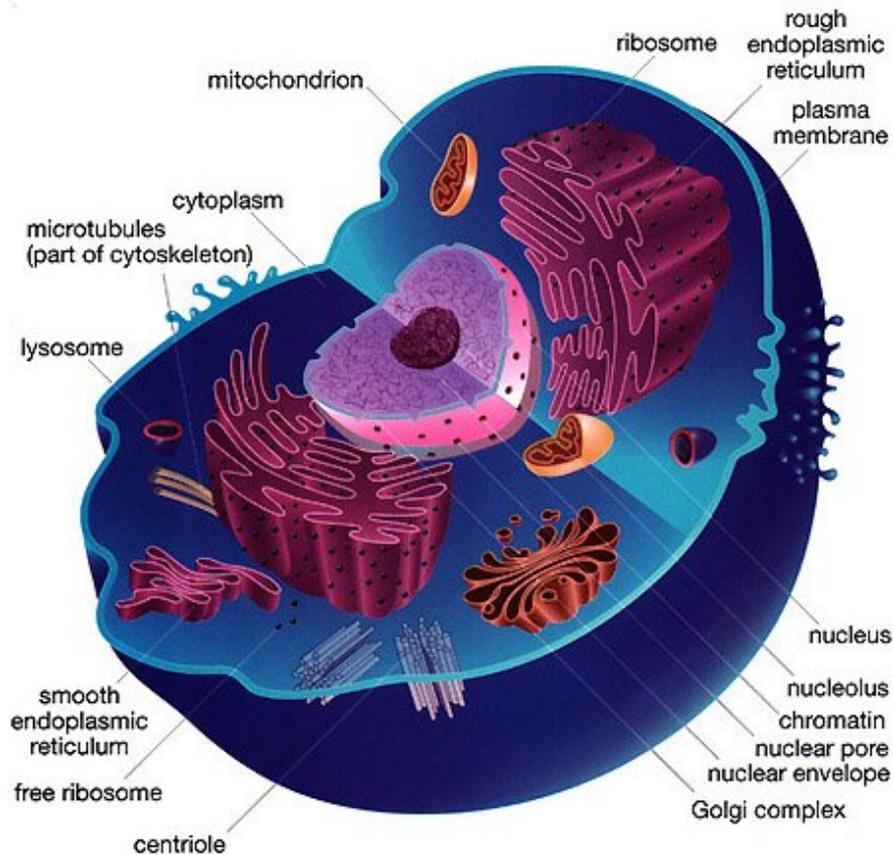


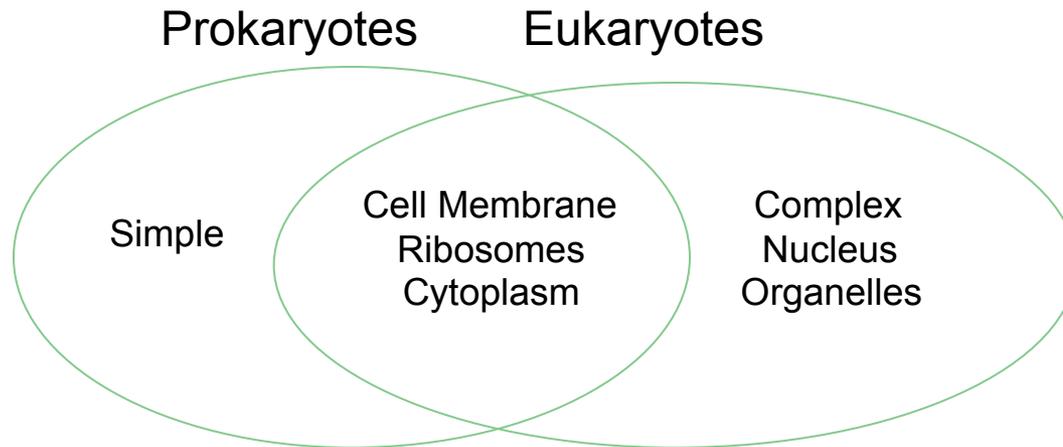
CELL STRUCTURES



Cell Structures

- Nucleolus
- Nuclear Envelope
- Cytoskeleton
- Centrioles
- Rough ER
- Smooth ER
- Golgi
- Lysosome
- Vacuole
- Chloroplast
- Mitochondrion

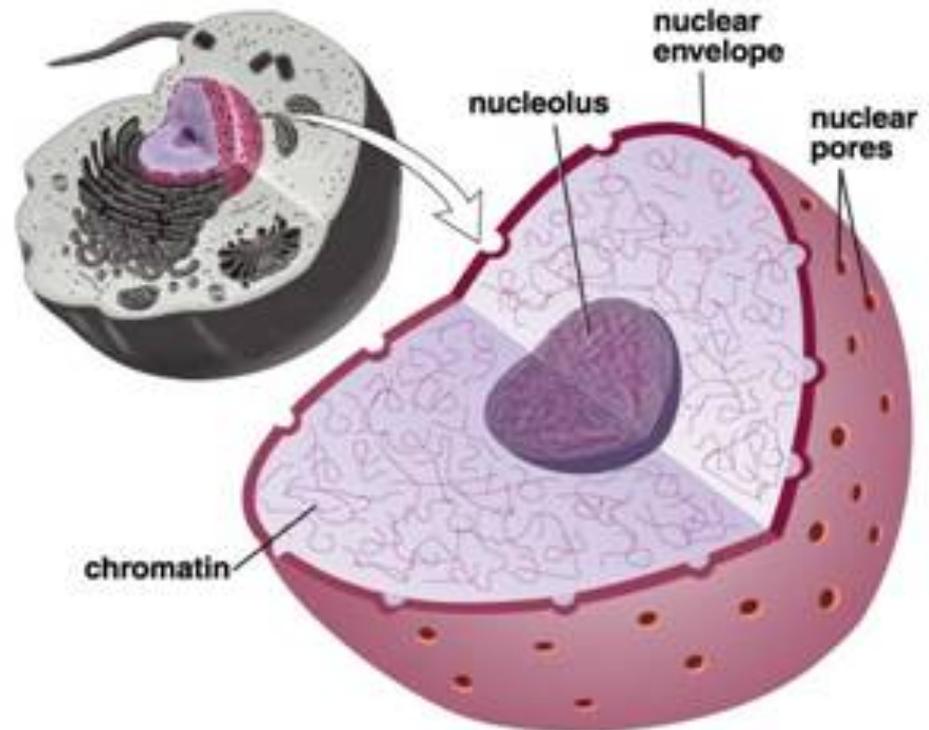
Venn Diagram: Prokaryote vs. Eukaryote



Simple - Complex - Cell membrane - Ribosomes - Cytoplasm - Nucleus - Organelles

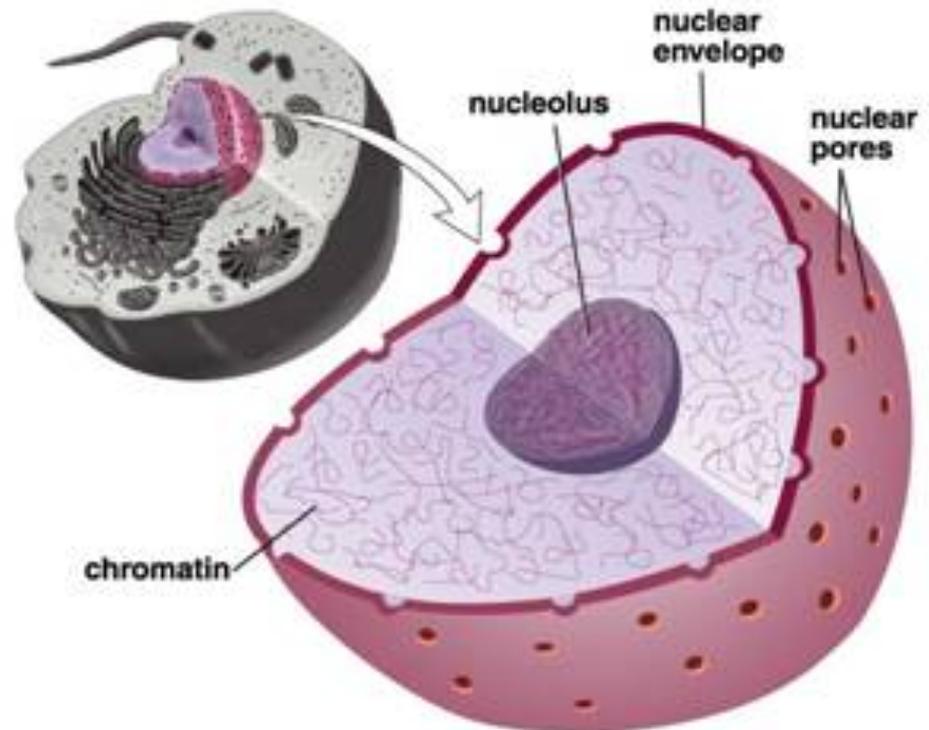
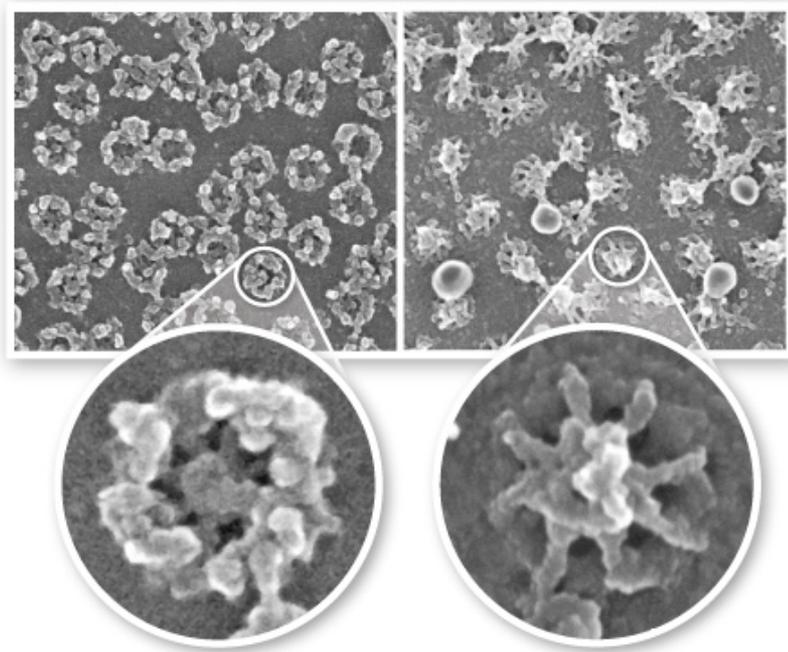
Nucleolus

The **nucleolus** is a dense region in the nucleus where ribosomes are assembled.

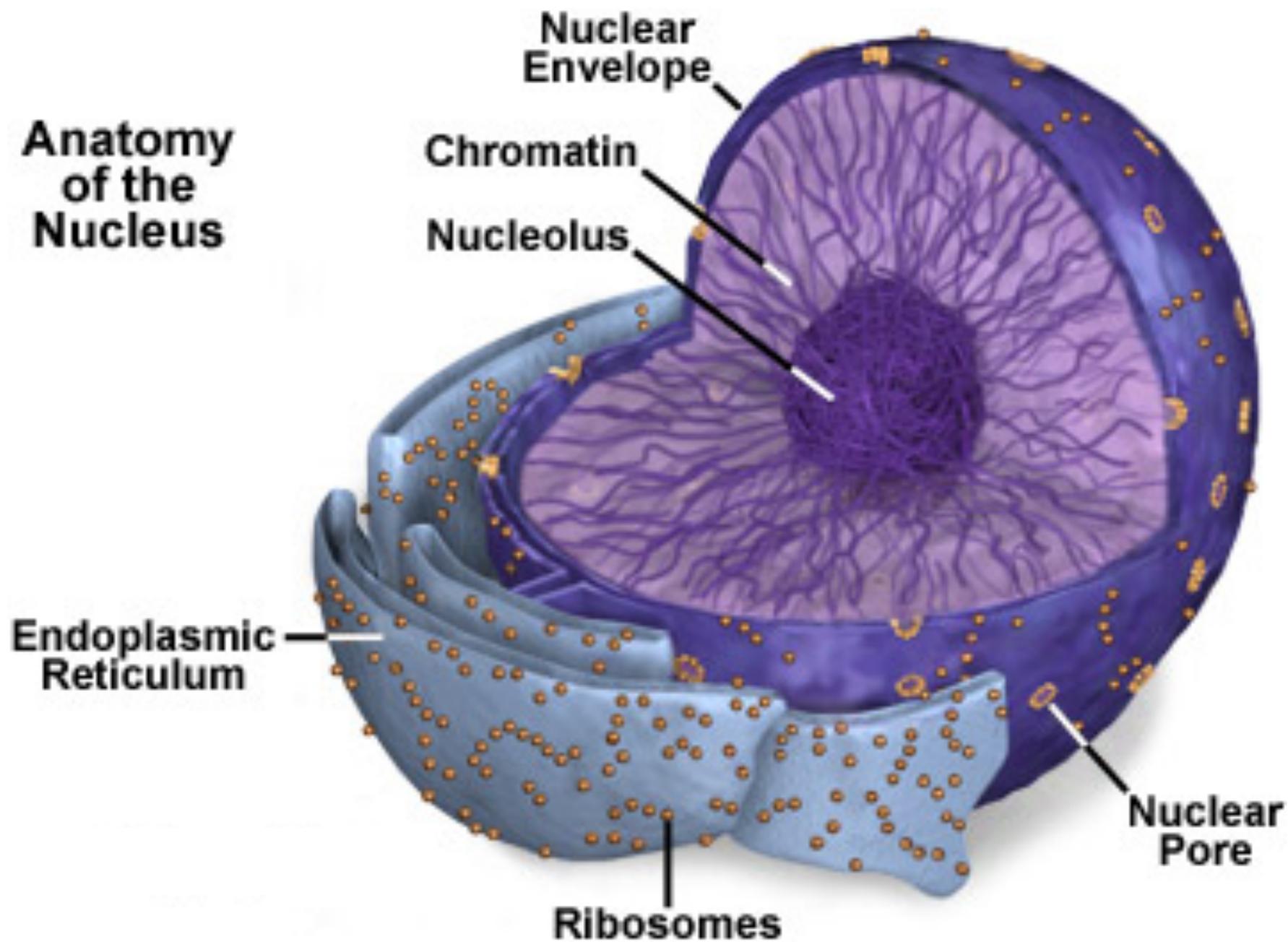


Nuclear Envelope

The nucleus is surrounded by a two-layer membrane called the **nuclear envelope**.

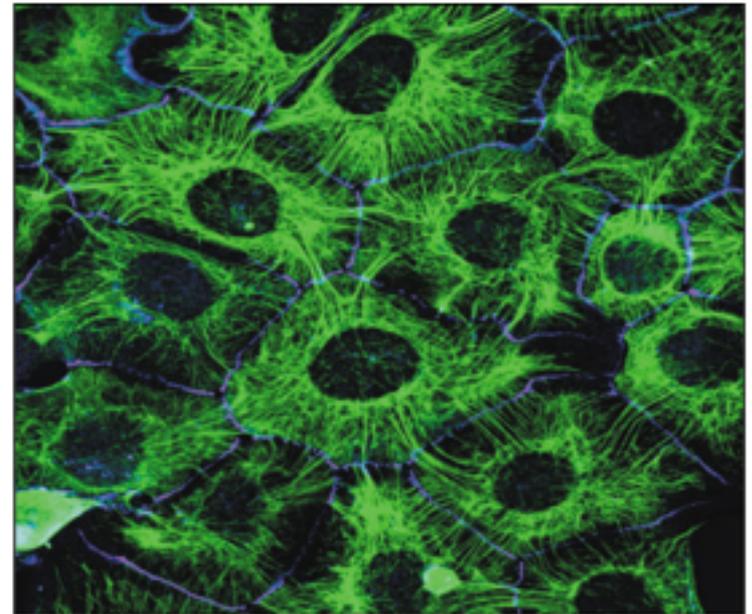


Anatomy of the Nucleus



Cytoskeleton

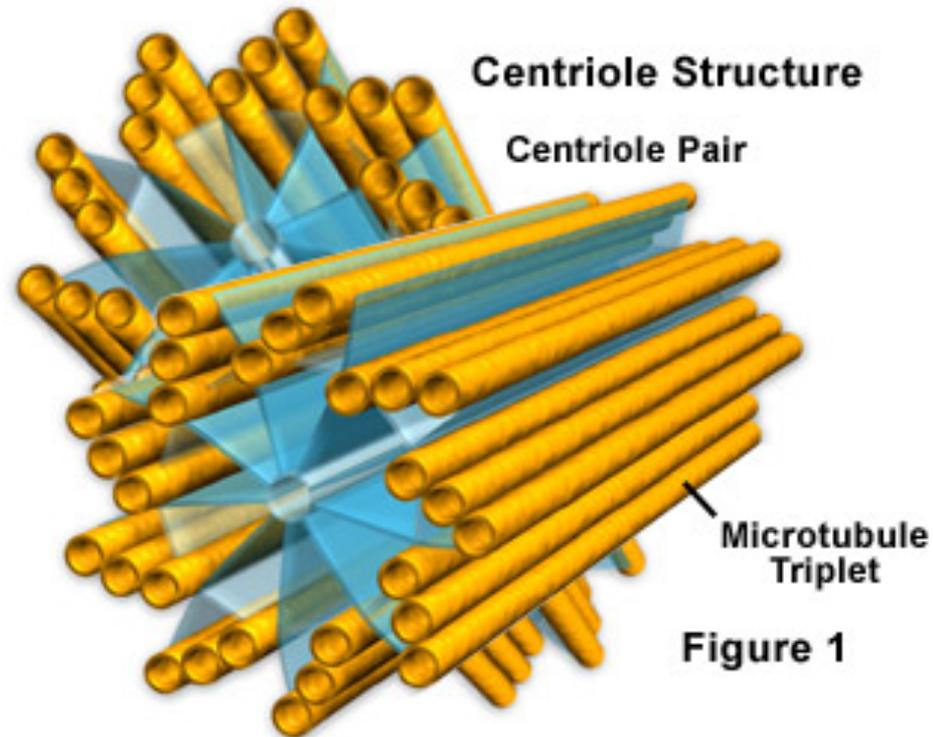
The **cytoskeleton** is a network of proteins that helps the cell maintain shape and transport materials around the cell.



An animal cell cytoskeleton 10 μm

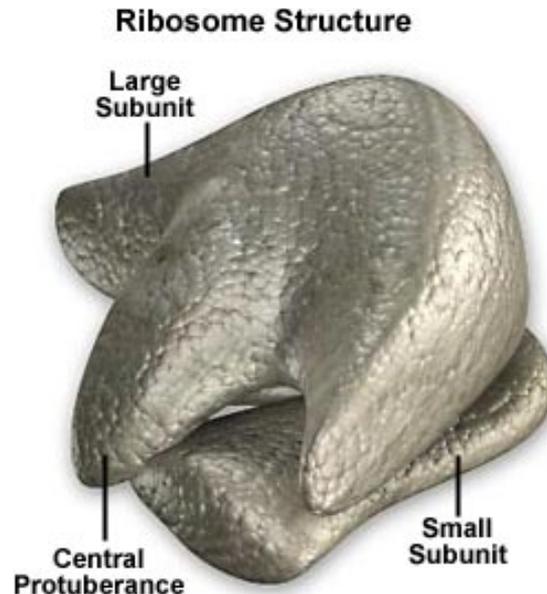
Centrioles

Centrioles are microtubule structures found only in animal cells. These structures help organize and separate chromosomes during cell division.



Ribosomes

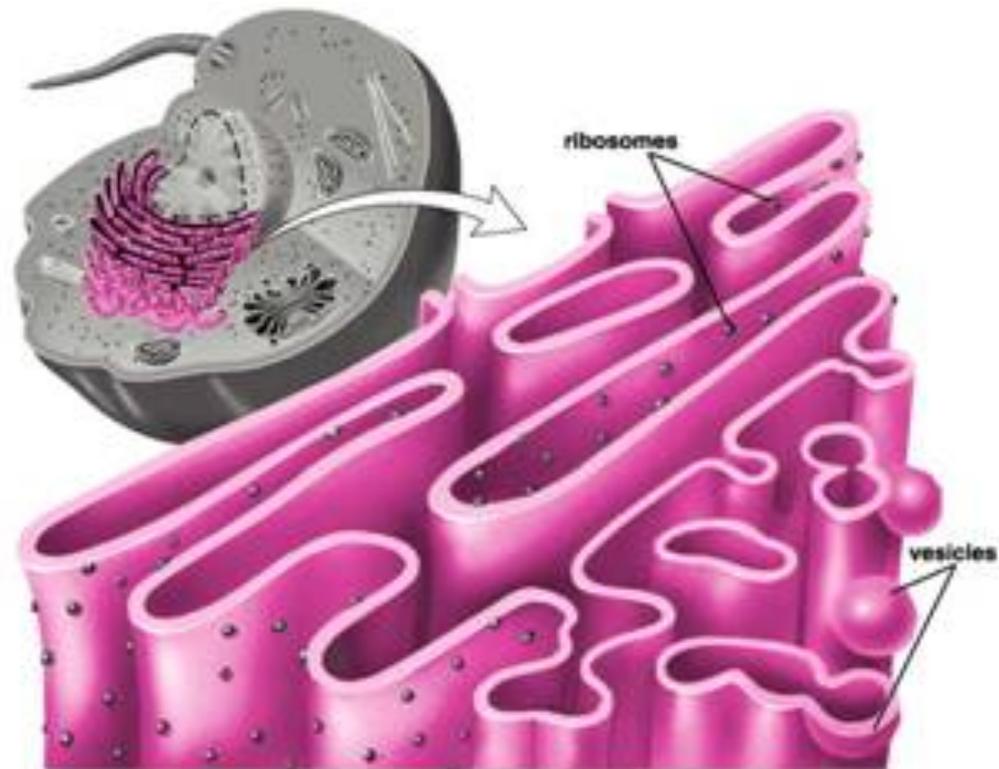
One of the most important jobs of the cell is making proteins. **Ribosomes** are the protein making machinery.



Ribosomes are made out of RNA, which is a nucleic acid similar to DNA.

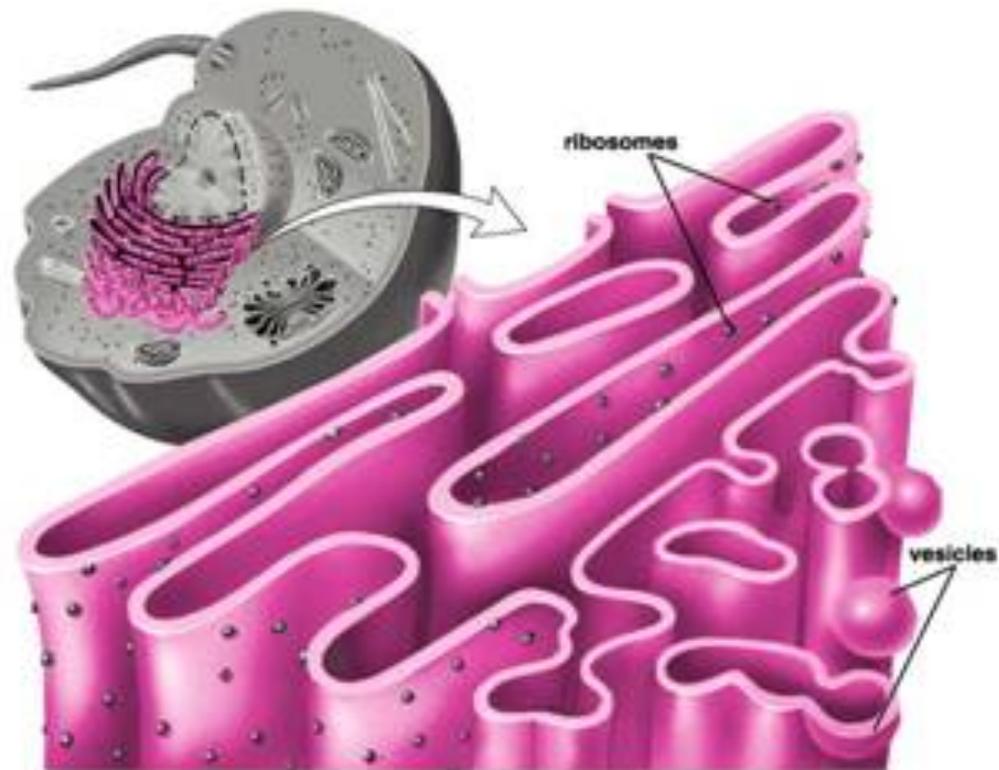
Endoplasmic Reticulum

The **smooth endoplasmic reticulum (SER)** is where the components of the *cell membrane* are assembled and some *proteins* are modified.



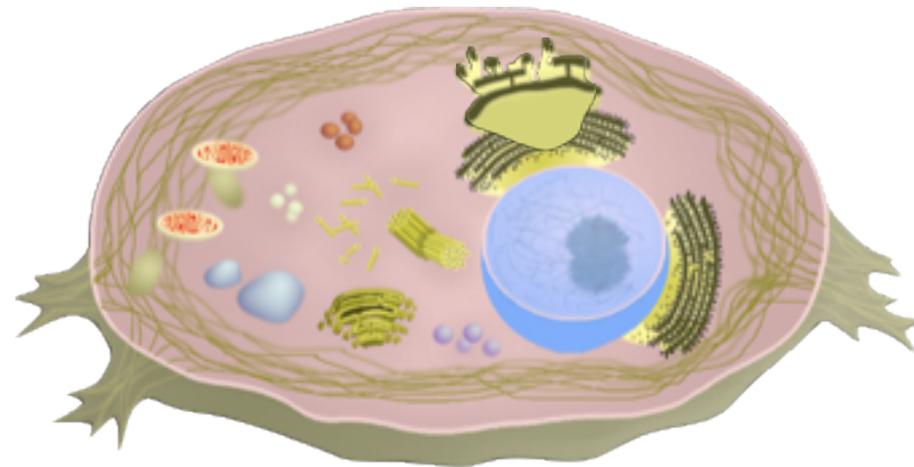
Endoplasmic Reticulum

The **rough endoplasmic reticulum** aids in the formation of proteins. *Ribosomes* attached to the rough ER surface give it a beaded appearance.



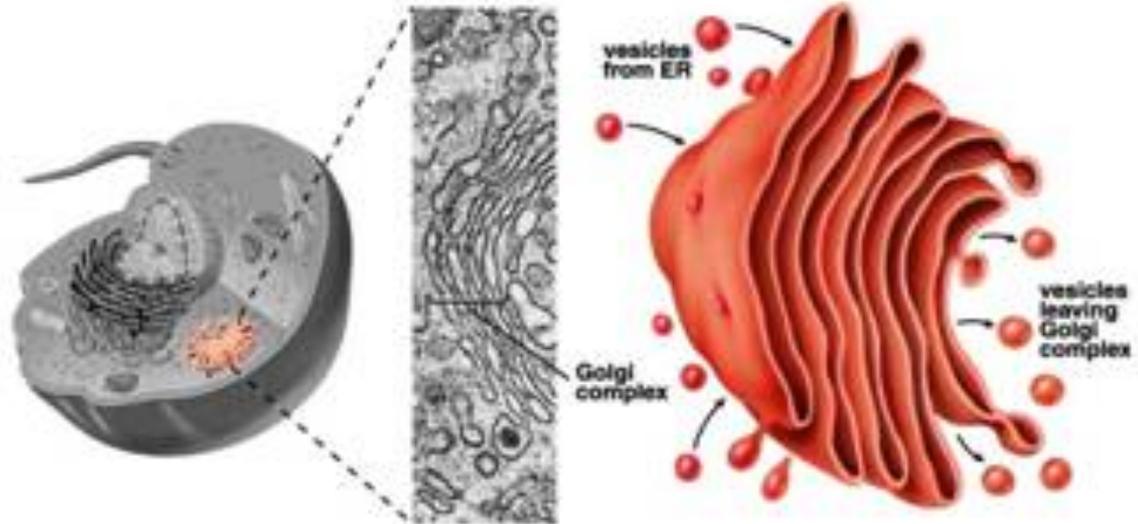
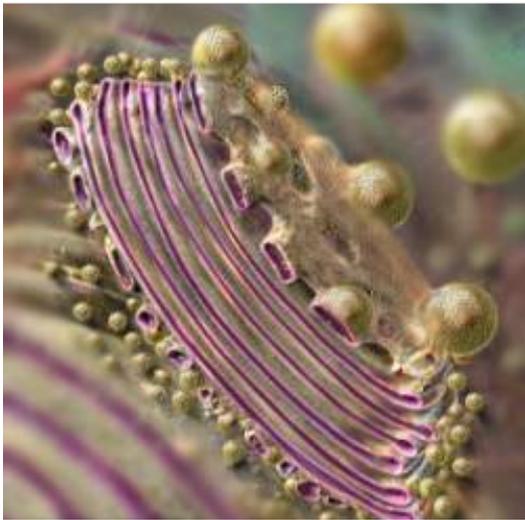
Endoplasmic Reticulum

The **smooth endoplasmic reticulum** performs specialized tasks based on the type of tissue. It aids in complex lipid formation (e.g. membranes and hormones).



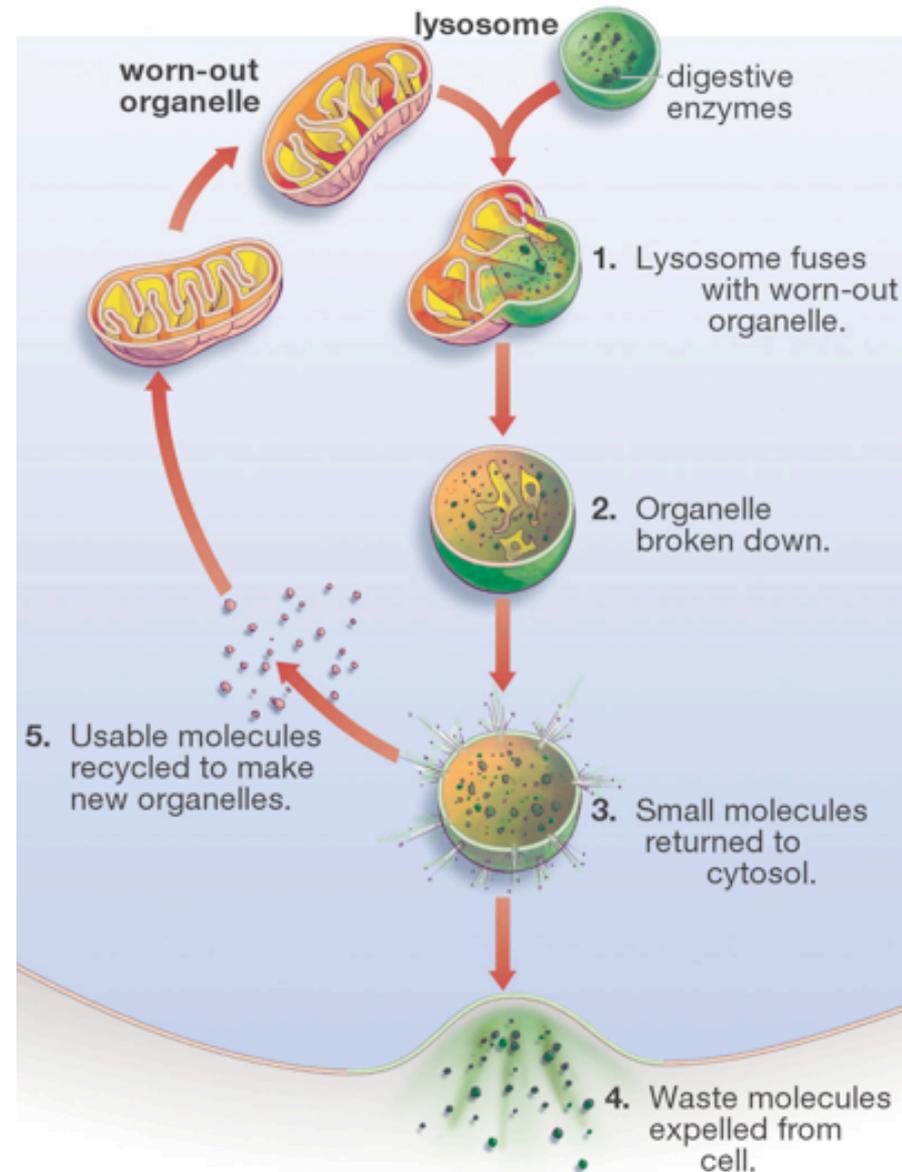
Golgi

The **Golgi** modifies proteins produced by the rough ER for their specialized tasks before sending them onto their final destination.



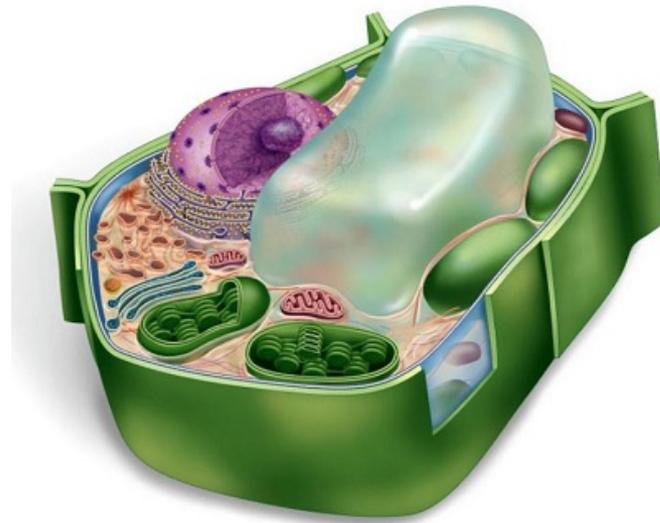
Lysosome

Lysosomes are small organelles filled with digestive enzymes that break down worn-out or damaged organelles.



Vacuole

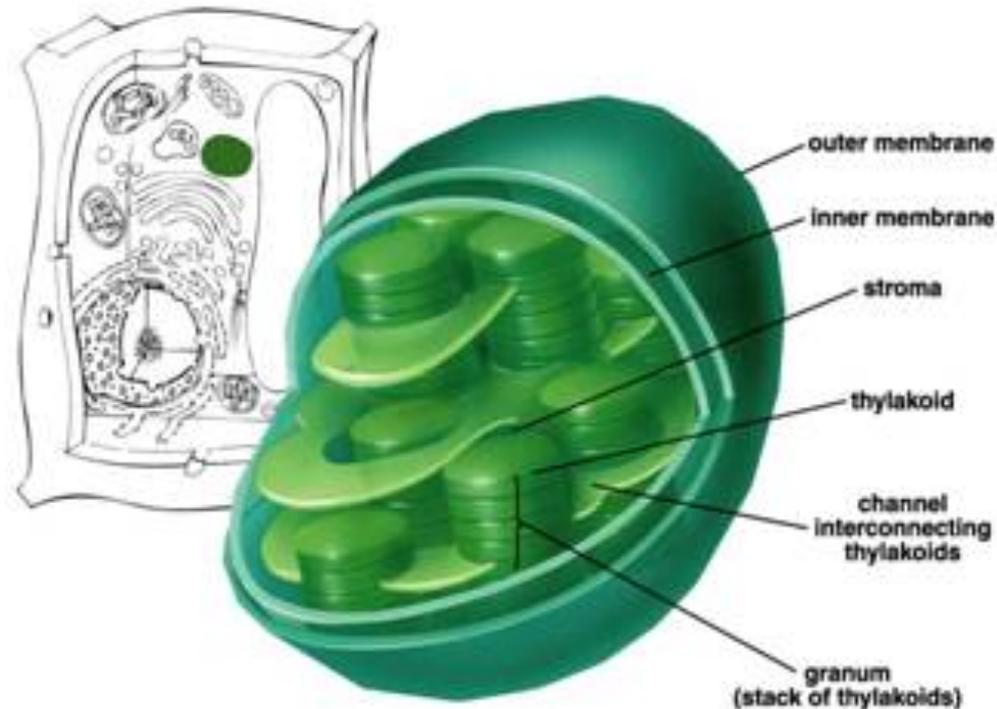
Cells often store materials such as water, salts, proteins, and carbohydrates in saclike structures known as **vacuoles**.

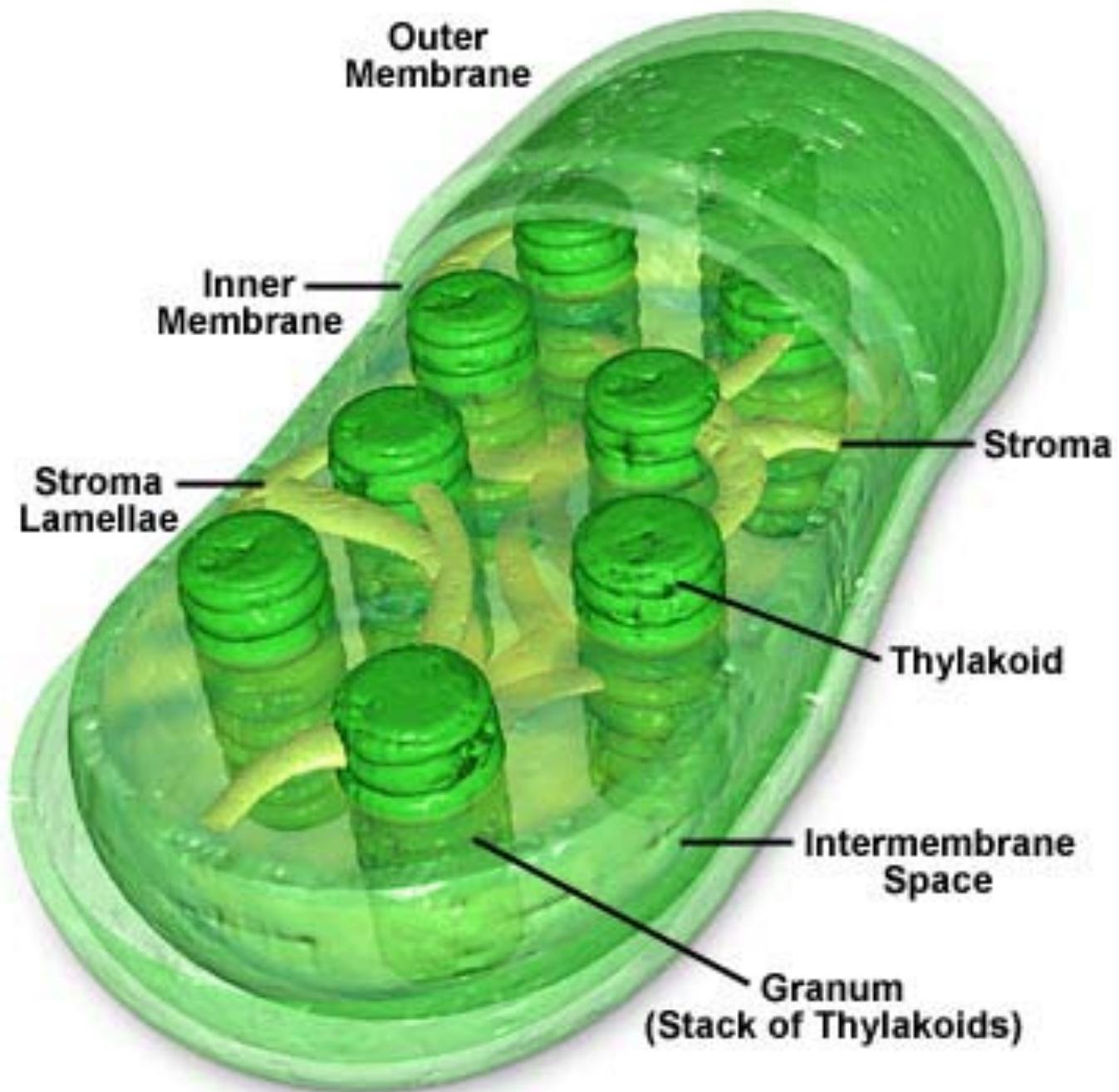


Many plants have a single large, central vacuole filled with liquid that helps plants maintain internal pressure.

Chloroplasts

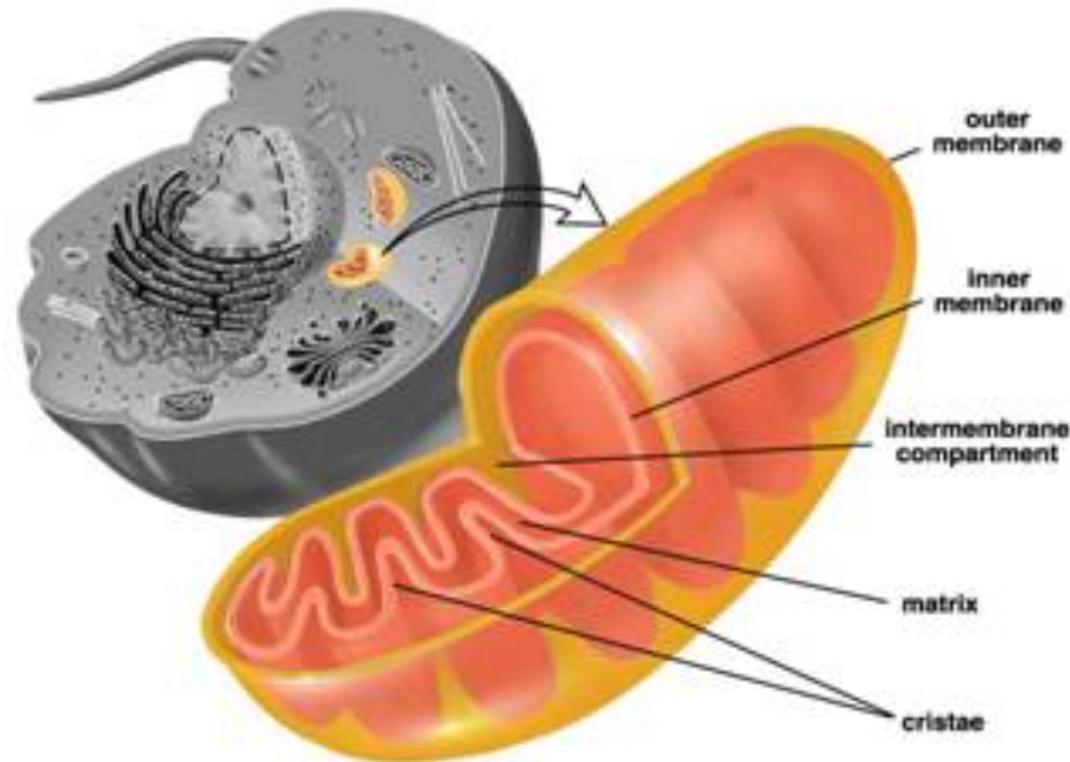
Chloroplasts use the energy from sunlight to make energy-rich food molecules (sugar) in a process known as *photosynthesis*.



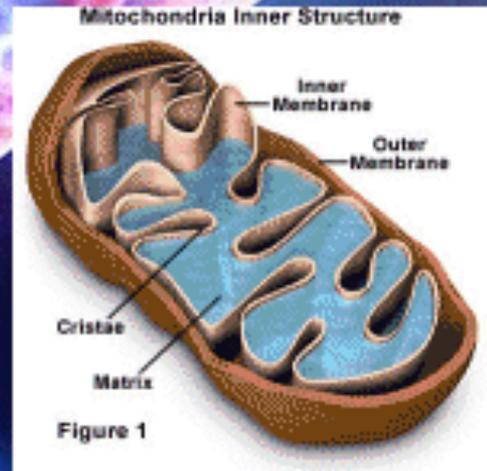
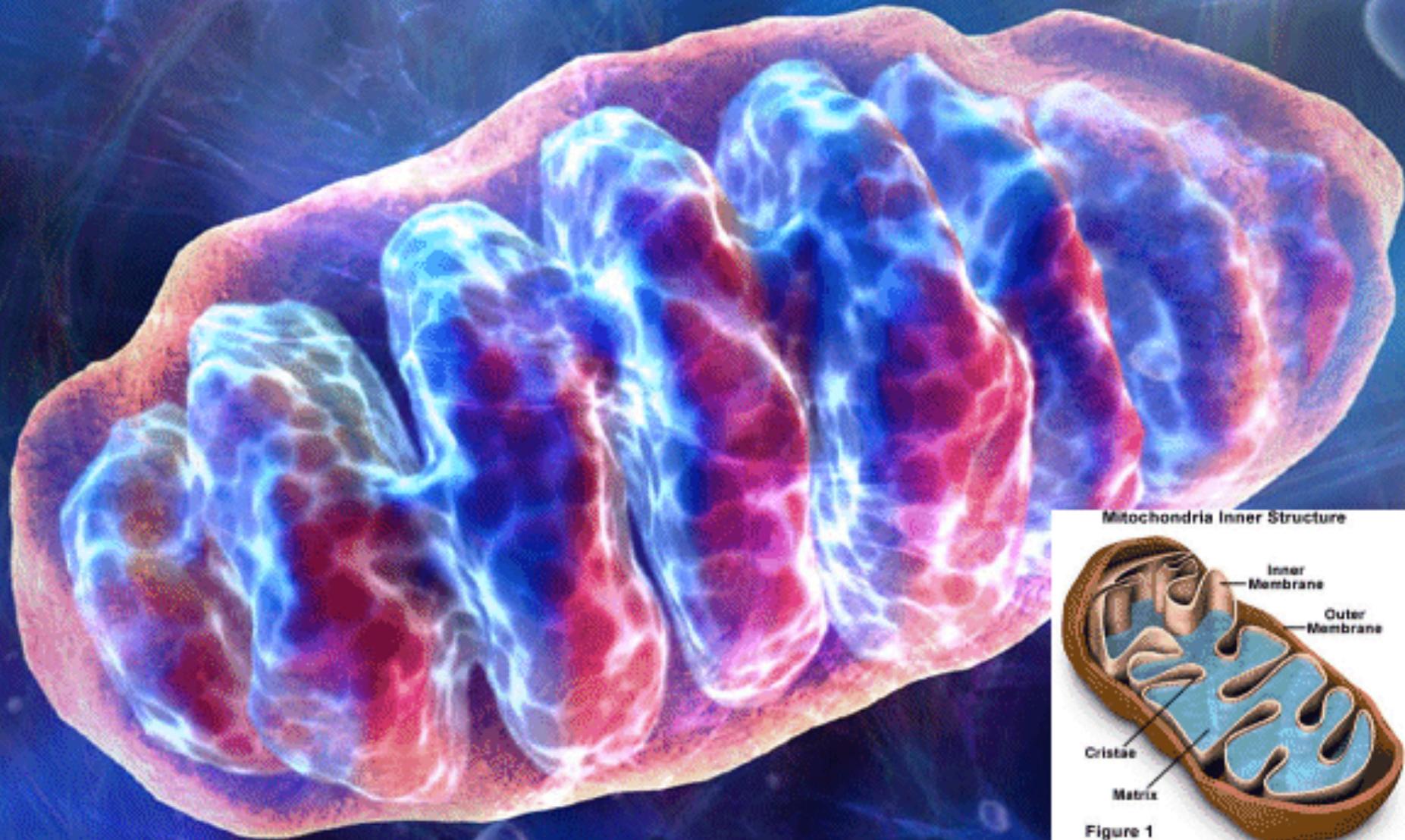


Mitochondria

Mitochondria use energy from food to make high-energy compounds (ATP) that the cell uses to power cellular processes.



mitochondria



<http://www.microscopy.fsu.edu/cells/animals/mitochondria.html>

<http://www.hybridmedicalanimation.com/pages/chloroplast.html>