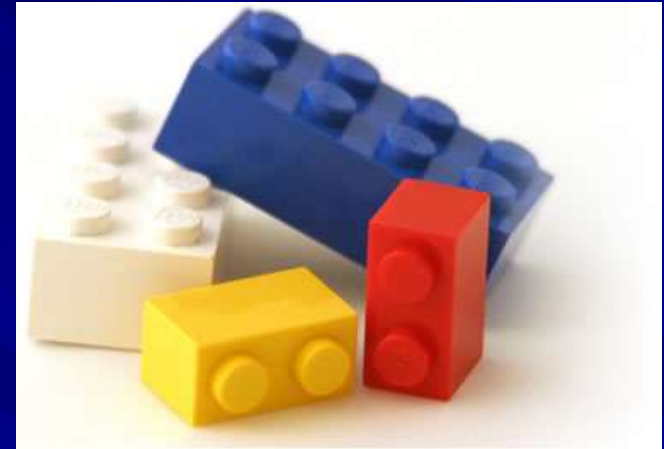
A fluorescence micrograph showing a dense network of cells. The nuclei are stained blue, the cytoplasm and some internal structures are stained red, and other structures are stained green. The overall appearance is that of a complex, interconnected cellular network.

**Introduction to:
Cell Parts and
Functions**
Pages 21&22 in Textbook

What is a **Cell**?

- All living things are made of at least 1 or more *small building blocks* called cells.
- Cells need to take in food, water, oxygen, and release waste....**YOU** are made of trillions of cells!



Cells are ***SMALL!***

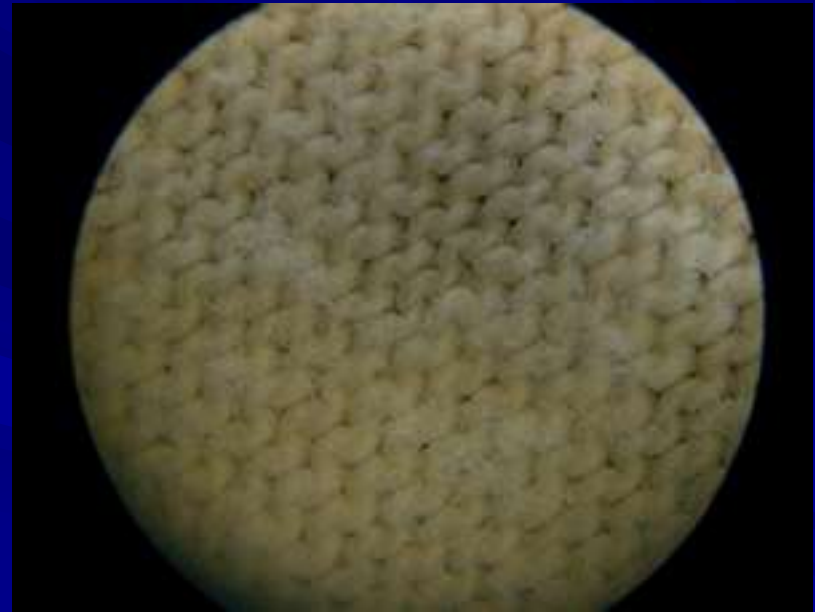
- ❖ Most cells are much smaller
- ❖ than a grain of sand.



- ❖ You need to use a microscope to see most cells.
- ❖ Some microscopes actually let you see inside cells!

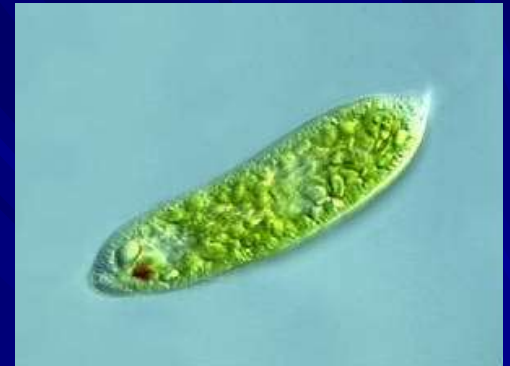


What do YOU See here?

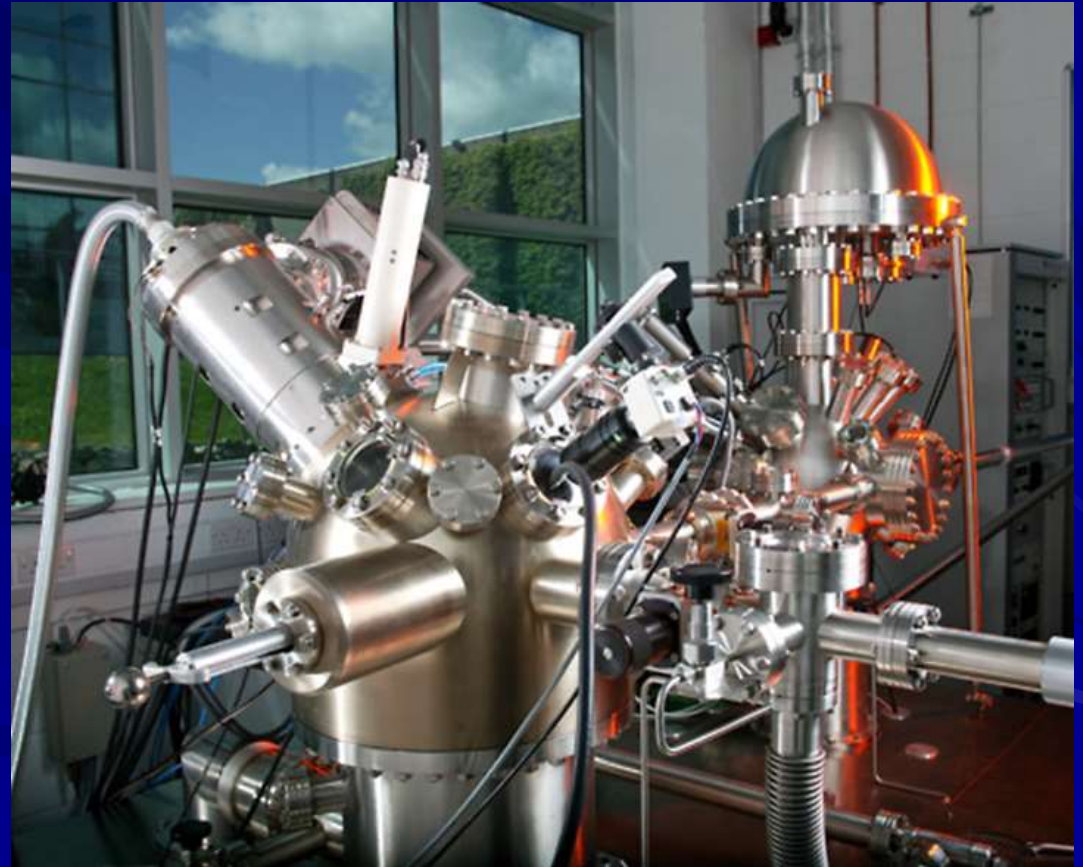


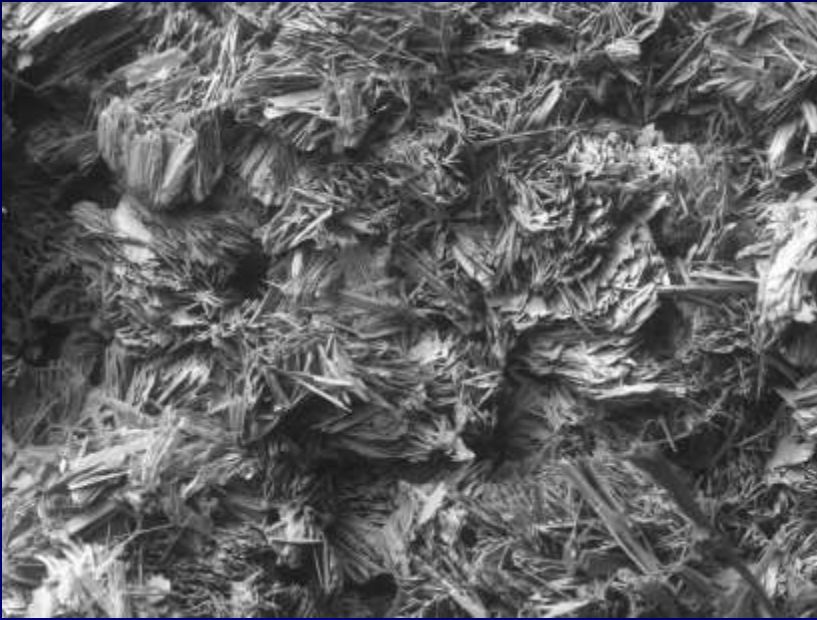
Cell *Theory* : 3 Parts

- 1) All living things are made of one or more cells.
- 2) Cells are the basic units of structure and function in all living things.
- 3) All cells come from existing cells (replicate).

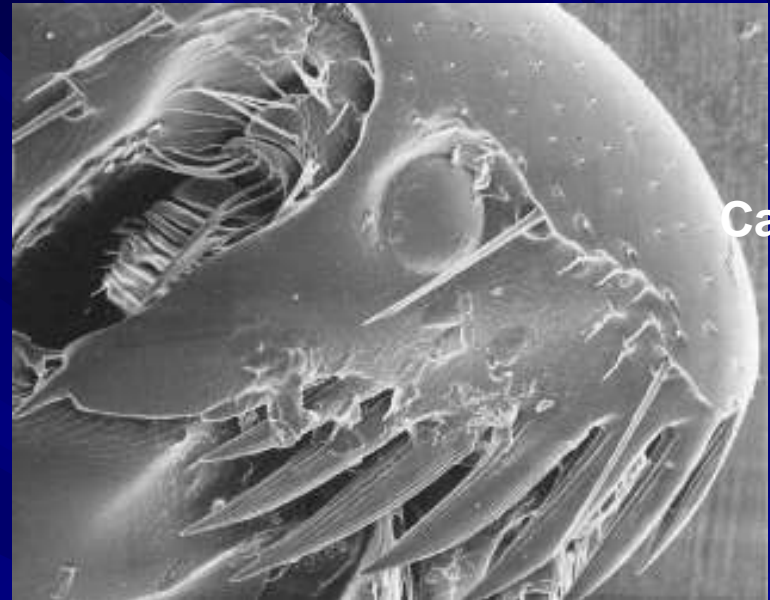


We have been using microscopes that magnify up to 400X, but some microscopes are
BIG and ***POWERFUL!***

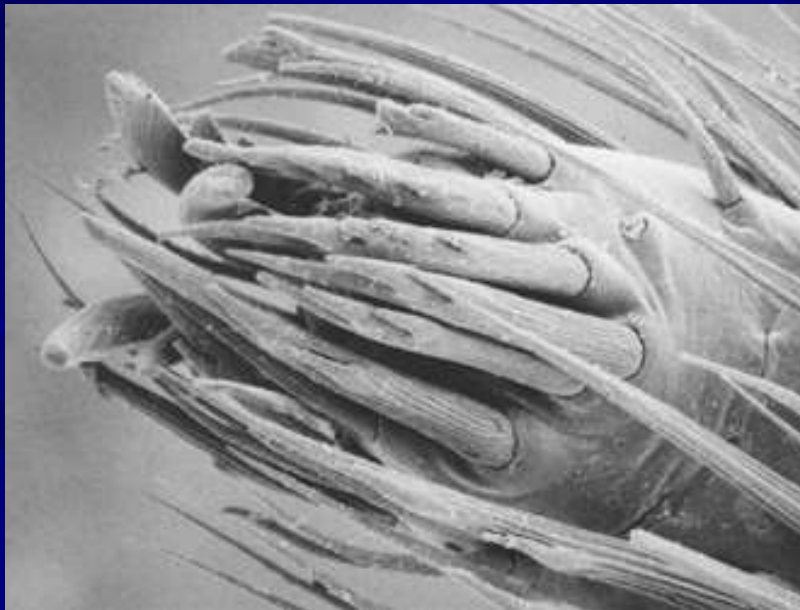




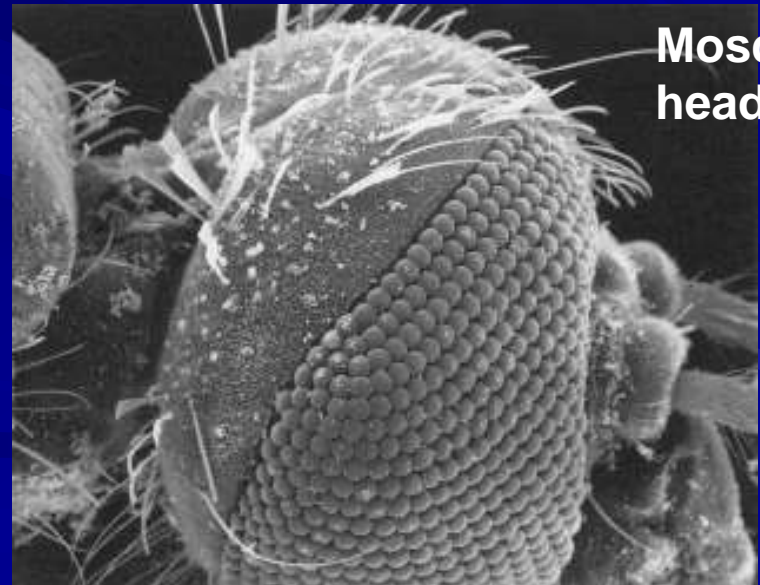
Egg Shell



Cat flea



Black Widow Spider Claw



Mosquito head

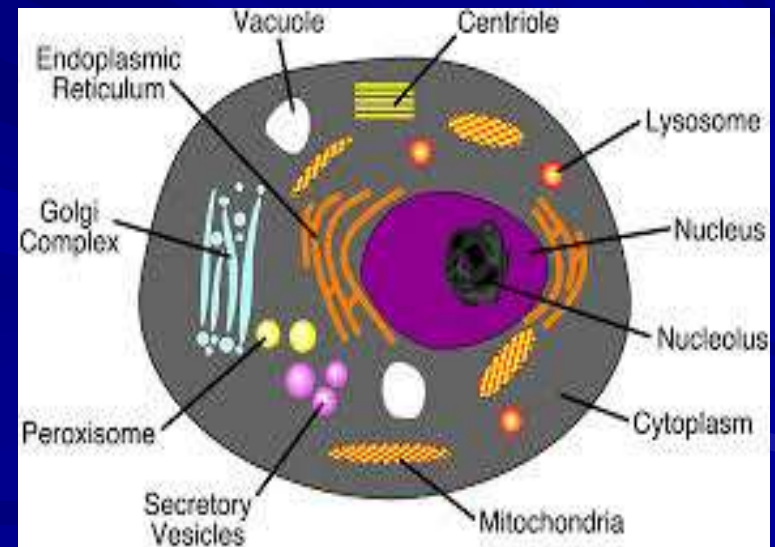
Notes:

Use the Headings and write anything in **green!**

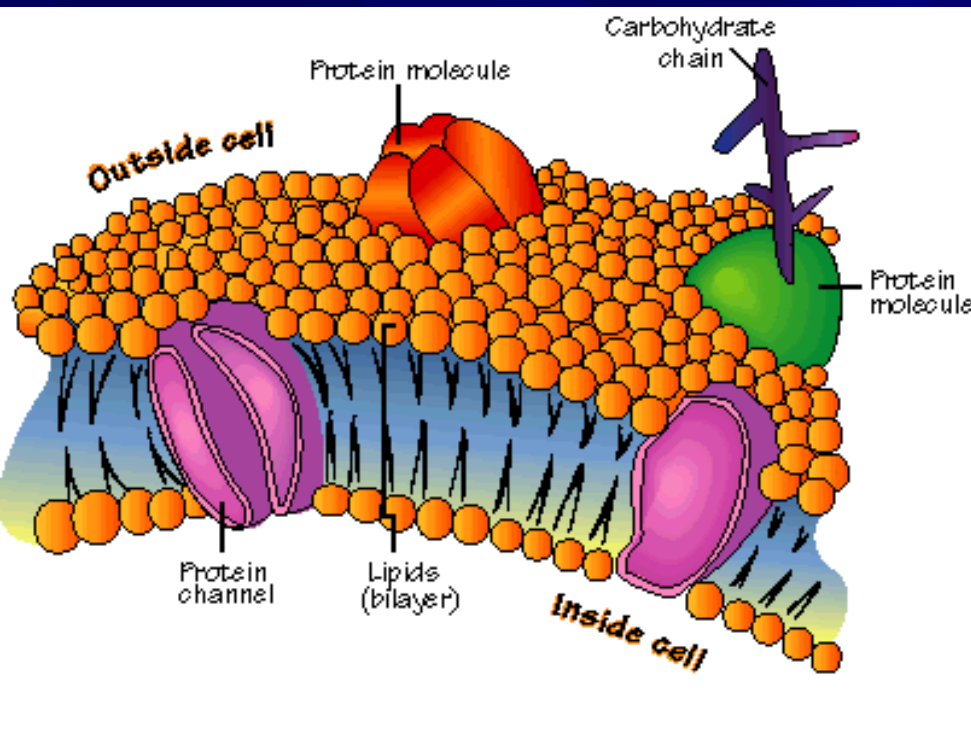
Organelles:

An organelle is one of several structures with specialized functions, suspended in the cytoplasm of a cell.

An important piece of a Cell.



The Cell membrane

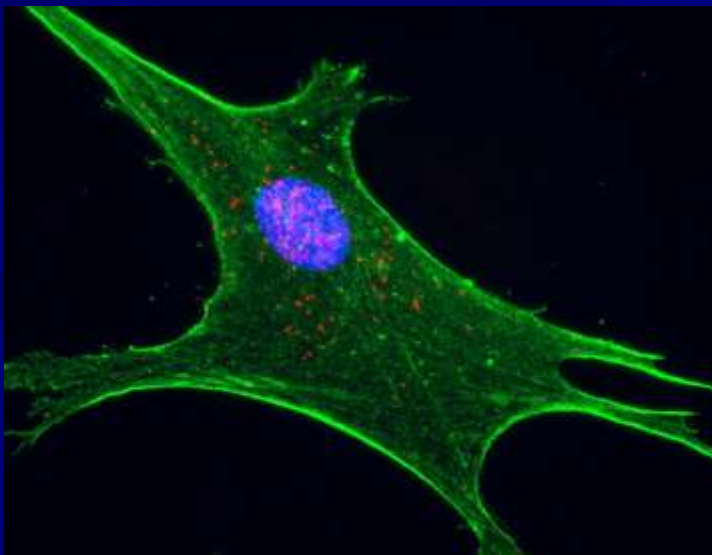


- The cell membrane has 2 layers, and only lets certain substances in and out. It is a barrier between the inside and outside of the cell.
- **GATE KEEPER**
- It has special proteins buried in it to let certain molecules across.

The Nucleus



- This organelle houses **DNA:** deoxyribonucleic acid, the blueprints for the cell.



- **Control Center**
- Your DNA has all the instructions for making you... ***in every cell!***

Cell Organelles: *Mitochondria*

- This caterpillar like, organelle is responsible for producing energy molecules called *ATP*

Adenosine triphosphate

- The *mitochondria*, are sometimes called the ‘*powerhouse*’ of the cell.



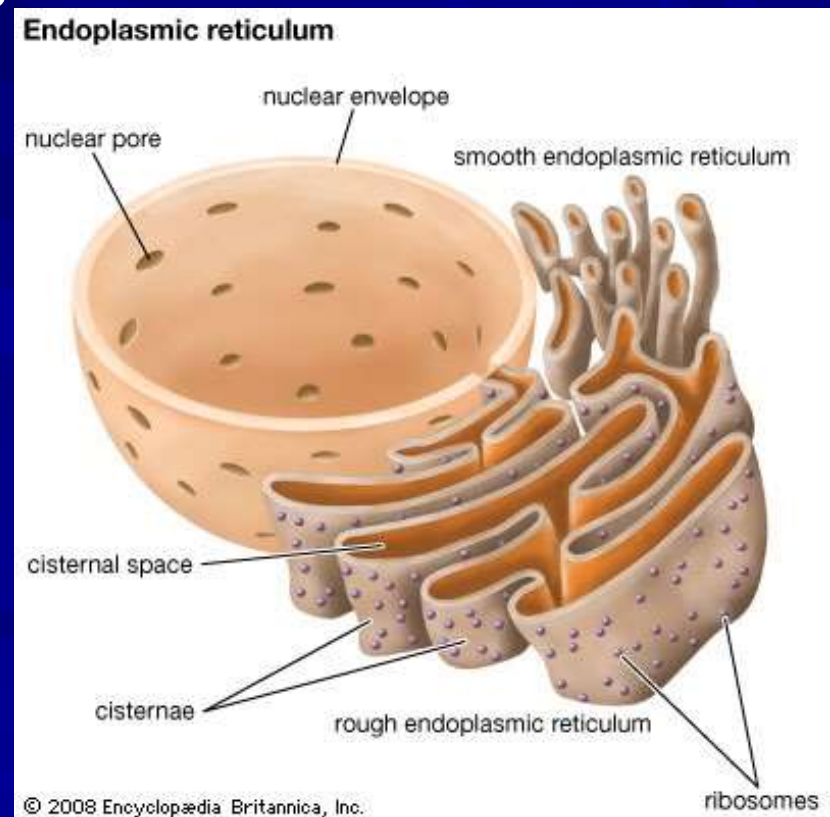
The *Endoplasmic Reticulum*

- This is like a **superhighway** inside the cell that helps to move proteins and other materials from one part of the cell to another



Endoplasmic Reticulum or ER

- There are two basic types of ER. Both rough ER and smooth ER have the same types of membranes but they have different shapes. Rough ER looks like sheets or disks of bumpy membranes
- Smooth ER looks more like tubes.
- Rough ER is called rough because it has ribosomes attached to its surface.



Ribosomes



- **Ribosomes** are like tiny factories that make proteins, things the cell needs to survive.

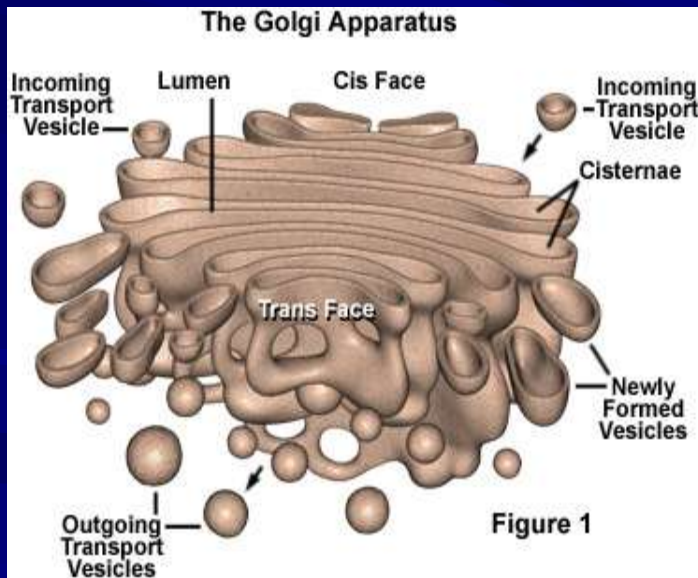


- They do this using instructions from the **DNA**...



The *Golgi Bodies*

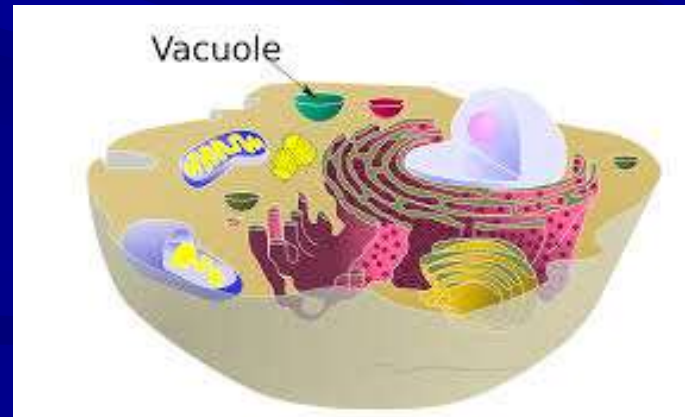
- The “mailroom” of the cell.
- The ER delivers proteins and other material and the Golgi Bodies package them and send them to other parts of the cell.



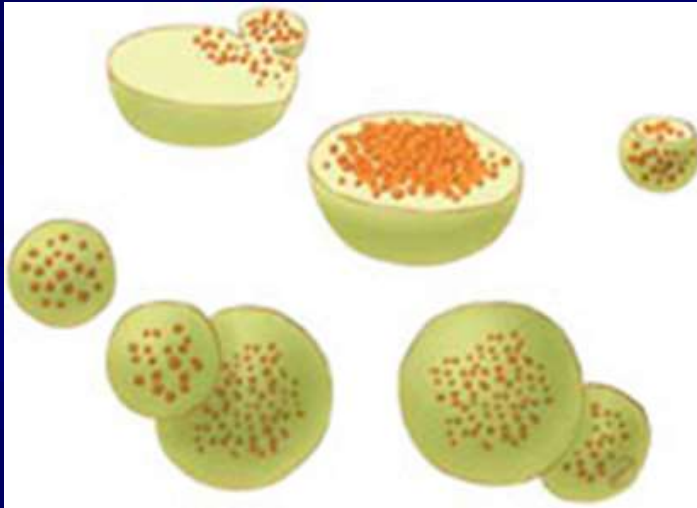
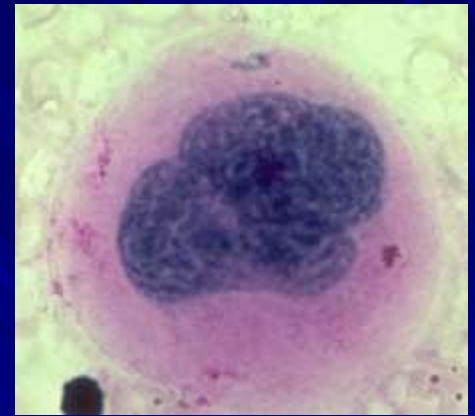
Vacuoles

- The storage area of a cell.

A water-filled sac which holds materials for use in the cell, or holds waste products.



Lysosomes



- These organelles are like little **Recycling Centers**. They contain chemicals which break down certain materials in the cell- food or old cell parts- to be used again. **Cleaning Crew**

Cytoplasm

- All cells contain a liquid in which organelles 'float around.'
- This fluid is called **cytoplasm**



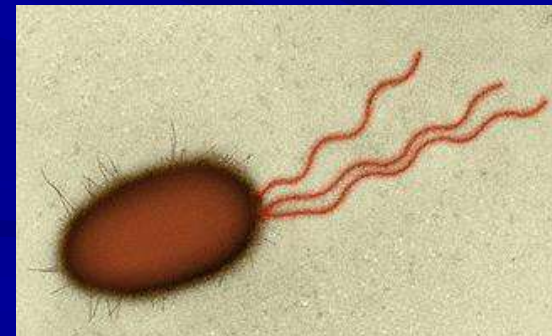
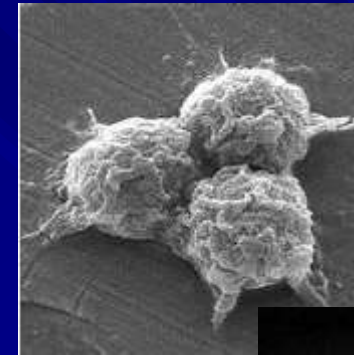
Animal Cells are Organized



- **Animal cells** have many structures inside which make them unique and special.
- **These structures are called Organelles...**

Bacteria: The 'simplest' cells

- Commonly referred to as **germs**, bacteria are **single celled organisms**.
- Bacteria are everywhere, and most are harmless.
- Many Bacteria utilize **flagella**, which are long, noodle-like structures that to move around.



Prokaryotic Cell Structure

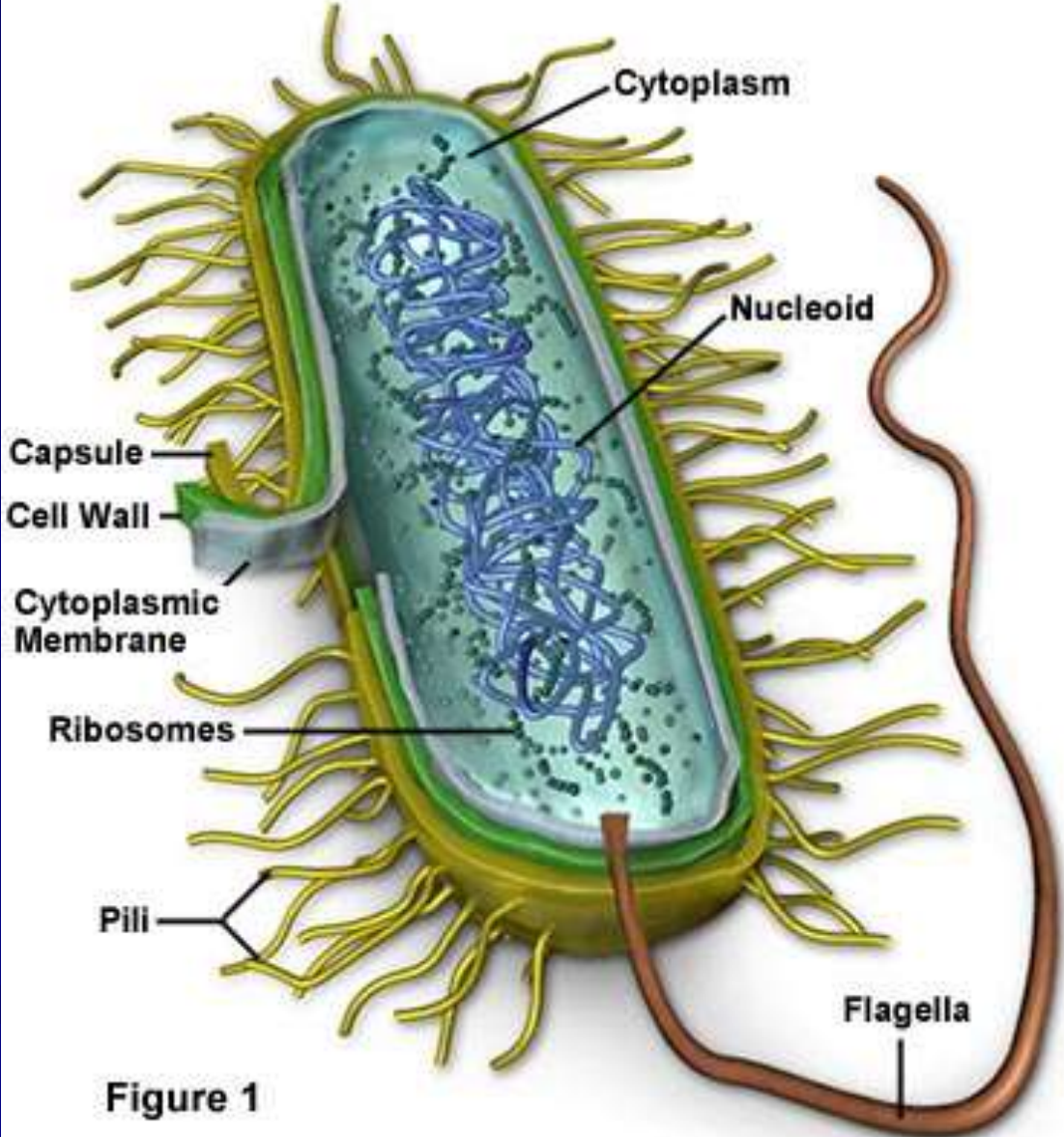
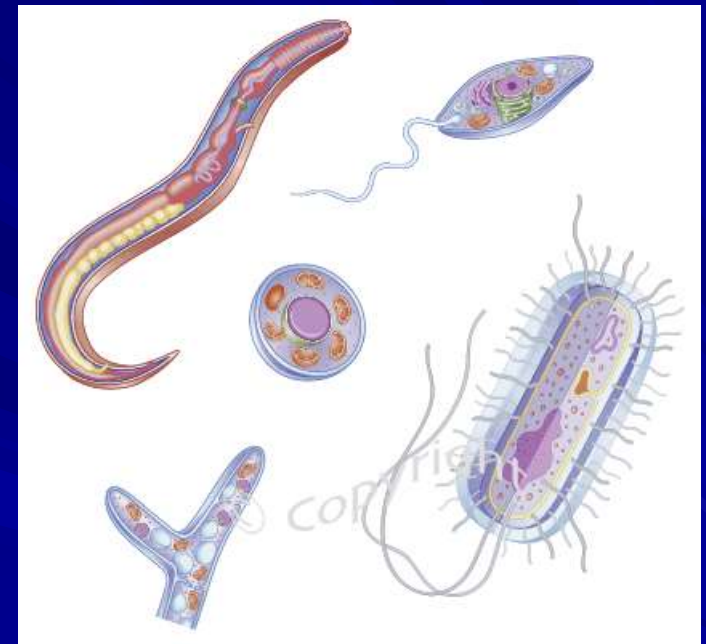


Figure 1

Single Celled Animals?

- There is an entire kingdom of microscopic single-celled animals called “*protozoans*.”
- They live in places like oceans, lakes, and ponds.



Single-celled Animals



Diatom



Amoeba



dinoflagellate

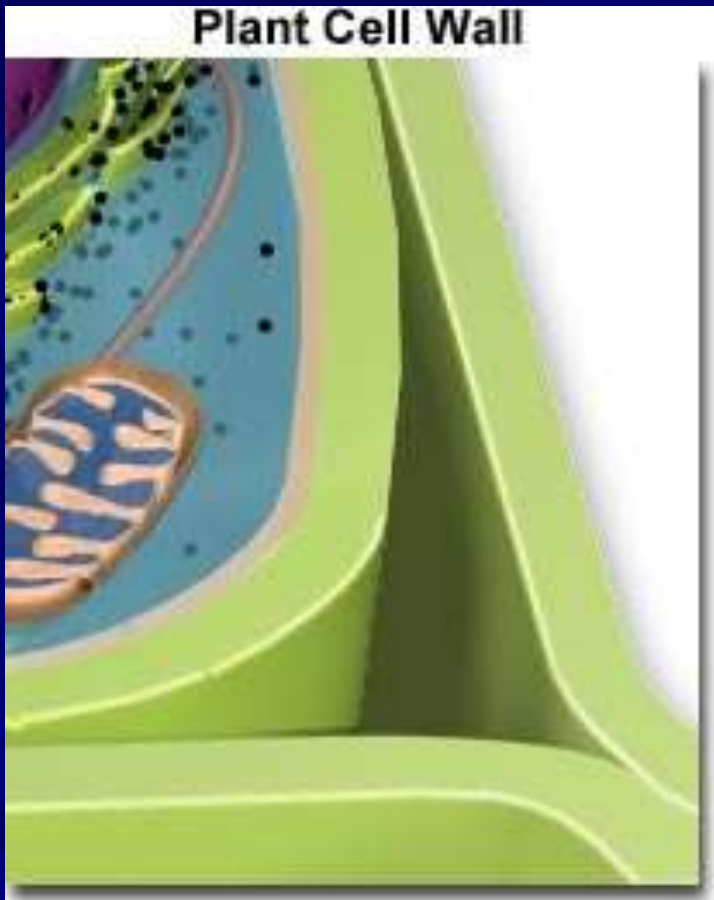


Euglena



giardia

Plant Cells vs. *Animal Cells*



- There are some key differences between *Plant cells* and *animal cells*.
- Plant cells have a rigid *cell wall* which provides it with strength and protection.

Plant Cells vs. *Animal Cells*

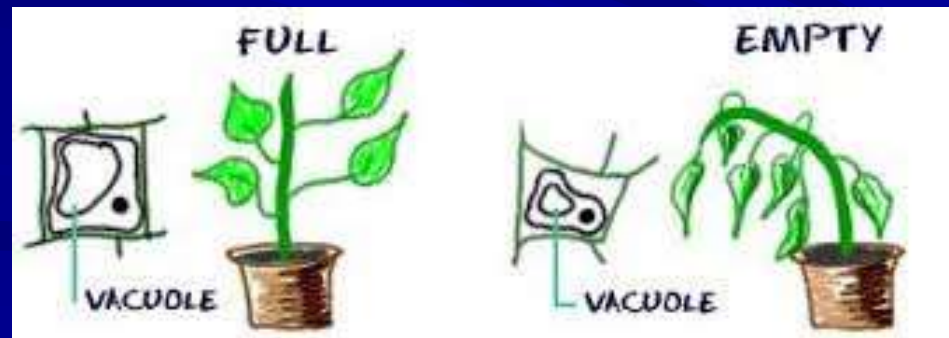
- Plant cells have unique organelles called *chloroplasts* which use sunlight, carbon dioxide, and water to make sugars and plant parts in a process called *photosynthesis*.



Plant Cells vs. Animal Cells

Animal- One or more small vacuoles (much smaller than plant cells).

Plant- One, large central vacuole taking up 90% of cell volume.



“That’s All Folks!”
More to come...

