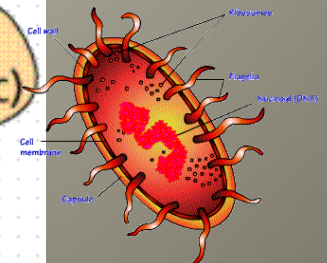
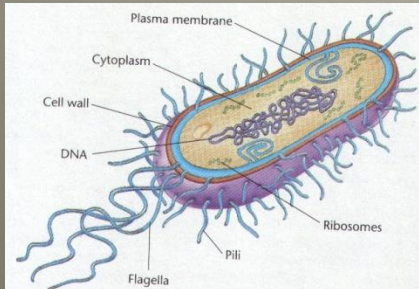
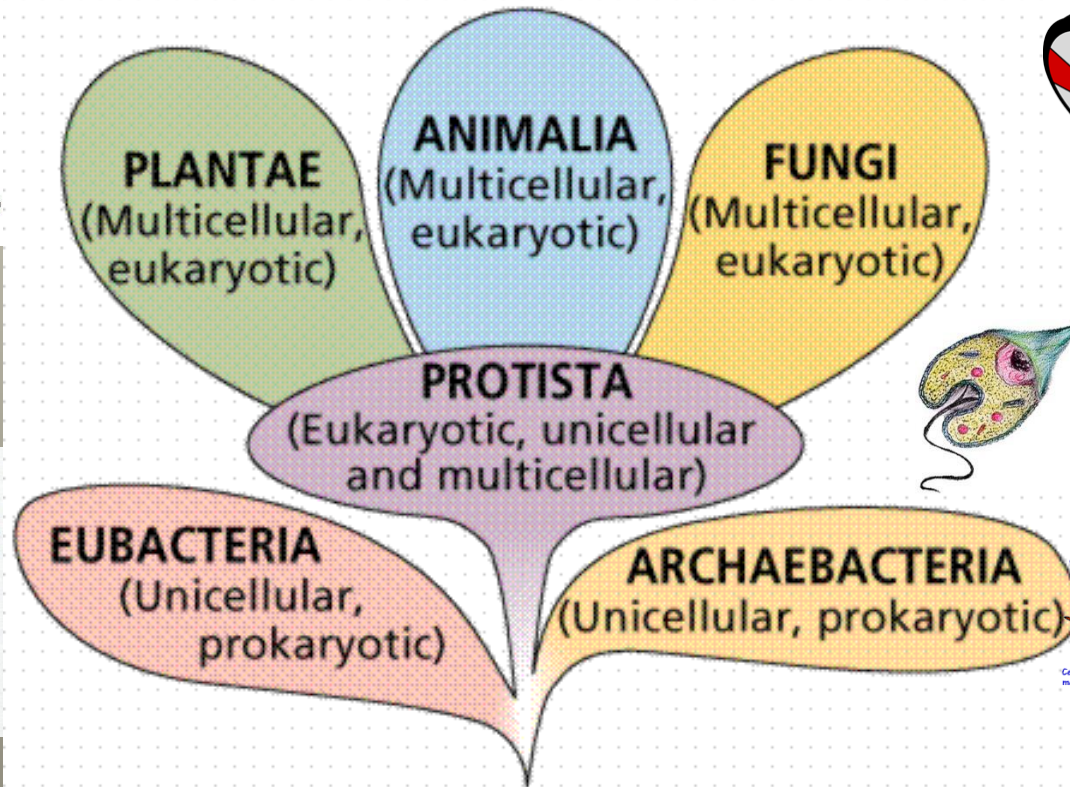
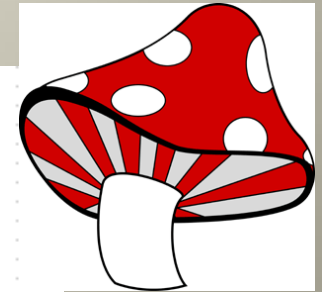
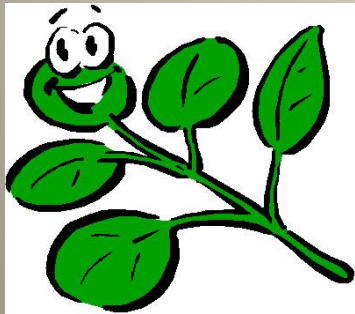
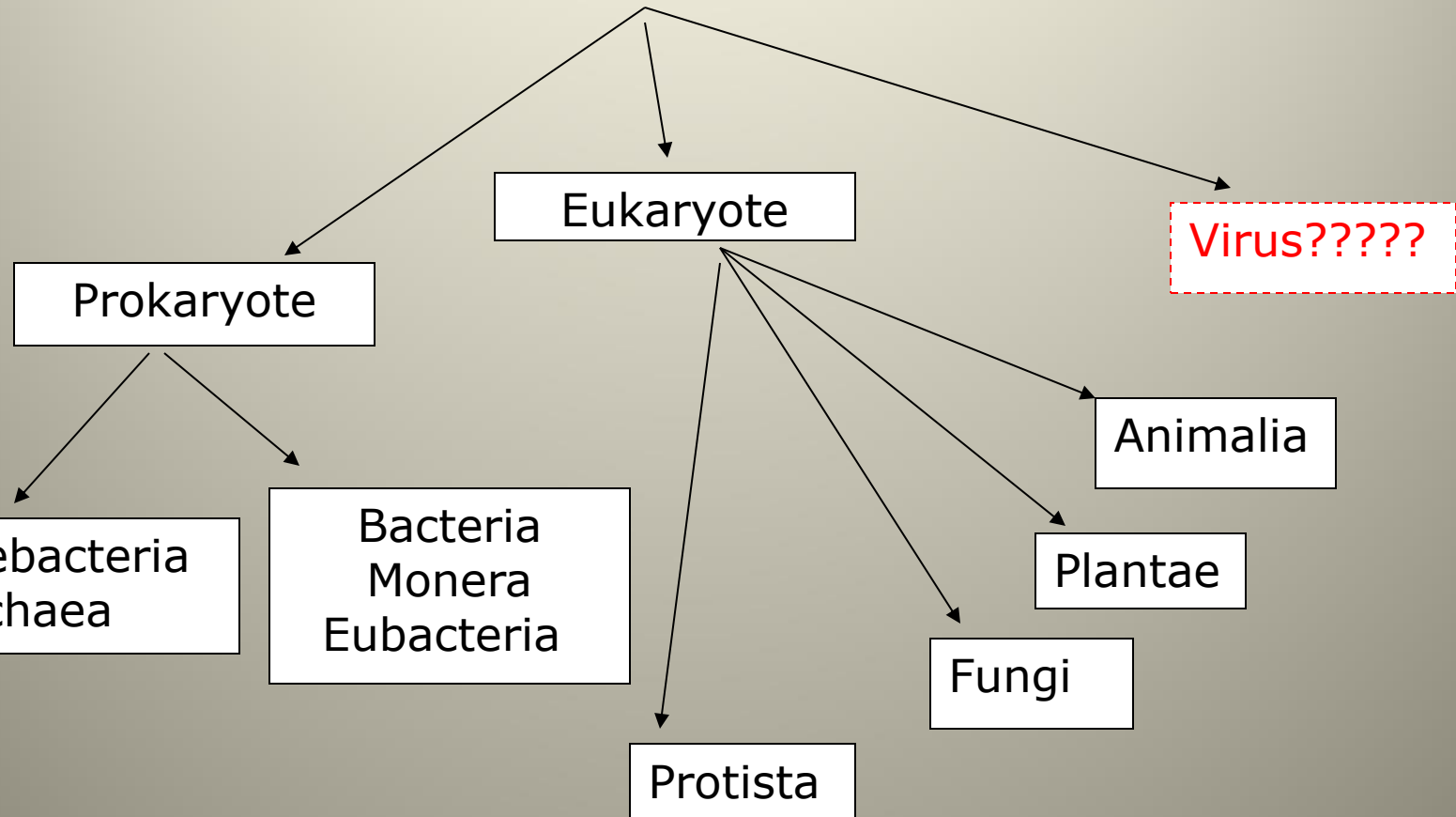


# THE SIX KINGDOMS



# THE SIX KINGDOMS

All living things



# TYPES OF LIVING THINGS

Plant cells

Animal cells

Protist cells

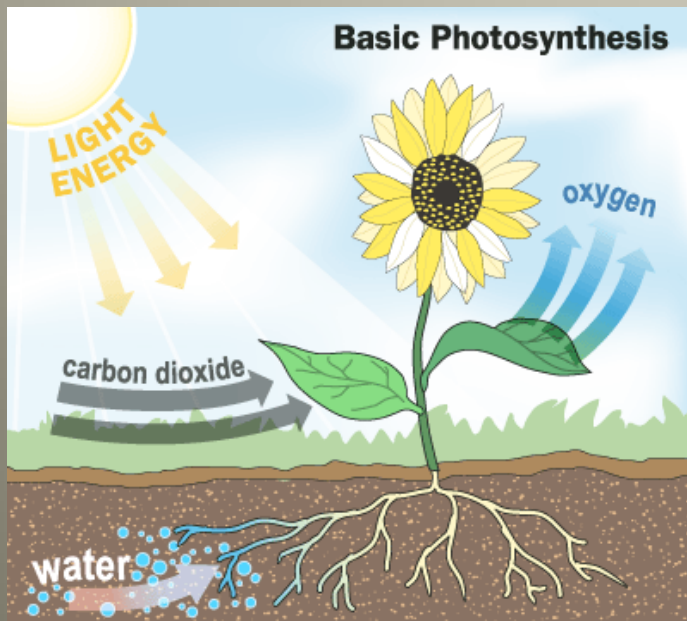
Fungal cells

Bacteria

Archaea

**Autotrophic:** Makes their own food. Eg. Plants and some protists

**Heterotrophic:** Relies on others for food. Eg. Animals, some protists, fungi, & some bacteria



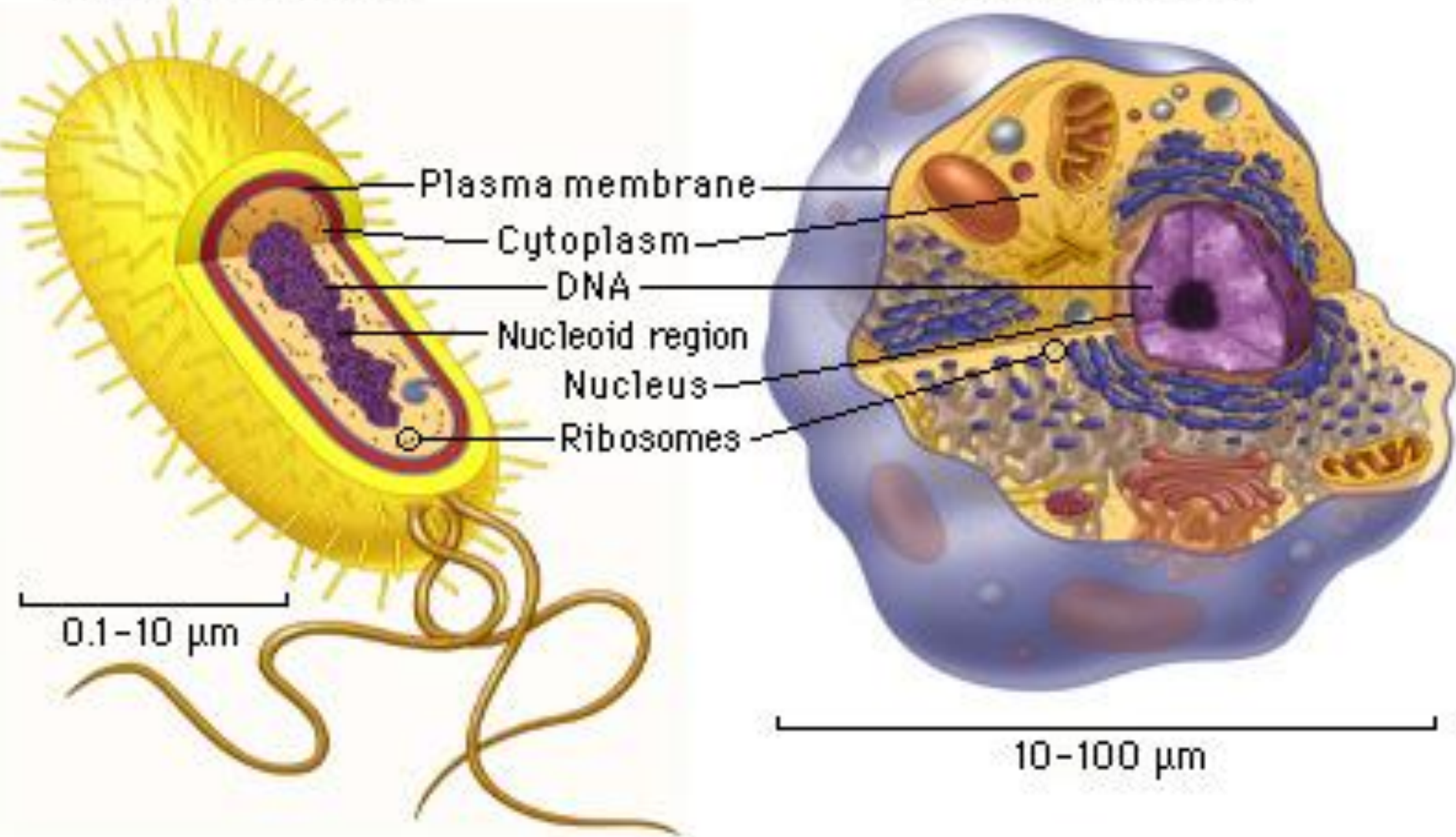
Vs.



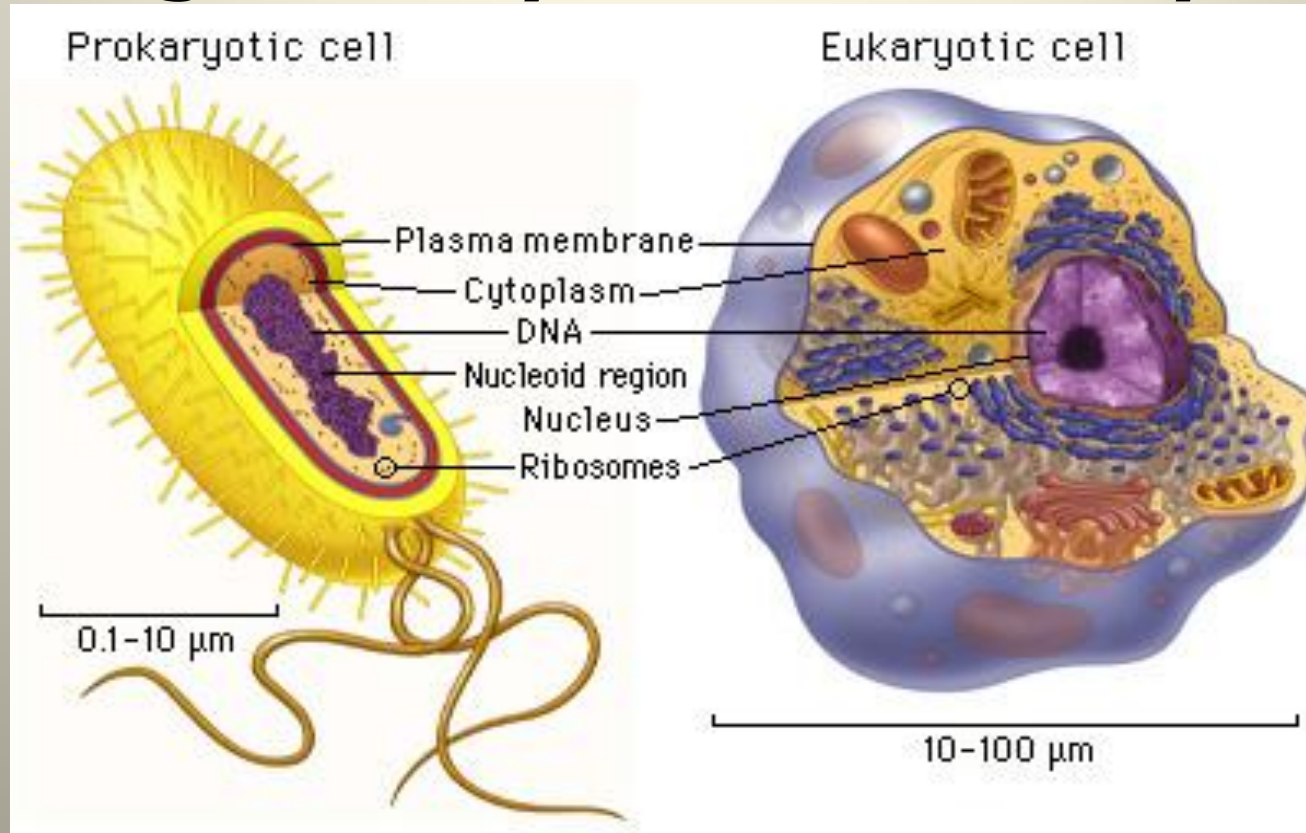
# Comparing Prokaryotic and Eukaryotic Cells

Prokaryotic cell

Eukaryotic cell



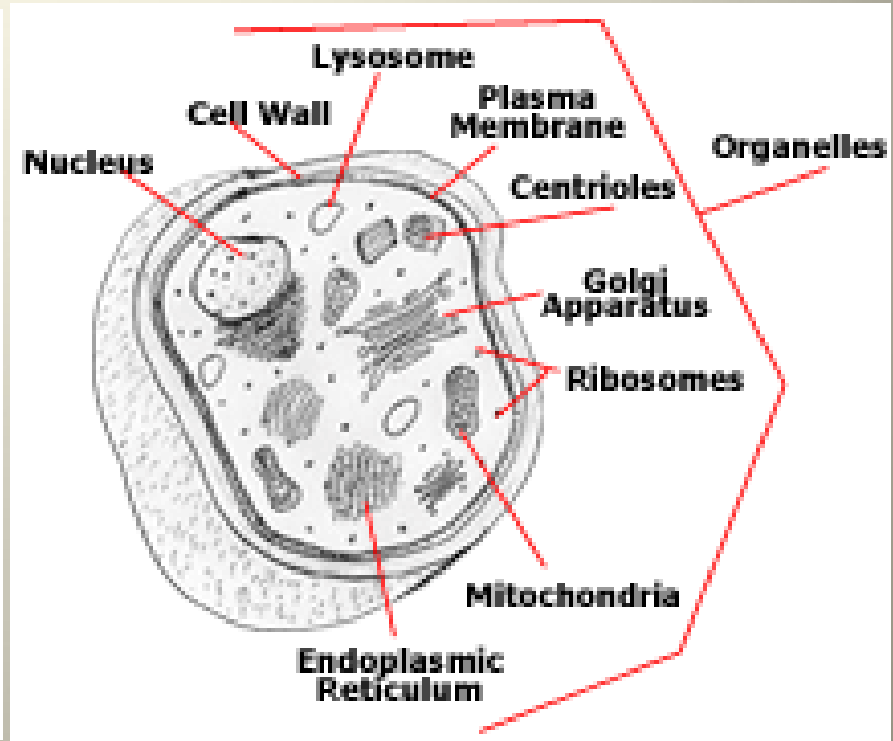
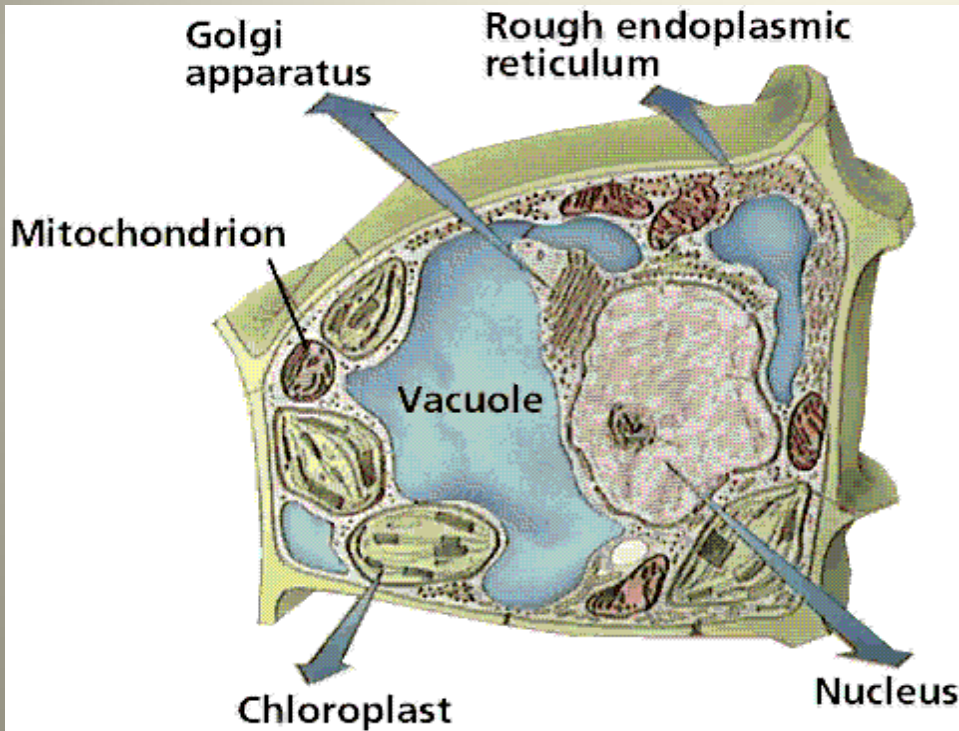
# Comparing Prokaryotic and Eukaryotic Cells



**a)** Prokaryotes do not have a nucleus

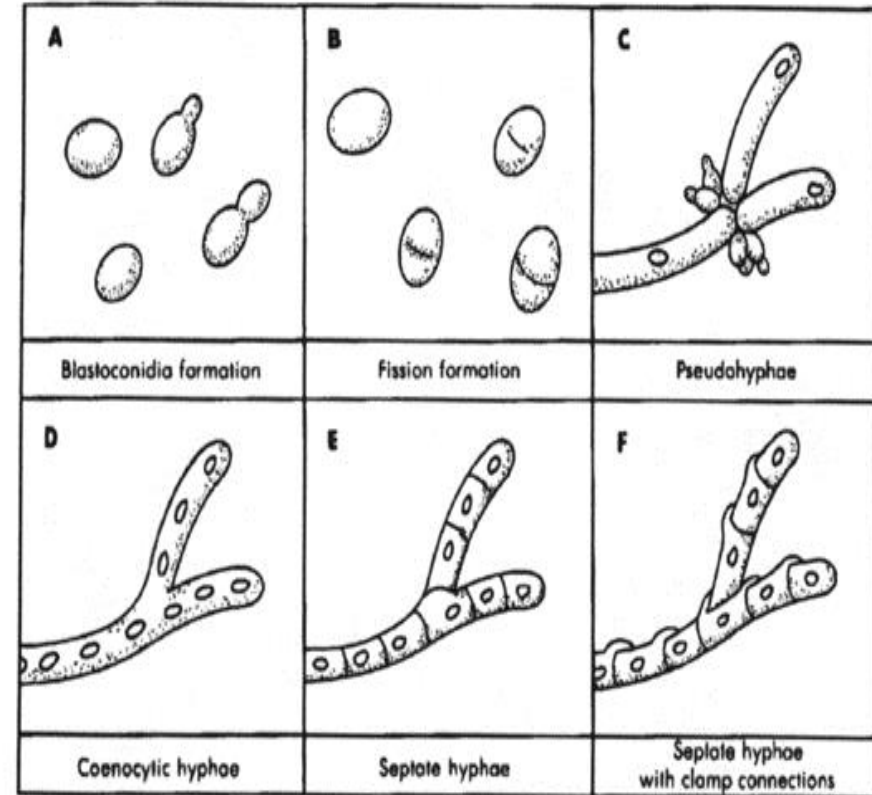
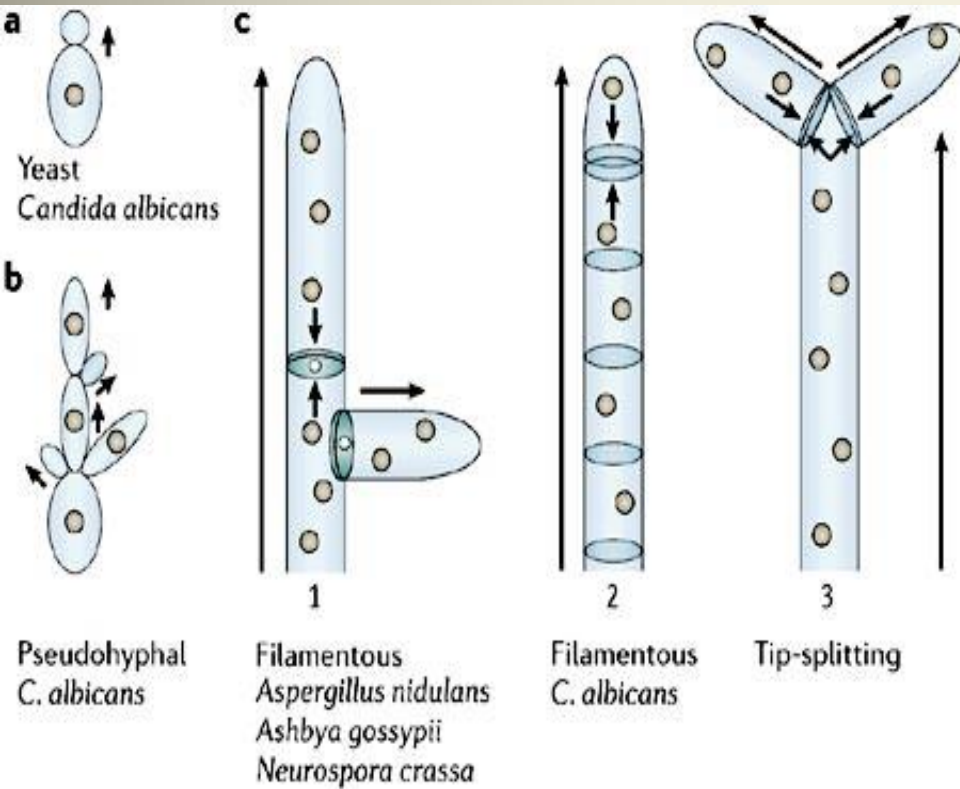
**b)** Prokaryotes do not have membrane-bound organelles

# Comparing Fungi and Plant Cells



- a)** Fungal cells do not have chloroplasts (plants do)
- b)** Fungal cells are heterotrophic (plants are autotrophic)
- c)** Fungal cells have rigid cell walls made from chitin (plants have walls made of cellulose)

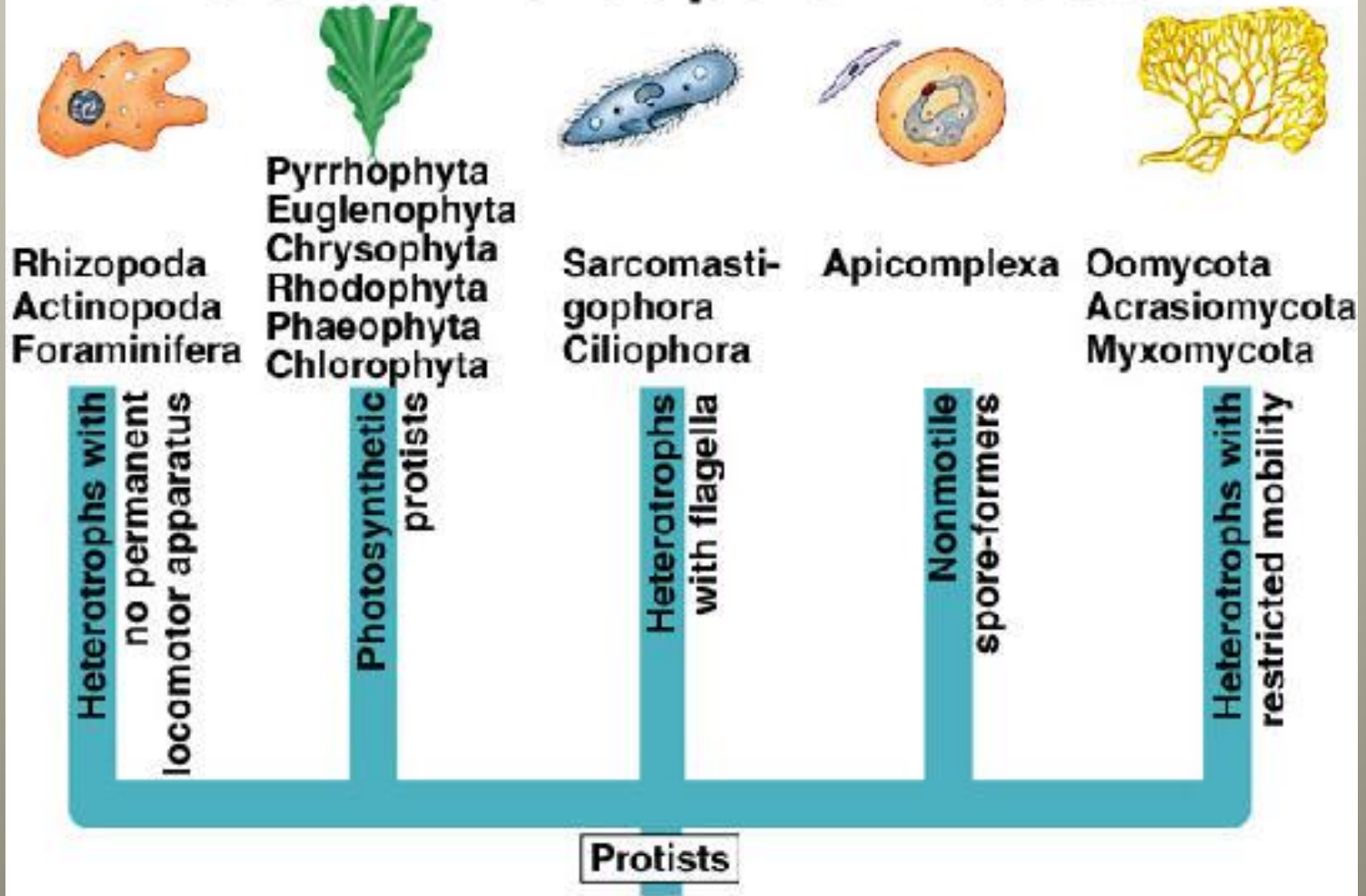
# Comparing Fungi and Plant Cells



Fungal cells often fuse together, making it hard to locate one discrete cell in the organism

# Protists

## General Groups of Protists

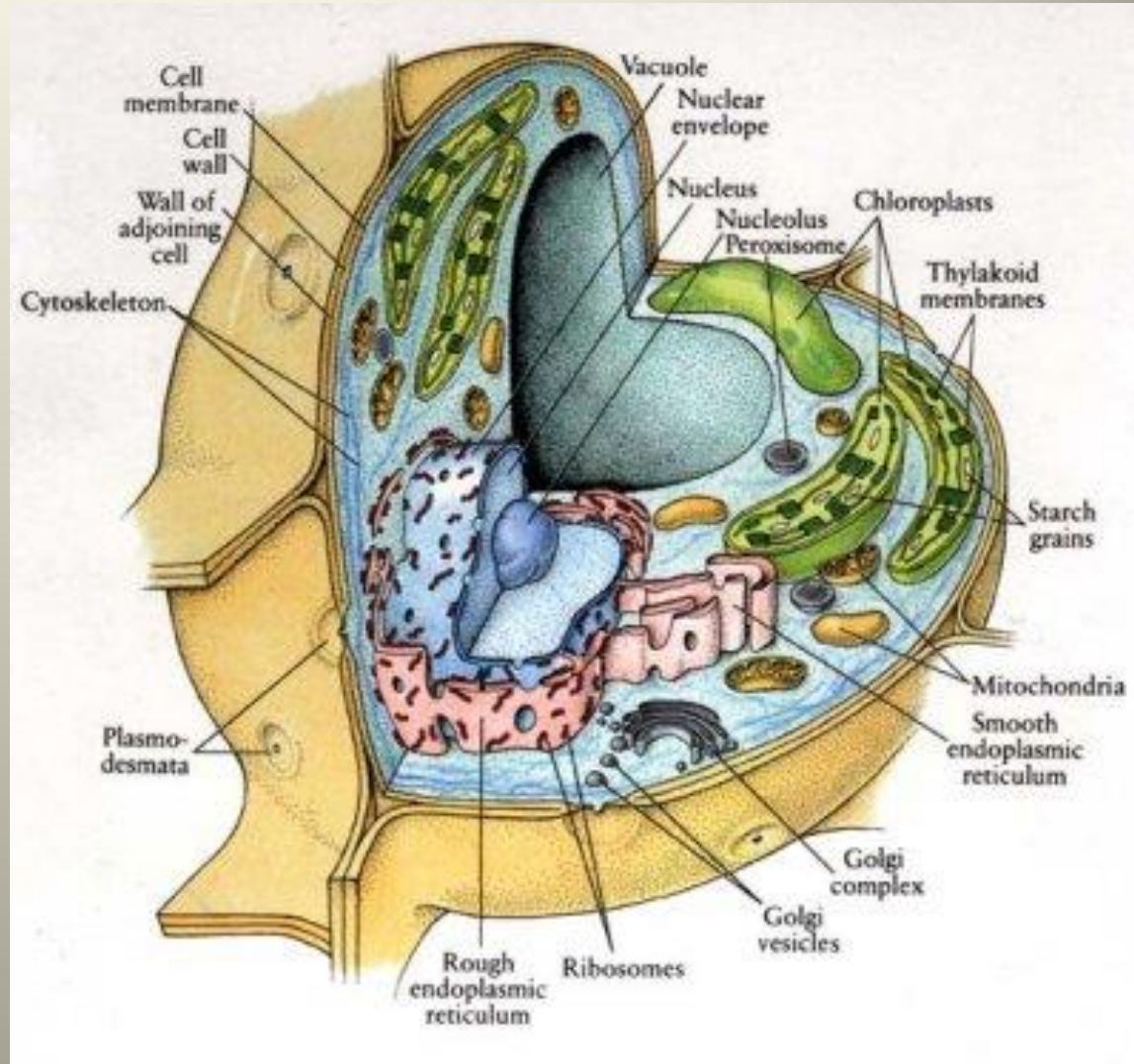


There are **many** different types of protists



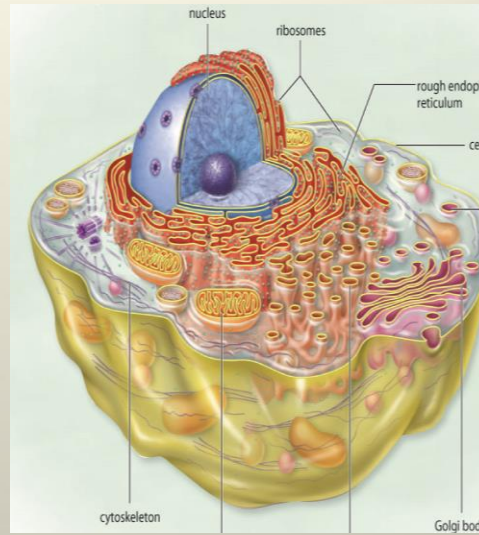
# All cells have in common:

- 1) All cells have cytoplasm
- 2) All cells have genetic material
- 3) All cells have a membrane



# Viruses Vs. Cells

**Size:** Viruses are much smaller than cells



**Life cycle:** How can something without life have a life cycle?

**Metabolism:** Viruses do not metabolize (no cytoplasm)

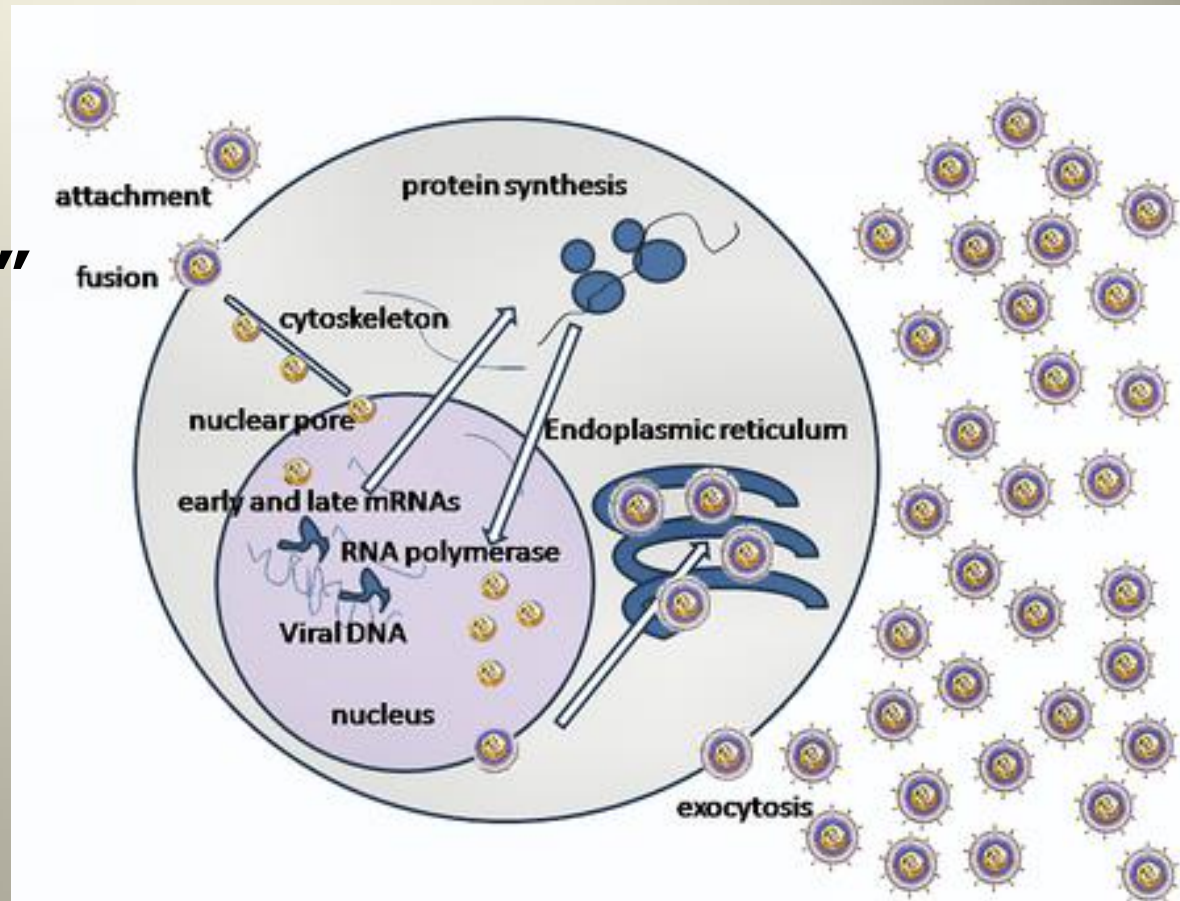
**Organelles:** Viruses do not have organelles

**Genetic material:** Viruses contain RNA or DNA enclosed by protein, not a membrane

# Viruses

**Viruses are not considered “living” when outside a host cell**

**The general name for a virus in this state is “virion”**



**They are not considered living in this state because they are inactive and cannot reproduce**

# Sauerkraut explosion prompts quarantine

*Last Updated: Saturday, September 11, 2010 | 2:58 PM PT*

## The Canadian Press

Twenty-four students and four staff members at a central B.C. high school were briefly quarantined after a can of sauerkraut exploded Friday in a food science class.

The fire department, a hazardous materials unit and RCMP were called to Kelly Road Secondary School in Prince George at about 2 p.m. PT.

RCMP Const. Lesley Smith said school officials were concerned about a possible **botulism** outbreak after the contents of a years-old can of pickled cabbage splattered on students.

Officials later determined there was no cause for alarm.

The students briefly returned to their classes, then were dismissed early.

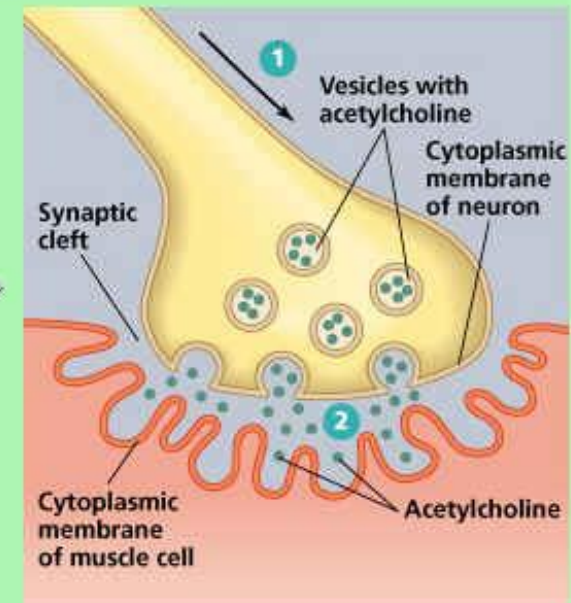
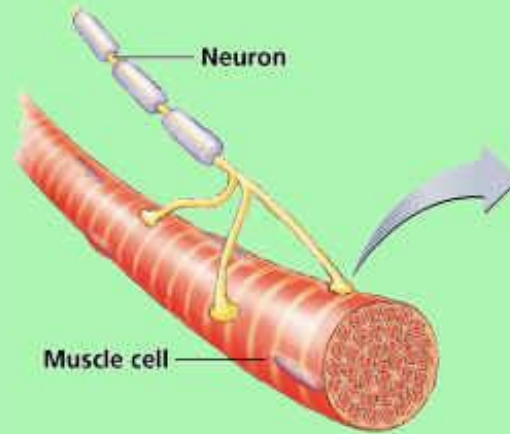


*Clostridium botulinum*

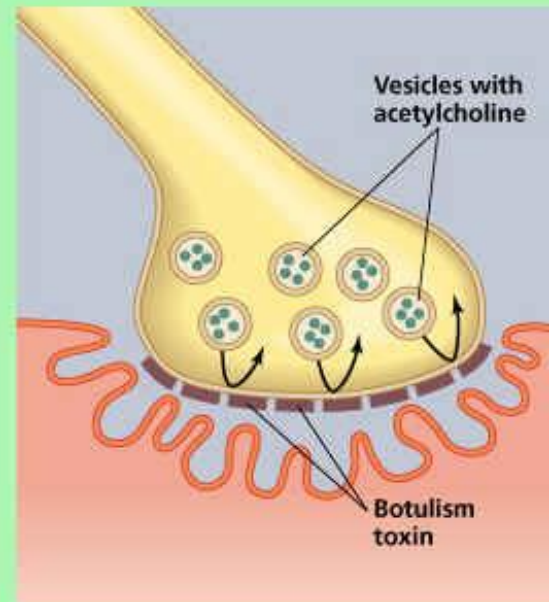


# *Clostridium botulinum*

**Botulinum toxin →  
leads to paralysis**



(a) Normal neuromuscular junction



(b) Neuromuscular junction with botulinum toxin present

# Comparing Prokaryotic and Eukaryotic Cells

	PROKARYOTE	EUKARYOTE
Meaning of name	Pro means before Karyon means nucleus	Eu means after Karyon means nucleus
Evolution of first cells	3.5 billion years ago (older type of cell)	1.5 billion years ago
Size of cells	Smaller (1-10 $\mu\text{m}$ )	Larger (100-1000 $\mu\text{m}$ )
Uni-/multicellular	Unicellular (less complex)	Unicellular/Multicellular (more complex)
Organelles	Absent	Present
Location of genetic information	Nucleoid region	Nucleus
DNA structure	Circular (usually one chromosome)	Not circular (more than one chromosome)
Reproductive strategy	Asexual/Sexual	Asexual/Sexual
Oxygen requirement	Anaerobic (doesn't	aerobic

# Comparing the Six Kingdoms

Classification	Prokaryote		Eukaryote			
Kingdoms	Archaea	Bacteria	Protista	Fungi	Plantae	Animalia
<b>Body Form</b> (unicellular/ multicellular)	unicellular	unicellular	Unicellular/ multicellular	Unicellular/ multicellular	Multicellular	Multicellular
<b>Mitochondria</b> (absent/ present)	Absent	Absent	Present	Present	Present	Present
<b>Cell Wall</b> (absent/ present)	Present (different from bacterial CW)	Present (peptidoglycan)	Present in some	Present (chitin)	Present (cellulose)	Absent
<b>Nutrition</b> (absorption, photosynthesis, chemosynthesis, ingestion)	Absorption, photosynthesis, chemosynthesis	Absorption, photosynthesis, chemosynthesis	Absorption, photosynthesis, ingestion	Absorption	Photosynthesis	Ingestion
<b>Nervous System</b> (absent/ present)	Absent	Absent	Absent	Absent	Absent	Present
<b>Motility</b> (absent/ present)	Present in some	Present in some	Present in some	Absent	Absent	present

# Comparing the Six Kingdoms

Classification	Prokaryote	
Kingdoms	Archaea	Bacteria
Body Form (unicellular/ multicellular)	unicellular	unicellular
Mitochondria (absent/ present)	Absent	Absent
Cell Wall (absent/ present)	Present (different from bacterial CW)	Present (peptidoglycan)
Nutrition (absorption, photosynthesis, chemosynthesis, ingestion)	Absorption, photosynthesis, chemosynthesis	Absorption, photosynthesis, chemosynthesis
Nervous System (absent/ present)	Absent	Absent
Motility (absent/ present)	Present in some	Present in some



# Comparing the Six Kingdoms

Classification	Eukaryote			
Kingdoms	Protista	Fungi	Plantae	Animalia
Body Form (unicellular/ multicellular)	Unicellular/ muticellular	Unicellular/ muticellular	Muticellular	Multicellular
Mitochondria (absent/ present)	Present	Present	Present	Present
Cell Wall (absent/ present)	Present in some	Present (chitin)	Present (cellulose)	Absent
Nutrition (absorption, photosynthesis, chemosynthesis, ingestion)	Absorption, photosynthesis, ingestion	Absorption	Photosynthe sis	Ingestion
Nervous System (absent/ present)	Absent	Absent	Absent	Present
Motility (absent/ present)	Present in some	Absent	Absent	present