

## Cell Anatomy

Anatomy = the study of the structures and components of an organism

-Types of Cells:

1) **Prokaryotic** = simple, primitive

= no membrane bound nucleus, only a dense, nuclear area

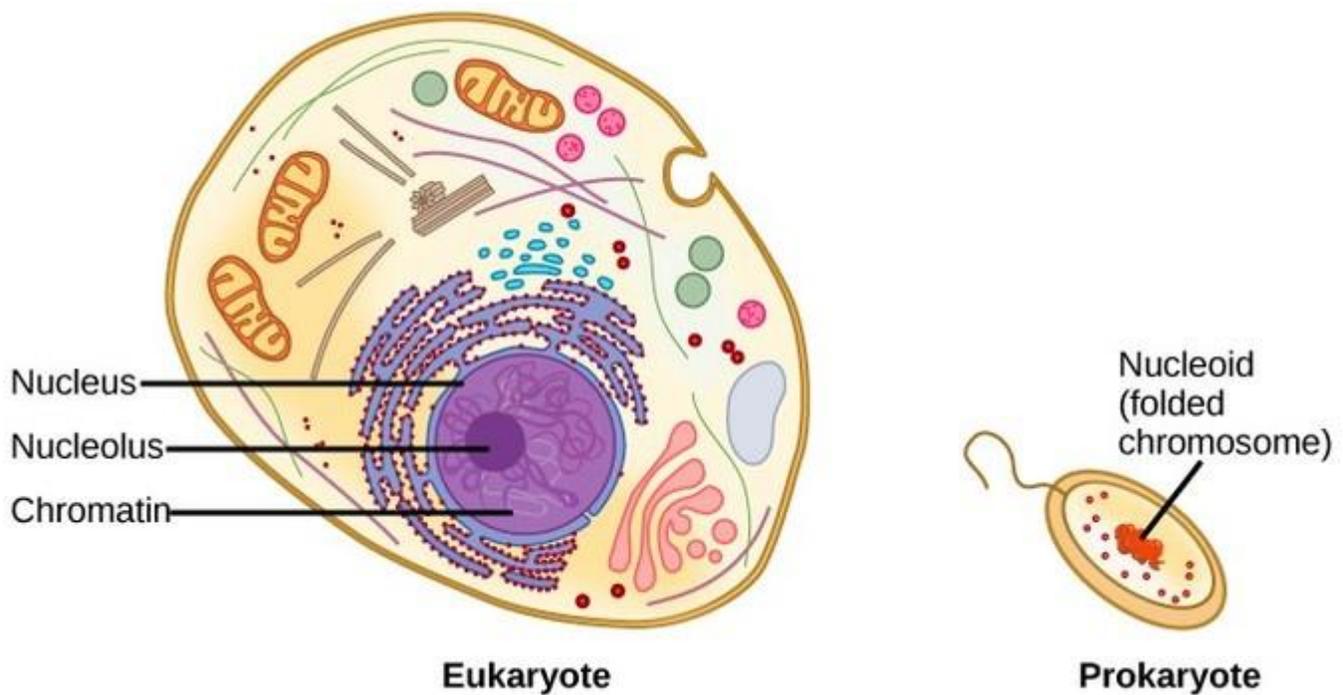
= single-celled organisms (only bacteria)

2) **Eukaryotic** = complex

= membrane bound nucleus

= many internal structures called organelles

= uni- and multicellular organisms (ie. Plants, animals, etc)



## **Eukaryotic Cells**

- the cell is divided into 3 main areas or parts:

A) Cell membrane

B) Nucleus

C) Cytoplasm

-these areas are visible through a light microscope

## A) Cell Membrane

- a.k.a. Plasma membrane
- provides a boundary between the cell & its environment or neighboring cells
- determines what enters or leaves the cell

## B) Nucleus

- contains chromosomes composed of DNA
- controls all activities of the cell

1. **Nucleolus** - small, denser area in nucleus  
= responsible for the synthesis of RNA and ribosomes

## C) Cytoplasm

- jelly- like portion of the cell between the nucleus and cell membrane
- composed of:
  - Microfilaments (structures that form the cytoskeleton)
  - Microtubules (fibers that transport materials within the cytoplasm)
- contains specialized structures called **organelles** with specialized functions:

1. **Mitochondria** = produces energy for the cell by breaking down sugar

2. **Ribosomes** = make proteins for all structures within the cell

3. **Endoplasmic Reticulum (aka ER)**

= canals to move materials between the nucleus & cell membrane

= two types:

- Smooth ER  
= makes, transports and stores fats
- Rough ER  
= has ribosomes attached to it  
= makes, transports & stores proteins

4. **Golgi Apparatus** = a.k.a Golgi Complex, Gogi Body

= looks like a stack of pancakes

= modifies & packages big proteins to pass through cell membrane

5. **Vacuole** = fluid filled cavity used for storage of food, waste or water

= many small ones in animal cells

= 1-2 large ones in plant cells which store water providing  
Structure

6. **Vesicles** = small membrane bound sac responsible for storing and transporting substances necessary for cell metabolism

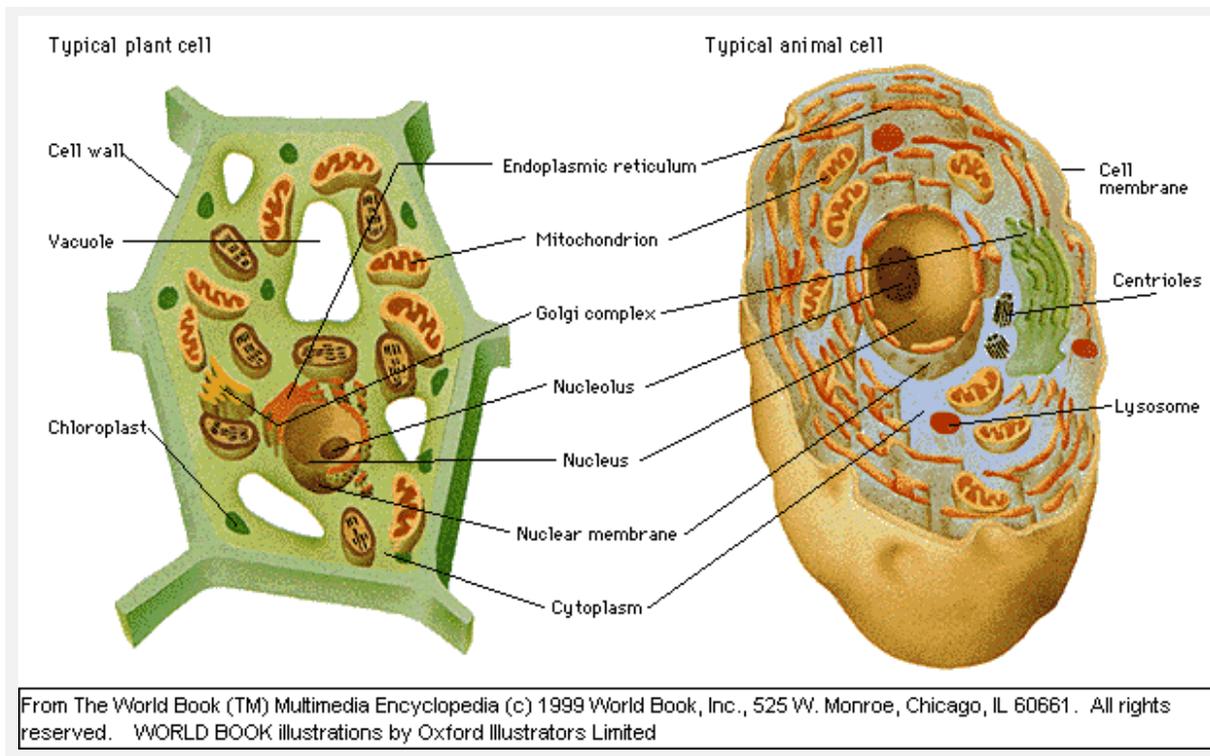
7. **Lysosomes** = contains enzymes  
 = site of intracellular digestion  
 = acts as a defense system destroying foreign invaders  
 = more numerous in animal cells than plant cells

8. **Centrosome with Centrioles** = aid in cell division of animal cells

Structures below are only found in plant cells:

9. **Cell Wall** = found outside the cell membrane  
 = provides support and protection  
 = composed cellulose (starch)

10. **Plastids** = function food production and storage  
 a) **Chloroplasts** = green in color because they contain chlorophyll  
 = convert light energy to chemical energy through photosynthesis  
 b) **Chromoplasts** = contain pigments giving plants different colors  
 = storage function



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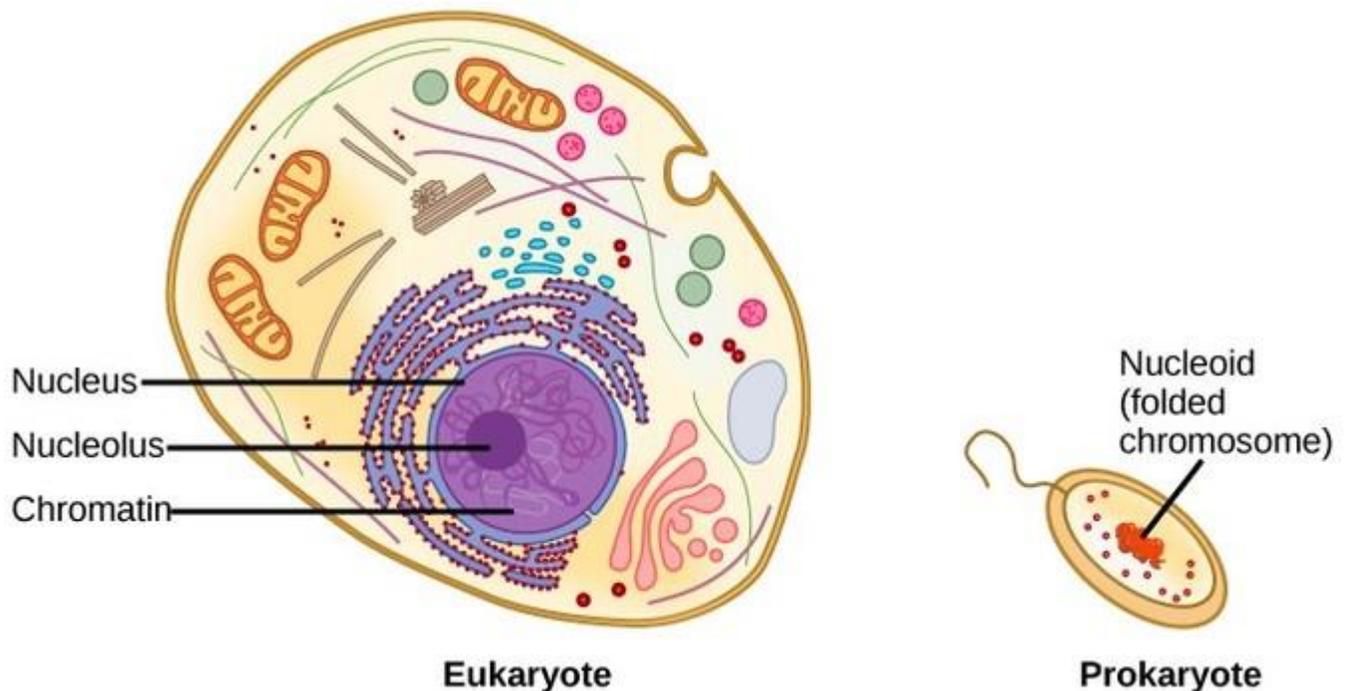
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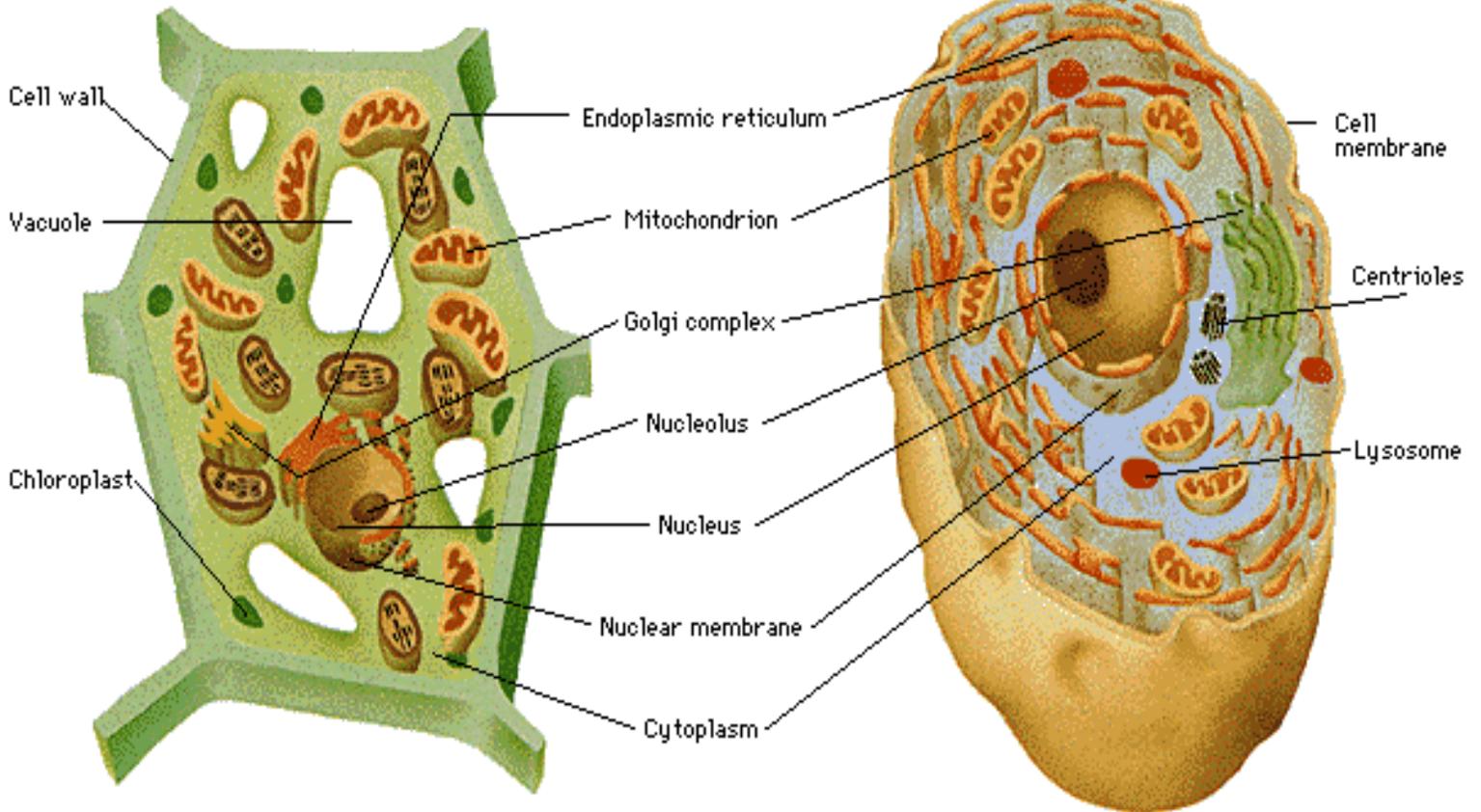
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Typical plant cell

Typical animal cell



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