

## Chapter 4: Cell Structure & Function

### Cell Theory

- All \_\_\_\_\_ are made of one or more \_\_\_\_\_
- A cell is the smallest unit of \_\_\_\_\_
- All cells come from \_\_\_\_\_ cells

### What is a “Cell”?

- All cells have a \_\_\_\_\_ membrane surrounding them
- All cells have either a \_\_\_\_\_ or a \_\_\_\_\_ region
- All cells have \_\_\_\_\_ containing \_\_\_\_\_

### Cell Size

- Most cells are too \_\_\_\_\_ to be seen without a \_\_\_\_\_
- Small size allows materials to \_\_\_\_\_ to all parts of the cell
- Cell size is restricted by the \_\_\_\_\_ ratio

### Prokaryotic Cells

- Bacterial and \_\_\_\_\_ cells are called “\_\_\_\_\_,” meaning “before the nucleus”
- Prokaryotic cells have no \_\_\_\_\_ surrounding their organelles
- Prokaryotes still have \_\_\_\_\_ scattered through their cytoplasm

## **Eukaryotic Cells**

- Eukaryotic (“true nucleus”) cells contain \_\_\_\_\_ that are enclosed by \_\_\_\_\_
- Eukaryotic cells are found in \_\_\_\_\_, plants, fungi, and protists

## **Eukaryotic Cells: Organelles**

- A \_\_\_\_\_ is a membrane sac that controls access to the \_\_\_\_\_
- Mitochondria have enzymes for \_\_\_\_\_ formation through respiration
- Ribosomes (“free” or attached to membranes) synthesize \_\_\_\_\_
- The endoplasmic reticulum (ER) \_\_\_\_\_ proteins and helps make lipids
- \_\_\_\_\_ bodies also modify proteins, sort and ship proteins, and prepare substances to become secretions
- Lysosomes \_\_\_\_\_ material in the cell
- \_\_\_\_\_ vesicles carry materials between organelles, or to-and-from the cell’s \_\_\_\_\_
- The \_\_\_\_\_ gives the cell shape and \_\_\_\_\_
- Photosynthetic cells contain \_\_\_\_\_ for food production and storage
- Central \_\_\_\_\_ and a cell \_\_\_\_\_ are found in many plants, fungi, and protists, but not in animals

## **The Nucleus**

- The nucleus contains DNA which is the \_\_\_\_\_ for synthesizing proteins
- The nuclear envelope is a \_\_\_\_\_ membrane, each consisting of a \_\_\_\_\_ of phospholipids
- The nucleolus is where \_\_\_\_\_ are formed

## **The Cytomembrane System**

- The ER is a collection of membranous \_\_\_\_\_ and flattened sacs

- ER is described as “ \_\_\_\_\_ ” or “ \_\_\_\_\_ ” depending on whether or not it is covered in \_\_\_\_\_
- The two types of \_\_\_\_ serve different functions in protein & lipid formation
- Golgi Bodies look like flattened sacs of membrane, with \_\_\_\_\_ budding off the edges
- The Golgi \_\_\_\_\_ proteins and lipids to prepare them to exit the cell (as \_\_\_\_\_)
- Lysosomes are vesicles that contain powerful \_\_\_\_\_ enzymes
- Lysosomes are used by single-celled organisms to digest \_\_\_\_\_
- Lysosomes also help during \_\_\_\_\_ of amphibians

### **Mitochondria**

- Mitochondria are the main organelles for transferring \_\_\_\_\_ from carbohydrates to ATP in \_\_\_\_\_ conditions
- Mitochondria may have evolved from \_\_\_\_\_
- Mitochondria contain folded inner membranes called \_\_\_\_\_

### **Plastids**

- Any colored plastid is called a \_\_\_\_\_
- \_\_\_\_\_ (the most famous plastids) perform photosynthesis
- Chromoplasts give \_\_\_\_\_ to the leaves, petals, and fruits of plants
- Colorless plastids ( \_\_\_\_\_ ) store \_\_\_\_\_
- Structurally, chloroplasts contain inner membrane disks called \_\_\_\_\_, and a liquid called \_\_\_\_\_
- Grana contain \_\_\_\_\_, including chlorophyll
- Chloroplasts are thought to have evolved from \_\_\_\_\_

## The Cytoskeleton

- The cytoskeleton is made up of proteins assembled into \_\_\_\_\_ and \_\_\_\_\_
- Some portions of the cytoskeleton are \_\_\_\_\_, some form only \_\_\_\_\_
- \_\_\_\_\_ and \_\_\_\_\_ are microtubules used for locomotion and other motion
- \_\_\_\_\_ are a special Microtubule Organizing Center (MTOC) that controls animal cell \_\_\_\_\_
- MTOCs also help the cell to \_\_\_\_\_ normally

## Cell Wall

- Most cells have a cell wall (\_\_\_\_\_ cells do not)
- Cell walls are \_\_\_\_\_ “boxes” that support the cell
- \_\_\_\_\_ in the wall allow materials to pass through
- Cell walls are made of \_\_\_\_\_