Biology 10

Ch 7-2 Notes (p 196-207)
"Cell Structures"

Objectives

- Describe the main function of the cell wall.
- Describe the function of the cell nucleus.
- Identify the main roles of the cytoskeleton.
- Describe the functions of the major cell organelles

The Cell as a Factory…

- A useful analogy when learning the functions of the organelles is to compare the cell to a factory
- A factory is responsible for manufacturing and shipment of goods
- A cell typically also manufactures and ships "goods", in this case, _____

Ribosomes: The Factory Workers

- **ribosomes**
  - tiny spherical structures located throughout the cytoplasm, and also attached to the endoplasmic reticulum
  - found in prokaryotes and eukaryotes
  - job is to _____

ER: The Assembly Line/Conveyer Belts

- **endoplasmic reticulum**
  - system of folded membranes that extends from the nucleus into the cytoplasm
  - Two types:
    - **smooth ER-** does not have ribosomes attached
      - function is to _____ _____
    - **rough ER**- has ribosomes attached to it
      - function is to _____, provide a space for ribosomes to operate

Golgi Apparatus: Shipment Center

- **Golgi Apparatus**
  - resembles a stack of pancakes in the cytoplasm
  - function is to _____ released by the ER

- proteins packaged in small sacs called **vesicles**, where they are released into the cytoplasm
- vesicles then travel to the plasma membrane, where the contents are exported

Intermission 1

Mitochondria: The Power Plant

- **mitochondria**
  - _____ of the cell (="power plants")
  - surrounded by a double membrane
  - contains a series of folded membranes (**cristae**)
    - increase the surface area for respiration to take place on
  - Contain their own DNA and ribosomes, which allows them to self-replicate
    - Hypothesized that mitochondria were once unicellular prokaryotic cells

Lysosome: The Maintenance Staff

- **lysosomes**
  - found in animal cells only!
  - small sacs that contain digestive enzymes
  - function is to _____ proteins
    - the garbage men of the cell

Cytoskeleton: Support and Transport

- **cytoskeleton**
  - consists of **microtubules and microfilaments**
  - Help _____ the cell
  - Also help transport materials throughout the cell

Nucleus: The Control Center

- **nucleus**
  - _____ of the cell
  - surrounded by a double membrane (**nuclear envelope**)
  - contains a jelly-like substance called **nucleoplasm**
  - contains the hereditary material of the cell (DNA)
    - **chromatin**- thread-like filaments of DNA
    - **chromosomes**- condensed version of chromatin
  - also contains a round structure called **nucleolus**
    - site of ribosome synthesis

Intermission 2

Moving the Cell Around

- **cilia and flagella**
  - Structures extending from the plasma membrane that help the cell _____

- **cilia**- a series of _____ extensions
- **flagella**- a _____
  - cilia and flagella structurally similar
  - have a "9+2" arrangement of microtubules

Plant cells

- contains the above structures (except lysosomes) and the following structures
- **cell wall-** _____ of the cell
  - protects the cell, provides support to the cell
  - composed of cellulose (polysaccharide) and some proteins

Plant cells (continued)

- **vacuole**
  - large _____ (typically stores water, food, minerals, wastes)
    - animal cells may have tiny versions of vacuoles, but never a large one like plants!
- **plastids**
  - include many types
    - **chloroplasts**- contain _____
      - photosynthesis sites- produce glucose
    - **chromoplasts**- contain pigments that give plants _____
    - **leucoplasts**- store _____

Plant Cell Diagram