

February 9, 2015

## Introduction to Cells

### Outline

- Introduction to cells
- Membranes
  - o Movement of Water and Solutes
- Structure of Cells

### Announcements

- Quiz 3 now available
- Critical thinking #2 now available
  - o Both due Sunday February 15<sup>th</sup> by 1159 pm
- Lecture is canceled on Wednesday
  - o Friday's lecture: Photosynthesis and cellular respiration

### Life's Hierarchy of Organization

- Which level is the first level with living properties? (Clicker Question)
  - a) Organelle
  - b) Cell**
  - c) Organ
  - d) Tissue
  - e) Organism

### Discovery of Cells

- Cells first discovered in 1665 by Robert Hooke
  - o Observed cork under microscope

- Advances in microscopes increased knowledge of cells

### Cells: Beginning of Life

- Cell theory: living things are made of cells and cells reproduce from other cells

### 7 Properties of Life

1. Order
2. Reproduction
3. Growth and Development
4. Energy Processing
5. Response to the Environment
6. Regulation of Internal Environment
7. Evolutionary Adaptation

### 2 Types of Cells

1. Prokaryotes
2. Eukaryotes

### Cellular Structures

- The structure and function of plasma membranes are primarily based on the arrangement of which macromolecule? (Clicker Question)
  - a) Proteins
  - b) DNA
  - c) Lipids**
  - d) Carbohydrates
- All cells of organisms contain:
  - o Plasma Membrane

- o Chromosomes with DNA
- o Ribosomes to make proteins
- o Cytoplasm

### Cytoplasm

- Interior portion of cell
  - o Separated by plasma membrane from external environment
- Cellular fluid

### Plasma Membrane

- Function
  - o Separates cell from external environment
  - o Regulates movement of substances into and out of cell
    - Needs to bring supplies in and push waste out
- Selective permeability
  - o It's not a hard surface but it is also not soft, it selects what to let in and what to keep out
  - o Some molecules move through easily
    - Water, O<sub>2</sub>, CO<sub>2</sub>
      - Essential to cell life so it's important for them to move in and out freely
  - o Large molecules need assistance
    - Transport proteins help them get in and out of the cell

### Transport across Membrane

- Active Transport