Terminology:

1. Anatomical/Directional terms
2. Body Cavities:

Thoracic w/pericardial & pleural cavities

Abdominopelvic

Organization/Regulation:

1. Levels of Organization
2. Molecules → Cells → Tissues → Organs → Organ Systems → Organism
3. Homeostasis
4. Regulatory Components:

 sensory receptor -> integrative center -> effector

2. Feedback Mechanisms:
 negative v positive feedback

Basic Chemistry:

A. Common elements: C, O, H, N, Ca, K, P

B. Atoms exhibit protons (+), neutrons (0), electrons (-)

C. Chemical bonds can be covalent, ionic or hydrogen

D. Properties of Water (hydrophilic vs. hydrophobic molecules)

E. Acid/Base & pH

F. Energy mechanics/Metabolism

1. Catabolism- decomposition reactions; usually via hydrolysis

2. Anabolism- synthesis reactions; usually via dehydration

3. Enzymes drive both processes

Organic Molecules:

A. Carbohydrates:

1. Monosaccharides: C6H12O6/ glucose, fructose

2. Disaccharides: (C6H12O6)2 /sucrose, lactose

3. Polysaccharides: (C6H12O6)n/ starch, cellulose,glucogen

B. Lipids:

1. Fatty Acids: long carbon chains used to make other lipids

saturated vs. unsaturated

2. Triglycerides:

One glycerol + 3 fatty acids
Energy storage, insulation and protection

3. Phospholipids & glycolipids:
Membrane structure

4. Steroids:
hormones

5. Eicosanoids: chemical messengers

C. Proteins:

Amino acid monomers → polypeptide polymers

Enzymes- ↑ reaction rates by ↓ activation energy

D. Nucleic Acids
 DNA, RNA: made from nucleotide monomers
 provide the instructions to synthesize proteins
 ATP: energy storage molecule

III. Cell Components

A. External/Internal Membranes:

1. Phospholipids

2. Proteins: receptor, recognition, adhesion, transport

B. Organelles found cytoplasm

1. Ribosomes

2. Nucleus

3. Endoplasmic Reticulum, Golgi Complex, Lysosome

4. Mitochondria

IV. Membrane Transport

A. Passive Transport: down concentration gradient; no ATP required

1. Diffusion and Osmosis (hyper/hypo/isotonic systems)

2. Facilitated diffusion: carrier-mediated transport

B. Active Transport: requires ATP and protein(s)

1. Ion pumps: work against gradient

2. Endo/Exocytosis- transport of material into/out of cell via vesicles