

# BIO100 Review for Exam 1

## CHAPTER 1

### **Introduction: Biology Today**

#### The Scope of Life

The Unity of Life  
Life at Its Many Levels  
Life in Its Diverse Forms

#### Evolution: Biology's Unifying Theme

The Darwinian View of Life  
Natural Selection

#### The Process of Science

Discovery Science  
Hypothesis-Driven Science  
Can Colors Protect a Snake?  
The Culture of Science  
Science, Technology, and Society

#### **Terms/Concepts:**

Properties of Life  
Levels of Organization  
    Biosphere  
    Ecosystem  
    Communities  
    Population  
    Individuals  
    Organs  
    Tissues

Cells  
Organelles  
Molecules  
Atoms

#### Cell Theory

#### Taxonomy

Kingdom  
Phylum  
Class  
Order  
Family  
Genus  
Species

#### 5 Kingdoms

Monera  
Plantae  
Animalia  
Fungi  
Protista

#### Scientific Method

Casual question  
hypothesis  
prediction  
test  
conclusion

#### Natural Selection (Darwin)

## CHAPTER 2

# Essential Chemistry for Biology

### Some Basic Chemistry

Matter: Elements and Compounds  
Atoms  
Chemical Bonding and Molecules  
Chemical Reactions

### Water and Life

Water's Life-Supporting Properties  
Acids, Bases, and pH

### Terms/Concepts:

Element  
Compounds  
HONC  
Atoms  
Atomic number  
Atomic Mass (Mass Number)  
Neutrons  
Protons  
Electrons  
Isotopes  
Orbitals  
Shells  
Bonds  
    Covalent (Polar and non-polar)  
    Ionic  
    Hydrogen  
    Van der Waals  
Reactants  
Products

# CHAPTER 3

## The Molecules of Life

### Organic Molecules

Carbon Chemistry  
Giant Molecules from Smaller Building Blocks

### Biological Molecules

Carbohydrates  
Lipids  
Proteins  
Nucleic Acids

### Terms/Concepts:

Properties of Water  
    Cohesion  
    surface tension  
Heat vs. Temperature  
Solvent  
Solute  
Acid  
Base  
Buffers  
Macromolecules  
Polymer  
Monomer  
Anabolic  
Catabolic  
Dehydration reaction  
Hydrolysis reaction  
monosaccharide  
disaccharides

glycosidic link  
polysaccharide  
    starch  
    glycogen  
    cellulose  
Lipids  
    fats  
    phospholipids  
    steroids  
glycerol  
fatty acid  
triglyceride  
    ester linkage  
reduced (saturated)  
oxidized (unsaturated)  
Proteins  
    amino acids  
polypeptide  
    peptide bonds  
Protein conformation  
    Primary  
    Secondary  
    Tertiary  
    Quaternary  
Nucleic acids  
    nitrogenous base  
(changeable)  
    sugar  
    phosphate group  
hydrophilic  
hydrophobic

## CHAPTER 4

### **A Tour of the Cell**

#### The Microscopic World of Cells

Microscopes as a Window on the  
World of Cells

The Two Major Categories of Cells

A Panoramic View of Eukaryotic  
Cells

#### Membrane Structure

The Plasma Membrane: A Fluid

Mosaic of Lipids and Proteins

Cell Surfaces

#### The Nucleus and Ribosomes:

Genetic Control of the Cell

Structure and Function of the  
Nucleus

Ribosomes

How DNA Controls the Cell

#### The Endomembrane System: Manufacturing and Distributing Cellular Products

The Endoplasmic Reticulum

The Golgi Apparatus

Lysosomes

Vacuoles

#### Chloroplasts and Mitochondria:

Energy Conversion

Chloroplasts

Mitochondria

#### The Cytoskeleton: Cell Shape and Movement

Maintaining Cell Shape

Cilia and Flagella

#### **Terms/Concepts:**

Microscopes

Simple

Compound

Electron Microscope

SEM (scanning electron  
microscope)

TEM (transmission electron  
microscope)

Magnification

Resolution

Cell Theory

Prokaryotic – know structural parts  
and functions

Eukaryotic – know structural parts  
and functions

## CHAPTER 5

# The Working Cell

### Some Basic Energy Concepts

Conservation of Energy  
Entropy  
Chemical Energy  
Food Calories

### ATP and Cellular Work

The Structure of ATP  
Phosphate Transfer  
The ATP Cycle

### Enzymes

Activation Energy  
Induced Fit  
Enzyme Inhibitors

### Membrane Function

Passive Transport: Diffusion Across Membranes  
Osmosis and Water Balance in Cells  
Active Transport: The Pumping of Molecules Across Membranes  
Exocytosis and Endocytosis: Traffic of Large Molecules  
The Role of Membranes in Cell Signaling

### Terms/Concepts:

Conservation of Energy  
Potential energy  
kinetic energy  
chemical energy  
entropy  
photosynthesis  
exergonic  
catabolism  
oxidation reduction  
Redox  
Cellular respiration  
reactants

products  
ATP cycle  
enzymes  
passive transport – diffusion  
facilitated diffusion  
osmosis  
osmoregulation  
hypertonic  
hypotonic  
isotonic  
lysing  
turgid  
flaccid  
active transport  
exocytosis  
endocytosis  
    pinocytosis  
    phagocytosis  
    receptor mediated  
endocytosis