

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