

Study Guide: Highlights and Themes from Midterm #1 Lecture Series

Lecture Series 1 – Evolutionary Framework

Overview of Biology
Evolutionary Milestones
Biological Diversity
Fundamental Concepts
 Emergent Properties
 Hierarchical Organization
Endosymbiosis and Complexity
Habitable Zones in our Solar System

Lecture Series 2 – Biologically Important Macromolecules

Condensation/Dehydration or Hydrolysis Reactions
Macromolecules vs. Polymers
 Lipids
 Carbos
 Proteins
 Nucleic Acids
Bonds/Linkages for each!
Proteins
 Structures and Functions
 Folding
 Interactions

Lecture Series 3 – The Organization of the Cell

Cell Theory
Surface Area to Volume Ratios
Compare and Contrast Prokaryotes with Eukaryotes
Compare and Contrast Plant Cells with Animal Cells

Organelles

Structures and Functions

Endomembrane System

e.g., From Signal Sequence to Oligosaccharide in a Glycoprotein

Cytoskeleton

Whose Who and What Do They do?

Motor Proteins and How They Work

Extracellular Structures of Plants and Animals

Lecture Series 4 – Cellular Membranes

Membrane Composition and Structure

Animal Cell Adhesion

Passive Processes of Membrane Transport

Osmosis, Which Way Does It Flow?

Active Transport of Membrane Transport

Primary vs Secondary

Endocytosis and Exocytosis

Receptor-Mediated Endocytosis