

Study Card: To Accompany Essential Biology 3/E & Essential Biology W/Physiology 2/E

STUDY CARD

To accompany Essential Biology, Third Edition, and Essential Biology with Physiology, Second Edition

Chapter 1 Introduction: Biology Today

- Properties of life include order, organization, growth and development, energy utilization, response to the environment, and continuity.
- The scale of life ranges from molecules to ecosystems: from molecules → cells → tissues → organs → organisms → populations → communities → ecosystems → biomes.
- It is the hierarchical organization of matter that can perform all activities required by life. There are two main types of cells: prokaryotic (small, without a nucleus) and eukaryotic (large, with a nucleus, and compartmentalized by membranes).
- Biologists classify organisms into three domains: (1) Bacteria and (2) Eukarya are single-celled prokaryotic organisms. (3) Eukarya is divided into at least four kingdoms: Protista (mostly unicellular), Fungi (mostly multicellular), Plantae (mostly multicellular), and Animalia (mostly multicellular).
- Evolution, first described by Charles Darwin in 1859 in his book *The Origin of Species*, is the change in the heritable characteristics of populations over successive generations. It is the process by which organisms with favorable traits are more likely to survive and reproduce, passing those traits on to their offspring.
- Evolution is supported by evidence from fossils, comparative anatomy, embryology, and molecular biology.
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Chapter 2 Essential Chemistry for Biology


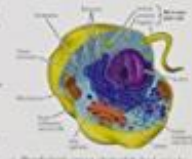
- Matter consists of elements and compounds. Combination of two or more elements, known as chemical reactions, are essential for life. Oxygen, carbon, hydrogen, and nitrogen are the most abundant.
- There are four main types of atoms: metals, nonmetals, metalloids, and noble gases.
- Atoms are made of protons, neutrons, and electrons.
- Molecular formula shows the number of atoms of each element in a molecule.
- Ionic bond: attraction between the oppositely charged ions.
- Covalent bond: attraction between atoms that share one or more pairs of outer-shell electrons.
- Hydrophobic: interaction between nonpolar molecules.
- Hydrophilic: interaction between polar molecules.
- Hydrophobic: interaction between nonpolar molecules.
- Hydrophilic: interaction between polar molecules.

Chapter 3 The Molecules of Life

- Carbohydrates: molecules made of carbon and hydrogen. They are the main source of energy for most organisms. They are made of monosaccharides, disaccharides, and polysaccharides.
- Lipids: hydrophobic molecules that store energy and form the cell membrane. They are made of fatty acids and glycerol.
- Proteins: large molecules made of amino acids. They are the main building blocks of life. They are made of polypeptides.
- Nucleic acids: molecules that store and transmit genetic information. They are made of nucleotides.

Chapter 4 A Tour of the Cell

- Microscopy and staining techniques are used to study cells. The light microscope can see structures up to 200 micrometers. The electron microscope can see structures up to 0.1 micrometers.
- Prokaryotes: single-celled organisms without a nucleus. They are found in all environments.
- Eukaryotes: organisms with a nucleus. They are found in all environments.
- The cell is the basic unit of structure and function. It is the smallest unit of life that can perform all the activities of life.
- The cell membrane is a phospholipid bilayer. It is made of phospholipids and proteins.
- The cytoplasm is the fluid inside the cell. It is made of water, ions, and small molecules.
- The nucleus is the control center of the cell. It contains the DNA and is surrounded by a nuclear envelope.
- The endoplasmic reticulum (ER) is a network of membranes that is involved in protein synthesis and transport. It is made of phospholipids and proteins.
- The Golgi apparatus is a series of membranes that are involved in the transport of proteins and lipids. It is made of phospholipids and proteins.
- Lysosomes are organelles that are involved in the breakdown of macromolecules. They are made of phospholipids and proteins.
- Mitochondria are organelles that are involved in the production of energy. They are made of phospholipids and proteins.



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Reviews




*Absolutely essential go through ebook. It can be rally exciting throgh studying period of time. Its been written in an exceptionally simple way in fact it is only right after i finished reading this pdf where basically modified me, modify the way i believe.
(Iliana Hartmann)*

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