

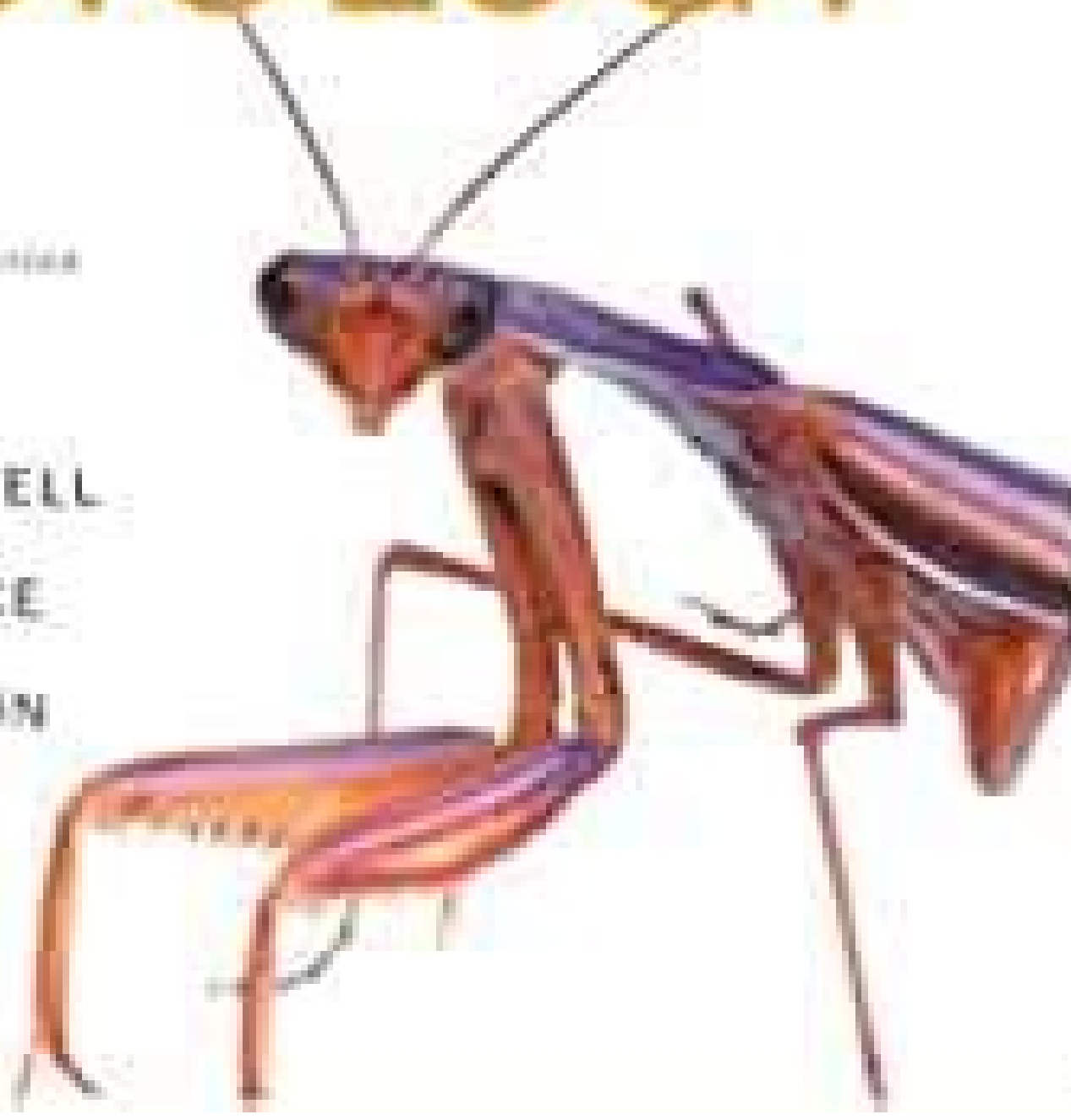
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ESSENTIAL BIOLOGY

Third Edition

CAMPBELL
REECE
SIMON



STUDY CARD

for CAMPBELL-REECE BIOLOGY Seventh Edition

Expanding Life (Ch. 1)

1. Life exists from the microscopic scale to the global.
2. Living systems are much more than the sum of their parts.
3. Organisms include a great diversity of species.
4. Individual organisms are both units and diversities.
5. Biological complexity increases and heterogeneity broadens as you ascend the life.

The Chemical Context of Life (Ch. 2)

1. Matter consists of chemical elements in pure form and compounds formed by chemical reactions.
2. An element's properties depend on its atomic structure.
3. Chemical reactions are the basis of life.
4. Chemical reactions involve changes in the chemical bonds that hold atoms together, changing the energy of the system.
5. In a chemical bond, two atoms share a pair of electrons. Double and triple bonds are also possible.
6. Electrons transfer from one atom to another, forming the ionic bond between oppositely charged ions.
7. Double bonds include multiple bonds and can also form ring structures.
8. Chemical reactions make and break chemical bonds as reactions are controlled by products.

Water (Ch. 3)

1. Water molecules are polar. Hydrogen bonding between water molecules gives water unique properties that allow life to exist on Earth.
2. Cohesive and adhesive water properties allow plants to move water up tall trees.
3. Water's high specific heat and high heat of vaporization moderate temperatures on Earth.
4. Ice floats because hydrogen bonds lock water into a crystalline lattice that reduces its density.

5. Water is a versatile solvent.
6. The hydrophilic surface of a cell membrane is made up of phospholipids, which are amphiphilic.
7. Acids release hydrogen ions (H^+).
8. Bases release hydroxide ions (OH^-).
9. Buffers resist changes in pH.

Carbon and Molecular Diversity (Ch. 4)

1. Organic chemistry is the study of carbon-containing molecules.
2. Carbon atom's small size and ability to form strong bonds with up to four other atoms.
3. Carbon chains form the backbone of many organic molecules. These chains can be branched or straight.
4. Carbon is the same number of atoms and electrons that H atoms have and therefore can form four covalent bonds.

ATP as a Chemical Energy-Carrying Molecule (Ch. 5)

1. ATP is a chemical energy-carrying molecule.
2. ATP is composed of Adenosine Triphosphate (ATP).
3. ATP is composed of Adenosine Diphosphate (ADP) + P_i + energy.

Macromolecules (Ch. 5)

1. Macromolecules are polymers synthesized from repeating units called monomers.
2. Polymers are formed by the reaction of monomers in the presence of a catalyst.
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Protein Synthesis (Ch. 6)

1. Protein synthesis is the process of creating a protein from a gene.
2. Protein synthesis involves transcription and translation.
3. Transcription is the process of copying a gene's DNA into messenger RNA (mRNA).
4. Translation is the process of using mRNA to synthesize a protein.
5. The genetic code is the set of rules that defines how sequences of nucleotide bases in DNA or mRNA are translated into the amino acid sequence of a protein.
6. The genetic code is universal and non-overlapping.
7. The genetic code is read in groups of three nucleotides called codons.
8. Each codon codes for a specific amino acid.
9. The start codon (AUG) codes for methionine and is the first codon in a protein.
10. The stop codons (UAG, UGA, UGG) do not code for any amino acid and signal the end of a protein.

A Tour of the Cell (Ch. 7)

1. All organisms are composed of one or more cells.
2. Cells are bounded by a plasma membrane and contain various organelles, one or more nucleus, and many ribosomes.

Prokaryotic Cells (Ch. 8)

1. Prokaryotic cells usually have a cell wall that is a mixture of other molecules besides peptidoglycan.
2. Prokaryotic cells lack a nucleus and other membrane-bound organelles.
3. Prokaryotic cells are generally larger than eukaryotic cells.
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Eukaryotic Cells (Ch. 9)

1. Eukaryotic cells have a nucleus and other membrane-bound organelles.
2. Eukaryotic cells are generally larger than prokaryotic cells.
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Plant Cells (Ch. 10)

1. Plant cells have a cell wall made of cellulose.
2. Plant cells have a large central vacuole.
3. Plant cells have chloroplasts.
4. Plant cells have a nucleus.
5. Plant cells have a Golgi apparatus.
6. Plant cells have a cytoskeleton.
7. Plant cells have a plasma membrane.
8. Plant cells have a cell wall.
9. Plant cells have a large central vacuole.
10. Plant cells have chloroplasts.

Animal Cells (Ch. 11)

1. Animal cells lack a cell wall and a large central vacuole.
2. Animal cells have a nucleus.
3. Animal cells have a Golgi apparatus.
4. Animal cells have a cytoskeleton.
5. Animal cells have a plasma membrane.
6. Animal cells have a cell wall.
7. Animal cells have a large central vacuole.
8. Animal cells have chloroplasts.
9. Animal cells have a nucleus.
10. Animal cells have a Golgi apparatus.

STUDY GUIDE

MARTHA R. TAYLOR

TENTH EDITION

CAMPBELL BIOLOGY

REECE • URRY • CAIN
WASSERMAN • MINORSKY • JACKSON



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