

Chapter 5: Structure and Function of the Cell Membrane and an Introduction to Energy (pages 145-191)

- [5.1 The Cell Membrane \(page 145\)](#)
- [5.2 Passive Transport \(page 152\)](#)
- [5.3 Active Transport \(page 161\)](#)
- [5.4 Energy and Metabolism \(page 166\)](#)
- [5.5 Law of Thermodynamics \(page 171\)](#)
- [5.6 Types of Energy \(page 175\)](#)
- [5.7 Enzymes \(page 184\)](#)

Chapter 6: Introduction to Cellular Respiration (pages 193-222)

- [6.1 Energy in Living Systems \(page 193\)](#)
- [6.2 Glycolysis \(page 201\)](#)
- [6.3 Citric Acid Cycle \(page 206\)](#)
- [6.4 Oxidative phosphorylation \(page 210\)](#)
- [6.5 Fermentation \(page 216\)](#)
- [6.6 Connections to Other Metabolic Pathways \(page 220\)](#)

Chapter 7: Introduction to Photosynthesis (pages 223-246)

- [7.1: Overview of Photosynthesis \(page 223\)](#)
- [7.2: The Light-Dependent Reactions of Photosynthesis \(page 232\)](#)
- [7.3: The Calvin Cycle \(page 240\)](#)

Unit 2: Cell Division and Genetics

Chapter 8: Introduction to Reproduction at the Cellular Level (pages 247-293)

- [8.1 The Genome \(page 248\)](#)
- [8.2 The Cell Cycle and Mitosis \(page 252\)](#)
- [8.3 Prokaryotic Cell Division \(page 265\)](#)
- [8.4 Sexual Reproduction \(page 269\)](#)
- [8.5 Meiosis \(page 272\)](#)
- [8.6 Errors in Meiosis \(page 287\)](#)

Chapter 9: Introduction to Patterns of Inheritance (pages 295-333)

- [9.1 Gregor Mendel and Genetic Crosses \(page 295\)](#)
- [9.2 Laws of Inheritance \(page 301\)](#)
- [9.3 Extensions of the Laws of Inheritance \(page 313\)](#)
- [9.4 Chromosomal Basis of Inheritance \(page 320\)](#)
- [9.5 Patterns of Inheritance \(page 326\)](#)

Unit 3: Molecular Biology and Biotechnology

Chapter 10: DNA Replication and Protein Synthesis (pages 335-376)

- [10.1 The Structure of DNA \(page 335\)](#)
- [10.2 DNA Replication \(page 343\)](#)
- [10.3 Transcription \(page 355\)](#)
- [10.4 Translation \(page 364\)](#)
- [10.5 How Genes Are Regulated \(pages 372\)](#)

Unit 4: Evolution and Introduction to Biotechnology

Chapter 11: Introduction Evolution (pages 379-405)

- [11.1 Discovering How Populations Change \(page 378\)](#)
- [11.2 Mechanisms of Evolution \(page 388\)](#)
- [11.3. Evidence of Evolution \(page 396\)](#)
- [11.4 Common Misconceptions about Evolution \(pages 402\)](#)

Glossary (pages I-XXI)

OER Attribution Table (pages XXIII-XXXVI)

Preface

Principles of Biology – An Introduction to Biological Concepts of Biology

About Our Team

Principles of Biology – An Introduction to Biological Concepts would not be possible without the work of the following College of Lake County faculty contributing authors and reviewers.

Senior Faculty Contributing Author and Reviewer

Elizabeth O’Grady, PhD

Faculty Contributing Authors and Reviewers

Jason Cashmore, MS

Marsha Hay, MS

Carol Wismer, MS

This textbook was put together to increase accessibility and provide a quality textbook at little or no cost to student learners. This work was funded in part by a sabbatical provided by the College of Lake County and support by the Biological and Health Science Division. A special thank you to Mark Coykendall, Biology Department Chair, for his support and encouragement.

This textbook would not have been possible without the support and advise of our families.

A copy of this book can be found on CLC’s website – [Biology OER](#)



All written text found in *Principles of Biology – An Introduction to Biological Concepts* and the OpenStax textbooks are licensed under [Creative Commons Attribution License 4.0](#). The images, photos, graphs, etc. used in this textbook have each been individually attributed. Images, photos, graphs, etc. have different creative commons licenses and have been licensed according to their original authors. An attribution table can be located on the last pages of this textbook.