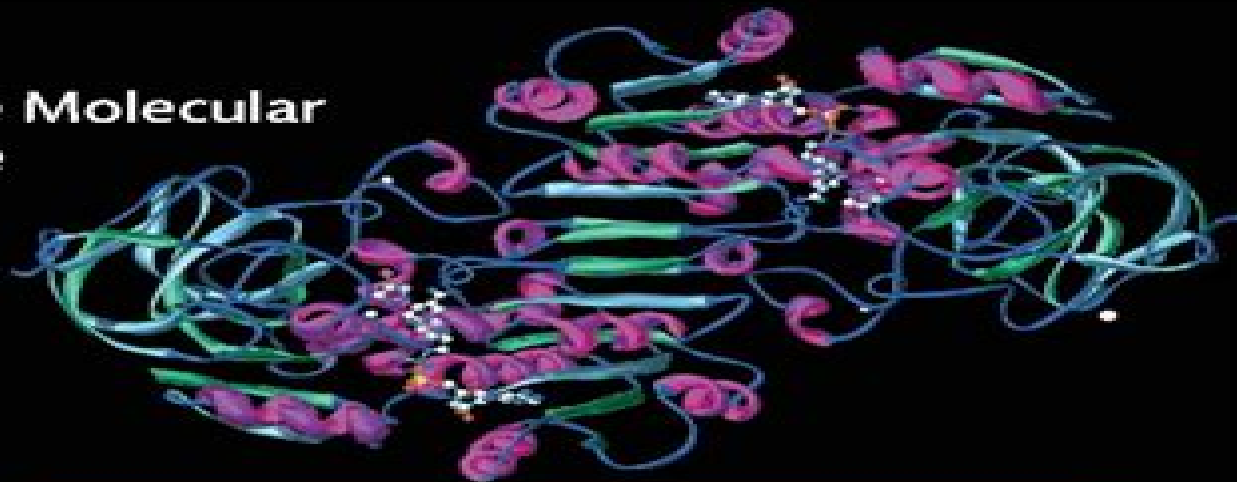


## CHAPTER 3

# Carbon and the Molecular Diversity of Life



**Figure 3.1** This image is a molecular model of alcohol dehydrogenase, a protein that breaks down alcohol in the body and affects a person's tolerance for alcohol. Proteins are one class of organic (carbon-based) molecules.

### KEY CONCEPTS

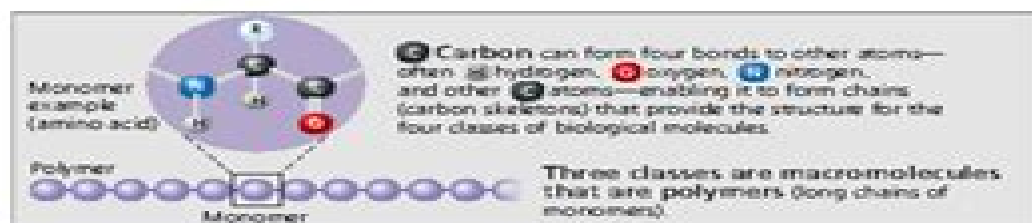
- 3.1** Carbon atoms can form diverse molecules by bonding to four other atoms.
- 3.2** Macromolecules are polymers, built from monomers.
- 3.3** Carbohydrates serve as fuel and building material.
- 3.4** Lipids are a diverse group of hydrophobic molecules.
- 3.5** Proteins include a diversity of structures, resulting in a wide range of functions.
- 3.6** Nucleic acids store, transmit, and help express hereditary information.
- 3.7** Genomics and proteomics have transformed biological inquiry and applications.

### STUDY TIP

**Make a visual study guide:** For each class of biological molecules you read about in the chapter, draw two monomers linked together (or, for lipids, two different examples). Label their chemical groups and list the functions of that class.

Important Biological Molecules	
Carbohydrates	Proteins
Nucleic acids	Lipids

### How is carbon the structural basis for four important classes of biological molecules?



**Carbohydrates** are a source of energy and provide structural support.



**Nucleic acids** store genetic information and function in gene expression.



**Proteins** have a wide range of functions, such as catalyzing reactions.



The fourth class, **lipids**, are not polymers or macromolecules.

**Lipids**, a group of diverse molecules that do not mix well with water, provide energy and make up cellular membranes.



# Chapter 3 Carbon And The Molecular Diversity Of Life

**Martha R. Taylor**



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Nina Caris,Harold T. Underwood,1996 Formal Ontology in Information Systems P. Garbacz,O. Kutz,2014-09-05 Formal Ontology in Information Systems FOIS is the flagship conference of the International Association for Ontology and its Applications IAOA Its interdisciplinary research focus lies at the intersection of philosophical ontology linguistics logic cognitive science and computer science as well as in the applications of ontological analysis to conceptual modeling knowledge engineering knowledge management information systems development library and information science scientific research and semantic technologies in general As in previous years FOIS 2014 was a nexus of interdisciplinary research and communication The current proceedings is divided into four main sections dealing with foundations processes agency and dispositions methods and tools and applications The last of these covers a broad spectrum of areas including in particular biology and medicine engineering and economy For the first time in its history the conference hosted a special track an ontology competition the aim of which was to encourage authors to make their ontologies publicly available and to allow them to be evaluated according to a set of predetermined criteria Papers discussing these ontologies can also be found in this volume The book will be of interest to all those whose work involves the application of ontologies and who are looking for a current overview of developments in formal ontology *Campbell Biology Australian and New Zealand Edition* Jane B. Reece,Noel Meyers,Lisa A. Urry,Michael L. Cain,Steven A. Wasserman,Peter V. Minorsky,2015-05-20 Over nine successful editions CAMPBELL BIOLOGY has been recognised as the world s leading introductory biology textbook The Australian edition of CAMPBELL BIOLOGY continues to engage students with its dynamic coverage of the essential elements of this critical discipline It is the only biology text and media product that helps students to make connections across different core topics in biology between text and visuals between global and Australian New Zealand biology and from scientific study to the real world The Tenth Edition of Australian CAMPBELL BIOLOGY helps launch students to success in biology through its clear and engaging narrative superior pedagogy and innovative use of art and photos to promote student learning It continues to engage students with its dynamic coverage of the essential elements of this critical discipline This Tenth Edition with an increased focus on evolution ensures students receive the most up to date accurate and relevant information

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in isolation from other topics Previous studies have been much broader including also consideration of the mission that collects samples on Mars and brings them to Earth atmospheric entry sample recovery and transport to the quarantine facility The charge to COMPLEX stated that the central question to be addressed in this study is the following What are the criteria that must be satisfied before martian samples can be released from a quarantine facility Bio Class Notes Nina Caris,Nina Chris,1993

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**Biodiversity in British Columbia** Canadian Wildlife Service,1994 This book consists of a collection of individual papers surveying the existing knowledge of biodiversity in British Columbia The first section contains papers that consider the importance of an ecosystem centred approach to the conservation of biodiversity explain the methods of classifying the status of rare species and review the role of biosystematics and taxonomy in the study of biodiversity The second section focuses on the diversity of species in British Columbia with papers on specific species or groups such as lepidoptera marine invertebrates lichens bryophytes fish fungi mammals birds reptiles and vascular plants Part three summarises information on the diversity of the province s ecosystems with papers on such topics as forests grasslands marine areas urban areas and atmospheric change The final section discusses ways of protecting biodiversity concluding with a summary of recommendations for biodiversity conservation Kaplan SAT II Biology 2002-2003 Claire Aldridge,Glenn E. Croston,Kaplan, Inc,2002-03-19 Updated for 2002 2003 Kaplan s guides to the SAT II feature hundreds of practice questions including three full length practice tests and quizzes in every chapter

**Life** William

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