# Campbell Biology, Canadian Edition Plus MasteringBiology

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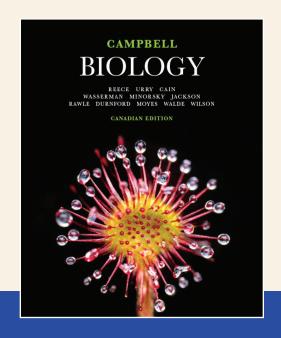
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Kenneth Wilson, University of Saskatchewan



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Campbell BIOLOGY is the best-selling introductory biology resource in North America. Unparalleled in accuracy, depth of explanation, and art program, the Canadian edition maintains the integrity of the original text-book while integrating material relevant to studying the discipline in this country. Weaving examples of flora, fauna, and species found in Canada alongside global examples, integrating biological issues and data, and showcasing research conducted in Canada makes learning more meaningful.

#### **Available Instructor Resources**

- Case Studies
- TestGen and Test Item File
- Lecture PowerPoints
- Clicker Questions
- Image Libraries
- MasteringBiology
- LearningCatalytics

#### **Available Student Resources**

- Study on the Go
- A Short Guide to Writing About Biology, Seventh Edition
- Practicing Biology: A Student Workbook, Fourth Edition
- Into the Jungle: Great Adventures in the Search for Evolution

### **Brief Contents**

#### Unit 1:The Chemistry of Life

- 2 The Chemical Context of Life
- 3 Water and Life
- 4 Carbon and the Molecular Diversity of Life
- 5 The Structure and Function of Large

**Biological Molecules** 

#### Unit 2:The Cell

- 6 A Tour of the Cell
- 7 Membrane Structure and Function
- 8 An Introduction to Metabolism
- 9 Cellular Respiration and Fermentation
- 10 Photosynthesis
- 11 Cell Communication
- 12 The Cell Cycle

#### Unit 3: Genetics

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- 14 Mendel and the Gene Idea
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- 16 The Molecular Basis of Inheritance
- 17 From Gene to Protein
- 18 Regulation of Gene Expression
- 19 Viruses
- 20 DNA Tools and Biotechnology
- 21 Genomes and Their Evolution

#### Unit 4: Mechanisms of Evolution

- 22 Descent with Modification: A Darwinian View of Life
- 23 The Evolution of Populations
- 24 The Origin of Species
- 25 The History of Life on Earth

# Unit 5:The Evolutionary History of Biological Diversity

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- 28 Protists
- 29 Plant Diversity I: How Plants Colonized Land
- 30 Plant Diversity II: The Evolution of Seed Plants
- 31 Fungi
- 32 An Overview of Animal Diversity
- 33 An Introduction to Invertebrates
- 34 The Origin and Evolution of Vertebrates

#### Unit 6: Plant Form and Function

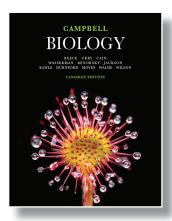
- 35 Plant Structure, Growth,
- and Development
- 36 Resource Acquisition and Transport in Vascular Plants
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- 38 Angiosperm Reproduction and Biotechnology
- 39 Plant Responses to Internal and External Signals

#### Unit 7: Animal Form and Function

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- 44 Osmoregulation and Excretion
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#### **Unit 8: Ecology**

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- 55 Ecosystems and Restoration Ecology
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# Campbell Biology, Canadian Edition Plus MasteringBiology

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### **Features**

- Key Concepts: A manageable framework of 3 to 6 Key Concepts organize each chapter.
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- Evolution: The Canadian Edition emphasizes the core theme of evolution throughout. An Evolution Section in every chapter explicitly focuses on the evolutionary aspects of chapter material. Evolutionary mechanisms are covered in-depth in Unit 4. Evolutionary Framework and the diversity of life is explored in Unit 5.
- Make Connections: The Canadian Edition helps students make connections across biology topics. Make Connections Figures pull together content from different chapters and provide a visual representation of "big picture" relationships. Make Connections Questions ask students to relate the content of a chapter to what they learned earlier in the course.
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# **About the Canadian Authors**



Fiona Rawle (Units 1–4; editor Units 1–8) received her Ph.D. from Queen's University in Kingston, Ontario. She is a teaching-stream faculty member at the University of Toronto at Mississauga, where she teaches Introduction to Evolution and Evolutionary Genetics,

Introductory Genetics, and Molecular Basis of Disease. Fiona's teaching and pedagogical research interests focus on several areas: (1) the development of case studies to immerse students in real-world biological challenges and allow students to connect with material from different perspectives; (2) the development of active learning techniques that can be used in large class settings. Active learning has been shown to increase student comprehension of complex biological topics; and (3) the development of scientific literacy interventions that can be used across the undergraduate biology curriculum. Fiona was the recipient of a 2010 Faculty Award for Teaching Excellence while at Wilfrid Laurier University.



Dion Durnford (Unit 5) is a professor at the University of New Brunswick, in Fredericton. He earned a B.Sc. in Biology from Dalhousie University and a Ph.D. in Botany from the University of British Columbia. His research has focused on the evolution of light-

harvesting antenna systems and the role of these proteins in light-harvesting and photo-protection in microalgae. His recent work is examining how microalgae age and their strategies for increasing longevity. Dion was the recipient of the 2002 Faculty of Science Excellence in Teaching award and the 2010 Allan P. Stewart Award for Excellence in Teaching.



Chris Moyes (Unit 7) is a comparative physiologist, focusing on the muscle biochemistry and energetics. He received his Ph.D. in Zoology from the University of British Columbia (1991) and is currently a Professor in the Department of Biology, Queen's University. He has

published more than 100 research papers and contributed to four books. He is co-author of Principles of Animal Physiology, first published in 2006.



Sandra Walde (Unit 8) is a professor of biology and associate dean of science at Dalhousie University. She received her B.Sc. in Biology and Ph.D. in Ecology from the University of Calgary, and then went to the University of California, Santa Barbara, as a post-doctoral fellow.

At Dalhousie, she teaches general ecology to first and second year students and population ecology to upper year students. Sandy's research has focussed on dispersal and ecological interactions in aquatic and terrestrial communities. She feels lucky that her field work has taken her to some beautiful places, including studies of stream invertebrate communities in Alberta and Nova Scotia, and research on native fishes in the lakes of the Patagonian Andes.



Kenneth Wilson (Unit 6) is a professor in the Department of Biology at the University of Saskatchewan. He has a B.Sc. in Biochemistry from the University of Waterloo and a Ph.D. in Plant Sciences from the University of Western Ontario. His research focuses

on the perception of environmental stresses in plant cells and the regulation of photosynthesis. However, he has published research papers on topics ranging from the acclimation of plants to ultraviolet light, to the identification of algal species for use as sources of biodiesel. He teaches Introductory Biology, Plant Physiology and Genetics, as well as supervising graduate student research projects. In 2010, he received the Provost's Award for Outstanding Teaching and the College of Arts and Sciences Teaching Excellence Award from the University of Saskatchewan.