A vast amount of figures and illustrations are included, which highlight historical aspects of fMRI, as well as the physics and the psychological principles behind this imaging technique. Patient-derived images provide relevant examples and further convey the ideas presented throughout the text. Questions presented throughout the book engage the reader and confirm that he or she is comprehending the important concepts covered in the text. Each chapter ends with a summary to ensure the reader understands the key concepts and a list of suggested readings to enhance the understanding of information introduced in that section. To further assist the reader, this book also has a companion website with free study questions for each chapter, a list of links to websites with additional information, as well as an online glossary highlighting the important terms used throughout the textbook. This book serves as a great read for students interested in the medical or physical sciences, researchers or physicians utilizing fMRI in their research or treatment regimens, or those just interested in fulfilling their curiosity of this imaging technique.

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Thieme Atlas of Anatomy: General Anatomy and Musculoskeletal System, Second Edition. By Michael Schuenke, Erik Schulte, Udo Schumacher, and Lawrence M. Ross. New York: Thieme Medical Publishers, Inc.; 2014. US $77.99 (Paperback). 609 p. ISBN: 978-1604069228.

The Thieme Atlas of Anatomy: General Anatomy and Musculoskeletal System, second edition, is an exceptional resource for anyone studying anatomy with an emphasis on the musculoskeletal system. The Thieme Atlas of Anatomy, unlike many other anatomical atlases, combines illustrations with descriptive text and tables and clinical applications. Thus, this text not only functions as a clinically focused atlas, but also a standalone anatomical textbook.

The authors approach the study of anatomy in a manner that builds complexity, starting with basic human embryology and development, then moving onto surface anatomy, bones, joints, muscles, vessels, and innervation, followed by an in-depth study of the trunk wall, upper limb, and lower limb. Each chapter notably emphasizes the important relationship between anatomical structure and function as well as introduces clinical applications.

The most remarkable feature of this atlas is the set of extraordinarily realistic illustrations created for the first edition, in an attempt to provide both students and providers with a fresh approach to the subject matter. New to the second edition are 30 two-page spreads devoted to clinical pathology that include osteoarthritis of the hip joint, compression syndromes of peripheral nerves, conduction anesthesia of peripheral nerves, shoulder arthroscopy and degenerative changes of the shoulder joint, functions of individual muscles and the symptoms associated with weakening of these muscles, and diagnostic imaging of the large joints. The second edition also contains clinically important imaging for plain film, CT, and MRI scans related to musculoskeletal anatomy and pathology that are presented in parallel with the anatomical illustrations.

This edition also comes with access to WinkingSkull.com PLUS, an online resource that contains more than 500 full-color illustrations and radiographs not contained in the text. In addition to the image bank that can be studied with labels-on and labels-off, this online resource can be used by students to self-assess their understanding of the material by taking timed tests with instant results.

This book is an ideal text not only for students of various disciplines studying anatomy for the first time, but it also serves as a valuable resource for faculty and providers. The well-organized summary tables are ideal for readers who are interested in a quick anatomical review.

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Essential Cell Biology. Fourth Edition. By Bruce Alberts, Dennis Bray, Karen Hopkin, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter. New York: Garland Science; 2013. US $121.94 (Hardcover). 864 p. ISBN: 978-0815344544.

Essential Cell Biology, fourth edition, provides an up-to-date introduction to the fundamental concepts of cell biology as well as rapidly growing fields such as stem cell biology, development, and cancer. With 20 chapters, the book covers topics such as macromolecules, DNA replication, gene transcription, cell membranes, cytoskeleton, and the cell-division cycle. This book is ideal for students taking an introductory cell or molecular biology course, yet is also suitable for individuals looking to simply refresh their understanding of some of the basics of cell biology. The book engages the reader with commentary such as: “What does it mean to be living? Petunias, people, and pond scum are all alive; stones, sand, and summer breezes are not. But what are the fundamental properties that characterize living things and distinguish them from nonliving matter?” In addition, the authors provide a clear overview at the beginning of each chapter and highlight the essential points that will be covered. Furthermore, throughout the book, they consistently relate the newly covered material with the material in the previous chapters. While the text is clear, the authors still provide a thorough tour of the many branches of cell biology and show how these concepts are relevant to biomedical applications. New concepts are generally given in combination with several graphical representations to orient the reader. In addition, they provide a greatly expanded Question
Bank, several new student assessment tools, as well as more than 130 narrated videos to guide reader as they progress through the chapters. Students will gain a broad understanding of biological processes from the latest edition of *Essential Cell Biology*, which will also help them as they advance to more specialized topics of biology and biomedical research.

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*Methodologies for Metabolomics: Experimental Strategies and Techniques*. Edited by Norbert W. Lutz, Jonathan V. Sweedler, and Ron A. Wevers. New York: Cambridge University Press; 2013. US $164.99 (Hardcover). 640 p. ISBN: 978-0521765909.

The complicated nature of small molecules continues to frustrate the 4-decade-old field of metabolomics, limiting it to “emerging field” status even to the present day. In contrast to genomics, there is very little common ground in terms of chemical structure. Even compared to proteomics, the diversity is astounding when one considers the xenobiotic origins of a great proportion of an organism’s metabolome. Nevertheless, a few main techniques for assessment of the metabolome stand out, and *Methodologies for Metabolomics* focuses on innovations of the two major analytical approaches: mass spectrometry (MS) and nuclear magnetic resonance (NMR) spectroscopy.

*Methodologies for Metabolomics* is a detailed read that targets students and researchers, with chapters dedicated to sample extraction and purification, analytics, and data processing. The basics of MS and NMR and the organizational pipelines common to metabolomics are introduced in Part I’s chapters. Part II focuses on MS-based approaches. Parts III-IV deal with NMR-based approaches.

Within the techniques outlined in each chapter, the depth of coverage varies from general overviews to well-outlined protocols. Examples of methodologies include ion mobility MS, which separates ions both by size and charge (Chapter 9), and hyperpolarized NMR, which alters the spin state of protons and greatly increases sensitivity (Chapter 21). Overall, significant attention is spent on lipids, a particularly difficult class of metabolites to purify and detect. One weakness of this text is a relative dearth of approaches that focus on non-human tissues. Plant and microbe-specific metabolomes are rich in metabolic diversity, and a greater focus could subsequently lead to more diverse sets of methodologies than the current emphasis on human disease.

Although many of the techniques found in *Methodologies for Metabolomics* have existed for decades, the potential for their application in biological systems — particularly *in vivo* — is only starting to be realized. It is from these angles that this text provides a suitable resource for exploring many of the cutting-edge innovations in an ever-growing area of molecular biology.

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*The Molecules of Life: Physical and Chemical Properties*. By John Kuriyan, Boyana Konforti, and Davi Wemmer. New York and London: Garland Science; 2013. US $157.00 (Paperback). 1008 p. ISBN: 978-0815341888.

As we enter the age of molecular medicine, in which the time between identification of a molecular target and generation of a site-specific intervention is becoming increasingly small, a well-integrated understanding of the physical and chemical processes that govern molecular interactions is becoming exceedingly important. *The Molecules of Life: Physical and Chemical Properties* seeks to approach our current understanding of life by uniting fundamental concepts in thermodynamics and kinetics commonly taught in introductory physical chemistry courses with biological processes functioning at the level of molecular structure frequently taught in undergraduate biochemistry courses.

Unlike other biochemistry textbooks, this text aims to present the concepts of thermodynamics through applied analysis of biological systems. The authors have taught a course at the University of California at Berkeley for the last few years using this approach that integrates thermodynamics and molecular systems and have found this strategy widely appealing to students from biology, chemistry, and biomedical engineering. The organization of the course follows the layout of *The Molecules of Life*, which begins with an introduction of biological macromolecules. The following chapters focus on the energy and entropy that govern interactions of the macromolecules and the application of these concepts in free energy and equilibrium. The authors then delve into molecular recognition and the rates of molecular processes and finish with protein and RNA folding and protein synthesis.

The text is eloquently written and scattered with high-resolution images and easily interpreted figures and diagrams. Although this text is rather math heavy, important equations are derived in easy-to-follow detail, which provides an understanding of the equations necessary to answer the problems at the end of every chapter. For students or scientists looking for a quicker review of the material, each chapter is littered with gray boxes that summarize the information presented in the text.

*The Molecules of Life* is ideal for beginning undergraduate or graduate students with a background in biochemistry, physics, and differential equations who wish to begin understanding the physical basis of life. The companion student resource website for this text contains animations and videos that dynamically illustrate important