

Book Reviews*

Practical NMR Relaxation for Chemists. By Vladimir I. Bakhmutov (Texas A&M University). John Wiley & Sons, Ltd., Chichester. 2005. xi + 202 pp. 6 × 9 in. \$89.95. ISBN 0-532-42154-5.

¹This book is well organized and begins with a basic explanation of NMR spectroscopy and relaxation mechanisms. Limited use of complex mathematical equations in the explanations makes for relatively light reading, and this book can be followed by any chemist who wishes to understand NMR relaxation. There are also many informative diagrams that help the reader follow the explanations. The first half of the book is dedicated to explaining the basics of the relaxation phenomenon. The second half describes many practical uses for relaxation-based NMR experiments.

The main limitation of the book is that the broad coverage of the subject is really introductory and would require further reading on a given topic before a researcher would be competent to use the described methods. Fortunately, the material in the book is well referenced and each chapter has a bibliography. That being said, the book provides an excellent foundation for understanding the use of relaxation NMR experiments as a tool rather than a primary research focus. Another point of consideration is that the book is not focused on organic compounds, the point of interest for readers of the *Journal of Natural Products*. Many of the examples are of exotic metal complexes rather than naturally occurring organic molecules.

This book is a very suitable introduction for someone who wants to gain practical knowledge about the NMR relaxation phenomenon. It would be appropriate for use in an advanced undergraduate or graduate level course on this topic or would be an excellent starting point for an investigator who would like to begin using relaxation-based NMR experiments to help solve appropriate problems.

D. Chuck Dunbar

*University of Mississippi
University, Mississippi*

NP058256B

10.1021/np058256b

Toxicogenomics Principles and Applications. Edited by H. K. Hamadeh and C. A. Afshari (Amgen, Inc.). Wiley-Liss, Hoboken. 2004. xii + 361 pp. 6 × 9¹/₂ in. \$64.95. ISBN 0-471-43417-5.

Toxicogenomics characterizes the activity of a particular toxin or chemical substance on living tissue by profiling the agent's affect on genetic material. The term toxicogenomics, however, is a bit deceptive. This discipline is not the simple combination of toxicology and genomics, but instead a multifaceted field that also embraces molecular biology, chemistry, pathology, statistics, bioinformatics, and engineering. As no one person is an expert in all these areas, toxicogenomics calls for a team approach. Effective teamwork, as exemplified in sports, requires cross training. *Toxicogenomics Principles and Applications* provides this cross training for a broad audience. For students, the book reviews the fundamentals of toxicology and explains technologies and "omic" approaches used in this discipline. Experienced researchers will find it a useful resource to help evaluate emerging research and participate in new studies.

Users of the text will need to have some understanding of biology, chemistry, genetics, statistics, and bioinformatics. Even the most general material assumes an understanding of biological processes such as apoptosis, inflammation, and carcinogenesis; the chemistry of phase I and II metabolic reactions; the fundamentals of gene expression; the difference between parametric and non-parametric statistical analyses; and the basics of data management and knowledge-based systems.

Several chapters are dedicated to the technologies and experimental tools used in the "omic" approach to toxicology. These chapters include helpful discussions of microarrays and polymerase chain reaction (PCR) methodologies, scanners used to collect data, database management systems, and high-throughput technologies. Additional chapters focus on data analysis and interpretation. One such chapter is dedicated to the statistics of toxicogenomics. Unlike traditional toxicology that measures a few variables, toxicogenomics uses microarrays that allow measurement of thousands of variables. The large number of potential relationships between these variables requires thoughtful consideration to avoid faulty interpretations and false conclusions. Statistical concepts and techniques are illustrated using a typical experiment, and common pitfalls that contribute to data misinterpretation are discussed.

The book (and perhaps the field itself) is slightly mistitled, as it goes beyond genomics and also includes transcriptomics (the study of an entire population of transcripts in a cell population at a given time), proteomics (the study of all proteins expressed in a cell and how they interact), and metabolomics (the study of small molecules that specific cellular processes leave behind). All these -omics are integral to toxicogenomics. Toxicants interact with proteins, affecting protein signaling, transcription factors, and metabolite–protein interactions, which regulate the expression of genes as transcripts.

The last chapter of the book provides many useful web-based resources. In some cases, the URLs have changed (e.g., LocusLink has been reorganized as Entrez Gene) or no longer function (e.g., AMAD database system). The vast majority of resources, however, are reliable web sites that will help researchers keep abreast of programs, standards, tools, and databases that are key to the study of toxicogenomics.

The editors have assembled a useful guide for new and seasoned scientists exploring the relationships between genetic variation and toxic response.

Cathy Fomous

*Aspen Systems
Rockville, Maryland*

NP0582675

10.1021/np0582675

Microbial Diversity and Bioprospecting. Edited by Alan T. Bull (University of Kent, Canterbury). ASM Press, Washington, DC. 2004. xix + 496 pp. 8 × 11 in. \$129.95. ISBN 1-55581-267-8.

As the title implies, this book is about microbes and their value in bioprospecting, but this book will be of great value to anyone toiling with any source of natural products as leads to drugs, agrochemicals, or other agents of use to mankind. The editor assembled a panel of experts across numerous microbiology

*Unsigned book reviews are by the Book Review Editor.

specialties and, together, they produced this exceptionally well written treatise on the critical issues that confront those bioprospecting the microbial riches of the world.

After a brief introduction on the rationale for exploring and exploiting biological diversity, the book is divided into eight substantive sections or topic areas: Microbial Diversity—the Resource; Microbial Ecology—the Key to Discovery; Biogeography and Mapping Microbial Diversity; Bioinformatics; Prospecting—the Targets; Conservation of Microbial Gene Pools; and Convention on Biological Diversity—Implications for Microbial Prospecting. The book then concludes with a brief chapter on the value of biodiversity, by an economist, with various economic formulas and calculations.

This reviewer could find but one mistake in the text, and it had nothing to do with microbiology. Chapter 39, on the convention on biodiversity and benefit sharing, discusses an agreement between an Australian pharmaceutical company, AMRAD, and the Western

Australian Department of Conservation and Land Management, CALM, to access and commercialize compounds from a species of smokebush, *Conospermum*, and refers to the active agent as an antitumor compound. The pharmacological activity in question was actually anti-HIV activity.

While the book is well indexed and numerous references are provided in each of the 44 chapters, the book is not intended as a comprehensive review, but rather a philosophical overview with a sense of the state of the science in each of the technical areas. There is something for everyone in this book, from advanced undergraduate to long-time veteran principal investigators. The text is thought-provoking, as much as it is informative. This book is heartily recommended to any individual who can afford it and to all institutional libraries, academic, government, and industrial.

NP058266C

10.1021/np058266c