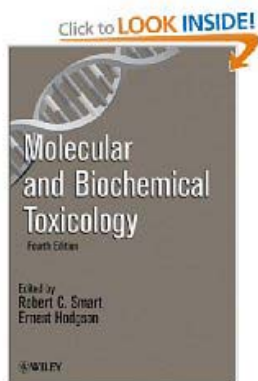


### Book Review



**Robert C. Smart and Ernest Hodgson (Eds),  
Molecular and Biochemical Toxicology**

**Fourth edition, ISBN-10: 047010211X, John Wiley & Sons Inc. Hoboken New Jersey, 2008, 902 pages**

Because the principles and methods of molecular and cellular biology are improving continuously and the genomic sciences play an ever increasing role in mechanistic toxicology, this new edition has been completely revised. There are coverage biochemical, cellular, and molecular events induced by toxicants at the cellular and organism levels and there are also described complex methods used in toxicology.

Robert C. Smart and Ernest Hodgson, two distinguished professors from the Department of Environmental and Molecular Toxicology of the North Carolina State University, underline in the first chapter, ***Molecular and Biochemical Toxicology: Definition and Scope***, that “the study of toxic action is a many-faceted subject, covering all aspects from the initial environmental contact of a toxicant to its toxic endpoints and to its ultimate excretion back into the environment”.

In chapter 2, ***Overview of Molecular Techniques in Toxicology: Genes and Transgenes***, Robert C. Smart presents

an overview of the genetic code and flow of genetic information, some methods to evaluate gene expression, function and regulation.

Chapter 3, ***Toxicogenomics*** (author Marjorie F. Oleksiak), chapter 4, ***Proteomics*** (author B. Alex Merrick) and chapter 5, ***Metabolomics*** (author Nigel Deighton) explore the interface between toxicology and genomic sciences.

Eric A. Stone and Dahlia M. Nielsen in chapter 6, ***Bioinformatics***, familiarize the reader with the biological sequence analysis and comparison, the obtaining of a genbank record of a known gene and the genetic mapping.

In chapter 7, ***Immunochemical Techniques in Toxicology*** (author Gerald A. LeBlanc) and chapter 8, ***Cellular Techniques*** (author Sharon A. Meyer) there are presented monoclonal and polyclonal antibodies production, immunoassays, cellular studies in intact tissue and the replacement of animal testing with cell culture models.

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Darryl C. Zeldin and John M. Scubert in chapter 9 describe the ***Structure, Mechanism and Regulation of Cytochromes P450***.

Chapter 10, ***Phase I Metabolism of Toxicants and Metabolic Interactions*** (authors Ernest Hodgons, Parikshit C. Das, Tachyeon M. Cho and Randy L. Rose), chapter 11, ***Phase I – Toxicogenetics*** (authors Ernest Hodgons and Edward L. Croom), chapter 12, ***Phase II – Conjugation of Toxicants*** (author Gerald A. LeBlanc), chapter 13, ***Regulation and Polymorphisms in Phase II Genes*** (author Yoshiaki Tsuji), chapter 14, ***Developmental Effects on Xenobiotic Metabolism*** and chapter 15, ***Cellular Transport and Elimination*** (author David S. Miller) include increased emphasis on structure, mechanism, and regulation of xenobiotic metabolizing enzymes, toxicogenetics, and xenobiotic transporters.

Aside from the presented topics, this edition contains additional new chapters which offer information on: ***Mechanisms on Cell Death*** (authors Mac Law and Susan Elmore), ***Mitochondrial Dysfunction*** (author Jan Ninomiya-Tsuji), ***Glutathione-Dependent Mechanisms in Chemically Induced Cells Injury and Cellular Protection Mechanisms*** (author Donald J. Reed), ***Toxicant-Receptor Interactions: Fundamental Principles*** (author Richard B. Mailman), ***Reactive Oxygen/Reactive Metabolites and Toxicity*** (author Elizabeth L. MacKenzie), ***Metals*** (author David B. Buchwalter), ***DNA Damage and Mutagenesis*** (author Zhigang Yang) and ***DNA Repair*** (author

Isabel Mellon), ***Carcinogenesis*** (authors Robert C. Smart, Sarah J. Ewing and Kari D. Loomis), ***Genetic Toxicology*** (author R. Julian Preston), ***Molecular Epidemiology and Genetic Susceptibility*** (authors Ruth M. Lunn and Mariana C. Stern), ***Respiratory Toxicology*** (author James C. Bonner), ***Hepatotoxicity*** (authors Andrew D. Wallace and Sharon A. Meyer), ***Biochemical Mechanisms of Renal Toxicity*** (authors Joan B. Tarloff and Andrew D. Wallace), ***Biochemical Toxicology of the Peripheral Nervous System***, (authors Jeffrey F. Goodrum, Arrel D. Toews and Thomas W. Bouldin), ***Biochemical Toxicology of the Central Nervous System***, (author Bonita L. Blake), ***Immunotoxicology*** (authors MaryJane K. Selgrade, Dori R. Germolec, Robert W. Luebke, Ralph J. Smialowicz, Marsha D. Ward and Christal C. Bowman), ***Reproductive Toxicology*** (author John F. Couse), ***Developmental Toxicology*** (author John F. Couse) and ***Dermatotoxicology***(author Nancy A. Monteiro-Riviere).

Each chapter of the book ends with a summary or conclusions and a comprehensive bibliography.

The book, written in an easy-to-understand style, is welcomed for scientists in academia, industry and research and also for graduate students and anyone interested in the understanding of the molecular and biochemical toxicology.

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