

Book Review

Pharmacogenomics (Second Edition). Werner Kalow, Urs A. Meyer, and Rachel F. Tyndale (eds.) Taylor & Francis, Boca Raton, FL, 2005, hardback, 665 pp. ISBN: 1-57444-878-1

Interest in personalized medicine has been heightened by recent advances in genome research including the completion of the Human Genome Project and the first phase of the Hap-Map Project, stimulating research in the field of pharmacogenomics. An early treatise addressing this topic was *Pharmacogenomics*, edited by Werner Kalow, Urs A. Meyer, and Rachel F. Tyndale, copyright 2001. Because of the rapid advances in pharmacogenomics as well as increased interest in this topic over recent years, the publication of a second edition of *Pharmacogenomics* is warranted. As with the first edition, the second edition of *Pharmacogenomics* nobly attempts to cover the breadth of the field in its current state. Barring the overly ambitious effort to be all-encompassing in a field that has had numerous advances in recent years, the changes made to the second edition are well worth attention.

Most of the topics covered in the original edition are covered in the second. The only notable exclusion from the current edition is a chapter on the technique of serial analysis of gene expression. Numerous comprehensive works on serial analysis of gene expression are currently available and the utility of this methodology in pharmacogenomics has been limited. Therefore, the absence of this chapter is not critical. Importantly, many of the chapters from the original edition have been extensively expanded and many new, highly relevant chapters have been added.

Areas covered in *Pharmacogenomics* include drug target (i.e., pharmacodynamic) and metabolic (i.e., pharmacokinetic) pathways relevant to pharmacogenomics with chapters on genetic variation of drug metabolizing enzymes, receptors, drug transporters, and cardiac ion channels. In addition, technical advances in the field of genomics as related to evaluating drug effects are covered in detail. For example, more traditional topics such as analysis of single nucleotide polymorphisms and molecular diagnostics are augmented with new chapters on techniques such as multiplex minisequencing on microarrays and MALDI-TOF mass spectrometry. Other notable additions include chapters on metabonomics and pharmacoeugenetics. Finally, a new chapter on the topic of haplotype structure complements sections on bioinformatics, genomic

mapping, and variation of disease loci. All chapters in *Pharmacogenomics* are authored by key investigators in the field.

A noteworthy chapter added to the second edition is Regulatory Perspectives on Pharmacogenomics. Regulatory issues concerning pharmacogenomics are of critical concern for the implementation of pharmacogenomics in practice. Lawrence Lesko and Janet Woodcock adeptly cover this topic with attention focused primarily toward the concerns of the Food and Drug Administration on the use of pharmacogenomic data in drug approval. This valuable information is timely and should be considered by all interested in pharmacogenomics.

Despite the endeavor of *Pharmacogenomics* to be comprehensive, areas of limited attention, or possibly considerate dismissal, are practical implementation of pharmacogenomics in clinical practice (however, a chapter entitled Clinical Practice is included, which chronicles critical components of pharmacogenomics that should be considered for implementation). Technical advances necessary to perform the analysis of genetic polymorphisms are becoming readily available to clinicians. Therefore, this topic desperately requires attention for the field of pharmacogenomics to manifest its promise of personalized medicine. Moreover, very little attention is paid to the critical consideration of the ethical, legal, and social implications of genetic research as it impacts pharmacogenomics.

The editors Urs A. Meyer and Werner Kalow lend a unique perspective on the history of pharmacogenomics, as these individuals are among the forefathers of the field, making their contributions a must read for all persons wishing to establish themselves in the field. *Pharmacogenomics*, second edition, remains a critical text in the field and should be read by all whom wish to develop a comprehensive understanding of pharmacogenomics. It is likely that extraordinary advances and breakthroughs in pharmacogenomics over the ensuing years will continue such that future editions of *Pharmacogenomics* may best serve the field by sub-dividing the diverse topics presented in the second edition.

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