[PDF] Isotope Tracers in Metabolic Research: Principles and Practice of Kinetic Analysis

Isotope Tracers in Metabolic Research: Principles and Practice of Kinetic Analysis

Robert R. Wolfe, David L. Chinkes
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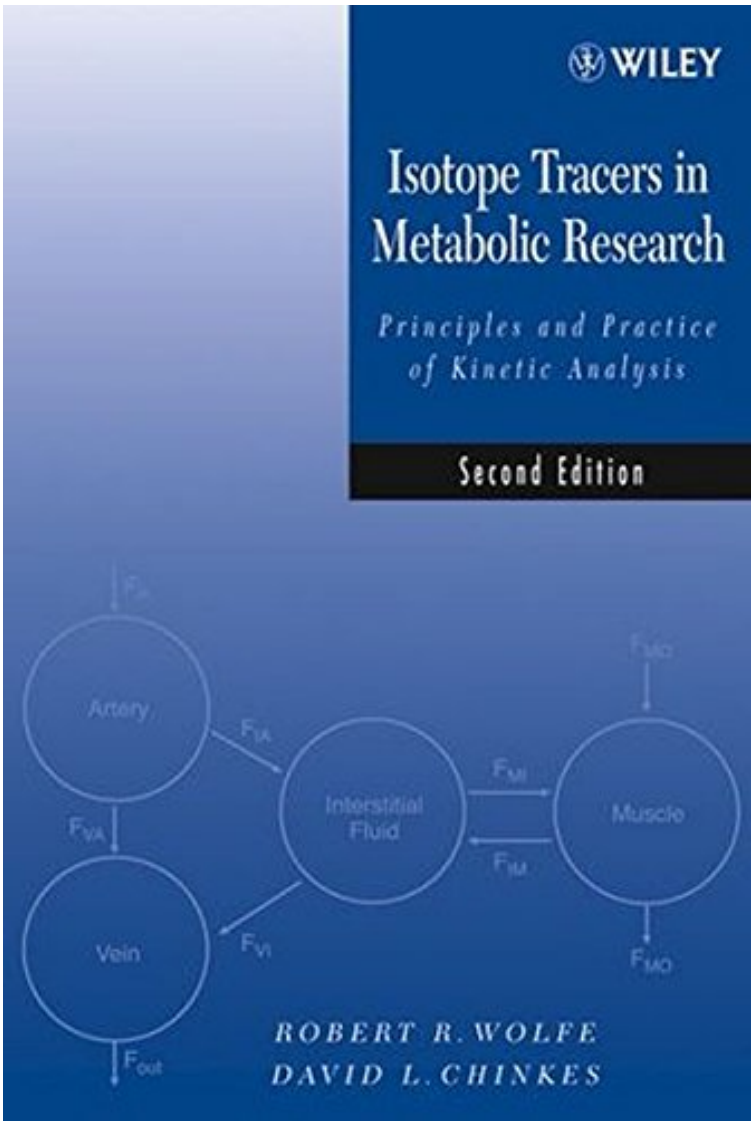

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In the past few years, the number of applications of tracers for in vivo biomedical studies has greatly increased. New analytical tools at the genetic and protein levels have spurred this growth, opening the door for a deeper understanding of metabolic events. This in turn promises to yield significant advances in the understanding and treatment of human disease. Now fully revised and expanded, Isotope Tracers in Metabolic Research, Second Edition is the established definitive text on stable and radioactive isotope tracers. In unique, multidisciplinary fashion, it presents comprehensive coverage of new methodological, mathematical, and theoretical approaches. This new Second Edition includes: All-new chapters on nuclear magnetic resonance, mass isotopomer analysis, and methods of protein metabolism analysis A completely updated categorized list of over 750 references Major advances in the development of mass isotopomer and positional isotopomer techniques, noninvasive isotope techniques for studying metabolic pathways, hyphenated techniques, and new tracer techniques The latest developments in quantification of DNA synthesis and mass spectrometry spurred by genome sequencing and proteomics New coverage of mathematical modeling Expanded coverage of microdialysis probes, laboratory procedures, and regulatory issues related to human studies In this complete guide to performing tracer studies, the authors systematically cover tracer selection, modeling considerations, sample derivitization, mass spectrometry analysis, and data interpretation. Problems and discussion questions highlight key points in each chapter. Isotope Tracers in Metabolic Research, Second Edition offers students and researchers a comprehensive, practical resource for utilizing the latest tracer methodologies.

"...is supported by a wealth of illustrations, tables, and exemplary calculations that will aid in comprehension...[an] excellent and much needed textbook." (The Quarterly of Biology, March 2007) "...should be required for anyone who desires to know more about metabolic tracer kinetics." (Journal of the American Society for Mass Spectrometry, September 2005) "...an effective integration of theory and practical implementation...It effectively serves as a teaching textbook as well as a research item." (E-STREAMS, August 2005)From the AuthorThe goal of this book is to provide the researcher a solid theoretical base in tracer kinetics as applied to physiological metabolism. The book is a revised edition of Radioactive and Stable Isotope Tracers in Biomedicine: Principles and Practice of Kinetic Analysis. This revision incorporates new information and techniques that have been developed over the past decade. Also, chapters have been revised in order to facilitate teaching and learning. Abundant numerical examples now appear throughout the text.From the Back CoverIn the past few years, the number of applications of tracers for in vivo biomedical studies has greatly increased. New analytical tools at the genetic and protein levels have spurred this growth, opening the door for a deeper understanding of metabolic events. This in turn promises to yield significant advances in the understanding and treatment of human disease. Now fully revised and expanded, Isotope Tracers in Metabolic Research, Second Edition is the established definitive text on stable and radioactive isotope tracers. In unique, multidisciplinary fashion, it presents comprehensive coverage of new methodological, mathematical, and theoretical approaches. This new Second Edition includes: All-new chapters on nuclear magnetic resonance, mass isotopomer analysis, and methods of protein metabolism analysis A completely updated categorized list of over 750 references Major advances in the development of mass isotopomer and positional isotopomer techniques, noninvasive isotope techniques for studying metabolic pathways, hyphenated techniques, and new tracer techniques The latest developments in quantification of DNA synthesis and mass spectrometry spurred by genome sequencing and proteomics New coverage of mathematical modeling Expanded coverage of microdialysis probes, laboratory procedures, and regulatory issues related to human studies In this complete guide to performing tracer studies, the authors systematically cover tracer selection, modeling considerations, sample derivitization, mass spectrometry analysis, and data interpretation. Problems and discussion questions highlight key points in each chapter. Isotope Tracers in Metabolic Research, Second Edition offers students and researchers a comprehensive, practical resource for utilizing the latest tracer methodologies.