

Methods in
ENZYMOLOGY

Volume 454
Computer Methods,
Part A

Edited by

Michael L. Johnson
Ludwig Brand





VOLUME FOUR HUNDRED AND FIFTY-FOUR

**METHODS IN
ENZYMLOGY**

Computer Methods, Part A

METHODS IN ENZYMOLOGY

Editors-in-Chief

JOHN N. ABELSON AND MELVIN I. SIMON

*Division of Biology
California Institute of Technology
Pasadena, California*

Founding Editors

SIDNEY P. COLOWICK AND NATHAN O. KAPLAN

VOLUME FOUR HUNDRED AND FIFTY-FOUR

METHODS IN ENZYMLOGY

Computer Methods, Part A

EDITED BY

MICHAEL L. JOHNSON

*Departments of Pharmacology and Internal Medicine
University of Virginia Health System
Charlottesville, Virginia*

LUDWIG BRAND

*Department of Biology
Johns Hopkins University
Baltimore, MD, USA*



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CONTRIBUTORS

Thomas J. Balkin

Department of Behavioral Biology, Walter Reed Army Institute of Research,
Division of Neuroscience, Silver Spring, Maryland

Daniel A. Beard

Biotechnology and Bioengineering Center and Department of Physiology,
Medical College of Wisconsin, Milwaukee, Wisconsin

Gregory Belenky

Sleep and Performance Research Center, Washington State University, Spokane,
Washington

Patrick L. Benitez

Departments of Pharmacology and Medicine, University of Virginia Health
System, Charlottesville, VA

Marc Breton

University of Virginia Health System, Charlottesville, Virginia

Emre Brookes

Department of Biochemistry, The University of Texas Health Science Center at
San Antonio, San Antonio, Texas

Yang Cao

Department of Computer Science, Virginia Tech, Blacksburg, Virginia

William Clarke

University of Virginia Health System, Charlottesville, Virginia

Borries Demeler

Department of Biochemistry, The University of Texas Health Science Center at
San Antonio, San Antonio, Texas

Harold B. Dowse

School of Biology and Ecology and Department of Mathematics and Statistics,
University of Maine, Orono, Maine

William S. Evans

Endocrinology and Metabolism Department of Medicine, and Department of
Obstetrics and Gynecology, University of Virginia Health System, Charlottesville,
Virginia

Leon S. Farhy

Endocrinology and Metabolism Department of Medicine, University of Virginia Health System, Charlottesville, Virginia

David M. Freiburger

Sleep and Performance Research Center, Washington State University, Spokane, Washington

Alan Genz

Department of Mathematics, Washington State University, Pullman, Washington

A. Granada

Institute for Theoretical Biology, Humboldt-Universität zu Berlin, Berlin, Germany

Alexander Greene

School of Medicine, University of Florida, Gainesville, Florida

R. M. Hennig

Behavioral Physiology, Biology Department, Humboldt-Universität zu Berlin, Berlin, Germany

H. Herzel

Institute for Theoretical Biology, Humboldt-Universität zu Berlin, Berlin, Germany

Michael L. Johnson

Departments of Pharmacology and Medicine, University of Virginia Health System, Charlottesville, VA

Boris Kovatchev

University of Virginia Health System, Charlottesville, Virginia

A. Kramer

Laboratory of Chronobiology, Charité Universitätsmedizin Berlin, Berlin, Germany

Gary H. Kamimori

Department of Behavioral Biology, Walter Reed Army Institute of Research, Division of Neuroscience, Silver Spring, Maryland

Martin J. Kushmerick

Departments of Radiology, Bioengineering, Physiology and Biophysics, University of Washington, Seattle, Washington

George I. Makhatadze

Department of Biology and Center for Biotechnology and Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, New York

Jay I. Myung

Department of Psychology, Ohio State University, Columbus, Ohio

Luitgard Nagel-Steger

Heinrich-Heine-Universität Düsseldorf, Institut für Physikalische Biologie, Düsseldorf, Germany

Ralf Nass

Endocrinology and Metabolism Department of Medicine, University of Virginia Health System, Charlottesville, Virginia

Jens Erik Nielsen

School of Biomolecular and Biomedical Science, Centre Synthesis and Chemical Biology, UCD Conway Institute, University College Dublin, Belfield, Dublin, Ireland

Robert Palais

Department of Pathology, University of Utah, Salt Lake City, Utah, and Department of Mathematics, University of Utah, Salt Lake City, Utah

Lenore Pipes

Departments of Pharmacology and Medicine, University of Virginia Health System, Charlottesville, VA

Mark A. Pitt

Department of Psychology, Ohio State University, Columbus, Ohio

Raina Robeva

Department of Mathematical Sciences, Sweet Briar College, Sweet Briar, Virginia

B. Ronacher

Behavioral Physiology, Biology Department, Humboldt-Universität zu Berlin, Berlin, Germany

David C. Samuels

Center for Human Genetics Research, Department of Molecular Physiology and Biophysics, Nashville, TN

Katrina L. Schweiker

Department of Biochemistry and Molecular Biology, Penn State University College of Medicine, Hershey, Pennsylvania, and Department of Biology and Center for Biotechnology and Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, New York

Amber D. Smith

Sleep and Performance Research Center, Washington State University, Spokane, Washington

Yun Tang

Department of Psychology, Ohio State University, Columbus, Ohio

Joel Tellinghuisen

Department of Chemistry, Vanderbilt University, Nashville, Tennessee

Michael O. Thorner

Endocrinology and Metabolism Department of Medicine, University of Virginia Health System, Charlottesville, Virginia

Hans P. A. Van Dongen

Sleep and Performance Research Center, Washington State University, Spokane, Washington

Paula P. Veldhuis

Departments of Pharmacology and Medicine, University of Virginia Health System, Charlottesville, VA

Kalyan C. Vinnakota

Biotechnology and Bioengineering Center and Department of Physiology, Medical College of Wisconsin, Milwaukee, Wisconsin

Carl T. Wittwer

Department of Pathology, University of Utah, Salt Lake City, Utah

Fan Wu

Biotechnology and Bioengineering Center and Department of Physiology, Medical College of Wisconsin, Milwaukee, Wisconsin

PREFACE

The use of computers and computational methods has become ubiquitous in biological and biomedical research. This has been driven by numerous factors, a few of which follow: One primary reason is the emphasis being placed on computers and computational methods within the National Institutes of Health (NIH) roadmap; another factor is the increased level of mathematical and computational sophistication among researchers, particularly among junior scientists, students, journal reviewers, and NIH study section members; and another is the rapid advances in computer hardware and software, which make these methods far more accessible to the rank-and-file research community.

A general perception exists that the only applications of computers and computer methods in biological and biomedical research are either basic statistical analysis or the searching of DNA sequence data bases. While these are important applications, they only scratch the surface of the current and potential applications of computers and computer methods in biomedical research. The various chapters within this volume include a wide variety of applications that extend this limited perception.

The training of the majority of senior M.D.'s and Ph.D.'s in clinical or basic disciplines at academic medical centers rarely includes advanced coursework in mathematics, numerical analysis, statistics, or computer science. Generally, their hardware and software are maintained by a hospital staff that installs all hardware and software and even restricts what is available on their computers. Therefore, a critical aspect of this volume is information and methodology transfer to this target audience. This specific audience is indifferent as to whether the hardware and software are modern, object-oriented, portable, reusable, use the latest markup language, interchangeable, or easily maintained. These users are only interested in analyzing their data. The chapters within this volume have been written in order to be accessible to this target audience.

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