

*Methods in Enzymology*

*Volume 102*

*Hormone Action*

*Part G*

*Calmodulin and Calcium-Binding Proteins*

EDITED BY

*Anthony R. Means*

*Bert W. O'Malley*

*Methods in Enzymology*

*Volume 102*

# *Hormone Action*

## *Part G*

### *Calmodulin and Calcium-Binding Proteins*

EDITED BY

**Anthony R. Means**

DEPARTMENT OF CELL BIOLOGY

BAYLOR COLLEGE OF MEDICINE

HOUSTON, TEXAS

**Bert W. O'Malley**

DEPARTMENT OF CELL BIOLOGY

BAYLOR COLLEGE OF MEDICINE

HOUSTON, TEXAS

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## Contributors to Volume 102

Article numbers are in parentheses following the names of contributors.

Affiliations listed are current.

- JAMES MICHAEL ANDERSON (2), *United States Department of Agriculture, Agricultural Research Service, and Departments of Crop Science and Botany, North Carolina State University, Raleigh, North Carolina 27650*
- MICHAEL D. BATES (18), *Department of Pharmacology, Duke University Medical Center, Durham, North Carolina 27710*
- JAMES G. CHAFOULEAS (9), *Department of Cell Biology, Baylor College of Medicine, Houston, Texas 77030*
- HARRY CHARBONNEAU (3), *Department of Microbiology and Immunology, Duke University Medical Center, Durham, North Carolina 27710*
- WAI YIU CHEUNG (4, 23), *Departments of Biochemistry, St. Jude Children's Research Hospital, The University of Tennessee Center for the Health Sciences, Memphis, Tennessee 38101*
- PHILIP COHEN (21, 22), *Department of Biochemistry, Medical Sciences Institute, The University of Dundee, Dundee DD1 4HN, Scotland*
- P. MICHAEL CONN (18), *Department of Pharmacology, Duke University Medical Center, Durham, North Carolina 27710*
- WILLIAM J. COOK (13), *Department of Pathology, University of Alabama in Birmingham, Birmingham, Alabama 35294*
- MILTON J. CORMIER (3, 18), *Department of Biochemistry, University of Georgia, Athens, Georgia 30602*
- JOHN R. DEDMAN (1), *Department of Physiology and Cell Biology and Department of Internal Medicine (Endocrinology), University of Texas Health Science Center at Houston, Houston, Texas 77025*
- JACQUES G. DEMAÏLE (25), *Centre de Recherches de Biochimie Macromoléculaire du CNRS, and Unité INSERM 249, Biochimie des Régulations des Systèmes Contractiles, BP 5015, 34033 Montpellier, France*
- TOYOSHI ENDO (24), *Department of Pharmacology, Mie University School of Medicine, Edobashi, Tsu 514, Japan*
- JOHN R. GLENNEY, JR. (19), *The Salk Institute, Laboratory of Molecular Biology and Virology, San Diego, California 92138*
- ROGER GRAND (21), *Department of Biochemistry, University of Birmingham, Birmingham, England*
- JEFFREY F. HARPER (11), *Division of Endocrinology, Department of Internal Medicine and Department of Pharmacology, University of Texas Medical School at Houston, Houston, Texas 77025*
- RUSSELL C. HART (3, 18), *Department of Biochemistry, University of Georgia, Athens, Georgia 30602*
- RITA HICE (3), *Department of Biochemistry, University of Georgia, Athens, Georgia 30602*
- HIROYOSHI HIDAKA (17, 24), *Department of Pharmacology, Mie University School of Medicine, Edobashi, Tsu 514, Japan*
- THOMAS R. HINDS (5), *Department of Pharmacology, School of Medicine, University of Washington, Seattle, Washington 98195*
- SHOZO IIDA (12), *Section of Contractile Proteins, Department of Pharmacology and Cell Biophysics, University of Cincinnati College of Medicine, Cincinnati, Ohio 45221*
- MARCIA A. KAETZEL (1), *Department of Internal Medicine (Endocrinology), University of Texas Health Science Center at Houston, Houston, Texas 77025*
- NORIO KAJIKAWA (26), *The Kyoto Research Laboratory, Kaken Pharmaceutical Co., Ltd., Kyoto 607, Japan*
- KANEFUSA KATO (24), *Department of Biochemistry, Institute for Developmental Research, Aichi Prefectural Colony, Kamiya, Kasugai, Aichi 480-03, Japan*

- AKIRA KISHIMOTO (26), *Department of Biochemistry, Kobe University School of Medicine, Kobe 650, Japan*
- C. B. KLEE (22), *Laboratory of Biochemistry, National Cancer Institute, National Institutes of Health, Bethesda, Maryland 20205*
- RACHEL E. KLEVIT (8), *Department of Microbiology/Immunology, Duke University Medical Center, Durham, North Carolina 27710*
- M. H. KRINKS (22), *Laboratory of Biochemistry, National Cancer Institute, National Institutes of Health, Bethesda, Maryland 20205*
- LISETTE LAGACÉ (9), *Department of Cell Biology, Baylor College of Medicine, Houston, Texas 77030*
- CHRISTIAN J. LE PEUCH (25), *Centre de Recherches de Biochimie Macromoléculaire du CNRS, and Unité INSERM U-249, BP 5015, 34033 Montpellier, France*
- DANIELLE A.-M. LE PEUCH (25), *Centre de Recherches de Biochimie Macromoléculaire du CNRS, and Unité INSERM 249, BP 5015, 34033 Montpellier, France*
- A. S. MANALAN (22), *Laboratory of Biochemistry, National Cancer Institute, National Institutes of Health, Bethesda, Maryland 20205*
- DAVID R. MANNING (7), *Department of Pharmacology, University of Texas Health Science Center at Dallas, Dallas, Texas 75235*
- ANTHONY R. MEANS (9), *Department of Cell Biology, Baylor College of Medicine, Houston, Texas 77030*
- BARBARA E. MILLER (27), *Department of Biochemistry, University of California, Riverside, California 92521*
- TIMOTHY J. MURTAUGH (15), *Department of Pediatrics, University of Wisconsin Medical School, Madison, Wisconsin 53706*
- YASUTOMI NISHIZUKA (26), *Department of Biochemistry, Kobe University School of Medicine, Kobe 650, Japan*
- ANTHONY W. NORMAN (27), *Department of Biochemistry, University of California, Riverside, California 92521*
- BRADLEY B. ÖLWIN (14), *Department of Pharmacology, University of Washington, Seattle, Washington 98195*
- COLIN PICTON (21), *Searle Research and Development, P.O. Box 53, Lane End Road, High Wycombe, Bucks, HP12 4HL, England*
- JAMES D. POTTER (12), *Section of Contractile Proteins, Department of Pharmacology and Cell Biophysics, University of Cincinnati College of Medicine, Cincinnati, Ohio 45221*
- MARY E. RISER (9), *Department of Cell Biology, Baylor College of Medicine, Houston, Texas 77030*
- GERALD M. ROSEN (18), *Department of Pharmacology, Duke University Medical Center, Durham, North Carolina 27710*
- PAUL M. ROWE (15), *Department of Physiological Chemistry, University of Wisconsin Medical School, Madison, Wisconsin 53706*
- JOHN S. SACK (13), *Institute of Dental Research, University of Alabama in Birmingham, Birmingham, Alabama 35294*
- RAJENDRA K. SHARMA (20), *Department of Medical Biochemistry, Faculty of Medicine, University of Calgary, Calgary, Alberta T2N 1N4, Canada*
- SHIRISH SHENOLIKAR (21), *Department of Pharmacology, University of Texas Health Science Center at Houston, Houston, Texas 77025*
- MAKOTO SHIOTA (26), *Department of Orthopedics, Hyogo College of Medicine, Nishinomiya 663, Japan*
- FRANK L. SIEGEL (15), *Departments of Pediatrics and Physiological Chemistry, University of Wisconsin Medical School, Madison, Wisconsin 53706*
- PAUL J. SILVER (6), *Experimental Therapeutics, Wyeth Laboratories, Inc., P.O. Box 8299, Philadelphia, Pennsylvania 19101*

- ALTON L. STEINER (11), *Division of Endocrinology, Department of Internal Medicine, University of Texas Medical School at Houston, Houston, Texas 77025*
- A. A. STEWART (22), *Department of Biological Chemistry, University of California School of Medicine, Davis, California 95616*
- DANIEL R. STORM (14), *Department of Pharmacology, University of Washington, Seattle, Washington 98195*
- PRISCILLA STRANG-BROWN (12), *Section of Contractile Proteins, Department of Pharmacology and Cell Biophysics, University of Cincinnati College of Medicine, Cincinnati, Ohio 45221*
- JAMES T. STULL (6, 7), *Department of Pharmacology, University of Texas Health Science Center at Dallas, Dallas, Texas 75235*
- E. ANN TALLANT (4, 23), *Departments of Biochemistry, St. Jude Children's Research Hospital, The University of Tennessee Center for the Health Sciences, Memphis, Tennessee 38101*
- TOSHIO TANAKA (17), *Department of Pharmacology, Mie University School of Medicine, Edobashi, Tsu 514, Japan*
- WILLIAM A. TAYLOR (20), *Department of Biochemistry, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba T3E 0W3, Canada*
- THOMAS C. VANAMAN (28), *Department of Microbiology/Immunology, Duke University Medical Center, Durham, North Carolina 27710*
- PAMELA L. VINCENT (15), *Department of Physiological Chemistry, University of Wisconsin Medical School, Madison, Wisconsin 53706*
- FRANK F. VINCENZI (5), *Department of Pharmacology, School of Medicine, University of Washington, Seattle, Washington 98195*
- PATRICIA L. WALKER (12), *Section of Contractile Proteins, Department of Pharmacology and Cell Biophysics, University of Cincinnati College of Medicine, Cincinnati, Ohio 45221*
- ROBERT W. WALLACE (4, 23), *Department of Pharmacology, The University of Alabama in Birmingham, Birmingham, Alabama 35294*
- JERRY H. WANG (20), *Department of Medical Biochemistry, Faculty of Medicine, University of Calgary, Calgary, Alberta T2N 1N4, Canada*
- KLAUS WEBER (19), *Department of Biochemistry, Max-Planck Institute for Biophysical Chemistry, D-3400 Goettingen, Federal Republic of Germany*
- BENJAMIN WEISS (16), *Department of Pharmacology, Medical College of Pennsylvania, Philadelphia, Pennsylvania 19129*
- MICHAEL J. WELSH (10), *Department of Anatomy and Cell Biology, University of Michigan Medical School, Ann Arbor, Michigan 48109*
- LYNDA S. WRIGHT (15), *Department of Pediatrics, University of Wisconsin Medical School, Madison, Wisconsin 53706*

## Preface

It is now well accepted that calmodulin represents the major intracellular calcium receptor in all nonmuscle and smooth muscle eukaryotic cells. Although this protein was first reported in the late 1960s, the impact it would have upon the multidisciplinary fields involving calcium transport, metabolism, and action was not realized until 1976. Calmodulin research is one of the most rapidly advancing areas of investigation in cell regulation since the early years of cyclic nucleotides. This rapidly expanding field, comprised of investigators from a broad range of disciplines, has generated an impressive array of methodological advances. These advances led to the addition of this volume to the Hormone Action series of volumes that specifically deal with steroid and peptide hormones.

The volume includes methods for assaying calmodulin, purifying the protein, and determining many of its multiple and unique physicochemical properties. Chapters are included that describe approaches to the utilization of calmodulin to purify calmodulin-dependent enzymes and to the detection of previously unknown calmodulin-binding proteins. The hydrophobic properties of this protein have led to the discovery of various pharmacological agents that bind it and can be utilized not only to purify calmodulin but also to probe potential physiological roles. Finally, methods are presented for the production and purification of polyclonal and monoclonal antibodies. These antibodies have been used to develop radioimmunoassays, localize calmodulin in cells at both light and electron microscopic levels, study the turnover of the protein in cells and tissues, and to isolate the calmodulin mRNA and gene.

It should be emphasized that in this exponentially growing field methodological advances have been made since this volume went to press. Calmodulin mediates many of its effects through the activation of various protein kinases. Some of the apparent omissions dealing with these enzymes are covered in Volume 99 of *Methods in Enzymology*.

We would like to express our appreciation to the contributors for their willingness to participate in this venture and for their excellent research that made this volume possible. Thanks are also extended to the competent and courteous staff of Academic Press for their untiring efforts and advice.

ANTHONY R. MEANS  
BERT W. O'MALLEY

# METHODS IN ENZYMOLOGY

EDITED BY

**Sidney P. Colowick and Nathan O. Kaplan**

VANDERBILT UNIVERSITY  
SCHOOL OF MEDICINE  
NASHVILLE, TENNESSEE

DEPARTMENT OF CHEMISTRY  
UNIVERSITY OF CALIFORNIA  
AT SAN DIEGO  
LA JOLLA, CALIFORNIA

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