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CONTROL OF MEMBRANE FUNCTION: SHORT-TERM AND LONG-TERM

EDITORS

J.M. RITCHIE
P.J. MAGISTRETTI
L. BOLIS

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Progress in Cell Research

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Control of membrane function: Short-term and long-term

Proceedings of the 13th International Conference on Biological Membranes held at Crans-sur-Sierre, Switzerland, June 19–22, 1989

Editors

J. Murdoch Ritchie

Department of Pharmacology
Yale University School of Medicine
New Haven, Connecticut
U.S.A.

Pierre J. Magistretti

Institute of Physiology
University of Lausanne Medical School
Lausanne
Switzerland

Liana Bolis

Laboratory of General Biology
University of Milan
Milan
Italy

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Progress in Cell Research

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Preface

It is now well-established that the cell membrane is not a mere spectator of intracellular and extracellular events. It is in fact the site of an evergrowing list of molecular events that play a pivotal role in cell-cell interactions. Based on elegant functional studies, the presence of receptors for extracellular messengers and of ion channels spanning the membrane had long been surmised. Now, thanks to the most recent developments in molecular biological techniques, a plethora of channels and receptors has been cloned and their molecular structure determined: one could say that a body has been given to the soul. Furthermore, the molecular dissection performed with site-directed mutagenesis has identified the crucial role of certain amino acids for the expression of receptor and channel function. Transduction mechanisms operating at the membrane level couple extracellular signals to intracellular effectors. Thus, the language of neurotransmitters and hormones finds its translators in such membrane-based transduction mechanisms. A new vocabulary of cell-cell communication has been brought by the demonstration that intracellular effectors, or second messengers, interact to modulate cell function. It therefore appears that cross-talk between signalling molecules takes place on both sides of the plasma membrane. One mechanism through which the function of receptors and channels can be regulated is the phosphorylation of certain amino acids in their sequence, mainly tyrosine and serine. Such phosphorylation may in turn be regulated by extracellular messengers. This again underscores the functional impact of the interface that the membrane represents. Control of membrane function was therefore the theme on which converged the diverse, often divergent, approaches of the participants in the thirteenth International Conference on Biological Membranes. Messengers, receptors, and effectors engaged, without marked signs of desensitization, in intense and fruitfull cross-talk for almost one week in Crans-sur-Sierre.

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Dedication

Ralph Straub

Professor Ralph Straub, Chairman of the Department of Pharmacology at the University of Geneva from 1966 until 1988, was actively involved in the organizing of the International Conferences on Biological Membranes. He was responsible for one Conference (the seventh) and participated in many others. In particular, he provided much advice and support to the organizers of the present Conference. His sudden, unexpected death in April 1988 did not allow him to participate in the 13th Conference, to much of whose planning he had greatly contributed. It was felt appropriate therefore to dedicate this, the 13th Conference, to Ralph Straub.

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Contributors

Osvaldo Alvarez, *Departments of Biology and Physics, University of California San Diego, San Diego, CA 92093, U.S.A.*

P. Ascher, *Laboratoire de Neurobiologie, École Normale Supérieure, 46 rue d'Ulm, 75230 Paris Cedex 05, France*

Julius Axelrod, *Laboratory of Cell Biology, National Institute of Mental Health, Bethesda, MD 20892, U.S.A.*

Heather A. Bakalyar, *Howard Hughes Medical Institute, Department of Molecular Biology, Johns Hopkins University, 725 North Wolfe Street, Room 805 PCTB, Baltimore, MD 21205, U.S.A.*

D. Bartel, *Max-Planck Institut für Biophysik, Heinrich-Hoffmann Str. 7, 6000 Frankfurt M. 71, F.R.G.*

Étienne-Emile Baulieu, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Nadine Binart, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

C. Liana Bolis, *Department of Comparative & General Physiology, University of Milan, Milan, Italy*

S. Borgese, *Département de Biologie du C.E.A., Laboratoire Jean Maetz, BP 38, 06230 Villefranche-sur-Mer, France*

Françoise Cadepond, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Antonio Calignano, *Howard Hughes Medical Institute and Center for Neurobiology & Behavior, Columbia University, New York, NY 10028, U.S.A.*

Grant M. Carrow, *Graduate Department of Biochemistry, Brandeis University, Waltham, MA 02254, U.S.A.*

Maria-Grazia Catelli, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Beatrice Chambraud, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Toni Claudio, *Department of Cellular & Molecular Physiology, Yale University School of Medicine, New Haven, CT 06510, U.S.A.*

I. Corthésy-Theulaz, *Institut de Pharmacologie de l'Université de Lausanne, Bugnon 27, CH-1005 Lausanne, Switzerland*

Daniel Dagan, *Graduate Department of Biochemistry, Brandeis University, Waltham, MA 02254, U.S.A.*

George Eisenman, *Department of Physiology and Brain Research Institute, UCLA Medical School, Los Angeles, CA 90024, U.S.A.*

J.H. Exton, *Howard Hughes Medical Institute, and Vanderbilt University School of Medicine, Nashville, TN 37232, U.S.A.*

Paul G. Feinstein, *Howard Hughes Medical Institute, Department of Molecular Biology, Johns Hopkins University, 725 North Wolfe Street, Room 805 PCTB, Baltimore, MD 21205, U.S.A.*

F. Garcia-Romeu, *Département de Biologie du C.E.A., Laboratoire Jean Maetz, BP 38, 06230 Villefranche-sur-Mer, France*

Jean Garnier, *INRA, 78350 Jouy en Josas, France*

E.-M. Gartner, *Max-Planck Institut für Biophysik, Heinrich-Hoffmann Str. 7, 6000 Frankfurt M. 71, F.R.G.*

Jean-Marie Gasc, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Ghislaine Groyer-Schweizer, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

P. Honegger, *Institut de Physiologie de l'Université de Lausanne, Bugnon 5, CH-1005 Lausanne, Switzerland*

Richard L. Huganir, *Howard Hughes Medical Institute, Department of Neuroscience, Johns Hopkins University School of Medicine, 725 North Wolfe Street, Room 818 PCTB, Baltimore, MD 21205, U.S.A.*

J. Johnson, *Laboratoire de Neurobiologie, École Normale Supérieure, 46 rue d'Ulm, 75230 Paris Cedex 05, France*

David T. Jones, *Howard Hughes Medical Institute, Department of Molecular Biology, Johns Hopkins University, 725 North Wolfe Street, Room 805 PCTB, Baltimore, MD 21205, U.S.A.*

Ronald Kaback, *Roche Institute of Molecular Biology, Roche Research Center, Nutley, NJ 07110, U.S.A.*

Julie A. Kauer, *Departments of Pharmacology and Physiology, University of California, San Francisco, CA, U.S.A.*

Sathapana Kongsamut, *Departments of Cellular & Molecular Physiology and Pharmacology, Yale University School of Medicine, New Haven, CT 06510, U.S.A.*

T.D. Lamb, *Department of Physiology, University of Cambridge, Downing Street, Cambridge, CB2 3EB, U.K.*

Marie Ledoux, *Laboratory of Cell Biology, Rockefeller University, New York, NY 10021, U.S.A.*

B. Legrum, *Max-Planck Institut für Biophysik, Heinrich-Hoffmann Str. 7, 6000 Frankfurt M. 71, F.R.G.*

S. Lepke, *Max-Planck Institut fur Biophysik, Heinrich-Hoffmann Str. 7, 6000 Frankfurt M. 71, F.R.G.*

Irwin B. Levitan, *Graduate Department of Biochemistry, Brandeis University, Waltham, MA 02254, U.S.A.*

Stephen S. Lin, *Graduate Department of Biochemistry, Brandeis University, Waltham, MA 02254, U.S.A.*

Diane Lipscombe, *Department of Molecular & Cellular Physiology, Beckman Center, Stanford University Medical Center, Palo Alto, CA 94305, U.S.A.*

Pierre J. Magistretti, *Institut de Physiologie, Faculté de Médecine, Université de Lausanne, Bugnon 7, CH-1005 Lausanne, Switzerland*

Robert C. Malenka, *Departments of Psychiatry and Physiology, University of California, San Francisco, CA, U.S.A.*

Jean-Luc Martin, *Institut de Physiologie, Faculté de Médecine, Université de Lausanne, Switzerland*

Mauricio Montal, *Departments of Biology and Physics, University of California, San Diego, CA 92093, U.S.A.*

R. Motais, *Départment de Biologie du C.E.A., Laboratoire Jean Maetz, BP 38, 06230 Villefranche-sur-Mer, France*

Eric J. Nestler, *Laboratory of Molecular Psychiatry, Departments of Psychiatry and Pharmacology, Yale University School of Medicine, Connecticut Mental Health Center, 34 Park Street, New Haven, CT 06508, U.S.A.*

Roger A. Nicoll, *Departments of Pharmacology and Physiology, University of California, San Francisco, CA, U.S.A.*

H. Passow, *Max-Planck Institut für Biophysik, Heinrich-Hoffmann Str. 7, 6000 Frankfurt M. 71, F.R.G.*

David J. Perkel, *Departments of Pharmacology and Physiology, University of California, San Francisco, CA, U.S.A.*

John P. Perkins, *Department of Pharmacology, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510, U.S.A.*

Marie-Edith Rafestin-Oblin, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Christine Radanyi, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Gerard Redeuilh, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Randall R. Reed, *Howard Hughes Medical Institute, Department of Molecular Biology, Johns Hopkins University, 725 North Wolfe Street, Room 805 PCTB, Baltimore, MD 21205, U.S.A.*

Jack-Michel Renoir, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

J. Murdoch Ritchie, *Department of Pharmacology, Yale University School of Medicine, New Haven, CT 06510, U.S.A.*

J. David Robertson, *Department of Neurobiology, Duke University Marine Laboratory and Duke University School of Medicine, Durham, NC, U.S.A.*

Paul D. Roepe, *Roche Institute of Molecular Biology, Roche Research Center, Nutley, NJ 07110, U.S.A.*

B. Rossier, *Institut de Pharmacologie de l'Université de Lausanne, Bugnon 27, CH-1005 Lausanne, Switzerland*

Michele Sabbah, *Laboratoire Hormones, INSERM, U33, Faculté de Médecine, 94270 Bicêtre, France*

Todd C. Sacktor, *Howard Hughes Medical Institute, and Center for Neurobiology & Behavior, Columbia University, New York, NY 10028, U.S.A.*

U. Scheuring, *Département de Biologie du C.E.A., Laboratoire Jean Maetz, BP 38, 06230 Villefranche-sur-Mer, France*

James H. Schwartz, *Howard Hughes Medical Institute and Center for Neurobiology & Behavior, Columbia University, New York, NY 10028, U.S.A.*

Philip Siekevitz, *Laboratory of Cell Biology, Rockefeller University, New York, NY 10021, U.S.A.*

Robert M. Stroud, *Department of Biochemistry & Biophysics S-960, University of California, San Francisco, CA 94143-0448, U.S.A.*

V. Torre, *Dipartimento di Fisica, Universita di Genova, Via Dodecaneso 33, 16146 Genoa, Italy*

Richard W. Tsien, *Department of Molecular & Cellular Physiology, Beckman Center, Stanford University Medical Center, Palo Alto, CA 94305, U.S.A.*

Alfredo Villarroel, *Biology Department, Faculty of Sciences, University of Chile, Santiago, Chile*

J. Wendel, *Max-Planck Institut für Biophysik, Heinrich-Hoffmann Str. 7, 6000 Frankfurt M. 71, F.R.G.*

Monita P. Wilson, *Graduate Department of Biochemistry, Brandeis University, Waltham, MA 02254, U.S.A.*

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