

**NEUROHYPOPHYSEAL
PEPTIDE HORMONES
AND OTHER BIOLOGICALLY
ACTIVE PEPTIDES**

David H. Schlesinger, Editor

DEVELOPMENTS IN ENDOCRINOLOGY VOLUME 13

NEUROHYPOPHYSEAL PEPTIDE HORMONES AND OTHER BIOLOGICALLY ACTIVE PEPTIDES

Proceedings of the International Symposium on
Neurohypophyseal Peptide Hormones and Other Biologically Active Peptides
held September 1980 at the University of Illinois, Chicago, Illinois, U.S.A.,
in memory of Dr. Roderich Walter

Editor:

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ELSEVIER/NORTH-HOLLAND
NEW YORK • AMSTERDAM • OXFORD

© 1981 by Elsevier North Holland, Inc.

Published by:

Elsevier North Holland, Inc.
52 Vanderbilt Avenue, New York, New York 10017

Sole distributors outside U.S.A. and Canada:

Elsevier/North-Holland Biomedical Press
335 Jan van Galenstraat, P.O. Box 211
Amsterdam, The Netherlands

Library of Congress Cataloging in Publication Data

International Symposium on Neurohypophyseal
Peptide Hormones and Other Biologically Active
Peptides (1980 : University of Illinois,
Chicago)
Neurohypophyseal peptide hormones and other
biologically active peptides.

(Developments in endocrinology ; v. 13)

Bibliography: p.

Includes index.

1. Pituitary hormones--Congresses. 2. Neuro-
hypophysis--Congresses. 3. Peptides--Congresses.
I. Walter, Roderich, 1937-1979. II. Schlesinger,
David H. III. Title. IV. Series. [DNLM:
1: Peptides--Congresses. 2. Pituitary hormones,

Posterior--Congresses. W1 DE997VW v. 13 / WK 520
I61n 1980]

QP572.P52I57 1980 612'.492 81-5090

ISBN 0-444-00605-2 AACR2

Series ISBN: 0-444-80009-3

Manufactured in the United States of America

**NEUROHYPOPHYSEAL PEPTIDE HORMONES AND
OTHER BIOLOGICALLY ACTIVE PEPTIDES**

Volume 1: Multiple Molecular Forms in Steroid Hormone Receptor
Volume 2: Multiple Molecular Forms in Steroid Hormone Receptor

DEVELOPMENTS IN ENDOCRINOLOGY

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- Volume 2—Progress in Prolactin Physiology and Pathology, edited by C. Robyn and M. Harter (1978)
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- Volume 13—Neurohypophyseal Peptide Hormones and Other Biologically Active Peptides, edited by David H. Schlesinger (1981)

Dedication

The Proceedings of this Symposium on Neurohypophyseal Peptide Hormones and Other Biologically Active Peptides is dedicated to the memory of Professor Roderich Walter, Head of the Department of Physiology and Biophysics at the University of Illinois Medical Center, who died of cancer at the age of 42 on September 18, 1979.

All of us who have interacted and collaborated with Roderich over the years have known him to be a very demanding, yet compassionate, self-motivated, disciplined and highly focused scientist and one who possessed an intense dedication and conviction to basic research. Roderich was one of those unique scientific leaders whose door was always open to those with whom he wanted to share scientific exchange, as I, for one, can attest to. For those outside his department or immediate area the phone was always the vehicle and he seemingly always had a direct hotline to all those with whom he actively collaborated; the number of these collaborators was astounding. These multidisciplinary collaborations, started in some cases, years ago, are still burgeoning today, and many of these studies are reported in these Proceedings.

David H. Schlesinger

Curriculum Vitae

Name: Roderich W. Walter

Born: July 16, 1937; Darmstadt, West Germany

Family: Married, three children

Education: Justus Liebig University; Giessen, West Germany; 1959–1961, Vordiplom (B.S.); University of Cincinnati; Cincinnati, Ohio; 1961–1964; Ph.D.

Honors: Honeffer Model, 1959–1961; "Deutscher Akademischer Austauschdienst," 1961–1962; Fellow, New York Academy of Sciences

Positions: 1974–1979 Professor and Head of Physiology and Biophysics*, University of Illinois Medical Center, Chicago

1974–1979 Professor, University of Illinois Graduate College, Medical Center, Chicago

1971–1974 Professor of Physiology and Biophysics, Mount Sinai School of Medicine of C.U.N.Y., New York

1971–1974 Professor, The Graduate School of Biological Sciences, Mount Sinai School of Medicine of C.U.N.Y., New York

1966–1971 Associate Professor of Physiology, Mount Sinai School of Medicine of C.U.N.Y., New York

1965–1979 Research Collaborator, Medical Research Center, Brookhaven National Laboratory, New York, New York

1965–1966 Associate, The Mount Sinai Hospital, New York, New York

1964–1965 Associate, Cornell Medical College, Ithaca, New York

Additional Professional Activities:

Consultant, National Research Council, Division of Medical Sciences, 1968

Director, Graduate Studies, Department of Physiology and Biophysics, Mount Sinai School of Medicine of the City University of New York, New York, 1969–1974

NIH Study Section (Endocrinology), 1976–present

Editorial and Advisory Board, Molecular Pharmacology, 1975–present
 President, American Peptide Symposium, Inc., 1972–1975
 Planning Committee, American Peptide Symposium, Inc., 1972–present
 Executive Committee, University of Illinois Medical Center, Chicago, 1974–present
 Vice-President, American Peptide Symposium, Inc., 1975–1977
 Search Committee for Head of Biochemistry, University of Illinois Medical Center, 1975–1977
 Task Force for Accreditation Committee, University of Illinois Medical Center, 1976
 Search Committee for Dean of Graduate College and Associate Vice-Chancellor of Research, University of Illinois Medical Center, 1976
 Task Force on the State of the College, University of Illinois Medical Center, 1977
 Editorial Board, Int. J. Peptide Protein Res., 1978–present
 Academic Council of the University of Illinois, 1978–present
 Committee on Promotions of the School of Basic Medical Sciences (Chairman), University of Illinois at the Medical Center, 1978–present

Referee for manuscripts submitted to: Proc. Nat. Acad. Sci., U.S.A., Endocrinology, The Journal of Endocrinology, Neurochemistry, Brain Research, Journal American Chemical Society, Journal Medicinal Chemistry, Molecular Pharmacology, Journal of Experimental Biology, Journal of Theoretical Biology, Biopolymers, Archives of Biochemistry and Biophysics, Biochimica et Biophysica Acta, European Journal of Clinical Investigation, European Journal of Pharmacology, Advances in Chemistry Series, Biochemistry, Science.

Society Memberships: American Physiological Society; American Society of Biological Chemists; Society for Experimental Biology and Medicine; The Biophysical Society; American Association for the Advancement of Science; The Society of Applied Spectroscopy; The American Chemical Society; The Harvey Society; The Endocrine Society; The New York Academy of Sciences; Association of Chairmen of Departments of Physiology; American Peptide Symposium, Inc.; Sigma Xi; International Society of Magnetic Resonance; The American Academy of Political and Social Science.

Listings: Men of Achievement, 1977–; American Men and Women of Science, 1972–; Who's Who, 1973–; Who's Who in Health Care, 1977–; Who's Who in the Midwest, 1975–; MSS Information Corporation: in New Methods of Automated Analysis of Protein Structures, 1973; MSS Information Corporation: in Oxytocin, I: Current Research, 1974; MSS Information Corporation: in Vasopressin, I: Chemical and Clinical Aspects, 1974; MSS Information Corporation: in Oxytocin, IV: Current Research, 1974; Dictionary of International Biography, 14, 1977–1978 Edition.

Interests: Art, Music and Chess

Chess publications: Walter-Deitmar, in "Schach-Delikatessen." W. de Gruyter, 1961, p. 4; Fernschach, 26, 9, 1965; *ibid.* 26, 155, 1965; *ibid.* 33, 203, 1972; 33, 203, 1972; Sinai New Press, 4, 9, 1972; Schach DDR, 14, 184, 1960; *ibid.* 18, 127, 1964; *ibid.* 19, 108, 1965.

Chess correspondent: 38, 23, 1965; *ibid.* 38, 24, 1965; *ibid.* 39, 97, 1966; *ibid.* 39, 98, 1966; *ibid.* 43, 91, 1970; *ibid.* 44, 24, 1971; *ibid.* 44, 150, 1971; *ibid.* 45, 38, 1972; *ibid.* 45, 113, 1972; *ibid.* 45, 114, 1972; *ibid.* 45, 147, 1972; *ibid.* 50, 55, 1977; *ibid.* 50, 70, 1977; *ibid.* 51, 75, 1978; *ibid.* 51, 76, 1978.

Invited Participant in National and International Meetings:

1. American Association for the Advancement of Science, panelist in session on "Metabolic Control in Biological Systems," Washington, D.C., 1966.
2. National Academy of Sciences, National Research Council, Washington, D.C., 1967.
3. Ninth European Peptide Symposium, Orsay, France, 1968.
4. International Symposium on the Pharmacology of Hormonal Polypeptides, Milan, Italy, 1968.

5. First American Peptide Symposium, New Haven, Connecticut, 1968.
6. International Symposium on the Rational Development and Application of Drugs, Nijmegen, Holland, 1969.
7. Fourth International Congress on Pharmacology, Basel, Switzerland, 1969.
8. International Symposium on Nuclear Magnetic Resonance Spectroscopy, Birmingham, England, 1969.
9. Tenth European Peptide Symposium, Albano Terme, Italy, 1969.
10. Gordon Research Conference. Section: Hormone Action, New London, New Hampshire, 1970.
11. Second American Peptide Symposium, Cleveland, Ohio, 1970.
12. International Symposium on Organic Selenium and Tellurium Chemistry, The New York Academy of Sciences, New York, 1970.
13. International Symposium on Peptides, Intra-Science Research Foundation, Santa Monica, 1970.
14. Second International Symposium on Protein and Polypeptide Hormones, Liege, 1971.
15. Intra-Science Symposium on the Mechanism of Enzyme Action, Santa Monica, 1971.
16. Third American Peptide Symposium, Boston, Massachusetts, 1972.
17. Twelfth European Peptide Symposium, Schloss Reinhardsbrunn, East Germany, 1972.
18. Colloque sur "L'Analyse Conformationnelle de la Chaîne Peptidique," Brussels, Belgium, 1973.
19. Symposium on Intracellular Protein Catabolism, Friedrichroda, East Germany, 1973.
20. Fourth International Meeting of the Society for Neurochemistry, Tokyo, Japan, 1973.
21. Fourth International Conference on Atomic Spectroscopy, Toronto, Canada, 1973.
22. International Research Workshop and International Symposium on Quantum Biology and Quantum Pharmacology, Sanibel Island, USA, 1974.
23. International Symposium on Atomic Molecular and Solid-State Theory, and Quantum Statistics, Sanibel Island, USA, 1974.
24. Thirteenth European Peptide Symposium, Jerusalem, Israel, 1974.
25. International Symposium on Polyamino Acids, Polypeptides and Proteins and their Biological Implications, Rehovot, Israel, 1974.
26. International Conference of Neurophysin Proteins: Carriers of Peptide Hormones, New York Academy of Sciences, New York, New York, 1974.
27. Fourth American Peptide Symposium, New York, New York, 1975.
28. American Chemical Society, 170th National Meeting, Chicago, Illinois, 1975.
29. Jubilee Celebrations on occasion of 250th Anniversary of the USSR Academy of Sciences, USSR, 1975.
30. International Symposium Quantum Biology and Quantum Pharmacology, Sanibel Island, Florida, 1976.
31. FASEB-ASPET Symposium on "Comparative Cellular and Pharmacologic Actions of Neurohypophyseal Hormones on Smooth Muscle," Anaheim, California, 1976.
32. FASEB-ASPET Symposium on "Disturbances in Body Fluid Osmolality," Anaheim, California, 1976.
33. Jointly-sponsored Symposium by the Academy of Sciences of the USSR and The National Academy of Sciences of the United States on "Transport of Ions Across Membranes," Chicago, Illinois, 1976.
34. Bicentennial Neuropeptide Conference, Philadelphia, PA, 1976.
35. Fifth International Congress of Endocrinology, Hamburg, Germany, 1976.
36. Second European Colloquium on Hypothalamic Hormones, Tübingen, Germany, 1976.
37. Conference on the Neurohypophysis, Key Biscayne, Florida, 1976.
38. Fifth American Peptide Symposium, La Jolla, California, 1977.
39. Second Gordon Conference on the Chemistry and Physics of Peptides, Santa Barbara, California, 1978.

Patent: "X-Ray Crystallographic Method Using Selenium Marker," S.N. 635, 960.

Editor and Organizer of Symposia:

1. Neurophysin Proteins: Carriers of Peptide Hormones, *Ann. N.Y. Acad. Sci.*, Vol. 248, 1975.
2. Peptides: Chemistry, Structure and Biology (R. Walter and J. Meienhofer, eds.), Ann Arbor, Science Publishers, 1975.
3. Chemistry and Biology of Peptides, Winter Gordon Conference, 1976; Santa Barbara, California, Co-Chairman.

Invited Chapters for Books:

1. By Way of Introduction—The Cell. S. Masur, R. Walter and I.L. Schwartz, in Best and Taylor's *Physiological Basis of Medical Practice* (ed. J.R. Brobeck), 9th Edition, Williams and Wilkins, Baltimore, 1973, Sect. 1, Chapter 1.
2. Physiochemical Properties, Permeability and Transport Functions of Cell Membranes. I.L. Schwartz, R. Walter, M. Fein and H. Wyssbrod, *ibid.*, Sect. 1, Chapter 2.
3. Physiology of Purines and Pyrimidines. R. Walter and P.L. Hoffman, *ibid.*, Sect. 1, Chapter 6.
4. Selenium—Containing Amino Acids and Peptides. R. Walter and J. Roy, in *Organic Selenium Compounds: Their Chemistry and Biology* (eds. W.H.H. Gunther and D.L. Klayman), J. Wiley and Sons, New York, 1973, p. 601.
5. Peptide Hormone Attachment to Cells and Action on the Cell Membrane. I.L. Schwartz and R. Walter, in *Methods in Investigative and Diagnostic Endocrinology* (eds. S. Berson and R.S. Yalow), North-Holland Publ. Co., Amsterdam, 1973, p. 179.
6. Methods of Isolation and Identification of Neurophysin Proteins. R. Walter and E. Breslow, in *Research Methods in Neurochemistry* (eds. N. Marks and R. Rodnight), Vol. 2, Plenum Press, New York, 1974, p. 247.
7. Physiology of Purines and Pyrimidines. R. Walter, P.L. Hoffman, and E.W. Holmes, in Best and Taylor's *Physiological Basis of Medical Practice* (ed. J.R. Brobeck), 10th Edition, Williams and Wilkins, Baltimore, in press.

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Peptide Synthesis

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David H. Schlesinger, Editor

Neurohypophyseal Peptide Hormones and Other Biologically Active Peptides

Inspiration and Perseverance in Research

A Tribute to Roderich Walter (1937-1979)

Johannes Meienhofer

Chemical Research Department, Hoffmann-La Roche Inc., Nutley, New Jersey

When Roderich Walter passed away on September 18, 1979, he left a remarkable record of over 300 scientific publications on the chemistry, structure, and conformation, on the physiology and pharmacology of neurohypophyseal hormones and related biologically active peptides. Walter's eminent success as a scientist was as much a consequence of his unique dynamic personality as of his wide range of interdisciplinary research pursuits. Throughout his career, Walter displayed outstanding originality along with extraordinary productivity which may be attributed to two of his many talents, inspiration and perseverance.

Inspiration means literally receiving enlightenment by divine influence, as it originated from a religious concept. Perseverance, on the other hand, means the steady pursuit of a principle or project even in the face of seemingly insurmountable obstacles or discouraging criticism.

Inspiration may happen as a momentary spark providing a sudden insight in or a solution to a problem, but it may also involve a lengthy thought process, that requires far-sighted vision based on knowledge and expectation. Inspiration may also be aided by independent or unconventional thinking. In research, inspiration refers not only to the perception of new ideas but also to the ability of stimulating and motivating colleagues and collaborators. In this context, inspiration is a bidirectional principle.

Perseverance may, at a brief glance, appear to be a less glorious motive in research. However, the steady pursuit of a project is a most important ingredient for success. Perseverance is essential in the early stages of gathering the data in a new research project and it is based on self-confidence and