Miami Winter Symposia Volume 13

Molecular Cloning of Recombinant DNA

> Edited by W. A. Scott R. Werner

# MOLECULAR CLONING OF RECOMBINANT DNA

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Department of Biochemistry University of Miami School of Medicine Miami, Florida

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### SPEAKERS, CHAIRMEN, AND DISCUSSANTS

- F. Ausubel, Biological Laboratories, Harvard University, Cambridge, Massachusetts.
- P. Berg, Department of Biochemistry, Stanford University Medical Center, Stanford, California.
- F. Blasi, Centro di Endocrinologia ed Oncologia, Naples, Italy.
- F. Blattner, Department of Genetics, University of Wisconsin Medical School, Madison, Wisconsin.
- A. P. Bollon, Health Science Center at Dallas, University of Texas, Dallas, Texas.
- T. W. Borum, The Wistar Institute, Philadelphia, Pennsylvania.
- **H. W. Boyer**, Department of Biochemistry and Biophysics, University of California, San Francisco, California.
- J. Carbon, Department of Biological Sciences, University of California, Santa Barbara, California.
- S. N. Cohen, Department of Medicine, Stanford University Medical Center, Stanford, California.
- **R. Curtiss III**, Department of Microbiology, University of Alabama in Birmingham, Birmingham, Alabama.
- **R. W. Davis**, Department of Biochemistry, Stanford University Medical Center, Stanford, California.
- *P. Duesberg*, Department of Molecular Biology, Wendell M. Stanley Hall, University of California, Berkeley, California.
- A. Eisenstark, College of Arts and Sciences, University of Missouri, Columbia, Missouri.
- R. Faust, USDA ARS Insect Pathology Laboratory, Beltsville, Maryland.
- L. P. Gage, Department of Cellular Biology, Roche Institute of Molecular Biology, Nutley, New Jersey.
- S. B. Greer (Session Chairman), Department of Microbiology, University of Miami School of Medicine, Miami, Florida.
- **B. Gronenborn**, Institute of Genetics, University of Cologne, Cologne, Federal Republic of Germany.
- **B. S. Hartley** (Session Chairman), Biochemistry Department, Imperial College, London, England.
- L. Koditscheck, Montclair State College, Upper Montclair, New Jersey.
- L. Krueger, National Institutes of Health, Bethesda, Maryland.

- **R. H. Lawrence**, Corporate Research Laboratory, Union Carbide Corporation, Tarrytown, New York.
- **P. Leder**, Laboratory of Molecular Genetics, National Institute of Health, Bethesda, Maryland.
- J. T. Lis, Department of Biochemistry, Stanford University Medical Center, Stanford, California.
- U. Z. Littauer (Session Chairman), The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania.
- **B. Mach**, Department of Pathology, University of Geneva, Geneva, Switzerland.
- T. Maniatis, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York.
- L. Maturin, Department of Microbiology, University of Albama in Birmingham, Birmingham, Alabama.
- G. M. McCorkle, Department of Biological Sciences, Purdue University, West Lafayette, Indiana.
- **R. B. Meagher**, Department of Microbiology and Biochemistry, University of California, San Francisco, California.
- J. Messing, Munich, Germany.
- J. F. Morrow, Department of Biological Chemistry, Harvard Medical School, Boston, Massachusetts.
- K. Murray, Department of Molecular Biology, University of Edinburgh, Edinburgh, Scotland.
- O. Polianovski, Academy of Sciences, Moscow, USSR.
- A. Prozorov, The Rockefeller University, New York, New York.
- **P. H. Roy**, Biomedical Sciences, Brown University, Providence, Rhode Island.
- K. Sakaguchi, Mitsubishi-Kasei Institute for Life Sciences, Tokyo, Japan.
- W. Salser, Biology Department, University of California, Los Angeles, California.
- P. Sarin, National Institutes of Health, Bethesda, Maryland.
- W. A. Scott (Session Chairman), Department of Biochemistry, University of Miami School of Medicine, Miami, Florida.
- **H. K. Stanford** (Session Chairman), President of the University of Miami School of Medicine, Coral Gables, Florida.
- W. Szybalski, McArdel Laboratory, University of Wisconsin, Madison, Wisconsin.
- J. Tooze (Session Chairman), E.M.B.O., Federal Republic of Germany.
- **B. Weisblum**, Department of Pharmacology, University of Wisconsin, Madison, Wisconsin.
- C. Weissmann, Universitat Zurich, Zurich, Switzerland.
- **R. Werner** (Session Chairman), Department of Biochemistry, University of Miami School of Medicine, Miami, Florida.
- S. Woo, Department of Cell Biology, Baylor College of Medicine, Houston, Texas.
- R. Wu, Cornell University, Ithaca, New York.

#### PREFACE

This volume is the thirteenth of a continuing series published under the title "Miami Winter Symposia." In January 1969, the Department of Biochemistry of the University of Miami and the University-affiliated Papanicolaou Cancer Research Institute joined in sponsoring and presenting two symposia on biochemical topics as an annual event, now in its ninth year. The proceedings of the two symposia have been published as separate volumes.

As topics for the Miami Winter Symposia we select areas of biochemistry in which recent progress offers new insights into the molecular basis of biological phenomena. The first symposium sponsored by the Department of Biochemistry, emphasizes basic research in this area while the second symposium, sponsored by the Papanicolaou Cancer Research Institute, deals with the application of this research to the cancer problem. This volume contains the proceedings of the Biochemistry Department's Symposium on "Molecular Cloning of Recombinant DNA" and will be published simultaneously with the proceedings of the Papanicolaou Cancer Research Institute's Symposium on "Genetic Manipulation as it Affects the Cancer Problem" (Volume 14). Together these symposia describe some of the remarkable progress that has taken place, during the last few years, in nucleic acid technology and in its application toward analysis of the genetic organization of eukaryotic chromosomes.

Associated with the symposia is the Feodor Lynen Lecture, named in honor of the Department of Biochemistry's distinguished Visiting Professor. Past speakers have been George Wald, Arthur Kornberg, Harland G. Wood, Earl W. Sutherland, Jr., Luis F. Leloir, Gerald M. Edelman, and A. H. T. Theorell. This year the Lynen Lecture was delivered by Paul Berg. These lectures have provided insights of the history of discovery, and have included personal and scientific philosophies of our distinguished speakers. The Lynen Lecturer for 1978 will be James D. Watson and the symposia will focus on developmental biology.

To bring forward as much of the recent work as possible, short communications are presented in a joint poster session for the two symposia. Some abstracts of these short communications appear in this volume and the remainder are published in Volume 14 of the series. Our arrangement with the publishers is to achieve rapid publication of these symposia and we thank the speakers for their prompt submission of manuscripts and Sandra Black for her efforts which enabled us to bring this about. Our thanks also go to the participants whose interest and discussions provided the interactions that bring a symposium to life and to the many local helpers, faculty and administrative staff who have contributed to the success of the present symposium. Special gratitude should be accorded to the organizers and coordinators of the program: W. J. Whelan, Sandra Black, and Olga F. Lopez.

The financial assistance of several departments in the University of Miami School of Medicine, namely, Anesthesiology, Dermatology, Pathology, Radiology, as well as the Howard Hughes Medical Institute, Abbott Laboratories, Boehringer Mannheim Corporation, Eli Lilly and Company, Hoffmann-La Roche, SmithKline Corporation, and Upjohn Company, is gratefully acknowledged.

> W. A. Scott R. Werner

#### The Eighth Feodor Lynen Lecture:

Biochemical Pastimes ... and Future Times

#### Paul Berg Department of Biochemistry Stanford University

The invitation to be the eighth Feodor Lynen lecturer is, for me, a great honor; furthermore, it is a very real privilege to help honor Fitzie Lynen's many outstanding scientific achievements. I am also unashamedly flattered at having my name added to the list of distinguished lecturers who preceded me, particularly as many of them were the heroes who made growing up in science such a great adventure. Two earlier Lynen lecturers warrant special mention: Harland Wood and Arthur Kornberg taught me more than the facts, concepts and skills of biochemistry; their deep commitment to learning and discovery were most influential in shaping my own goals and values in science and life. I am most fortunate now to count them as dear and cherished friends.

The Lynen lectures are traditionaly autobiographical and anecdotal. Some of the lecturers embraced this format enthusiastically (e.g. a series of "My Life and..." essays), others approached the assignment more gingerly and with trepidation (e.g. "I Hate to Bore People With My Recollections"), and one rejected it in favor of an erudite analysis of the mysterious process of creation and discovery in science. Whatever the format or style, the results have been a voyeur's delight; each offering has provided a glimpse of a remarkable man and illuminated the personal and scientific philosophies that shaped a golden era of biochemical sciences.

Partly by choice, but also because opportunities have been lacking, I have rarely (actually just once (1)) engaged in autobiographical musings. I suspect I'm not alone in this regard. Carl Cori, in a recent essay honoring Severo Ochoa (2), lamented that "the incredibly fast advance in many areas of biochemistry and molecular biology makes for equally rapid obsolescence of previous findings. Even the basic observation