

**COLD SPRING HARBOR SYMPOSIA  
ON QUANTITATIVE BIOLOGY**

**VOLUME LXI**

**COLD SPRING HARBOR SYMPOSIA  
ON QUANTITATIVE BIOLOGY**

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**Function & Dysfunction in the  
Nervous System**

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## COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY

*Founded in 1933 by*  
REGINALD G. HARRIS  
*Director of the Biological Laboratory 1924 to 1936*

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*Front Cover (Paperback):* Living Purkinje neuron deeply embedded in a guinea pig brain slice, filled with fluorescein dextran. Imaging was performed by two-photon excitation laser scanning microscopy using a solid-state mode locked laser as light source. (Photo courtesy of K. Svoboda, W. Denk, W. Knox, and S. Tsuda, Bell Labs.)

*Back Cover (Paperback):* Atrophic Purkinje cell dendritic tree seen in a cerebellum from a 1-week-old B05 transgenic mouse. (For details, see Orr and Zoghbi, p. 654, this volume.)

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## Symposium Participants

- ADAMSON, D. CORY, Dept. of Neuroscience and Neurology, Johns Hopkins University School of Medicine, Baltimore, Maryland
- ADELSTEI, ROBERT, Dept. of Molecular Cardiology, National Institutes of Health, Bethesda, Maryland
- ALONSO, JOSE-MANUEL, Dept. of Neurobiology, Rockefeller University, New York, New York
- ANDERSEN, RICHARD, Dept. of Behavioral Biology, California Institute of Technology, Pasadena, California
- ARNOLD, DONALD, Dept. of Molecular Biology, Rockefeller University, New York, New York
- ATWELL, CONSTANCE, National Institute of Neurological Disorders, Bethesda, Maryland
- AUER, MANFRED, EMBL, Structures and Biocomputing, Heidelberg, Germany
- AUSTEN, BRIAN, St. Georges Hospital Medical School Surgery, London, United Kingdom
- AXEL, RICHARD, Columbia University, Howard Hughes Medical Institute, New York, New York
- BAHN, SABINE, Dept. of Neurobiology, MRC-LMB, Cambridge, United Kingdom
- BALDWIN, ANNE, Dept. of Neurobiology, Stanford University Medical Center, Stanford, California
- BAO, JUN, Dept. of Neuroscience and Neurology, Johns Hopkins University, Baltimore, Maryland
- BAR-PELED, OSNAT, Dept. of Neurology/Neuromuscular, Johns Hopkins University School of Medicine, Baltimore, Maryland
- BARDE, YVES-ALAIN, Dept. of Neurobiochemistry, Max-Planck Institute für Psychiatrie, Martinsreid, Germany
- BARGMANN, CORNELIA, Dept. of Anatomy, University of California, San Francisco/Howard Hughes Medical Institute, San Francisco
- BARINAGA, MARCIA, *Science* Research News, Berkeley, California
- BAULIEU, ETIENNE EMILE, INSERM, Le Kremlin-Bicetre France
- BENNETT, MICHAEL, Dept. of Neuroscience, Albert Einstein College of Medicine, Bronx, New York
- BERG, MARGARET, Dept. of Neurobiology, Northwestern University, Evanston, Illinois
- BERRETTINI, WADE, Dept. of Psychiatry and Pharmacology, Thomas Jefferson University, Philadelphia, Pennsylvania
- BESSEN, RICHARD, Lab. of Persistent Viral Diseases, National Institutes of Health, Rocky Mountain Laboratory, Hamilton, Montana
- BESSEREAU, JEAN-LOUIS, Dept. of Neurobiologie Moleculaire, Institut Pasteur, Paris, France
- BLUTHMANN, HORST, Central Research Units, Hoffmann-LaRoche and Company, Ltd., Basel, Switzerland
- BODNER, RUTH, Dept. of Biology, University of California at San Diego, La Jolla
- BONETTA, LAURA, Picower Institute Press, Molecular Medicine, Manhasset, New York
- BORCHELT, DAVID, Dept. of Pathology, Johns Hopkins School of Medicine, Baltimore, Maryland
- BOXER, ADAM, Dept. of Biochemistry, New York University Medical Center, Howard Hughes Medical Institute, New York, New York
- BRAUN, JOCHEN, Computation and Neural Systems, California Institute of Technology, Pasadena
- BRUIJN, LUCIE, Dept. of Cell Biology, Ludwig Institute for Cancer Research, La Jolla, California
- BUCHMAN, VLADIMIR, Dept. of Biological and Medical Sciences, University of St. Andrews, Fife, United Kingdom
- BUCK, LINDA, Dept. of Neurobiology, Harvard Medical School/Howard Hughes Medical Institute, Boston, Massachusetts
- BUERGER, ERICH, Boehringer Ingelheim KG Bio, Research Binger, Ingelheim, Germany
- CAHILL, LAWRENCE, University of California, Center for Neurobiology of Learning and Memory, Irvine
- CARONI, PICO, Friedrich Miescher Institute, Basel, Switzerland
- CASKEY, C. THOMAS, Merck Research Laboratories, West Point, Pennsylvania
- CHANG, CHIA-PING, Dept. of Molecular Biology, Bristol-Myers Squibb, Wallingford, California
- CHANGEUX, JEAN-PIERRE, Dept. of Neurobiology, Institut Pasteur Molecular, Paris, France
- CHASE, THOMAS, Dept. of Experimental Therapeutics, National Institutes of Health, Bethesda, Maryland
- CHEN, CHONG, Center for Learning and Memory, Massachusetts Institute of Technology/Howard Hughes Medical Institute, Cambridge
- CHEN, HONG, Dept. of Genomics, Millennium Pharmaceuticals, Inc., Cambridge, Massachusetts
- CHOI, DENNIS, Dept. of Neurology, Washington University School of Medicine, St. Louis, Missouri
- CHRISTINE, CHAD, Dept. of Neurology, University of California, San Francisco

- CLARK, ROBERT, Dept. of Psychiatry, Washington University School of Medicine, St. Louis, Missouri
- CLEVELAND, DON, Ludwig Institute for Cancer Research, University of California, San Diego
- CLINE, HOLLY, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- COBURN, CARA, Dept. of Anatomy, Howard Hughes Medical Institute, University of California, San Francisco
- COOKE, BOB, *Newsday*, Melville, New York
- COREY, DAVID, Dept. of Neurology, Massachusetts General Hospital, Boston
- CRUMP, GAGE, Dept. of Anatomy, University of California, San Francisco
- D'AGOSTARO, GIACOMO, ENEA Biophysics, Roma, Italy
- DASH, PRAMOD, Dept. of Neurobiology and Anatomy, University of Texas Medical School, Houston
- DE JAGER, PHILIP, Dept. of Molecular Biology, Rockefeller University, New York, New York
- DE KOKER, RUDI, Dept. of Chemistry, Stanford University, Stanford, California
- DE ARMOND, STEPHEN, Dept. of Neuropathology, University of California, School of Medicine, San Francisco
- DEPAULO, J. RAYMOND, Dept. of Psychiatry, Johns Hopkins University, Baltimore, Maryland
- DECHARMS, CHRISTOPHER, Dept. of Physiology, University of California, San Francisco
- DIAZ-NIDO, JAVIER, Centro De Biologia Molecular, Universidad Autonoma, Madrid, Spain
- DIETRICH, PAUL, Roche Bioscience Neurobiology Unit, Palo Alto, California
- DODELET, VINCENT, Dept. of Neuroimmunology, Montreal Neurological Institute, Quebec, Canada
- DRAGE, JOSEPH S., National Institute for Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland
- DREYFUSS, GIDEON, Dept. of Biochemistry and Biophysics, University of Pennsylvania School of Medicine, Howard Hughes Medical Institute, Philadelphia
- DU PASQUIER, RENAUD, Neurology Hospital, Cantonal Universitaire, University of Geneva, Switzerland
- DUNLOP, THOMAS WILLIAM, Dept. of Molecular Genetics, University of Glasgow, United Kingdom
- DWYER, NOELLE, Dept. of Neuroscience, University of California, San Francisco
- EDENHOFER, FRANK, Genzentrum Institut Biochemie Der Lmu, Munchen, Germany
- EDWARDS, ROBERT, Dept. of Neurology and Physiology, University of California, San Francisco
- EICHENBAUM, HOWARD, Center for Behavioral Neuroscience, State University of New York, Stony Brook
- ENIKOLOPOV, GRIGORI, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- EVINGER, CRAIG, Center for Neurobiology and Behavior, State University of New York, Stony Brook
- FARHANGRAZI, ZAHRA SHADI, Dept. of Neurology, Center for Study of Nervous System, Washington University, St. Louis, Missouri
- FEDOROV, NIKOLAI, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- FERRARO, TOM, Thomas Jefferson University, Philadelphia, Pennsylvania
- FISCHBACH, GERALD, Dept. of Neurobiology, Harvard Medical School, Boston, Massachusetts
- FISCHBECK, KENNETH, Dept. of Neurobiology, University of Pennsylvania, Philadelphia
- FLEISSNER, ERWIN, Division of Science and Mathematics, Hunter College, CUNY, New York, New York
- GALUSKE, RALF, Dept. of Neurophysiology, Max Planck Institute for Brain Research, Frankfurt, Germany
- GAMER, JURGEN, BASF Aktiengesellschaft ZHA Pharmaceuticals Research, Heidelberg, Germany
- GANDY, SAM, Dept. of Neurology and Neuroscience, Cornell University Medical College, New York, New York
- GARDNER, PAUL, Institute of Biotechnology, University of Texas Health Science Center, San Antonio
- GASIC, GREGORY, *Cell* Press Editor of Neuron, Cambridge, Massachusetts
- GELLIBOLIAN, ROBERT, Institute of Biosciences and Technology, Texas A&M University, Houston
- GERBER, DAVID, Center For Cancer Research, Massachusetts Institute of Technology, Cambridge
- GIESE, PETER, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- GILBERT, CHARLES, Dept. of Neurobiology, Rockefeller University, New York, New York
- GILLIAM, CONRAD, Dept. of Genetics and Development, Columbia University, New York, New York
- GLASS, DAVID, Regeneron Pharmaceutical Discovery, Tarrytown, New York
- GOEDERT, MICHEL, Medical Research Council Lab. of Molecular Biology, Cambridge, United Kingdom
- GOGOS, JOSEPH, Dept. of Neurobiology and Behavior, Columbia University, New York, New York
- GRICE, DOROTHY, Child Study Center Research and Clinical Child Psychiatry, Yale University, New Haven, Connecticut
- GUSELLA, JAMES, Dept. of Molecular Neurogenetics, Massachusetts General Hospital, Boston
- HAERTEL, MARION, Clinic for Tumor Biology Molecular Medicine, Freiburg, Germany
- HALL, ZACH, National Institute of Neurological Dis-

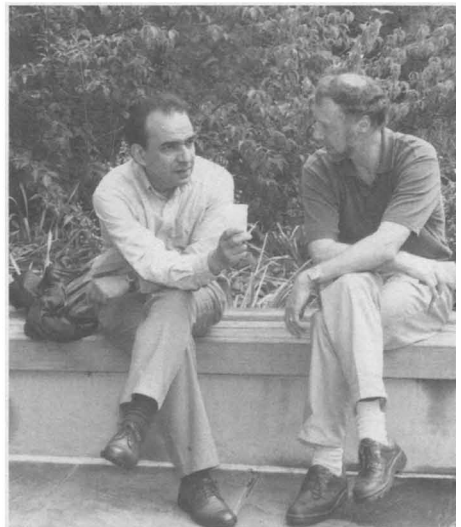
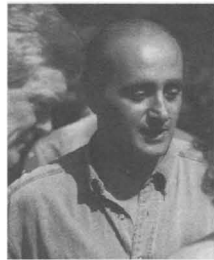
- orders and Stroke, National Institutes of Health, Bethesda, Maryland
- HAMILTON, BRUCE, Whitehead Institute, Cambridge, Massachusetts
- HARMAR, ANTHONY, Medical Research Council Brain Metabolism Unit, Royal Edinburgh Hospital, Scotland, United Kingdom
- HARPER, SARAH, Dept. of Pharmacology, Merck Research Laboratories, Harlow, United Kingdom
- HEMPERLY, JOHN, Dept. of Neurobiology, Becton Dickinson Company, Research Triangle Park, North Carolina
- HEYN, SIETSKIE, Dept. of Biological Chemistry, University of California, Davis
- HOMAN, RICHARD, Dept. of Neurology, Texas Tech Health Science Center, Lubbock
- HONG, KYONSOO, Dept. of Molecular Biology and Biochemistry, Rutgers University, Piscataway, New Jersey
- HUDSPETH, JAMES, Dept. of Sensory Neuroscience, Rockefeller University/Howard Hughes Medical Institute, New York, New York
- HUGHES, STEPHEN, Dept. of Molecular Biology, Hoechst Marion Roussel Pharmaceuticals, Inc., Somerville, New Jersey
- IRONSIDE, JAMES, Pathology Neuropathology Lab., University of Edinburgh, Scotland, United Kingdom
- ISENMANN, STEFAN, Max Planck-Institut für Entwicklungs Biologie I, Tuebingen, Germany
- JALONEN, TUULA, Dept. of Neurosurgery, Albany Medical College, Albany, New York
- JENNINGS, CHARLES, *Nature*, Washington, D.C.
- JOHNSON, EDWIN, Sibia Neurosciences Electrophysiology, La Jolla, California
- JOHO, ROLF, Dept. of Cell Biology and Neuroscience, University of Texas Southwestern Medical Center, Dallas, Texas
- JONAK, GERALD, Central Nervous System Disease Research, DuPont Merck Pharmaceutical Co., Inc., Wilmington, Delaware
- JONES, ELIZABETH, Dept. of Pharmacology, Yale University School of Medicine, New Haven, Connecticut
- KANDEL, ERIC, Center for Neurobiology and Behavior, Columbia University/Howard Hughes Medical Institute, New York, New York
- KARAYIORGOU, MARIA, Human Neurogenetics Laboratory, Rockefeller University, New York, New York
- KATZ, LARRY, Dept. of Neurobiology, Duke University Medical Center, Durham, North Carolina
- KAUFMANN, CHARLES, Dept. of Psychiatry, Columbia University, New York, New York
- KELNER, KATRINA, *Science*, Washington, D.C.
- KIMELBERG, HAROLD, Dept. of Neurosurgery, Albany Medical College, New York
- KIORPES, LYNNE, New York University Center for Neural Science, New York, New York
- KIRSCH, DONALD, American Cyanamid Company, Molecular Genetics Screen Design, Princeton, New Jersey
- KLAR, AMAR, Frederick Cancer Research and Development Center, ABL-Basic Research Program, Frederick, Maryland
- KLOMP, LEONARD, Dept. of Pediatrics, Washington University, St. Louis, Missouri
- KNEUSSEL, MATTHIAS, Dept. of Pharmacology, University College, London, United Kingdom
- KOGAN, JEFFREY, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- KOLLMAR, RICHARD, Dept. of Sensory Neuroscience, Rockefeller University, New York, New York
- KOOTHAN, THILLAI, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- KRANTZ, DAVID, Dept. of Neurology, University of California, San Francisco
- KRETZSCHMAR, DORIS, Zoology Institut für Entwicklungsbiologie, Universität Regensburg, Germany
- KRYLOVA, OLGA, University College of London Anatomy and Developmental Biology, United Kingdom
- KUMAR, LALITH, Dept. of Psychiatry, Henry Ford Hospital, Detroit, Michigan
- KURODA, YOICHIRO, Dept. of Molecular and Cellular Neurobiology, Tokyo Metropolitan Institute for Neuroscience, Japan
- KUWANA, YOSHIHISA, Dept. of Neurology, Kyowa Hakko Kogyo Co., Ltd., Shizuoka, Japan
- LAMPE, RICHARD, Dept. of Respiratory, Inflammation, and Neuroscience, Zeneca Pharmaceuticals, Wilmington, Delaware
- LAN, NANCY, Scientific Affairs and Intellectual Properties, Cocensys Inc., Irvine, California
- LANDIS, STORY, NINDS/National Institutes of Health, Bethesda, Maryland
- LEDoux, JOSEPH, Dept. of Neural Science, New York University, New York, New York
- LEGOUIS, RENAUD, Dept. of Biotechnologies, Institut Pasteur, Paris, France
- LIEBERMAN, ANDREW, Dept. of Pathology, Hospital of the University of Pennsylvania, Philadelphia
- LINTS, THIERRY, Dept. of Physiology and Cellular Biophysics, Columbia University, New York, New York
- LIU, QING, Howard Hughes Medical Institute, University of Pennsylvania, Philadelphia
- LIVINGSTONE, MARGARET, Dept. of Neurobiology, Harvard Medical School, Boston, Massachusetts
- LO ZENEC, MATHEW, Dept. of Biomedical Research,

- Pharmaceuticals, Inc., Wilmington, Delaware
- LU, SHAO-MING, Hohhs Lab., Dept. of Developmental Neuroscience, Vanderbilt University, Nashville, Tennessee
- LUPSKE, JAMES, Dept. of Molecular and Human Genetics, Baylor College of Medicine, Houston, Texas
- LUQUE, FRANCISCO, Dept. of Neurology, New York Medical College, Valhalla
- MACDONALD, MARCY, Dept. of Genetics, Massachusetts General Hospital, Charlestown
- MAGAZIN, MARILYN, Sanofi Recherche Biochemistry, Labege Innopole Labege, France
- MALHERBE, F. PARI, Pharma Division, Hoffmann La Roche Ltd., Basel, Switzerland
- MANDEL, JEAN-LOUIS, IGBMC, Illkirch, France
- MARCHIONNI, MARK, Dept. of Molecular Biology, Cambridge NeuroScience, Inc., Massachusetts
- MARGOLSKEE, ROBERT, Dept. of Physiology and Biophysics, Mt. Sinai School of Medicine, New York, New York
- MARTINS, VILMA, Fundacao Antonio Prudende Research Center, San Paulo, Brazil
- MASKOS, UWE, LMB/NINDS, National Institutes of Health, Bethesda, Maryland
- MASTERS, COLIN, Dept. of Pathology, University of Melbourne, Parkville, Victoria, Australia
- MAUE, ROBERT, Dept. of Physiology, Dartmouth Medical School, Hanover, New Hampshire
- MCGUFFIN, PETER, Dept. of Psychological Medicine, University of Wales College of Medicine, United Kingdom
- MCMAMARA, JAMES, Dept. of Medicine, Neurobiology, and Pharmacology, Duke University Medical Center, Durham, North Carolina
- MERZENICH, MICHAEL, Dept. of Otolaryngology/Physiology, University of California School of Medicine, San Francisco
- MIHALY, ANDRAS, Dept. of Anatomy, Kuwait University, Faculty of Medicine
- MIINEA, CRISTINEL, Biochemistry HSC, Houston, Texas
- MIZUNO, KEIKO, LDN, NICHD, National Institutes of Health, Bethesda, Maryland
- MOBLEY, WILLIAM, Dept. of Neurology, University of California, San Francisco
- MOMBAERTS, PETER, Rockefeller University, New York, New York
- MOSS, ROBERT, Dept. of Physiology, University of Texas Southwestern Medical Center, Dallas
- MOVSHON, J. ANTHONY, New York University Center for Neural Science/Howard Hughes Medical Institute, New York, New York
- MULVIHILL, EILEEN, Dept. of Immunology and Molecular Biology, Darwin Molecular Inc., Bothell, Washington
- NAEF, ROLAND, Swiss Federal Institute of Technology, Institute of Cell Biology, Zuench, Switzerland
- NAEVE, GREG, Dept. of Molecular Biology, Amgen, Thousand Oaks, California
- NAKAI, SHIGEYASU, Dept. of Cell Biology, Cancer Institute, Tokyo, Japan
- NAKANISHI, SHIGETADA, Dept. of Biological Sciences, Kyoto University, Faculty of Medicine, Japan
- NAWA, HIROYUKI, Niigata University, Brain Research Institute, Niigata, Japan
- NERI, CHRISTIAN, CEPH Neurogenetic Disorders, Paris, France
- NISHI, MAYUMI, Dept. of Biology, New York University, New York, New York
- NOEBELS, JEFFREY, Dept. of Neurology, Baylor College of Medicine, Houston, Texas
- NORTH, GEOFFREY, *Current Biology*, London, United Kingdom
- NOTTEBOHM, FERNANDO, Dept. of Animal Behavior, Rockefeller University Field Research Center, Millbrook, New York
- OGILVIE, ALAN, MRC Morningside Brain Metabolism Unit, Royal Edinburgh Hospital, Scotland, United Kingdom
- OHSHIMA, KEIICHI, Dept. of Biosciences and Technology, Texas A&M University, Houston
- OKUSE, KENJI, Dept. of Anatomy and Developmental Biology, University College of London, United Kingdom
- OLIVER, KEVIN, Dept. of Pharmacology, Merck Sharp and Dohme, Essex, United Kingdom
- ORR, HARRY, Dept. of Human Genetics, University of Minnesota, Minneapolis
- OTOMO, JUN, Advanced Research Laboratory, Hitachi, Ltd., Saitama, Japan
- OZSARAC, NESRIN, Dept. of Biochemistry and Molecular Genetics, University of New South Wales, Sydney, Australia
- PAGLIUSI, SONIA, Dept. of Neurobiology, Glaxo Institute for Molecular Biology, Geneva, Switzerland
- PATIL, NILA, Dept. of Genetics, Stanford University Medical Center, Stanford, California
- PEUNOVA, NATALIA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- PHAN, MIMI, Dept. of Neuroscience, University of California, Davis
- PHILLIPS, HEIDI, Dept. of Neuroscience, Genentech, South San Francisco, California
- PICHEL, JOSE, Mammalian Genes and Development, NICHD/National Institutes of Health, Bethesda, Maryland
- PLUMIER, JEAN-CHRISTOPHE, Dept. of Anatomy and Neurobiology, Dalhousie University, Halifax, Nova Scotia, Canada

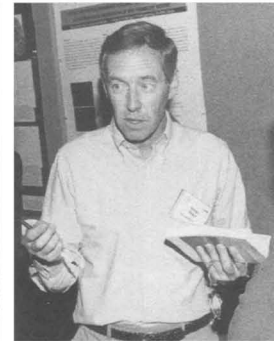
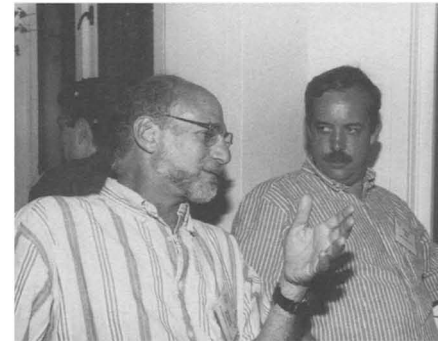
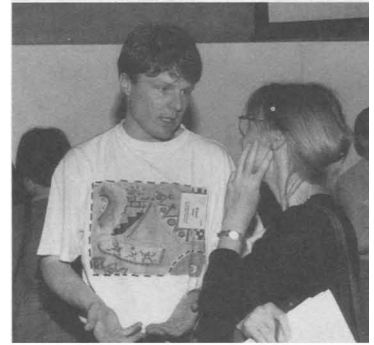
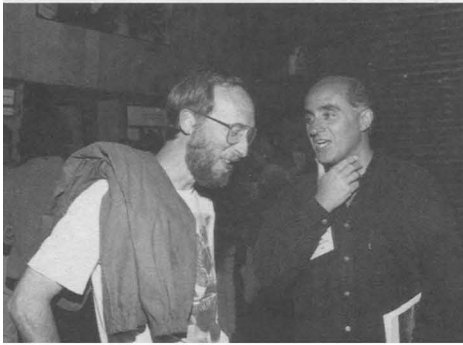
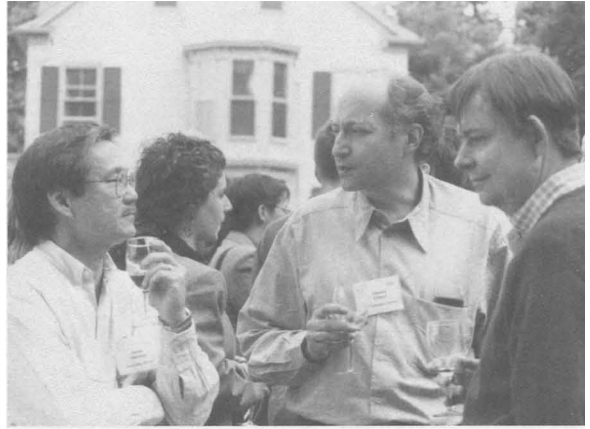
- POLLOCK, JONATHAN, Dept. of Biological Sciences, Purdue University, Lilly Hall of Life Sciences, West Lafayette, Indiana
- PRICE, DONALD, Dept. of Neuropathology, Johns Hopkins University School of Medicine, Baltimore, Maryland
- PRICE, RICHARD, Dept. of Neurology, San Francisco General Hospital, California
- PROSSER, HAYDN, Massachusetts Institute of Technology Center for Cancer Research, Cambridge
- PRUSINER, STANLEY, Dept. of Neurology, University of California, San Francisco
- PULVER, ANN, Dept. of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, Maryland
- RAICHEL, MARCUS, Dept. of Radiological Sciences, Washington University School of Medicine, St. Louis, Missouri
- RAMACHANDRAN, VILAYANUR, Dept. of Psychology, University of California, San Diego, La Jolla
- RAO, TADIMETI, Dept. of Neuropharmacology, Sibia Neuroscience Inc., La Jolla, California
- REED, RANDALL, Dept. of Molecular Biology and Genetics, Johns Hopkins University, Baltimore, Maryland
- ROBERTSON, MIRANDA, Garland Publishing, Middlesex House, London, United Kingdom
- RODRIGUS, ROLAND, I.C.P.U.C.L. Virology, Brussels, Belgium
- ROSBASH, MICHAEL, Dept. of Biology, Brandeis University/Howard Hughes Medical Institute, Waltham, Massachusetts
- ROSS, CHRISTOPHER, Dept. of Psychiatry and Neuroscience, Johns Hopkins Medical Institutions, Baltimore, Maryland
- ROVELLI, GIORGIO, Dept. of Molecular and Cellular Biology, Ciba-Geigy Ltd., Basel, Switzerland
- RUIZ-AVILA, LUIS, Dept. of Physiology and Biophysics, Mt. Sinai School of Medicine, New York, New York
- RUSANESCU, GABRIEL, Dept. of Neurobiology, State University of New York, Stony Brook
- SACHDEV, ROBERT, Dept. of Developmental Neuroscience, Vanderbilt University, Nashville, Tennessee
- SAHASRABUDHE, SUDHIR, Dept. of Molecular Neurobiology, Hoechst Marion Roussel Pharmaceuticals, Inc., Somerville, New Jersey
- SASSONE-CORSI, PAOLO, CNRS IGBMC, Strasbourg, France
- SAYEED, OMER, Dept. of Biology, California Institute of Technology, Pasadena, California
- SCHOEPFER, RALF, Dept. of Pharmacology, University College, London, United Kingdom
- SCHOFIELD, PETER, Garvan Institute of Medical Research, Sydney, New South Wales, Australia
- SCHUMACHER, MICHAEL, Inserm, France
- SCOTT, KRISTIN, Dept. of Biology, University of California, San Diego, La Jolla
- SELKOE, DENNIS, Dept. of Neurological Diseases, Harvard Medical School, Brigham and Womens Hospital, Boston, Massachusetts
- SHAH, NIRAO, Dept. of Biology, California Institute of Technology, Pasadena
- SHANK, RICHARD, Dept. of Pharmaceutical Research, R.W. Johnson Pharmaceutical Research Institute Spring House, Pennsylvania
- SHEN, JIE, Massachusetts Institute of Technology Center for Cancer Research, Cambridge
- SHEN, LIYA, Mammalian Gene and Development/NICHD, National Institutes of Health, Bethesda, Maryland
- SIDDIQUE, TEEPU, Northwestern University Medical School, Chicago, Illinois
- SIDDQUI, SHAHID, Dept. of Ecological Engineering, Toyohashi University of Technology, Japan
- SIEGEL, VIVIAN, *Cell*, Cambridge, Massachusetts
- SILOS, INMACULADA, Dept. of Molecular Oncology, Bristol-Myers Squibb, Princeton, New Jersey
- SILVA, ALCINO, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- SINGLE, FRANK NICOLAI, ZMBH Center for Molecular Biology, University of Heidelberg, Germany
- SIOMI, HARUHIKO, Dept. of Biochemistry and Biophysics, University of Pennsylvania School of Medicine, Philadelphia
- SMIGA, SUSAN, Dept. of Psychiatry, University of California, San Francisco
- SMITH-SWINTOSKY, VIRGINIA, CNS Drug Discovery, R.W. Johnson Pharmaceutical Research Institute, Spring House, Pennsylvania
- SPILLANTINI, MARIA GRAZIA, Dept. of Molecular Biology, Medical Research Council, Cambridge, United Kingdom
- SQUIRE, LARRY, Veterans Administration Medical Center, La Jolla, San Diego, California
- ST. GEORGE-HYSLOP, PETER, Dept. of Medicine, University of Toronto, Ontario, Canada
- STEBBINS, MICHAEL, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- STILLMAN, BRUCE, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- STRAUB, RICHARD, Dept. of Psychiatry, Medical College of Virginia, Richmond
- STRICKLAND, SIDNEY, Dept. of Pharmacology, University Medical Center at Stony Brook, New York
- STRITTMATTER, WARREN, Dept. of Neurology, Duke University Medical Center, Durham, North Carolina
- STRYKER, MICHAEL, Dept. of Physiology, University



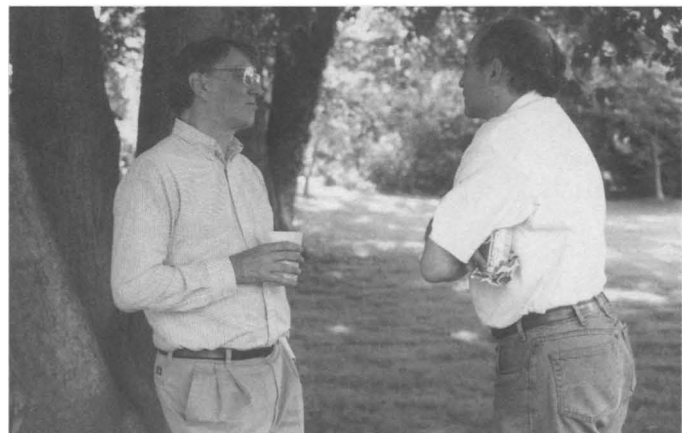
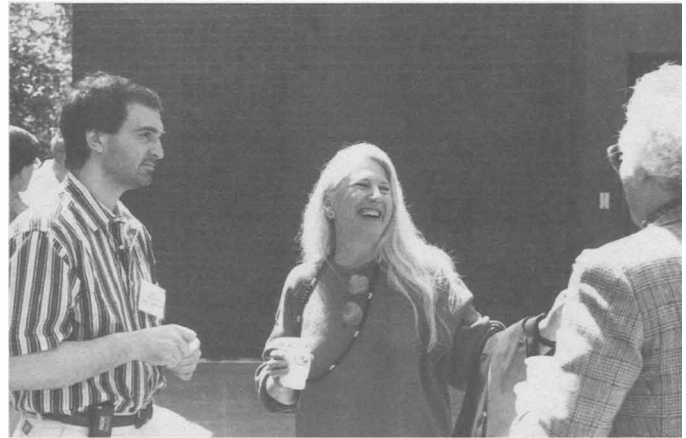
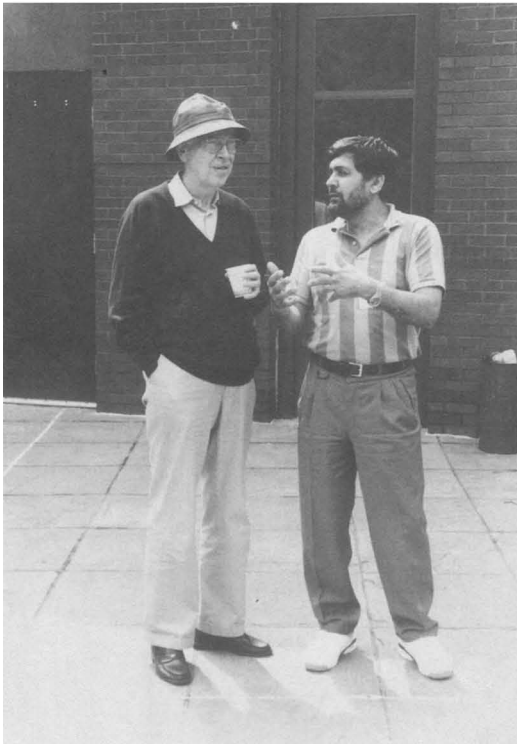
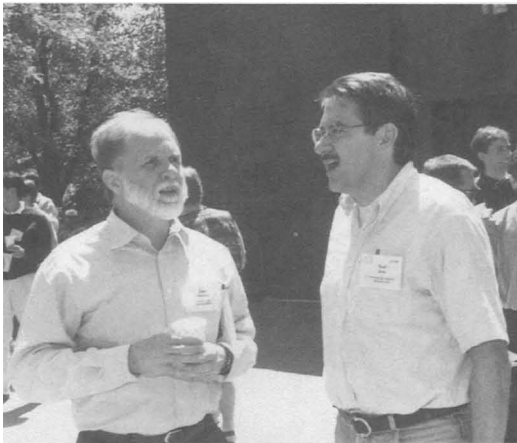
- of California Medical School, San Francisco
- STUTZMANN, GRACE, Dept. of Neural Science, New York University, New York, New York
- SWAIN, AMANDA, Dept. of Developmental Genetics, National Institute for Medical Research, London, United Kingdom
- SZEKELY, ANNA, Dept. of Neurology, Yale University Medical School, New Haven, Connecticut
- TAKAHASHI, JOSEPH, Dept. of Neurobiology and Physiology, Northwestern University, Evanston, Illinois
- TALAN, JAMIE, *Newsday*, Melville, New York
- TEKIRIAN, TINA, Dept. of Anatomy and Neurobiology, University of Kentucky, Sanders-Brown Alzheimers Disease Research Center, Lexington
- THALER, JOSHUA, Dept. of Biomedical Sciences, Ludwig Institute for Cancer Research, La Jolla, California
- THOENEN, HANS, Max Planck Institute for Psychiatry Neurochemistry, Martinsried, Germany
- TONEGAWA, SUSUMU, Massachusetts Institute of Technology Center for Learning and Memory, Cambridge
- TRANEL, DANIEL, Dept. of Neurology and Psychology, University of Iowa College of Medicine
- TREMP, GUNTER, Rhone-Poulenc Rorer Central Research 13, Vitry-sur-Seine, France
- TROEMEL, EMILY, Dept. of Anatomy, University of California, San Francisco
- TSIRKA, STELLA, Dept. of Pharmacology, State University of New York, Stony Brook
- TULLY, TIM, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- URNOV, FYODOR, Dept. of Biology and Medicine, Brown University, Providence, Rhode Island
- VALLEE, RICHARD, Dept. of Cell Biology, Worcester Foundation for Experimental Biology, Shrewsbury, Massachusetts
- VEZZONI, PAOLO, Consiglio Nazionale delle Ricerche Istituto Di Tecnologie Biomediche Avanzate, Milano, Italy
- WALKER, PHILIPPE, Astra Pain Research Unit, Armand Frappier, Laval, Quebec, Canada
- WALLIN, JOHAN, Astra Pain Control AB, Preclinical R & D Cellular and Molecular Pharmacology, Novum Unit Halsovagen 7, Huddinge, Sweden
- WANG, ZUO-ZHONG, Dept. of Cell Biology, National Institutes of Health, Bethesda, Maryland
- WARREN, STEPHEN, Dept. of Biochemistry, Emory University School of Medicine, Atlanta, Georgia
- WAXHAM, NEAL, Dept. of Neurobiology and Anatomy, University of Texas Medical School, Houston
- WEHR, ROLAND, Dept. of Molecular Cell Biology, Max Planck Institute of Biophysical Chemistry, Gottingen, Germany
- WEISSMANN, CHARLES, University of Zurich Institut fur Molekularbiologie/ABT.I Honggerberg, Zurich, Switzerland
- WELCHER, ANDREW, Dept. of Immunology, Amgen Inc., Thousand Oaks, California
- WESTPHAL, HEINER, National Cancer Institute, Bethesda, Maryland
- WEXLER, NANCY, Dept. of Psychiatry, Columbia University, New York, New York
- WHITE, FROST, Dept. of Neuroscience, Pfizer Central Research, Groton, Connecticut
- WICKELGREN, INGRID, Freelance journalist
- WICKNER, REED, NIADDK Lab. of Biochemical Pharmacology, National Institutes of Health, Bethesda, Maryland
- WILDENAUER, DIETER, Dept. of Psychiatry, University of Bonn, Germany
- WILLE, HOLGER, Dept. of Neurology, University of California, San Francisco
- WISHART, WILLIAM, Sandoz Pharma AG, Central Nervous System, Human Genome Group, Basel, Switzerland
- WONG, PHILIP, Dept. of Pathology, Neuropathology, Johns Hopkins University School of Medicine, Baltimore, Maryland
- WRIGHT, BEVERLY, Dept. of Physiology, University of California, San Francisco
- XU, ZUOSHANG, Dept. of Neurobiology, Worcester Foundation for Biomedical Research, Shrewsbury, Massachusetts
- YANCOPOULOS, GEORGE, Regeneron Pharmaceuticals, Inc., Tarrytown, New York
- YANG, YANMIN, Dept. of Molecular Genetics and Cell Biology, University of Chicago/Howard Hughes Medical Institute, Illinois
- YE, WEILAN, Dept. of Neuroscience, Genentech, South San Francisco, California
- YOUNG, KATHLEEN, Dept. of Molecular Genetic Screen Design, American Cyanamid Company, Princeton, New Jersey
- YOUNG, MICHAEL, Dept. of Genetics, Rockefeller University, Howard Hughes Medical Institute, New York, New York
- ZALUTSKY, ROBERT, NINDS, National Institutes of Health, Bethesda, Maryland
- ZENG, HONGKUI, Dept. of Biology, Brandeis University, Waltham, Massachusetts
- ZOGHBI, HUDA, Dept. of Molecular and Human Genetics, Baylor College of Medicine, Houston, Texas
- ZUKER, CHARLES, Dept. of Biology and Neurosciences, University of California, San Diego, La Jolla



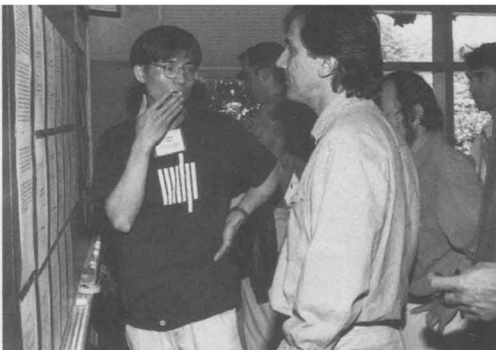
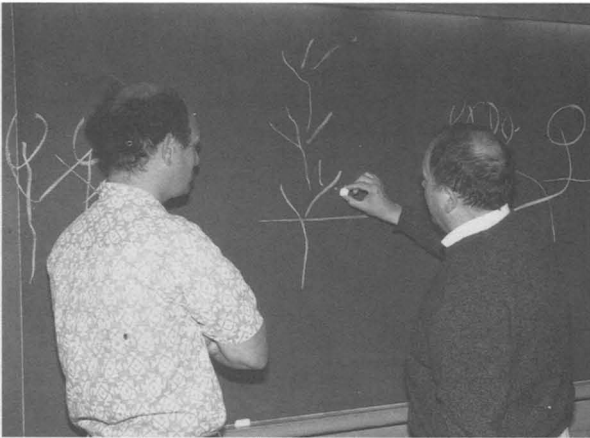
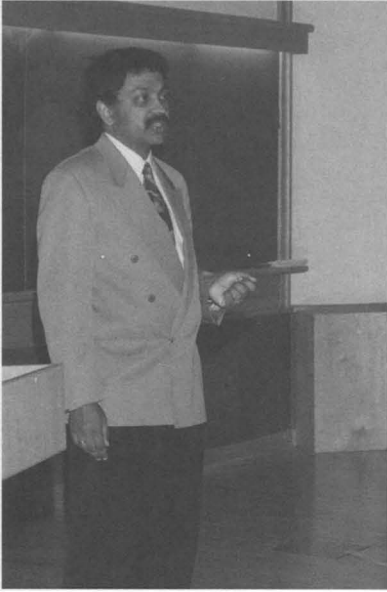
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**Second row:** Z. Hall; D. Price; J. Noebels; J. Witkowski, P. Sassone-Corsi; L. Katz  
**Third row:** H. Blüthmann, H. Westphal; R. Axel; P. Dash, N. Waxham  
**Fourth row:** E. Kandel, M. Robertson, B. Stillman; R. McKay, J. Inglis



**First row:** G. Enikolopov, E. Kandel, G. Fischbach; J. Takahashi, C. Gilbert, G. Gasic  
**Second row:** D. Cleveland, P. Sassone-Corsi; H. Thoenen, Y. Kuroda; R. Wehr, M. MacDonald  
**Third row:** B. Stillman, J.P. Changeux; M. Rosbash, R. Reed; D. Selkoe  
**Fourth row:** Picnic

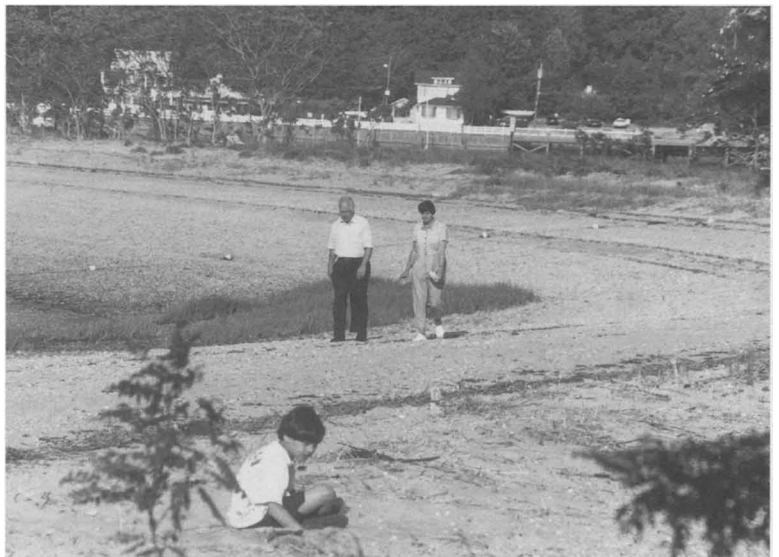
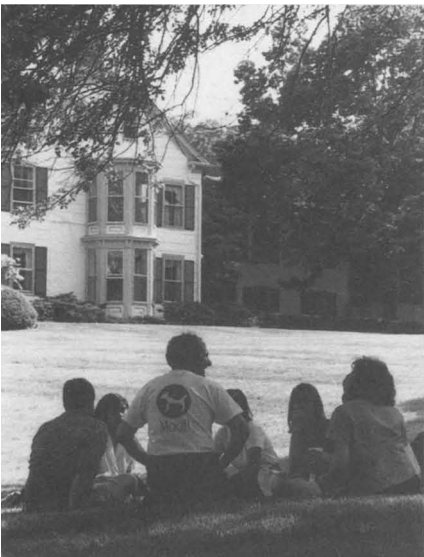
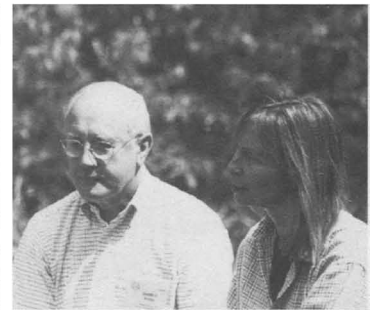
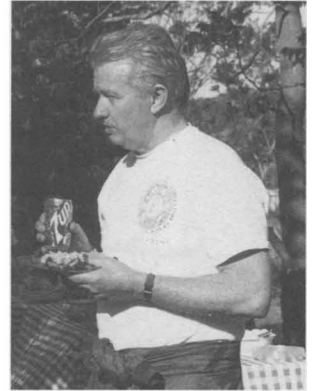


**First row: B. Stillman, G. Dreyfuss; N. Dwyer, H. Cline  
Second row: J. Hudspeth, R. Joho; J.P. Changeux, C. Weissmann; Z. Hall  
Third row: J. Watson, A. Klar; G. Yancopoulos, N. Wexler, S. Prusiner  
Fourth row: L. Squire, C. Gilbert**



**First row:** V.S. Ramachandran, Dorcas Cummings lecture; Poster session  
**Second row:** L. Katz, J.P. Changeux; S. Nakanishi, G. Gasic, A. Silva, C. Jennings  
**Third row:** J. Ironside; W. Berrettini; N. Wexler; J.R. DePaulo  
**Fourth row:** C. Chen, A. Silva; C. Bargmann, S. Strickland; R. Gellibolian, M. Haertel





**First row:** Y. Kuroda; R. Malinow, R. Edwards; D. Price  
**Second row:** M. Livingstone, S. Landis; S. Nakanishi, M. Bennett, G. Fischbach; U. Maskos, F. Nicolai-Single  
**Third row:** S. Strickland, B. Hamilton, R. Reed; H. Orr, J. Lupski; J. Drage, M. MacDonald  
**Fourth row:** Picnic

# Foreword

It is inherent in our nature to want to understand all that is wrong, as well as what is right, with the biological systems that we study. Perhaps one of the most fascinating areas of biology where this is applicable is the nervous system. Increasingly, progress in biology is influenced by the diseases and maladies that afflict us. Diseases of the brain and the periphery of the nervous system afflict many millions throughout the world, and the problems are as varied as the biology itself. But as modern techniques allow us to probe ever more deeply, we are able to understand how small changes can greatly influence our health and behavior. By studying the disease processes, we uncover surprising new findings that influence all of biology. For example, the discovery of prions and their unusual inheritance resulted from interest in a infectious disease in the highlands of New Guinea.

The decision to hold the sixty-first Symposium on "Function and Dysfunction in the Nervous System" was driven by the belief that in the near future we will learn an enormous amount about how the nervous system works by simultaneously studying the diseases that affect it. These studies, in parallel with other studies on the normal function of the nervous system, will greatly advance neurobiology in much the same way that genetics of model organisms has hastened unexpected and fundamental discoveries. The goal of this meeting was to intermingle scientists interested in the study of systems neuroscience with those trying to understand how those systems fail, so that an overview of the problems in neurological diseases could be obtained. This was a somewhat risky venture because neurobiology is as varied as biology itself, and the bringing together of investigators with diverse interests can create a hodgepodge of science that does not interest anyone. But the diseases of the nervous system are as fascinating as biology gets and it was well worth the risk.

Some Symposia celebrate past accomplishments in fields of biology, but this one looked mostly to the future, which we hope, and even expect, is an exciting one. I anticipate that this Symposium will provide a stepping stone for future progress. The current meeting could not have been organized without the great help of several colleagues, including Eric Kandel, Stan Prusiner, Richard Axel, Conrad Gilliam, Gideon Dreyfuss, and Tony Movshon. The formal scientific program consisted of 86 speakers and 94 poster presentations, and the meeting attracted 281 participants. Introductory talks on the first evening were from Michael Merzenich, Eric Kandel, Stan Prusiner, Richard Price, and Ann Pulver. The second Reginald G. Harris Lecture was delivered by Richard Axel, who presented his exciting work on olfaction. V.S. Ramachandran gave a fascinating Dorcas Cummings Lecture to our friends and neighbors about the illusions of the body image, and was widely acclaimed.

Essential funds to run this meeting were obtained from the National Institute of Neurological Disorders and Stroke and the Du Pont Merck Pharmaceutical Company. In addition, the financial help from the Corporate Sponsors of our meetings program is essential for these meetings to remain a success, and we are grateful for their continued support. These sponsors are: Alza Corporation; Amgen Inc.; BASF Bioresearch Corporation; Becton Dickinson and Company; Boehringer Mannheim Corporation; Bristol-Myers Squibb Company; Chiron Corporation; Chugal Research Institute for Molecular Medicine, Inc.; Diagnostic Products Corporation; The Du Pont Merck Pharmaceutical Company; Forest Laboratories, Inc.; Genentech, Inc.; Hoechst Marion Roussel, Inc.; Hoffmann-La Roche Inc.; Johnson & Johnson; Kyowa Hakko Kogyo Co., Ltd.; Life Technologies, Inc.; Eli Lilly and Company; Oncogene Science, Inc.; Pall Corporation; The Perkin-Elmer Corporation, Applied Biosystems Division; Pfizer Inc.; Pharmacia & Upjohn, Inc.; Research Genetics, Inc.; Sandoz Research Institute; Schering-Plough Corporation; Sumitomo Pharmaceuticals Co., Ltd.; Wyeth-Ayerst Research; and Zeneca Group PLC.

I thank the staff, in particular Diane Tighe, in our meetings and courses office, under the able direction of David Stewart, for their efficient and outstanding organization of this meeting. Mary Horton competently handled the various grant applications, and Herb Parsons and his staff provided excellent audiovisual assistance. The organization of this meeting relied on the essential work of my assistant Delia King. It was again a pleasure to work with the Laboratory Press, under the direction of John Inglis, particularly Nancy Ford, Patricia Barker, Joan Ebert, and Elaine Gaveglia. This year marks Nancy's retirement from the Cold

Spring Harbor Laboratory Press. She has shepherded the annual Symposium volumes for the past 24 years. Throughout that time, biology has undergone a revolution that has been recorded in these pages, and Nancy Ford played a great role in recording this important story. We wish her all the best.

Bruce Stillman  
*March 1997*



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