THE MARINE BIOLOGICAL LABORATORY

EIGHTY-SIXTH REPORT, FOR THE YEAR 1983—NINETY-SIXTH YEAR

I. TRUSTEES AND STANDING COMMITTEES ............................ 1
II. MEMBERS OF THE CORPORATION ................................. 5
  1. LIFE MEMBERS ............................................. 5
  2. REGULAR MEMBERS ......................................... 7
  3. ASSOCIATE MEMBERS ........................................ 25
III. CERTIFICATE OF ORGANIZATION ................................ 28
IV. ARTICLES OF AMENDMENT ....................................... 29
V. BYLAWS .................................................................. 30
VI. REPORT OF THE DIRECTOR ...................................... 34
VII. REPORT OF THE TREASURER AND THE CONTROLLER ......... 45
VIII. REPORT OF THE LIBRARIAN ................................... 55
IX. EDUCATIONAL PROGRAMS ....................................... 55
  1. SUMMER ......................................................... 55
  2. JANUARY ......................................................... 65
  3. SPRING .......................................................... 66
  4. SHORT COURSES ................................................ 67
X. RESEARCH AND TRAINING PROGRAMS ......................... 72
  1. SUMMER ......................................................... 72
  2. YEAR-ROUND .................................................... 79
XI. HONORS .................................................................. 85
XII. INSTITUTIONS REPRESENTED .................................. 87
XIII. LABORATORY SUPPORT STAFF ............................... 91

I. TRUSTEES

Including Action of the 1983 Annual Meeting

OFFICERS

PROSSER GIFFORD, Chairman of the Board of Trustees, Woodrow Wilson International Center for Scholars, Smithsonian Building, Washington, DC 20560

DENIS M. ROBINSON, Honorary Chairman of the Board of Trustees, High Voltage Engineering Corporation, Burlington, Massachusetts 01830

ROBERT MAINER, Treasurer, The Boston Company, One Boston Place, Boston, Massachusetts 02106

PAUL R. GROSS, President of the Corporation and Director of the Laboratory, Marine Biological Laboratory, Woods Hole, Massachusetts 02543

DAVID D. POTTER, Clerk, Harvard Medical School, Cambridge, Massachusetts 02138

Copyright © 1984, by the Marine Biological Laboratory
Library of Congress Card No. A38-518
(ISSN 0006-3185)
EMERITI

JOHN B. BUCK, National Institutes of Health
AURIN CHASE, Princeton University
ANTHONY C. CLEMENT, Emory University
KENNETH S. COLE, San Diego, California
ARTHUR L. COLWIN, University of Miami
LAURA COLWIN, University of Miami
D. EUGENE COPELAND, Marine Biological Laboratory
SEARS CROWELL, Indiana University
ALEXANDER T. DAIGNAULT, W. R. Grace Company
HARRY GRUNDFEST, Columbia University (deceased 10/83)
TERU HAYASHI, Miami, Florida
HOPE HIBBARD, Oberlin College
LEWIS KLEINHOLZ, Reed College
MAURICE KRAHL, Tucson, Arizona
DOUGLAS MARSLAND, Cockysville, Maryland
CHARLES B. METZ, University of Miami
HAROLD H. PLOUGH, Amherst, Massachusetts
C. LADD PROSSER, University of Illinois
JOHN S. RANKIN, Ashford, Connecticut
MERYL ROSE, Waquoit, Massachusetts
GEORGE T. SCOTT, Woods Hole, Massachusetts
MARY SEARS, Woods Hole, Massachusetts
CARL C. SPEIDEL, University of Virginia (no mailings)
ALBERT Szent-Györgyi, Marine Biological Laboratory
W. RANDOLPH TAYLOR, University of Michigan
GEORGE WALD, Harvard University

CLASS OF 1987

EDWARD A. ADELBERG, Yale University
JAMES M. CLARK, Shearson/American Express
HAROLD GAINER, National Institutes of Health
WILLIAM GOLDEN, New York, New York
HANS KORNBERG, University of Cambridge
LASZLO LORAND, Northwestern University
CAROL REINISCH, Tufts University
HOWARD A. SCHNEIDERMAN, Monsanto Company
SHELDON J. SEGAL, The Rockefeller Foundation

CLASS OF 1986

GEORGE H. A. CLOWES, JR., Cancer Research Institute
GERALD FISCHBACH, Washington University
JOHN E. HOBBIE, Ecosystems Center
EDWARD A. KRAVITZ, Harvard Medical School
RODOLFO ILNAS, New York University
THOMAS REESE, National Institutes of Health
D. THOMAS TRIOG, Wellesley, Massachusetts
NANCY SABIN WEXLER (elected 2/84)
J. RICHARD WHITTAKER, Marine Biological Laboratory

CLASS OF 1985

ROBERT W. ASHTON, Gaston Snow Beekman and Bogue
GENO A. BALLOTTI (elected 2/84)
TRUSTEES AND STANDING COMMITTEES

HARLYN O. HALVORSON, Brandeis University
JOHN G. HILDEBRAND, Columbia University
THOMAS J. HYNES, Jr., Meredith & Grew, Inc.
SHINYA INOUÉ, Marine Biological Laboratory
RICHARD P. MELLON, Richard King Mellon Foundation (resigned 8/83)
JOHN W. MOORE, Duke University
W. D. RUSSELL-HUNTER, Syracuse University
EVELYN SPIEGEL, Dartmouth College

CLASS OF 1984

CLAY ARMSTRONG, University of Pennsylvania
ROBERT B. BARLOW, Jr., Syracuse University
JOEL P. DAVIS, Seapuit, Inc.
JUDITH GRASSLE, Marine Biological Laboratory
HOLGER JANNASCH, Woods Hole Oceanographic Institution
BENJAMIN KAMINER, Boston University
BRIAN SALZBERG, University of Pennsylvania
W. NICHOLAS THORDIKE, Boston, Massachusetts
RICHARD W. YOUNG, Houghton Mifflin Company

STANDING COMMITTEES

EXECUTIVE COMMITTEE OF THE BOARD OF TRUSTEES

PROSSER GIFFORD*          HARLYN O. HALVORSON, 1985
PAUL R. GROSS*            J. RICHARD WHITTAKER, 1985
ROBERT MAINER*           JOHN G. HILDEBRAND, 1984
JOHN E. HOBBS, 1986      BENJAMIN KAMINER, 1984
EDWARD A. KRAVITZ, 1986

BUILDINGS AND GROUNDS COMMITTEE

FRANCIS HOSKIN, Chairman
LAWRENCE B. COHEN
A. FARMANFARMAIAN
ALAN FEIN
DANIEL GILBERT
CLIFFORD HARDING, JR.

CAPITAL DEVELOPMENT COMMITTEE

RICHARD W. YOUNG, Chairman
JOEL P. DAVIS
PROSSER GIFFORD*
WILLIAM T. GOLDEN
PAUL R. GROSS*

EMPLOYEE RELATIONS COMMITTEE

CATHERINE NORTON, Chairman
ED ENOS
WILLIAM EVANS

DONALD B. LEHY*
PHILIP PERSON
ROBERT PRUSCH
THOMAS REESE
EVELYN SPIEGEL

RICHARD W. YOUNG
ROBERT MAINER*
CAROL GANNON SALGUERO*
D. THOMAS TRIGG

Catherine Norton, Chairman
John Helfrich
Ed Enos
William Evans

John MacLeod
Carol Wagner
<table>
<thead>
<tr>
<th>Committee Name</th>
<th>Chairman</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FINANCIAL POLICY AND PLANNING COMMITTEE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEORGE H. A. CLOWES, Jr.</td>
<td>ROBERT MAINER</td>
</tr>
<tr>
<td></td>
<td>ROBERT ASHTON</td>
<td>W. NICHOLAS THORNDIKE</td>
</tr>
<tr>
<td></td>
<td>THOMAS HYNES</td>
<td>J. RICHARD WHITTAKER</td>
</tr>
<tr>
<td><strong>HOUSING, FOOD SERVICE, AND DAY CARE COMMITTEE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JELLE ATEMA, Chairman</td>
<td>MONA GROSS</td>
</tr>
<tr>
<td></td>
<td>DANIEL ALKON</td>
<td>THOMAS REESE</td>
</tr>
<tr>
<td></td>
<td>NINA ALLEN</td>
<td>BRIAN SALZBERG</td>
</tr>
<tr>
<td></td>
<td>ROBERT B. BARLOW, Jr.</td>
<td>HOMER P. SMITH*</td>
</tr>
<tr>
<td></td>
<td>GAIL BURD</td>
<td>SUSAN SZUTS</td>
</tr>
<tr>
<td><strong>INSTRUCTION COMMITTEE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JUDITH GRASSLE, Chairman</td>
<td>BRUCE PETERSON</td>
</tr>
<tr>
<td></td>
<td>RANDALL S. ALBETE</td>
<td>BRIAN SALZBERG</td>
</tr>
<tr>
<td></td>
<td>JOHN DOWLING</td>
<td>HERBERT SCHUEL</td>
</tr>
<tr>
<td></td>
<td>ALAN FEIN</td>
<td>ANDREW SZENT-GYÖRGYI</td>
</tr>
<tr>
<td></td>
<td>GEORGE PAPPAS</td>
<td></td>
</tr>
<tr>
<td><strong>INVESTMENT COMMITTEE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W. NICHOLAS THORNDIKE, Chairman</td>
<td>WILLIAM T. GOLDEN</td>
</tr>
<tr>
<td></td>
<td>JOHN ARNOLD</td>
<td>MAURICE LAZARUS</td>
</tr>
<tr>
<td></td>
<td>FROSSER GIFFORD*</td>
<td>ROBERT MAINER*</td>
</tr>
<tr>
<td><strong>LIBRARY JOINT MANAGEMENT COMMITTEE</strong></td>
<td>PAUL R. GROSS, Chairman</td>
<td>JOE KIEBALA</td>
</tr>
<tr>
<td></td>
<td>EDWARD A. ADELBERG</td>
<td>JOHN SPEER</td>
</tr>
<tr>
<td></td>
<td>GEORGE GRICE</td>
<td>JOHN STEELE</td>
</tr>
<tr>
<td><strong>LIBRARY JOINT USERS COMMITTEE</strong></td>
<td>EDDWARD A. ADELBERG, Chairman</td>
<td>SHINYA INOUÉ</td>
</tr>
<tr>
<td></td>
<td>WILFRED BRYAN</td>
<td>JOHN SCHLEE</td>
</tr>
<tr>
<td></td>
<td>JOHN DOWLING</td>
<td>FREDRIC SERCHUK</td>
</tr>
<tr>
<td></td>
<td>FREDERICK GRASSLE</td>
<td>OLIVER ZAFIRIOU</td>
</tr>
<tr>
<td><strong>MARINE RESOURCES COMMITTEE</strong></td>
<td>SEARS CROWELL, Chairman</td>
<td>JACK LEVIN</td>
</tr>
<tr>
<td></td>
<td>CARL J. BERG</td>
<td>ANNE F. O’MELIA</td>
</tr>
<tr>
<td></td>
<td>JUNE HARRIGAN</td>
<td>JOHN S. RANKIN</td>
</tr>
<tr>
<td></td>
<td>BILL JEFFERY</td>
<td>JOHN VALOIS*</td>
</tr>
<tr>
<td></td>
<td>IZIA LEDERHENDLER</td>
<td>JONATHAN WITTMENBER</td>
</tr>
<tr>
<td></td>
<td>LOUIS LEIBOVITZ</td>
<td></td>
</tr>
<tr>
<td><strong>RADIATION COMMITTEE</strong></td>
<td>PAUL DEWEER, Chairman</td>
<td>LOUIS KERR*</td>
</tr>
<tr>
<td></td>
<td>RICHARD L. CHAPPELL</td>
<td>ANTHONY LIUZZI</td>
</tr>
<tr>
<td></td>
<td>SHERWIN COOPERSTEIN</td>
<td>JOSEPH NEARY</td>
</tr>
<tr>
<td></td>
<td>DANIEL GROSCH</td>
<td>HARRIS RIPPS</td>
</tr>
</tbody>
</table>

* denotes outgoing members
TRUSTEES AND STANDING COMMITTEES

RESEARCH SERVICES COMMITTEE
RAYMOND STEPHENS, Chairman
JELLA ATEMA
ROBERT BARLOW, JR.
ROBERT GOLDMAN
JOHN HILDEBRAND
SAMUEL S. KOIDE
RAYMOND LASEK
BRYAN NOE
BARRY O'NEIL*
BRUCE PETERSON
BIRGIT ROSE
JOEL ROSENBAUM
SIDNEY TAMM

RESEARCH SPACE COMMITTEE
J. RICHARD WHITTAKER, Chairman
CLAY ARMSTRONG
ARTHUR DUBOIS
ROBERT GOLDMAN
DAVID LANDOWNE
HANS LAUFER
RODOLFO LLINAS
LASZLO LORAND
EDUARDO MACAGNO
JERRY MELILLO
ALAN PEARLMAN
JOEL ROSENBAUM

SAFETY COMMITTEE
JOHN HOBBIE, Chairman
DANIEL ALKON
EUGENIE COPELAND
LOUIS KERR
ALAN KUZIRIAN
DONALD LEHY
E. F. MACNICHOL, JR.
BARRY O'NEIL*
RAYMOND STEPHENS
PAUL STEUDLER
FREDERICK THRASHER

* ex officio

II. MEMBERS OF THE CORPORATION
Including Action of the 1983 Annual Meeting

LIFE MEMBERS
ABBOTT, MARIE, 259 High St., R.D. 2, Coventry, CT 06238
ADOLPH, EDWARD F., University of Rochester, School of Medicine and Dentistry, Rochester, NY 14642
BEAMS, HAROLD W., Department of Zoology, University of Iowa, Iowa City, IA 52342
BEHRE, ELLINOR, Black Mountain, NC 28711
BERTHOLF, LLOYD M., Westminster Village #2114, 2025 E. Lincoln St., Bloomington, IL 61701
BISHOP, DAVID W., Department of Physiology, Medical College of Ohio, C. S. 10008, Toledo, OH 43699
BOLD, HAROLD C., Department of Botany, University of Texas, Austin, TX 78712
BRIDGMAN, A. JOSEPHINE, 715 Kirk Rd., Decatur, GA 30030
BURBANK, MADELINE P., Box 15134, Atlanta, GA 30333
BURBANCK, WILLIAM D., Box 15134, Atlanta, GA 30333
BURDICK, C. LAWRENCE, 900 Barley Drive, Barley Mill Court, Wilmington, DE 19807
CARPENTER, RUSSELL L., 60 Lake St., Winchester, MA 01890
CHASE, AURIN, Professor of Biology Emeritus, Princeton University, Princeton, NJ 08540
CHENEY, RALPH H., 45 Coleridge Drive, Falmouth, MA 02540 (deceased 3/84)
CLARKE, GEORGE L., 44 Juniper Rd., Belmont, MA 02178
CLEMNET, ANTHONY C., Department of Biology, Emory University, Atlanta, GA 30322 (deceased 6/84)
MARINE BIOLOGICAL LABORATORY

COLE, KENNETH S., 2404 Loring St., San Diego, CA 92109 (deceased 4/84)
COLWIN, ARTHUR, 320 Woodcrest Rd., Key Biscayne, FL 33149
COLWIN, LAURA, 320 Woodcrest, Key Biscayne, FL 33149
COPELAND, D. E., 41 Fern Lane, Woods Hole, MA 02543
COSTELLO, HELEN M., 507 Monroe St., Chapel Hill, NC 27514
CROUSE, HELEN, Institute of Molecular Biophysics, Florida State University, Tallahassee, FL 32306
DILLER, IRENE C., 2417 Fairhill Ave., Glenside, PA 19038
DILLER, WILLIAM F., 2417 Fairhill Ave., Glenside, PA 19038
Elliott, Alfred M., 2345 Tarpon Rd., Naples, FL 33992
FERGUSON, JAMES K. W., 56 Clarkehaven St., Thornhill, Ontario L4J 2B4 Canada
FRAENKEL, GOTTFRIED S., Department of Entomology, University of Illinois, 320 Morrill Hall, Urbana, IL 61801
FRIES, ERIK F. B., 3870 Leafy Way, Miami, FL 33133
GILMAN, LAUREN C., Department of Biology, University of Miami, PO Box 24918, Coral Gables, FL 33124
GRAHAM, HERBERT, 36 Wilson Road, Woods Hole, MA 02543
GREEN, JAMES W., Department of Physiology, Rutgers University, Piscataway, NJ 08854
GRUNDFEST, HARRY, Department of Neurology, College of Physicians and Surgeons, Columbia University, New York, NY 10032 (deceased 10/83)
GUTTMAN, RITA, 75 Henry St., Brooklyn, NY 11210 (deceased 10/83)
HAMBURGER, VIKTOR, Professor Emeritus, Washington University, St. Louis, MO 63130
HAMILTON, HOWARD L., Department of Biology, University of Virginia, Charlottesville, VA 22901
HIBBARD, HOPE, 143 East College St., Apt. 309, Oberlin, OH 44074
HISAW, F. L. 5925 SW Plymouth Drive, Corvallis, OR 97330
HOLLAENDER, ALEXANDER, Associated Universities, Inc. 1717 Massachusetts Ave., NW, Washington, DC 20036
HUMES, ARTHUR, Marine Biological Laboratory, Woods Hole, MA 02543
JOHNSON, FRANK H., Department of Biology, Princeton University, Princeton, NJ 08540
KAAN, HELEN, 62 Locust St., Falmouth, MA 02540
KAHLER, ROBERT, P.O. Box 423, Woods Hole, MA 02543
KILLE, F_R., 1111 S. Lakemont Ave., #444, Winter Park, FL 32729
KLEINHOFT, LEWIS, Department of Biology, Reed College, Portland, OR 97202
LEVINE, RACHMIEL, 2024 Canyon Rd., Arcadia, CA 91006
LYNN, W. GARDNER, Department of Biology, Catholic University of America, Washington, DC 20017
MAGRUDER, SAMUEL R., 270 Cedar Lane, Paducah, KY 42001
MANWELL, REGINALD D., Syracuse University, Lyman Hall, Syracuse, NY 13210
MARSLAND, DOUGLAS, Broadmend N12, 13801 York Rd., Cockeysville, MD 21030
MILLER, JAMES A., 307 Shorewood Drive, E. Falmouth, MA 02536
MILNE, LORUS J., Department of Zoology, University of New Hampshire, Durham, NH 03824
MOORE, JOHN A., Department of Biology, University of California, Riverside, CA 92521
MOUL, E. T., 43 F. R. Lillie Rd., Woods Hole, MA 02543
NACE, PAUL F., 5 Bowditch Road, Woods Hole, MA 02543
NACHMANSOHN, DAVID, Department of Neurology, College of Physicians and Surgeons Columbia University, New York, NY 10032 (deceased 11/83)
PAGÉ, IRVING H., Box 516, Hyannisport, MA 02647
PLOUGH, HAROLD H., 31 Middle St., Amherst, MA 01002
POLJESTER, A. W., Box 23, Dixfield, ME 04224
POND, SAMUEL E., P.O. Box 63, E. Winthrop, ME 04343
PROSSER, C. LADD, Department of Physiology and Biophysics, University of Illinois, Urbana, IL 61801
PRYTZ, MARGARET MCDONALD, 21 McCouns Lane, Oyster Bay, NY 11771
RANKIN, JOHN S., JR., Box 97, Ashford, CT 06278
RENN, CHARLES E., Route 2, Hempstead, MD 21074
MEMBERS OF THE CORPORATION

REZNIKOFF, PAUL, 11 Brooks Rd., Woods Hole, MA 02543 (deceased 3/84)
RICHARDS, A. GLENN, Department of Entomology, Fisheries and Wildlife, University of Minnesota, St. Paul, MN 55101
RICHARDS, OSCAR W., Pacific University, Forest Grove, OR 97462
SCHARRER, BERTA, Department of Anatomy, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461
SCHMIDT, F. O., Room 16-512, Massachusetts Institute of Technology, Cambridge, MA 02139
SHEMIN, DAVID, Department of Biochemistry and Molecular Biology, Northwestern University, Evanston, IL 60201
SICHEL, ELSA, 4 Whitman Rd., Woods Hole, MA 02543 (deceased 12/83)
SONNENBLICK, B. P., Department of Zoology and Physiology, Rutgers University, 195 University Ave., Newark, NJ 07102
SPEIDEL, CARL C., 1873 Field Rd., Charlottesville, VA 22903 (no mailings)
STEHARDT, JACINTO, 1508 Spruce St., Berkeley, CA 94709
STUNKARD, HORACE W., American Museum of Natural History, Central Park West at 79th St., New York, NY 10024
TAYLOR, W. RANDOLPH, Department of Biology, University of Michigan, Ann Arbor, MI 48109
TWINKEL, LOIS E., 4 Sanderson Ave., Northampton, MA 01060
TRAGER, WILLIAM, The Rockefeller University, 1230 York Ave., New York, NY 10021
TRAVIS, DOROTHY F., 35 Coleridge Drive, Falmouth, MA 02540 (deceased 10/83)
WALD, GEORGE, Higgins Professor of Biology Emeritus, Harvard University, Cambridge, MA 02138
WICHTERMAN, RALPH, 31 Buzzards Bay Ave., Woods Hole, MA 02543
YOUNG, D. B., 1137 Main St., N. Hanover, MA 02357
ZINN, DONALD J., P.O. Box 589, Falmouth, MA 02541
ZORZOLI, ANITA, Department of Botany, Vassar College, Poughkeepsie, NY 12601
ZWEIFACH, BENJAMIN W., c/o Ames, University of California, La Jolla, CA 92037

REGULAR MEMBERS

ACHE, BARRY W., Whitney Marine Laboratory, University of Florida, Rt. 1 Box 121, St. Augustine, FL 32084
ACHESON, GEORGE H., 25 Quissett Ave., Woods Hole, MA 02543
ADAMS, JAMES A., Department of Biological Sciences, Tennessee State University 3500 John Merritt Blvd., Nashville, TN 37203
ADELBerg, EDWARD A., Department of Human Genetics, Yale University Medical School, P.O. Box 3333, New Haven, CT 06510
AFZELIUS, BJORN, Wenner-Gren Institute, University of Stockholm, Stockholm, Sweden
ALBERTE, RANDALL S., University of Chicago, Barnes Laboratory, 5630 S. Ingleside Ave., Chicago, IL 60637
ALBRIGHT, JOHN T., 7 Siders Pond Rd., Falmouth, MA 02540
ALKON, DANIEL, Section on Neural Systems, Laboratory of Biophysics, NIH, Marine Biological Laboratory, Woods Hole, MA 02543
ALLEN, GARLAND E., Department of Biology, Washington University, St. Louis, MO 63130
ALLEN, NINA S., Department of Biology, Wake Forest University, Box 7325, Reynolds Station, Winston-Salem, NC 27109
ALLEN, ROBERT D., Department of Biology, Dartmouth College, Hanover, NH 03755
ALSCHER, RUTH, Department of Biology, Manhattanville College, Purchase, NY 10577
AMATNIEK, ERNEST, 4797 Boston Post Rd., Pelham Manor, NY 10803
ANDERSON, EVERETT, Department of Anatomy, LHRBB, Harvard Medical School, Boston, MA 02115
ANDERSON, J. M., Cornell University, Emerson Hall, Ithaca, NY 14850
ARMET-KIBEL, CHRISTINE, Biology Department, University of Massachusetts—Boston, Boston, MA 02125
ARMSTRONG, CLAY M., Department of Physiology, Medical School, University of Pennsylvania, Philadelphia, PA 19174
ARMS特朗, PETER B., Department of Zoology, University of California, Davis, CA 95616
ARNOLD, JOHN M., Pacific Biomedical Research Center, University of Hawaii, 41 Ahui St.,
Honolulu, HI 96813
ARNOLD, WILLIAM A., 102 Balsam Rd., Oak Ridge, TN 37830
ASHTON, ROBERT W., Gaston Snow Beekman and Bogue, 14 Wall St., New York, NY 10005
ATEMA, JELLE, Marine Biological Laboratory, Woods Hole, MA 02543
ATWOD, KIMBALL C., 100 Haven Ave., Apt. 21-E, New York, NY 10032
AUSTIN, GEORGE, JR., Department of Biology, University of California, Los Angeles, CA
90024
AUSTIN, MARY L., 506½ N. Indiana Ave., Bloomington, IN 47401
BACON, ROBERT, P.O. Box 723, Woods Hole, MA 02543
Baker, ROBERT G., New York University Medical Center, 550 First Ave., New York, NY
10016
Baldwin, Thomas O., Department of Biochemistry and Biophysics, Texas A&M University,
College Station, TX 77843
Ballotti, geno A., Permanent Charity Fund of Boston, Boston Place, Boston, MA 02106
Bang, Betsy, 76 F. R. Lillie Rd., Woods Hole, MA 02543
Barker, Jeffery L., NIH, Bldg. 36 Room 2002, Bethesda, MD 20205
Barlow, Robert B., Jr., Institute for Sensory Research, Syracuse University, Merrill Lane,
Syracuse, NY 13210
Bartell, Clelerm K., 2000 Lake Shore Drive, New Orleans, LA 70122
Bath, lucena J., 26 Quissett Ave., Woods Hole, MA 02543
Bartlett, James H., Department of Physics, Box 121, University of Alabama, AL 35486
Batelle, Barbara Anne, National Eye Institute, NIH, Bethesda, MD 20205
Bauer, G. Eric, Department of Anatomy, University of Minnesota, Minneapolis, MN 55414
Bauge, Luis Alberto, Instituto de Investigacion Medica, Casilla de Correo 389, 5000 Cordoba,
Argentina
Beck, L. V., School of Experimental Medicine, Department of Pharmacology, Indiana Uni-
versity, Bloomington, IN 47401
Begg, David A., LHRRB, Harvard Medical School, 45 Shattuck St., Boston, MA 02115
Bell, Eugene, Department of Biology, Massachusetts Institute of Technology, 77 Massachusetts
Ave., Cambridge, MA 02139
Bennett, M. V. L., Albert Einstein College of Medicine, Department of Neuroscience, 1300
Morris Park Ave., Bronx, NY 10461
Bennett, Miranda F., Department of Biology, Colby College, Waterville, ME 04901
Berg, Carl J., Jr., Marine Biological Laboratory, Woods Hole, MA 02543
Bernel, Robert W., University of Virginia, School of Medicine, Charlottesville, VA 22908
Bernheimer, Alan W., New York University, College of Medicine, New York, NY 10016
(Life Member 10/83)
Bezanilla, Francisco, Department of Physiology, University of California, Los Angeles, CA
90032
Biggers, John D., Department of Physiology, Harvard Medical School, Boston, MA 02115
Bishop, Stephen H., Department of Zoology, Iowa State University, Ames, IA 50010
Bodian, David, Department of Otolaryngology, Johns Hopkins University, 1721 Madison St.,
Baltimore, MD 21206
Boettiger, Edward G., 29 Juniper Point, Woods Hole, MA 02543
Bogorad, Lawrence, The Biological Laboratories, Harvard University, Cambridge, MA 02138
Angeles, CA 90064
Borel, Hans G., Department of Zoology, University of Pennsylvania, Philadelphia, PA 19174
Borgee, Thomas A., Department of Biology, Lehman College, CUNY, Bronx, NY 10468
Borisy, Gary G., Laboratory of Molecular Biology, University of Wisconsin, Madison, WI
53715
Bosch, Herman F., Whipple Hill, Richmond, NH 03470
Botkin, Daniel, Department of Biology, University of California, Santa Barbara, CA 93106
Bowen, Vaughn T., 652 Knox Rd., Strafford, Wayne, PA 19087
BOWLES, FRANCIS P., P.O. Box 674, Woods Hole, MA 02543
BOYER, BARBARA C., Department of Biology, Union College, Schenectady, NY 12308
BRINLEY, F. J., Neurological Disorders Program, NINCDS, 716 Federal Building, Bethesda, MD 20205
BROWN, JOEL E., Department of Ophthalmology, Box 8096 Sciences Center, Washington University, 660 S. Euclid Ave., St. Louis, MO 63110
BROWN, STEPHEN C., Department of Biological Sciences, SUNY, Albany, NY 12222
BUCK, JOHN B., NIH, Laboratory of Physical Biology, Room 112, Building 6 Bethesda, MD 20205
BURDICK, CAROLYN J., Department of Biology, Brooklyn College, Brooklyn, NY 11210
BURGER, MAX, Department of Biochemistry, Biocenter of the University of Basel, Klingelbergstrasse 70, CH-4056 Basel, Switzerland
BURKY, ALBERT, Department of Biology, University of Dayton, Dayton, OH 45649
BURSTYN, HAROLD LEWIS, 523 National Center, U. S. Geological Survey, Reston, VA 22092
BURSZTAJN, SHERRY, Neurology Department—Program in Neuroscience, Baylor College of Medicine, Houston, TX 77030
BUSH, LOUISE, 7 Snapper Lane, Falmouth, MA 02540
CANDelas, Graciela C., Department of Biology, University of Puerto Rico, Rio Piedras, PR 00931
CARIELLO, LUCIO, Stazione Zoologica, Villa Communale, Napoli, Italy
CARLSON, FRANCIS D., Department of Biophysics, Johns Hopkins University, Baltimore, MD 21218
CASE, JAMES, Department of Biological Sciences, University of California, Santa Barbara, CA 93106
CASSIDY, J. D., University of Illinois at Chicago Circle Department of Biological Sciences, Box 4348, Chicago, IL 60680
CEBRA, JOHN J., Department of Biology, Leidy Labs, G-6, University of Pennsylvania, Philadelphia, PA 19174
CHAET, ALFRED B., University of West Florida, Pensacola, FL 32504
CHAMBERS, EDWARD L., Department of Physiology and Biophysics, University of Miami, School of Medicine, P.O. Box 520875, Miami, FL 33152
CHANG, DONALD C., Department of Physiology, Baylor College of Medicine, 1200 Moursund, Houston, TX 77030
CHAPPELL, RICHARD L., Department of Biological Sciences, Hunter College, Box 210, 695 Park Ave., New York, NY 10021
CHAuncey, HOWARD H., 30 Falmouth St., Wellesley Hills, MA 02181
CHILD, FRANK M., Department of Biology, Trinity College, Hartford, CT 06106
CITkowitz, ElNA, 410 Livingston St., New Haven, CT 06511
CLARK, A. M., 48 Wilson Rd., Woods Hole, MA 02543
CLARK, ELOISE E., Vice President for Academic Affairs, Bowing Green State University, Bowling Green, OH 43403
CLARK, HAYS, 26 Deer Park Drive, Greenwich, CT 06830
CLARK, JAMES M., Shearson/American Express, 14 Wall St., New York, NY 10005
CLARK, WALLIS H., JR., Aquaculture Program, Room 243, Department of Animal Science, University of California, Davis, CA 95616
CLAUDE, PHILIPPA, Primate Center, Capitol Court, Madison, WI 53706
CLAYTON, RODERICK K., Cornell University, Section of Genetics, Development and Physiology, Ithaca, NY 14850
CLOWES, GEORGE H. A., Jr., The Cancer Research Institute, 194 Pilgrim Rd., Boston, MA 02215
CLUTTER, MARY, Cellular and Physiological Biosciences Section, National Science Foundation, 1800 G St., NW, Washington, DC 20550
COBB, JEWELL P., President, California State University, Fullerton, CA 92634
COHEN, ADOLPH I., Department of Ophthalmology, School of Medicine, Washington University, 660 S. Euclid Ave., St. Louis, MO 63110
COHEN, CAROLYN, Rosenstiel Basic Medical Sciences Research Center, Brandeis University, Waltham, MA 02154
COHEN, LAWRENCE B., Department of Physiology, Yale University, 333 Cedar St., New Haven, CT 06510
COHEN, SEYMOUR S., Department of Pharmacological Science, SUNY, Stony Brook, NY 11790
COHEN, WILLIAM D., Department of Biological Sciences, Hunter College, 695 Park Ave., New York, NY 10021
COLE, JONATHAN J., Institute for Ecosystems Studies, Cary Arboretum, Millbrook, NY 12545
COLEMAN, ANNETTE W., Division of Biology and Medicine, Brown University, Providence, RI 02912
COLLIER, JACK R., Department of Biology, Brooklyn College, Brooklyn, NY 11210
COLLIER, MARJORIE MCCANN, Biology Department, Saint Peter's College, Kennedy Boulevard, Jersey City, NJ 07306
COOK, JOSEPH A., The Edna McConnell Clark Foundation, 250 Park Ave., New York, NY 10017
COOPERSTEIN, S. J., University of Connecticut, School of Medicine, Farmington Ave., Farmington, CT 06032
CORLISS, JOHN O., Department of Zoology, University of Maryland, College Park, MD 20742
CORNELL, NEAL W., 6428 Bannockburn Drive, Bethesda, MD 20817
CORNMAN, IVOR, 10A Orchard St., Woods Hole, MA 02543
CORSON, DAVID WESLEY, JR., Laboratory of Sensory Physiology, Marine Biological Laboratory, Woods Hole, MA 02543
COSTELLO, WALTER J., College of Medicine, Ohio University, Athens, OH 45701
COUCH, ERNEST F., Department of Biology, Texas Christian University, Fort Worth, TX 76129
CREMER-BARTELS, GERTRUD, Universitäts Augenklinik, 44 Munster, West Germany
CRIPPA, MARCO, Faculte des Sciences, Université de Genève, 20, quai Ernest-Ansermet, Genève 4, Switzerland
CROW, TERRY J., Department of Physiology, University of Pittsburgh, School of Medicine, Pittsburgh, PA 15261
CROWELL, SEARS, Department of Biology, Indiana University, Bloomington, IN 47401
DAIGNAULT, ALEXANDER T., W. R. Grace Company, 1114 Avenue of the Americas, New York, NY 10036
DAN, KATSUMA, Professor Emeritus, Tokyo Metropolitan Union, Meguro-ku, Tokyo, Japan
DAVID, JOHN R., Seeley G. Mudd Building, Room 504, 250 Longwood Ave., Boston MA 02115
DAVID, ROBERTA A., Seeley G. Mudd Building, Room 504, 250 Longwood Ave., Boston, MA 02115
DAVIS, BERNARD D., Bacterial Physiology Unit, Harvard Medical School, 25 Shattuck St., Boston, MA 02115
DAVIS, JOEL P., Seapuit, Inc., P.O. Box G, Osterville, MA 02655
DAW, NIGEL W., 78 Aberdeen Place, Clayton, MO 63105
DEGROOF, ROBERT C., RR#1 Box 343, Green Lane, PA 18054
DEHAAN, ROBERT L., Department of Anatomy, Emory University, Atlanta, GA 30322
DELANNEY, LOUIS E., Institute for Medical Research, 2260 Clove Drive, San Jose, CA 95128
DEPHELLIPS, HENRY A., Jr., Department of Chemistry, Trinity College, Hartford, CT 06106
DE TERRA, NOEL, Marine Biological Laboratory, Woods Hole, MA 02543
DETTBARN, WOLF-DIETRICH, Department of Pharmacology, School of Medicine, Vanderbilt University, Nashville, TN 37127
DEWEEER, PAUL J., Department of Physiology, School of Medicine, Washington University, St. Louis, MO 63110
DISCHE, ZACHARIAH, Eye Institute, College of Physicians and Surgeons, Columbia University, 639 West 165 Street, New York, NY 10032
DIXON, KEITH E., School of Biological Sciences, Flinders University, Bedford Park, South Australia
DOWDALL, MICHAEL J., Department of Biochemistry, University Hospital and Medical School, Nottingham N672 UH, England, U. K.
DOWLING, JOHN E., The Biological Laboratories, Harvard University, 16 Divinity Ave., Cambridge, MA 02138
MEMBERS OF THE CORPORATION

DU BOIS, ARTHUR BROOKS, John B. Pierce Foundation Laboratory, 290 Congress Ave., New Haven, CT 06519
DUDLEY, PATRICIA L., Department of Biological Sciences, Barnard College, Columbia University, New York, NY 10027
DUNHAM, PHILIP B., Department of Biology, Syracuse University, Syracuse, NY 13210
EBERT, JAMES D., Office of the President, Carnegie Institution of Washington 1530 P St., NW, Washington, DC 20008
ECKBERG, WILLIAM R., Department of Zoology, Howard University, Washington, DC 20059
ECKERT, ROGER O., Department of Zoology, University of California, Los Angeles, CA 90024
EDDS, KENNETH T., Department of Anatomical Sciences, SUNY, Buffalo, NY 14214
EDDS, LOUISE, College of Osteopathic Medicine, Grosvenor Hall, Ohio University, Athens, OH 45701
EDER, HOWARD A., Albert Einstein College of Medicine, 1300 Morris Park Ave. Bronx, NY 10461
EDWARDS, CHARLES, Department of Biological Sciences, SUNY, Albany, NY 12222
EGYUD, LASZLO G., P.O. Box 342, Woods Hole, MA 02543
EHRENSTEIN, GERALD, NIH, Bethesda, MD 20205
EHRlich, BARBARA E., Department of Physiology, Albert Einstein College of Medicine, 1300 Morris Park Ave., Bronx, NY 10461
EISEN, ARTHUR Z., Chief of Division of Dermatology, Washington University, St. Louis, MO 63110
ELDER, HUGH YOUNG, Institute of Physiology, University of Glasgow, Glasgow, Scotland, U. K.
EPEL, DAVID, Hopkins Marine Station, Pacific Grove, CA 93950
EPSTEIN, HERMAN T., Department of Biology, Brandeis University, Waltham, MA 02154
ERULKAR, SOLOMON D., 318 Kent Rd., Bala Cynwyd, PA 19004
ESSNER, EDWARD S., Kresge Eye Institute, Wayne State University, 540 E. Canfield Ave., Detroit, MI 48201
FAILLA, PATRICIA M., Office of the Director, Argonne National Laboratory, Argonne, IL 60439
FARMANFARMAIAN, A., Department of Physiology and Biochemistry, Rutgers University, New Brunswick, NJ 08903
FAUST, ROBERT G., Department of Physiology, Medical School, University of North Carolina, Chapel Hill, NC 27514
FEIN, ALAN, Laboratory of Sensory Physiology, Marine Biological Laboratory Woods Hole, MA 02543
FELDMAN, SUSAN C., Department of Anatomy, University of Medicine and Dentistry of New Jersey, New Jersey Medical School, 100 Bergen St., Newark, NJ 07103
FERGUSON, F. P., National Institute of General Medical Science, NIH, Bethesda, MD 20205
FESSENDEN, JANE, Marine Biological Laboratory, Woods Hole, MA 02543
FINKELSTEIN, ALAN, Albert Einstein College of Medicine, 1300 Morris Park Ave., Bronx, NY 10461
FISCHBACH, GERALD, Department of Anatomy and Neurobiology, Washington University School of Medicine, St. Louis, MO 63110
FISCHMAN, DONALD A., Department of Cell Biology and Anatomy, Cornell University Medical College, 1300 York Ave., New York, NY 10021
FISHER, J. MANERY, Department of Biochemistry, University of Toronto, Toronto, Ontario, Canada M5S 1A8
FISHMAN, HARVEY M., Department of Physiology, University of Texas Medical Branch, Galveston, TX 77550
FLANAGAN, DENNIS, Scientific American, 415 Madison Ave., New York, NY 10017
FOX, MAURICE S., Department of Biology, Massachusetts Institute of Technology, Cambridge, MA 02138
FRANZINI, CLARA, Department of Biology G-5, School of Medicine, University of Pennsylvania, Philadelphia, PA 19174
FRAZIER, DONALD T., Department of Physiology and Biophysics, University of Kentucky Medical Center, Lexington, KY 40536
FREEMAN, ALAN R., Department of Physiology, Temple University, 3420 N. Broad St., Philadelphia, PA 19140
FREEMAN, GARY L., Department of Zoology, University of Texas, Austin, TX 78172
FRENCH, ROBERT J., Department of Biophysics, University of Maryland, School of Medicine, Baltimore, MD 21201
FREYANG, WALTER J., Jr., 6247 29th St., NW, Washington, DC 20015
FULTON, CHANDLER, M., Department of Biology, Brandeis University, Waltham, MA 02154
FURSHAN, EDWIN J., Department of Neurophysiology, Harvard Medical School, Boston, MA 02115
FUSELER, JOHN W., Department of Cell Biology, University of Texas Medical Branch, 53233 Harry Hines Blvd., Dallas, TX 75235
FUTRELLE, ROBERT P., Department of Genetics and Development, 515 Morrill Hall, University of Illinois, 505 S. Goodwin Ave., Urbana, IL 61801
FYE, PAUL, P.O. Box 309, Woods Hole, MA 02543
GABRIEL, MORDECAI, Department of Biology, Brooklyn College, Brooklyn, NY 11210
GAINER, HAROLD, Section of Functional Neurochemistry, NIH, Bldg. 36 Room 2A21, Bethesda, MD 20205
GALATZER-LEYV, ROBERT M., Room 1819, 55 East Washington Street, Chicago, IL 60602
GALL, JOSEPH G., Carnegie Institution, 115 West University Parkway, Baltimore, MD 21210
GASCOYNE, PETER, Marine Biological Laboratory, Woods Hole, MA 02543
GELFANT, SEYMOUR, Department of Dermatology, Medical College of Georgia, Augusta, GA 30904
GELPERIN, ALAN, Department of Biology, Princeton University, Princeton, NJ 08540
GERMAN, JAMES L., III, The New York Blood Center, 310 East 67th St., New York, NY 10021
GIBBS, MARTIN, Institute for Photobiology of Cells and Organelles, Brandeis University, Waltham, MA 02154
GIBSON, A. JANE, Wing Hall, Cornell University, Ithaca, NY 14850
GIFFORD, PROSSER, The Wilson Center, Smithsonian Building, 1000 Jefferson Drive, SW, Washington, DC 20590
GILBERT, DANIEL L., NIH, Laboratory of Biophysics, NINCDS, Bldg. 36, Room 2A-29, Bethesda, MD 20205
GIUDICE, GIOVANNI, Via Archirafi 22, Palermo, Italy
GLUSMAN, MURRAY, Department of Psychiatry, Columbia University, 722 W. 168th St., New York, NY 10032
GOLDEN, WILLIAM T., 40 Wall St., New York, NY 10005
GOLDMAN, DAVID E., 63 Loop Rd., Falmouth, MA 02540
GOLDMAN, ROBERT D., Department of Cell Biology and Anatomy, Northwestern University, 303 E. Chicago Ave., Chicago, IL 60611
GOLDSMITH, PAUL K., 5511 Oakmont Avenue, Bethesda, MD 20034
GOLDSMITH, TIMOTHY H., Department of Biology, Yale University, New Haven, CT 06520
GOLDSTEIN, MOISE H., Jr., Johns Hopkins University, School of Medicine, 720 Rutland Ave., Baltimore, MD 21205
GOODMAN, LESLEY JEAN, Department of Zoology and Comparative Physiology, Queen Mary College, Mile End Road, London, E1 4NS, England, U. K.
GOTTSCHALL, GERTRUDE Y., 315 E. 68th St., 9-M, New York, NY 10021
GOUSSMIT, ESTHER, M., Department of Biology, Oakland University, Rochester, MI 48063
GOULD, ROBERT MICHAEL, Institute for Basic Research in Developmental Disabilities, 1050 Forest Hill Rd., Staten Island, NY 10314
GOULD, STEPHEN J., Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138
GOVIND, C. K., Zoology Department—Scarborough, University of Toronto, 1265 Military Trail, West Hill, Ontario, Canada, M1C 1A4
GRANT, PHILIP, Department of Biology, University of Oregon, Eugene, OR 97403
GRASS, ALBERT, The Grass Foundation, 77 Reservoir Rd., Quincy, MA 02170
GRASS, ELLEN R., The Grass Foundation, 77 Reservoir Rd., Quincy, MA 02170
GRASSELLE, JUDITH, Marine Biological Laboratory, Woods Hole, MA 02543
GREEN, JONATHAN P., Department of Biology, Roosevelt University, 430 S. Michigan Avenue, Chicago, IL 60605
GREENBERG, EVERETT PETER, Department of Microbiology, Stocking Hall, Cornell University, Ithaca, NY 14853
GREENBERG, MICHAEL J., C. V. Whitney Laboratory, Rt. 1, Box 121, St. Augustine, FL 32086
GREIF, ROGER L., Department of Physiology, Cornell University, Medical College New York, NY 10021
GRIFFIN, DONALD R., The Rockefeller University, 1230 York Ave., New York, NY 10021
GROSCH, DANIEL S., Department of Genetics, Gardner Hall, North Carolina State University, Raleigh, NC 27607
GROSS, PAUL R., President and Director, Marine Biological Laboratory, Woods Hole, MA 02543
GROSSMAN, ALBERT, New York University, Medical School, New York, NY 10016
GUNNING, A. ROBERT, P.O. Box 165, Falmouth, MA 02541
GWILLIAM, G. P., Department of Biology, Reed College, Portland, OR 97202
HALL, LINDA M., Department of Genetics, Albert Einstein College of Medicine, 1300 Morris Park Ave., Bronx, NY 10461
HALL, ZACK W., Department of Physiology, University of California, San Francisco, CA 94143
HALVORSON, HARLYN O., Rosenstiel Basic Medical Sciences Research Center, Brandeis University, Waltham, MA 02154
HAMLLETT, NANCY VIRGINIA, Department of Biology, Swarthmore College, Swarthmore, PA 19081
HANNA, ROBERT B., College of Environmental Science and Forestry, SUNY, Syracuse, NY 13210
HARDING, CLIFFORD V., Jr., Kresge Eye Institute, Wayne State University, 540 E. Canfield, Detroit, MI 48201
HAROSI, FERENC I., Laboratory of Sensory Physiology, Marine Biological Laboratory, Woods Hole, MA 02543
HARRIGAN, JUNE F., Laboratory of Biophysics, Marine Biological Laboratory, Woods Hole, MA 02543
HARRINGTON, GLENN W., Department of Microbiology, School of Dentistry, University of Missouri, 650 E. 25th St., Kansas City, MO 64108
HASCHEMEYER, AUDREY E. V., Department of Biological Sciences, Hunter College, 695 Park Ave., New York, NY 10021
HASTINGS, J. W., The Biological Laboratories, Harvard University, Cambridge, MA 02138
HAYASHI, TERU, 7105 SW 112 Pl., Miami, FL 33173
HAYES, RAYMOND L., Jr., Howard University, College of Medicine, 520 W St., NW, Washington, DC 20059
HENLEY, CATHERINE, 5225 Pooks Hill Rd., #1127 North, Bethesda, MD 20034
HERDON, WALTER R., University of Tennessee, 506 Andy Holt Tower, Knoxville, TN 37916
HESSLER, ANITA Y., 5795 Waverly Ave., La Jolla, CA 92037
HEUSER, JOHN, Department of Biophysics, Washington University, School of Medicine, St. Louis, MO 63110
HITT, HOWARD H., Harvard University, School of Public Health, 677 Huntington Ave., Boston, MA 02115
HIGHSTEIN, STEPHEN M., Department of Otolaryngology, Washington University, St. Louis, MO 63110
HILDEBRAND, JOHN G., Department of Biological Sciences, Fairchild Center #913, Columbia University, New York, NY 10027
HILLIS-COLINVAUX, LLEWELLYA, Department of Zoology, The Ohio State University 484 W 12th Ave., Columbus, OH 43210
HILLMAN, PETER, Department of Biology, Hebrew University, Jerusalem, Israel
HINEGARDNER, RALPH T., Division of Natural Sciences, University of California, Santa Cruz, CA 95064
HINSCH, GERTRUDE, W., Department of Biology, University of South Florida, Tampa, FL 33620
HOBBIE, JOHN E., Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA 02543
HODGE, ALAN J., Marine Biological Laboratory, Woods Hole, MA 02543
HODGE, CHARLES, IV, P.O. Box 4095, Philadelphia, PA 19118
HOFFMAN, JOSEPH, Department of Physiology, School of Medicine, Yale University, New Haven, CT 06515
HOFFMAN, RICHARD J., Department of Zoology, Iowa State University, Ames, IA 50011
HOLLYFIELD, JOE G., Baylor School of Medicine, Texas Medical Center, Houston, TX 77030
HOLTZMAN, ERIC, Department of Biological Sciences, Columbia University, New York, NY 10017
HOLZ, GEORGE G., JR., Department of Microbiology, SUNY, Syracuse, NY 13210
HOSKJIN, FRANCIS C. G., Department of Biology, Illinois Institute of Technology, Chicago, IL 60616
HOUGHTON, RICHARD A., III, Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA 02543
HOUSTON, HOWARD E., 2500 Virginia Ave., NW, Washington, DC 20037
HOWARTH, ROBERT, Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA 02543
HOY, RONALD R., Section of Neurobiology and Behavior, Cornell University, Ithaca, NY 14850
HUBBARD, RUTH, The Biological Laboratories, Harvard University, Cambridge, MA 02138
HUFNAGEL, LINDA A., Department of Microbiology, University of Rhode Island, Kingston, RI 02881
HUMMON, WILLIAM D., Department of Zoology, Ohio University, Athens, OH 45701
HUMPHREYS, SUSIE H., Kraft Research and Development, 801 Waukegan Rd., Glenview, IL 60025
HUMPHREYS, TOM D., University of Hawaii, PBRC, 41 Ahui St., Honolulu, HI 96813
HUNTER, BRUCE W., Box 321, Lincoln Center, MA 01773
HUNTER, ROBERT D., Department of Biological Sciences, Oakland University, Rochester, NY 48063
HUNZIKER, HERBERT E., Esq., P.O. Box 547, Falmouth, MA 02541
HURWITZ, CHARLES, Basic Science Research Lab, Veterans Administration Hospital, Albany, NY 12208
HURWITZ, JERARD, Albert Einstein College of Medicine, Department of Molecular Biology, 1300 Morris Park Avenue, Bronx, NY 10461
HUXLEY, HUGH E., Medical Research Council, Laboratory of Molecular Biology, Cambridge, England, U. K.
HYNES, THOMAS J., JR., Meredith and Grew, Inc., 125 High Street, Boston, MA 02110
ILAN, JOSEPH, Department of Anatomy, Case Western Reserve University, Cleveland, OH 44106
INGOGIA, NICHOLAS, Department of Physiology, New Jersey Medical School, 100 Bergen St., Newark, NJ 07103
INOUE, SADUYKI, McGill University Cancer Centre, Department of Anatomy, 3640 University St., Montreal, PQ, H3A 2B2, Canada
INOUE, SHINYA, Marine Biological Laboratory, Woods Hole, MA 02543
ISENBERG, IRVING, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR 97331
ISSADORIDES, MARIETTA R., Department of Psychiatry, University of Athens, Monis Petraki 8, Athens, 140, Greece
ISSELBACHER, KURT J., Massachusetts General Hospital, Boston, MA 02114
IZZARD, COLIN S., Department of Biological Sciences, SUNY, Albany, NY 12222
JACOBSON, ANTOINE G., Department of Zoology, University of Texas, Austin, TX 78712
JAFFE, LIONEL, Marine Biological Laboratory, Woods Hole, MA 02543
JAHAN-PARWAR, BEHRUS, Worcester Foundation for Experimental Biology, 222 Maple Ave., Shrewsbury, MA 01545
JANNASCH, HOLGER W., Woods Hole Oceanographic Institution, Woods Hole, MA 02543
JEFFERY, WILLIAM R., Department of Zoology, University of Texas, Austin, TX 78712
JENNER, CHARLES E., Department of Zoology, University of North Carolina, Chapel Hill, NC 27514
JONES, MEREDITH L., Division of Worms, Museum of Natural History, Smithsonian Institution, Washington, DC 20560
JOSEPHSON, ROBERT K., School of Biological Sciences, University of California, Irvine, CA 92664
KABAT, E. A., Department of Microbiology, College of Physicians and Surgeons Columbia University, 630 West 168th St., New York, NY 10032
KALEY, GABOR, Department of Physiology, Basic Sciences Building, New York Medical College, Valhalla, NY 10595
KALTENBACH, JANE, Department of Biological Sciences, Mount Holyoke College, South Hadley, MA 01075
KAMINER, BENJAMIN, Department of Physiology, School of Medicine, Boston University, 80 East Concord St., Boston, MA 02118
KAMMER, ANN E., Division of Biology, Kansas State University, Manhattan, KS 66506
KANE, ROBERT E., University of Hawaii, PBRC, 41 Ahui St., Honolulu, HI 96813
KANESHIRO, EDNA S., Department of Biological Sciences, University of Cincinnati, Cincinnati, OH 45221
KAPLAN, EHUD, The Rockefeller University, 1230 York Ave., New York, NY 10021
KARAKASHIAN, STEPHEN J., Apt. 16-F, 165 West 91st St., New York, NY 10024
KARUSH, FRED, Department of Microbiology, School of Medicine, University of Pennsylvania, Philadelphia, PA 19174
KATZ, GEORGE M., Fundamental and Experimental Research, Merck, Sharpe and Dohme Rahway, NJ 07065
KEAN, EDWARD L., Department of Ophthalmology and Biochemistry, Case Western Reserve University, Cleveland, OH 44101
KELLEY, DARCY BRISBANE, Department of Biological Sciences, 1018 Fairchild, Columbia University, New York, NY 10032
KELLY, ROBERT E., Department of Anatomy, College of Medicine, University of Illinois, P.O. Box 6998, Chicago, IL 60680
KEMP, NORMAN E., Department of Zoology, University of Michigan, Ann Arbor, MI 48104
KENDALL, JOHN P., Faneuil Hall Associates, One Boston Place, Boston, MA 02108
KEYNAN, ALEXANDER, Hebrew University, Jerusalem, Israel
KINGSBURY, JOHN M., Department of Botany, Cornell University, Ithaca, NY 14853
KIRSCHENBAUM, DONALD, Department of Biochemistry, SUNY, 450 Clarkson Ave., Brooklyn, NY 11203
KLEIN, MORTON, Department of Microbiology, Temple University, Philadelphia, PA 19122
KLOTZ, I. M., Department of Chemistry, Northwestern University, Evanston, IL 60201
KOIDE, SAMUEL S., Population Council, The Rockefeller University, 66th St. and York Ave., New York, NY 10021
KONIGSBERG, IRWIN R., Department of Biology, Gilmer Hall, University of Virginia, Charlottesville, VA 22903
KORNBERG, HANS, Department of Biochemistry, University of Cambridge, Tennis Court Rd., Cambridge, CB2 7QW, England, U. K.
KOSOWER, EDWARD M., Ramat-Aviv, Tel Aviv, 69978 Israel
KRAHL, M. E., 2783 W. Casas Circle, Tucson, AZ 85741
KRAKE, STEPHEN M., Massachusetts General Hospital, Boston, MA 02114
KRASSNER, STUART M., Department of Developmental and Cell Biology, University of California, Irvine, CA 92717
KRAUSS, ROBERT, FASEB, 9650 Rockville Pike, Bethesda, MD 20205
KRAVITZ, EDWARD A., Department of Neurobiology, Harvard Medical School, 25 Shattuck St., Boston, MA 02115
KRIEBEL, MAHLON E., Department of Physiology, B.S.B., Upstate Medical Center, 766 Irving Ave., Syracuse, NY 13210
KRIEG, WENDELL J. S., 1236 Hinman, Evanston, IL 60602
KRISTAN, WILLIAM B., JR., Department of Biology B-022, University of California San Diego, San Diego, CA 92093
KUHNS, WILLIAM J., University of North Carolina, 512 Faculty Lab Office, Bldg. 231-H, Chapel Hill, NC 27514
KUSANO, KIYOSHI, Illinois Institute of Technology, Department of Biology, 3300 South Federal St., Chicago, IL 60616
LADERMAN, AIMLEEL, P.O. Box 689, Woods Hole, MA 02543
LAMARCHE, PAUL H., Eastern Maine Medical Center, 489 State St., Bangor, ME 04401
LANDIS, DENNIS M. D., Department of Neurology, Massachusetts General Hospital, Boston, MA 02114
LANDIS, STORY C., Department of Neurobiology, Harvard Medical School, Boston, MA 02115
LANDOWNE, DAVID, Department of Physiology, University of Miami, R-430, P.O. Box 016430, Miami, FL 33101
LANGFORD, GEORGE M., Department of Physiology, Medical Sciences Research Wing 206H, University of North Carolina, Chapel Hill, NC 27514
LASEK, RAYMOND J., Case Western Reserve University, Department of Anatomy, Cleveland, OH 44106
LASTER, LEONARD, University of Oregon, Health Sciences Center, Portland, OR 97201
LAUFER, HANS, Biological Sciences Group U-42, University of Connecticut, Storrs, CT 06268
LAUFFER, MAX A., Department of Biophysics, University of Pittsburgh, Pittsburgh, PA 15260
LAZAROW, JANE, 221 Woodlawn Ave., St. Paul, MN 55105
LAZARUS, MAURICE, Federated Department Stores, Inc., 50 Cornhill, Boston, MA 02108
LEADBETTER, EDWARD R., Biological Sciences Group U-42, University of Connecticut, Storrs, CT 06268
LEDERBERG, JOSHUA, President, The Rockefeller University, New York, NY 10021
LEDERHENDLER, IZIA I., Laboratory of Biophysics, Marine Biological Laboratory, Woods Hole, MA 02543
LEE, JOHN J., Department of Biology, City College of CUNY, Convent Ave. and 138th St., New York, NY 10031
LEFEVRE, PAUL G., Box 339, Shoreham, NY 11786
LEIBOVITZ, LOUIS, Laboratory for Marine Animal Health, Marine Biological Laboratory, Woods Hole, MA 02543
LEIGHTON, JOSEPH, 1201 Waverly Rd., Gladwyne, PA 19035
LEIGHTON, STEPHEN, NIH, Bldg. 13 3W13, Bethesda, MD 20205
LENER, SAMUEL, 50-C Cokesbury Village, Hockessin, DE 19707
LERMANN, SIDNEY, Laboratory for Ophthalmic Research, Emory University, Atlanta, GA 30322
LERNER, AARON B., Yale University, School of Medicine, New Haven, CT 06510
LEVIN, JACK, Clinical Pathology Service, VA Hospital-113A, 4150 Clement St., San Francisco, CA 94120
LEVINTHAL, CYRUS, Department of Biological Sciences, Columbia University, 908 Schermerhorn Hall, New York, NY 10027
LEVITAN, HERBERT, Department of Zoology, University of Maryland, College Park, MD 20742
LING, GILBERT, 307 Berkeley Road, Marion, PA 19066
LIPICKY, RAYMOND J., Laboratory of Biophysics, NIH, Bldg. 36 Room 2A29, Bethesda, MD 20205
LISMAN, JOHN E., Department of Biology, Brandeis University, Waltham, MA 02154
LIUZZI, ANTHONY, Department of Physics, University of Lowell, Lowell, MA 01854
LLINAS, RODOLFO R., Department of Physiology and Biophysics, New York University Medical Center, 550 First Ave., New York, NY 10016
LOEWENSTEIN, WERNER R., Department of Physiology and Biophysics, University of Miami, P.O. Box 016430, Miami, FL 33101
LOEWUS, FRANK A., Department of Agricultural Chemistry, Washington State University, Pullman, WA 99164
LOFTFIELD, ROBERT B., Department of Biochemistry, School of Medicine, University of New Mexico, 900 Stanford, NE, Alburquerque, NM 87105
LONDON, IRVING M., Massachusetts Institute of Technology, Cambridge, MA 02139
LONGO, FRANK J., Department of Anatomy, University of Iowa, Iowa City, IA 52442
LORAND, LASZLO, Department of Biochemistry and Molecular Biology, Northwestern University, Evanston, IL 60201
LURIA, SALVADOR E., Massachusetts Institute of Technology, Department of Biology, Cambridge, MA 02139
LYNCH, CLARA J., 4800 Fillmore Ave., Alexandria, VA 22311
MACAGNO, EDUARDO R., 1003B Fairchild, Columbia University, New York, NY 10022
MACNICHOL, E. F., JR., Laboratory of Sensory Physiology, Marine Biological Laboratory, Woods Hole MA 02543
MAGLOTT, DONNA R. S., Department of Zoology, Howard University, Washington, DC 20059
MAINER, ROBERT, The Boston Company, One Boston Place, Boston, MA 02108
MALKIEL, SAUL, Allergic Diseases, Inc., 130 Lincoln St., Worcester, MA 01605
MANALIS, RICHARD S., RR #10, 400N, Columbia City, IN 47625
MANGUM, CHARLOTTE P., Department of Biology, College of William and Mary, Williamsburg, VA 23185
MARGULIS, LYNN, Department of Biology, Boston University, 2 Cummington St., Boston, MA 02215
MARINUCCI, ANDREW C., Department of Civil Engineering, Princeton University, Princeton, NJ 08544
MARSH, JULIAN B., Department of Biochemistry and Physiology, Medical College of Pennsylvania, 3300 Henry Ave., Philadelphia, PA 19129
MARTIN, LOWELL V., Marine Biological Laboratory, Woods Hole, MA 02543
MASEM, MORTON, 100 Hackmatack Way, Falmouth, MA 02540
MASTROIANNI, LUIGI, JR., Department of Obstetrics and Gynecology, University of Pennsylvania, Philadelphia, PA 19174
MATHews, RITA W., c/o A. J. Johnson, New York University Medical Center, 550 First Ave., New York, NY 10016
MATTeson, DONALD R., Department of Physiology, G4, School of Medicine, University of Pennsylvania, Philadelphia, PA 19104
MAUTNER, HENRY G., Department of Biochemistry and Pharmacology, Tufts University, 136 Harrison Ave., Boston, MA 02111
MAUZERALL, DAVID, The Rockefeller University, 1230 York Ave., New York, NY 10021
MAZIA, DANIEL, Hopkins Marine Station, Pacific Grove, CA 93950
MCCANN, FRANCES, Department of Physiology, Dartmouth Medical School, Hanover, NH 03755
MCClosky, LAWRENCE R., Department of Biology, Walla Walla College, College Place, WA 99324
MCLaughlin, JANE A., P.O. Box 187, Woods Hole, MA 02543
McMAHON, ROBERT F., Department of Biology, Box 19498, University of Texas, Arlington, TX 76019
MEEdel, THOMAS, Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543
MEINERTZHAGEN, IAN A., Department of Psychology, Life Sciences Center, Dalhousie University, Halifax, Nova Scotia, B3H 451, Canada
MEINKOTh, NORMAN A., Department of Biology, Swarthmore College, Swarthmore, PA 19081
MEISS, DENNIS E., Department of Biology, Clark University, Worcester, MA 01610
MELILLO JERRY A., Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA 02543
MELLON, DEFoREST, JR., Department of Biology, University of Virginia, Charlottesville, VA 22903
MELLON, RICHARD P., P.O. Box 187, Laughlintown, PA 15655
MENZEL, RANDEL, Institut fir Tierphysiologie, Free Universitat of Berlin, 1000 Berlin 41, Federal Republic of Germany
METUZALS, JANIS, Department of Anatomy, Faculty of Medicine, University of Ottawa, Ottawa, Ontario, K1N 9A9, Canada
METZ, CHARLES B., Institute of Molecular and Cellular Evolution, University of Miami, 521 Anastasia Ave., Carol Gables, FL 33134
O'MELIA, ANNE F., George Mason University, 4400 University Drive, Fairfax, VA 22030
OLSON, JOHN M., Institute of Biochemistry, Odense University, Campusvej 55, DK 5230
Odense M, Denmark (resigned 1/84)
OSCHMAN, JAMES L., Marine Biological Laboratory, Woods Hole, MA 02543
PALMER, JOHN D., Department of Zoology, University of Massachusetts, Amherst, MA 01002
PALT, YORAM, Department of Physiology and Biophysics, Israel Institute of Technology, 12
Haaliya St., BAT-GALIM, POB 9649, Haifa, Israel
PANT, HARISH C., Laboratory of Preclinical Studies, National Institute on Alcohol Abuse and
Alcoholism, 12501 Washington Ave., Rockville, MD 20852
PAPPAS, GEORGE D., Laboratory of Anatomy, College of Medicine, University of Illinois, 808
South Wood St., Chicago, IL 60612
PARDEE, ARTHUR B., Department of Pharmacology, Harvard Medical School, Boston, MA
02115
PARDY, ROSEVELT L., School of Life Sciences, University of Nebraska, Lincoln, NE 68588
PARMENTIER, JAMES L., Department of Anesthesiology, Anesthesiology Research Laboratory,
284 Cancer Center/Clinical Bldg., University of South Alabama, Mobile, AL 36688
PASSANO, LEONARD M., Department of Zoology, Birge Hall, University of Wisconsin, Madison,
WI 53706
PEARLMAN, ALAN L., Department of Physiology, School of Medicine, Washington University,
St. Louis, MO 63110
PEDERSON, THORO, Worcester Foundation for Experimental Biology, Shrewsbury, MA 01545
PERKINS, C. D., 400 Hilltop Terrace, Alexandria, VA 22301
PERSON, PHILIP, Special Dental Research Program, Veterans Administration Hospital, Brooklyn,
NY 11219
PETES, BRUCE J., Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA
02543
PETHIG, RONALD, School of Electronic Engineering Science, University College of N. Wales,
Dean St., Bangor, Gwynedd, LL57 IU, U. K.
PETTIBONE, MARIAN H., Division of Worms, W-213, Smithsonian Institution, Washington,
DC 20560
PFHOL, RONALD J., Department of Zoology, Miami University, Oxford, OH 45056
PIERCE, SIDNEY K., JR., Department of Zoology, University of Maryland, College Park, MD
20740
POLLARD, HARVEY B., NIH, F Building 10, Room 10B17, Bethesda, MD 20205
POLLARD, THOMAS D., Department of Cell Biology and Anatomy, Johns Hopkins University,
725 North Wolfe St., Baltimore, MD 21205
POLLOCK, LELAND W., Department of Zoology, Drew University, Madison, NJ 07940
PORTER, BEVERLY H., 14433 Taos Court, Wheaton, MD 20906
PORTER, KEITH R., 748 Eleventh St., Boulder, CO 80302
POTT, DAVID, Department of Neurobiology, Harvard Medical School, Boston, MA 02115
POTT, H. DAVID, P.O. Box 2286, Bloomington, IN 47401
POTTS, WILLIAM T., Department of Biology, University of Lancaster, Lancaster, England, U.
K.
POUSSART, DENIS, Department of Electrical Engineering, Universite Laval, Quebec, Canada
PRAET, MELANIE M., Department of Anatomy and Cell Biology, University of Miami School
of Medicine (R124), P.O. Box 016960, Miami, FL 33101
PRENDERGAST, ROBERT A., Department of Pathology and Ophthalmology, Johns Hopkins
University, Baltimore, MD 21205
PRICE, CARL A., Waksman Institute of Microbiology, Rutgers University, P.O. Box 759, Piscataway, NJ 08854
PRICE, CHRISTOPHER H., Biological Science Center, 2 Cummington St., Boston, MA 02215
PRIOR, DAVID J., Department of Biological Sciences, University of Kentucky, Lexington, KY
40506
PROVASOLI, LUIGI, 474 Whitney Ave., New Haven, CT 06511 (Life Member 12/83)
PRUSCH, ROBERT D., Department of Life Sciences, Gonzaga University, Spokane, WA 99258
PRZYBLSKI, RONALD J., Case Western Reserve University, Department of Anatomy, Cleveland, OH 44104
PURVES, DALE, Department of Physiology, Washington University School of Medicine, 660 S. Euclid Ave., St. Louis, MO 63110
QUIGLEY JAMES, Department of Microbiology and Immunology Box 44, SUNY Downstate Medical Center, 450 Clarkson Ave., Brooklyn, NY 11203
RAFIN, HARVEY, P.O. Box 239, Braddock Heights, MD 21714
RAFF, RUDOLF A., Department of Biology, Indiana University, Bloomington, IN 47405
RAKOWSKI, ROBERT F., Department of Physiology and Biophysics, Washington University, School of Medicine, 660 S. Euclid Ave., St. Louis, MO 63110
RAMON, FIDEL, Dept. de Fisiologia y Biofisca, Centro de Investigacion y de Estudios Avanzados del IPN, Apartado Postal 14-740, Mexico, D.F. 07000
RANZI, SILVIO, Department of Zoology, University of Milan, Milan, Italy
RATNER, SARAH, Department of Biochemistry, Public Health Research Institute, 455 First Ave., New York, NY 10016
REBHUN, LIONEL L., Department of Biology, Gilmer Hall, University of Virginia, Charlottesville, VA 22901
REDDAN, JOHN R., Department of Biological Sciences, Oakland University, Rochester, MI 48063
REESE, THOMAS S., Marine Biological Laboratory, Woods Hole, MA 02543
REINER, JOHN M., Albany Medical College of Union University, Department of Biochemistry, Albany, NY 12208
REINSCH, CAROL L., Tufts University School of Veterinary Medicine, 203 Harrison Avenue, Boston, MA 02115
REUBEN, JOHN P., Department of Biochemistry, Merck Sharp and Dohme, P.O. Box 2000, Rahway, NJ 07065
REYNOLDS, GEORGE T., Department of Physics, Jadwin Hall, Princeton University, Princeton, NJ 08540
RICE, ROBERT V., Carnegie Mellon Institute, 4400 Fifth Ave., Pittsburgh, PA 15213
RICKLES, FREDERICK R., University of Connecticut, School of Medicine, VA Hospital, Newington, CT 06111
RIPPS, HARRIS, Department of Ophthalmology, New York University School of Medicine, 550 First Ave., New York, NY 10016
ROBERTS, JOHN L., Department of Zoology, University of Massachusetts, Amherst, MA 01002
ROBINSON, DENIS M., High Voltage Engineering Corporation, Burlington, MA 01803
ROCKSTEIN, MORRIS, 335 Fluvia Ave., Miami, FL 33134
RONKIN, RAFAEL R., 3212 McKinley St., NW, Washington, DC 20015
ROSBASH, MICHAEL, Rosenstiel Center, Department of Biology, Brandeis University, Waltham, MA 02154
ROSE, BIRGIT, Department of Physiology R-430, University of Miami School of Medicine, P.O. Box 016430, Miami, FL 33152
ROSE, S. MERYL, Box 309W, Waquoit, MA 02536
ROSENBAM, JOEL L., Department of Biology, Kline Biology Tower, Yale University, New Haven, CT 06510
ROSENBERG, PHILIP, School of Pharmacy, Division of Pharmacology, University of Connecticut, Storrs, CT 06268
ROSENBLUTH, JACK, Department of Physiology, New York University School of Medicine, 550 First Ave., New York, NY 10016
ROSENBLUTH, RAFA, 3380 West 5th Ave., Vancouver 8 BC, Canada V6R 1R7
ROSILANSKY, JOHN, Box 208, Woods Hole, MA 02543
ROSILANSKY, PRISCILLA F., Box 208, Woods Hole, MA 02543
ROSS, WILLIAM N., Department of Physiology, New York Medical College, Valhalla, NY 10595
ROTH, JAY S., Division of Biological Sciences, Section of Biochemistry and Biophysics, University of Connecticut, Storrs, CT 06268
ROWLAND, LEWIS P., Neurological Institute, 710 West 168th St., New York, NY 10032
RUDERMAN, JOAN V., Department of Anatomy, Harvard Medical School, Boston, MA 02115
MEMBERS OF THE CORPORATION

RUSHFORTH, NORMAN B., Case Western Reserve University, Department of Biology, Cleveland, OH 44106
RUSSELL-HUNTER, W. D., Department of Biology, 110 Lyman Hall, Syracuse University, Syracuse, NY 13210
SAFFO, MARY BETH, Department of Biology, Swarthmore College, Swarthmore, PA 19081
SAGER, RUTH, Sidney Farber Cancer Institute, 44 Binney St., Boston, MA 02115
SALAMA, GUY, Department of Physiology, University of Pittsburgh, Pittsburgh, PA 15261
SALMON, EDWARD D., Department of Zoology, University of North Carolina, Chapel Hill, NC 27514
SALZBERG, BRIAN M., Department of Physiology, University of Pennsylvania, 4010 Locust St., Philadelphia, PA 19174
SANDERS, HOWARD, Woods Hole Oceanographic Institution, Woods Hole, MA 02543
SANGER, JEAN M., Department of Anatomy, School of Medicine, University of Pennsylvania, 36th and Hamilton Walk, Philadelphia, PA 19174
SANGER, JOSEPH, Department of Anatomy, School of Medicine, University of Pennsylvania, 36th and Hamilton Walk, Philadelphia, PA 19174
SATO, HIDEMI, Sugashima Marine Biological Laboratory, Nagoya University, Sugashima-cho, Toba-chi, Mie-Ken 517, Japan
SAUNDERS, JOHN JR., Department of Biological Sciences, SUNY, Albany, NY 12222
SAZ, ARTHUR K., Medical and Dental Schools, Georgetown University, 3900 Reservoir Rd., NW, Washington, DC 20051
SCHACHMAN, HOWARD K., Department of Molecular Biology, University of California, Berkeley, CA 94720
SCHIFF, JEROME A., Institute for Photobiology of Cells and Organelles, Brandeis University, Waltham, MA 02154
SCHLESINGER, R. WALTER, University of Medicine and Dentistry of New Jersey, Department of Microbiology, Rutgers Medical School, P.O. Box 101 Piscataway, NJ 08854 (Life Member 11/83)
SCHMEER, ARLENE C., O.P., Mercene Cancer Research Hospital of Saint Raphael, New Haven, CT 06511
SCHNEIDER, E. GAYLE, University of Nebraska Medical Center, Department of Biochemistry, 42nd and Dewey Ave., Omaha, NE 68105
SCHNEIDERMAN, HOWARD A., Monsanto Company, 800 North Lindberg Blvd., D1W, St. Louis, MO 63166
SCHOPF, THOMAS J. M., Department of Geophysical Sciences, University of Chicago, 5734 South Ellis Ave., Chicago, IL 60637 (deceased 3/84)
SCHOTTE, OSCAR E., Department of Biology, Amherst College, Amherst, MA 01002
SCHUEL, HERBERT, Department of Anatomical Sciences, SUNY, Buffalo, NY 14214
SCHUETZ, ALLEN W., School of Hygiene and Public Health, Johns Hopkins University, Baltimore, MD 21205
SCHWAB, WALTER E., Virginia Polytechnical Institute and State University, Department of Biology, Blacksburg, VA 24601
SCHWARTZ, JAMES H., Center for Neurobiology and Behavior, New York State Psychiatric Institute—Research Annex, 722 W. 168th St., 7th Floor, New York, NY 10032
SCHWARTZ, MARTIN, Department of Biological Sciences, University of Maryland Baltimore County, Catonsville, MD 21228
SCOFIELD, VIRGINIA LEE, Department of Microbiology and Immunology, UCLA School of Medicine, Los Angeles, CA 90024
SCOTT, ALLAN C., 1 Nudd St., Waterville, ME 04901
SCOTT, GEORGE T., 10 Orchard St., Woods Hole, MA 02543 (Life Member 10/83)
SEARS, MARY, P.O. Box 152, Woods Hole, MA 02543
SEGAL, SHELDON J., Population Division, The Rockefeller Foundation, 1133 Avenue of the Americas, New York, NY 10036
SELIGER, HOWARD H., Johns Hopkins University, McCollum-Pratt Institute, Baltimore, MD 21218
SELMAN, KELLY, Department of Anatomy, College of Medicine, University of Florida, Gainesville, FL 32601
SENF, JOSEPH, 378 Fairview St., Emmaus, PA 18049
SHANKLIN, DOUGLAS R., P.O. Box 1267, Gainesville, FL 32602
SHAPIRO, HERBERT, 6025 North 13th St., Philadelphia, PA 19141
SHAW, GAIUS R., Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA 02543
SHAW, JOHN R., Department of Zoology, Michigan State University, East Lansing, MI 48823
SHEPARD, DAVID C., P.O. Box 44, Woods Hole, MA 02543
SHEPHERD, DAVID, Department of Biology, Boston University, 2 Cummington St., Boston, MA 02215
SHERMAN, I. W., Division of Life Sciences, University of California, Riverside, CA 92502
SHIMO, MOSHE, Department of Microbiological Chemistry, Hebrew University, Jerusalem, Israel
SHOUKIMAS, JONATHAN J., Marine Biological Laboratory, Woods Hole, MA 02543
SIEGEL, IRWIN M., Department of Ophthalmology, New York University Medical Center, 550 First Avenue, New York, NY 10016
SIEGELMAN, HAROLD W., Department of Biology, Brookhaven National Laboratory, Upton, NY 11973
SJODIN, RAYMOND A., Department of Biophysics, University of Maryland, Baltimore, MD 21201
SKINNER, DOROTHY M., Oak Ridge National Laboratory, Biology Division, Oak Ridge, TN 37830
SLOBODA, ROGER D., Department of Biological Sciences, Dartmouth College, Hanover, NH 03755
SMITH, HOMER P., Marine Biological Laboratory, Woods Hole, MA 02543
SMITH, MICHAEL A., Colombo Campus, P.O. Box 1490, Colombo 3, Sri Lanka
SMITH, PAUL F., P.O. Box 264, Woods Hole, MA 02543
SMITH, RALPH I., Department of Zoology, University of California, Berkeley, CA 94720
SORENSON, ALBERT L., Albert Einstein College of Medicine, Department of Physiology, 1300 Morris Park Avenue, Bronx, NY 10461
SPECK, WILLIAM T., Case Western Reserve University, Department of Pediatrics, Cleveland, OH 44106
SPECTOR, A., College of Physicians and Surgeons, Columbia University, Black Bldg., Room 1516, New York, NY 10032
SPEER, JOHN W., Marine Biological Laboratory, Woods Hole, MA 02543
SPIEGEL, EVELYN, Department of Biological Sciences, Dartmouth College, Hanover, NH 03755
SPIEGEL, MELVIN, Department of Biological Sciences, Dartmouth College, Hanover, NH 03755
SPRAY, DAVID C., Albert Einstein College of Medicine, Department of Neurosciences, 1300 Morris Park Avenue, Bronx, NY 10461
STEELE, JOHN HYSLOP, Woods Hole Oceanographic Institution, Woods Hole, MA 02543
STEINACHER, ANTOINETTE, Department of Biophysics, The Rockefeller University, New York, NY 10021
STEINBERG, MALCOLM, Department of Biology, Princeton University, Princeton, NJ 08540
STEPHENS, GROVER C., Department of Developmental and Cell Biology, University of California, Irvine, CA 92717
STEPHENS, RAYMOND E., Marine Biological Laboratory, Woods Hole, MA 02543
STETTEN, DeWITT, JR., Senior Scientific Advisor, NIH, Bldg. 16, Room 118, Bethesda, MD 20205
STOKES, DARRELL R., Department of Biology, Emory University, Atlanta, GA 30322
STRACHER, ALFRED, Downstate Medical Center, SUNY, 450 Clarkson Ave., Brooklyn, NY 11203
STREHLER, BERNARD L., 2235 25th St., #217, San Pedro, CA 90732
STUART, ANN E., Department of Physiology, Medical Sciences Research Wing 206H, University of North Carolina, Chapel Hill, NC 27514
MEMBERS OF THE CORPORATION

SUMMERS, WILLIAM C., Huxley College, Western Washington University, Bellingham, WA 98225
SUSSMAN, MAURICE, Department of Life Sciences, University of Pittsburgh, Pittsburgh, PA 15260
SWENSON, RANDOLPHE P., Jr., Department of Physiology G-4, University of Pennsylvania, Philadelphia, PA 19174 (resigned 1/84)
SZABO, GEORGE, Harvard School of Dental Medicine, 188 Longwood Avenue, Boston, MA 02115
SZAMIER, R. BRUCE, Harvard Medical School, Berman-Gund Laboratory, Massachusetts Eye and Ear Infirmary, 243 Charles St., Boston, MA 02114
SZENT-GYÖRGYI, ALBERT, Marine Biological Laboratory, Woods Hole, MA 02543
SZENT-GYÖRGYI, ANDREW, Department of Biology, Brandeis University, Waltham, MA 02154
SZENT-GYÖRGYI, EVA SZENTKIRALY, Department of Biology, Brandeis University, Waltham, MA 02154
SZUTS, ETZ., Laboratory of Sensory Physiology, Marine Biological Laboratory, Woods Hole, MA 02543
TAKASHIMA, SHIRO, Department of Bioengineering, University of Pennsylvania, Philadelphia, PA 19174
TAMM, SIDNEY L., Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543
TANZER, MARVIN L., Department of Biochemistry, Box G, Medical School, University of Connecticut, Farmington, CT 06032
TASAKI, ICHU, Laboratory of Neurobiology, National Institute of Mental Health, NIH, Bethesda, MD 20205
TAYLOR, DOUGLASS L., Biological Sciences, Mellon Institute, 440 Fifth Avenue, Pittsburgh, PA 15213
TAYLOR, ROBERT E., Laboratory of Biophysics, NINCDS, NIH, Bethesda, MD 20205
TAYLOR, W. ROWLAND, 4800 Atwell Rd., Shady Side, MD 20764
TEAL, JOHN M., Department of Biology, Woods Hole Oceanographic Institution, Woods Hole, MA 02543
TELFER, WILLIAM H., Department of Biology, University of Pennsylvania, Philadelphia, PA 19174
THORNDIKE, W. NICHOLAS, Wellington Management Company, 28 State St., Boston, MA 02109
TRAVIS, D. M., Veterans Administration Medical Center, Fargo, ND 58102
TREISTMAN, STEVEN N., Worcester Foundation for Experimental Biology, Shrewsbury, MA 01545
TRIGG, D. THOMAS, 125 Grove St., Wellesley, MA 02181
TRINKAUS, J. PHILIP, Osborn Zoological Laboratories, Department of Zoology, Yale University, New Haven, CT 06510
TROLL, WALTER, Department of Environmental Medicine, College of Medicine, New York University, New York, NY 10016
TROXLER, ROBERT F., Department of Biochemistry, School of Medicine, Boston University, 80 East Concord St., Boston, MA 02118
TUCKER, EDWARD B., Biology Department, Vassar College, Poughkeepsie, NY 12601
TURNER, RUTH D., Mollusk Department, Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138
TWEEDDELL, KENYON S., Department of Biology, University of Notre Dame, Notre Dame, IN 46656
TYTETT, MICHAEL, Department of Anatomy, Bowman Gray School of Medicine, Winston-Salem, NC 27103
TURETZ, ROBERT B., Division of Biological Sciences, University of Chicago, 950 East 59th St., Chicago, IL 60637
VAJZELA, IVAN, Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543
VALOIS, JOHN, Marine Biological Laboratory, Woods Hole, MA 02543
VAN HOLDE, KENSL, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR 97331
VILTEE, CLAUDE A., Department of Biological Chemistry, Harvard Medical School, Boston, MA 02115
VINCENT, WALTER S., School of Life and Health Sciences, University of Delaware, Newark, DE 19711
WAINTO, WALTER W., Box 1059 Nelson Labs, Rutgers Biochemistry, Piscataway, NJ 08854
WAKSMAN, BYRON, National Multiple Sclerosis Society, 205 East 42nd St., New York, NY 10017
WALL, BETTY, 9 George St., Woods Hole, MA 02543
WALLACE, ROBIN A., Department of Anatomy, College of Medicine, University of Florida, Gainesville, FL 32610
WANG, AN, Wang Laboratories, Inc., Bedford Road, Lincoln, MA 01773
WARNER, ROBERT C., Department of Molecular Biology and Biochemistry, University of California, Irvine, CA 92717
WARREN, KENNETH S., The Rockefeller Foundation, 1133 Avenue of the Americas, New York, NY 10036
WARREN, LEONARD, Department of Therapeutic Research, School of Medicine, Anatomy-Chemistry Building, University of Pennsylvania, Philadelphia, PA 19174
WATERMAN, T. H., Yale University, Biology Department, Box 6666, 610 Kline Biology Tower, New Haven, CT 06510
WATSON, STANLEY, Woods Hole Oceanographic Institution, Woods Hole, MA 02543
WEBB, H. MARGUERITE, Marine Biological Laboratory, Woods Hole, MA 02543
WEBER, ANNEMARIE, Department of Biochemistry, School of Medicine, University of Pennsylvania, Philadelphia, PA 19174
WEBSTER, FERRIS, Box 765, Lewes, DE 19958
WEIDNER, EARL, Department of Zoology and Physiology, Louisiana State University, Baton Rouge, LA 70803
WEISS, LEON P., Department of Animal Biology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA 19174
WEISSMANN, GERALD, New York University, 550 First Avenue, New York, NY 10016
WEDIEMAN, ROBERT, Neurobiology Unit, The Hebrew University, Jerusalem, Israel
WESTERFIELD, R. MONTE, The Institute of Neuroscience, University of Oregon, Eugene, OR 97403
WEXLER, NANCY SABIN, 15 Claremont Avenue, Apt. 92, New York, NY 10027
WHITTAKER, J. RICHARD, Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543
WIENCINSKI, FLOYD J., 21 Glenview Road, Glenview, IL 60025 (Life Member 10/83)
WIGLEY, ROLAND L., 35 Wilson Road, Woods Hole, MA 02543
WILBER, CHARLES G., Department of Zoology, Colorado State University, Fort Collins, CO 80523
WILSON, DARCY B., Department of Pathology, School of Medicine, University of Pennsylvania, Philadelphia, PA 19174
WILSON, EDWARD O., Department of Zoology, Harvard University, Cambridge, MA 02138
WILSON, T. HASTINGS, Department of Physiology, Harvard Medical School, Boston, MA 02115
WILSON, WALTER L., Department of Biology, Oakland University, Rochester, MI 48063
WITKOVSKY, PAUL, Department of Ophthalmology, New York University Medical Center, 550 First Ave., New York, NY 10016
WITTENBERG, JONATHAN B., Department of Physiology and Biochemistry, Albert Einstein College, 1300 Morris Park Ave., New York, NY 10016
WOLF, DON P., Department of OB-GYN, University of Texas Health Sciences Center, 6431 Fannin, Houston, TX 77030
WOLFE, RALPH, Department of Microbiology, 131 Burrill Hall, University of Illinois, Urbana, IL 61801
WOODWELL, GEORGE M., Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA 02543
MEMBERS OF THE CORPORATION

WORGLI, BASIL V., Department of Ophthalmology, Columbia University, 630 West 168th St., New York, NY 10032
WU, CHAU HSUANG, Department of Pharmacology, Northwestern University Medical School, 203 E. Chicago Ave., Chicago, IL 60611
WYATTENBACH, CHARLES R., Department of Physiology and Cell Biology, University of Kansas, Lawrence, KS 66045
YEH, JAY Z., Department of Pharmacology, Northwestern University Medical School, 303 E. Chicago Ave., Chicago, IL 60611
YOUNG, RICHARD, Houghton Mifflin Company, One Beacon St., Boston, MA 02108
ZIGMA, SEYMOUR, School of Medicine and Dentistry, University of Rochester, 260 Crittenden Blvd., Rochester, NY 14620
ZUCKER, ROBERT S., Department of Physiology, University of California, Berkeley, CA 94720

ASSOCIATE MEMBERS

ACKROYD, DR. AND MRS. FREDERICK W.
ADELBerg, DR. AND MRS. EDWARD A.
ALLEN, MISS CAMILLA K.
ALLEN, DR. ROBERT D. AND INA S.
AMBERSON, MRS. WILLIAM R.
ANDERSON, DR. JAMES L. AND HELENE M.
ARMSTRONG, DR. AND MRS. SAMUEL C.
ARNOLD, DR. AND MRS. JOHN M.
ATWOOD, DR. AND MRS. KIMBALL C.
BALL, MRS. ERIC G.
BALLANTINE, DR. AND MRS. H. T., JR.
BANG, MRS. FREDERIK B.
Banks, MR. AND MRS. WILLIAM L.
BARROWS, MRS. ALBERT W.
BEERS, DR. AND MRS. YARDLEY
Bennett, DR. AND MRS. MICHAEL V. L.
BERNHEIMER, DR. ALAN W.
BERNSTEIN, MR. AND MRS. NORMAN
BERWIND, MR. DAVID
BIEGLOW, MRS. ROBERT O.
BOCHE, MR. DAVID
BODEEN, MR. AND MRS. GEORGE H.
BOETTGER, DR. AND MRS. EDWARD G.
BOLTON, MR. AND MRS. THOMAS C.
BOTKIN, DR. AND MRS. DANIEL B.
BOWLES, DR. AND MRS. FRANCIS P.
BRADLEY, DR. AND MRS. CHARLES C.
BROSNON, MRS. SAMUEL C.
BROWN, MRS. DUGALD E. S.
BROWN, DR. AND MRS. FRANK A., JR.
BROWN, MR. AND MRS. HENRY
BROWN, MRS. NEIL
BROWN, DR. AND MRS. THORNTON
Buck, MRS. JOHN B.
BUFFINGTON, MRS. ALICE H.
BURROUGH, MRS. ARNOLD H.
Burt, MRS. CHARLES E.
BUTLER, MR. AND MRS. RHETT W.
BUXTON, MR. AND MRS. BRUCE
CAKINS, MR. AND MRS. G. N. JR.
CAMPBELL, DR. AND MRS. DAVID G.
CAPOBIANCO, MR. AND MRS. PAT J.
CARLSON, DR. AND MRS. FRANCIS
CARLTON, MR. AND MRS. WINSLOW G.
CHENEY, MRS. RALPH H.
CLAFF, MR. AND MRS. MARK
CLARK, MR. AND MRS. HAYS
CLARK, MR. AND MRS. JAMES MCC.
CLARK, DR. AND MRS. LEONARD B.
CLARK, MRS. W. VAN ALAN
CLARKE, DR. BARBARA J.
CLEMENT, DR. AND MRS. A. C.
CLOWES FUND, INC.
CLOWES, DR. AND MRS. ALEXANDER W.
CLOWES, MR. ALLEN W.
CLOWES, DR. AND MRS. G. H. A., JR.
COBURN, MR. LAWRENCE
COLEMAN, DR. AND MRS. JOHN
CONNELL, MR. AND MRS. W. J.
COPELAND, MRS. D. EUGENE
COPELAND, MR. AND MRS. PRESTON S.
COSTELLO, MRS. DONALD P.
CRAIN, MR. AND MRS. MELVIN C.
CRAMER, MR. AND MRS. IAN D. W.
CRANE, MRS. JOHN
CRANE, JOSEPHINE B., FOUNDATION
CRANE, MR. THOMAS
CROSS, MR. AND MRS. NORMAN C.
CROSSLEY, MR. AND MRS. ARCHIBALD M.
CROWELL, DR. AND MRS. SEARS
DAIGNAULT, MR. AND MRS. ALEXANDER T.
Daniels, MR. AND MRS. BRUCE G.
DAVIS, MR. AND MRS. JOEL F.
DAY, MR. AND MRS. POMEROY
Di BERARDINO, DR. MARIE A.
DICKSON, DR. WILLIAM A.
DUMMOND, MR. AND MRS. A. H., JR.
DUBOIS, DR. AND MRS. ARTHUR B.
DUNKERLEY, MR. AND MRS. H. GORDON
DuPONT, MR. A. FELIX, JR.
EBERT, DR. AND MRS. JAMES D.
EGLOFF, DR. AND MRS. F. R. L.
EPPLE, MR. AND MRS. DUDLEY
EVANS, MR. AND MRS. DUDLEY
EWING, DR. AND MRS. GIFFORD C.
FERGUSON, DR. AND MRS. JAMES J., JR.
FINE, DR. AND MRS. JACOB
FISHER, MRS. B. C.
FISHER, MR. FREDERICK S., III
FISHER, DR. AND MRS. SAUL H.
FRANCIS, MR. AND MRS. LEWIS W., JR.
FRIENDSHIP FUND
FRIES, DR. AND MRS. E. F. B.
FYE, DR. AND MRS. PAUL M.
GABRIEL, DR. AND MRS. MORDECAI L.
GAISER, DR. AND MRS. DAVID W.
GARFIELD, MISS ELEANOR
GARREY, DR. WALTER E.
GELLIS, DR. AND MRS. SYDNEY
GERMAN, DR. AND MRS. JAMES L., III
GIFFORD, MR. JOHN A.
GIFFORD, DR. AND MRS. PROSSER
GILBERT, DR. AND MRS. DANIEL L.
GILBERT, MRS. CARL J.
GILDEA, DR. MARGARET C. L.
GILLETTE, MR. AND MRS. ROBERT S.
GLASS, DR. AND MRS. H. BENTLEY
GLAZEBROOK, MRS. JAMES R.
GLUSMAN, DR. AND MRS. MURRAY
GOLDMAN, DR. AND MRS. ALLEN, S.
GOLDSTEIN, DR. AND MRS. MOISE H., JR.
GOODWIN, MR. AND MRS. CHARLES
GRANT, DR. AND MRS. PHILIP
GRASSE, MRS. J. F.
GREEN, MISS GLADYS M.
GREENE, MR. AND MRS. WILLIAM C.
GREER, MR. AND MRS. W. H., JR.
GROSC, DR. AND MRS. DANIEL S.
GROSS, MRS. PAUL C.
GRUSON, MRS. MARTHA R.
GUNNING, MR. AND MRS. ROBERT
HAAKONSEN, DR. HARRY O.
HALVORSON, DR. AND MRS. HARLYN O.
HANDLER, MRS. PHILIP
HARVEY, DR. AND MRS. RICHARD B.
HASSET, MR. AND MRS. CHARLES
HASTINGS, DR. AND MRS. J. WOODLAND
HENLEY, DR. CATHERINE
HESSEY, MRS. GEORGE L.
HIATT, DR. AND MRS. HOWARD
HILL, MRS. SAMUEL E.
HILSINGER, MR. AND MRS. ARTHUR
HIRSCHFIELD, MRS. NATHAN B.
HOBIE, DR. AND MRS. JOHN
HOCKER, MR. AND MRS. LON
HOFMAN, REV. AND MRS. CHARLES
HORWITZ, DR. AND MRS. NORMAN H.
HOUSTON, MR. AND MRS. HOWARD E.
HOWARD, MR. AND MRS. L. L.
HUETTNER, DR. AND MRS. ROBERT J.
HYNES, MRS. AND MRS. THOMAS J. JR.
INOUE, DR. AND MRS. SHINYA
IRELAND, MRS. HERBERT A.
ISSOKSON, MR. AND MRS. ISRAEL
IVENS, DR. SUE
JACKSON, MISS ELIZABETH B.
JAFFE, DR. AND MRS. ERNEST R.
JANNEY, MRS. F. WISTAR
JEWETT, G. F., FOUNDATION
JEWETT, MR. AND MRS. G. F., JR.
JONES, MR. AND MRS. FREDERICK, III
JORDAN, DR. AND MRS. EDWIN, P.
KAAN, DR. HELEN W.
KAHLER, MR. AND MRS. GEORGE A.
KAHLER, MR. AND MRS. ROBERT W.
KAMINER, DR. AND MRS. BENJAMIN
KARUSH, DR. AND MRS. FRED
KEITH, MRS. JEAN R.
KELLEHER, MR. AND MRS. PAUL R.
KENDALL, MR. RICHARD E.
KEOSIAN, MRS. JESSIE
KIEH, MR. AND MRS. PIETER
KINNARD, MRS. L. RICHARD
KIVY, DR. AND MRS. PETER
KOHN, DR. AND MRS. HENRY I.
KOLLER, DR. AND MRS. LEWIS R.
KUFFLER, MRS. STEPHEN W.
LADERMAN, MR. AND MRS. AIMLEE EZRA
LASH, DR. AND MRS. JAMES
LASTER, DR. AND MRS. LEANARD
LAUFER, DR. AND MRS. HANS
LAVIGNE, MRS. RICHARD J.
LAWRENCE, MR. FREDERICK V.
LAWRENCE, MR. AND MRS. WILLIAM
LAZAROW, MRS. ARNOLD
LEATHERBEE, MRS. JOHN H.
LEMANN, MRS. LUCY B.
LENHER, DR. AND MRS. SAMUEL
LEVINE, DR. AND MRS. RACHMIEL
LEWIS, MR. JOHN T.
LITTLE, MRS. ELBERT
LOEB, MRS. ROBERT F.
LOVELL, MR. AND MRS. HOLLIS R.
LOWE, DR. AND MRS. CHARLES W.
LOWENGARD, MRS. JOSEPH
MACKEY, MR. AND MRS. WILLIAM K.
MACLEISH, MRS. MARGARET
MACNARY, MR. AND MRS. B. GLENN
MACNICHOL, DR. AND MRS. EDWARD F., JR.
MAHER, MISS ANNIE CAMILLE
MARSLAND, DR. DOUGLAS
MARTYNA, MR. AND MRS. JOSEPH C.
MARVIN, DR. DOROTHY H.
MASER, DR. AND MRS. MORTON
MASTROIANNI, DR. AND MRS. LUIGI, JR.
MATHER, MR. AND MRS. FRANK J., III
MATTHEI, MR. AND MRS. G. C.
MEMBERS OF THE CORPORATION

McCusker, Mr. and Mrs. Paul T.
McElroy, Mrs. Nella W.
McLane, Mrs. T. Thorne
Meigs, Mr. and Mrs. Arthur
Meigs, Dr. and Mrs. J. Wister
Melillo, Dr. and Mrs. Jerry M.
Mellon, Richard King, Trust
Mellon, Mr. and Mrs. Richard P.
Mendelson, Dr. Martin
Menke, Dr. W. J.
Metz, Dr. and Mrs. Charles B.
Meyers, Mr. and Mrs. Richard
Miller, Dr. Daniel A.
Mixter, Mr. and Mrs. William J., Jr.
Montgomery, Dr. and Mrs. Charles H.
Montgomery, Dr. and Mrs. Raymond P.
Moog, Dr. Florence
Moore, Mr. and Mrs. Berrien, III
Moore, Dr. and Mrs. John A.
Morse, Mr. and Mrs. Charles, L., Jr.
Morse, Mr. and Mrs. Richard S.
Moul, Dr. and Mrs. Edwin T.
Nace, Dr. and Mrs. Paul
Nelson, Dr. Pamela
Newton, Mr. and Mrs. William F.
Nickerson, Mr. and Mrs. Frank L.
Norman, Mr. and Mrs. Andrew E.
Norman Foundation
Norris, Mr. John, Esq.
O'Herron, Mr. and Mrs. Jonathan
Ortins, Mr. and Mrs. Armand
O'Sullivan, Dr. Renee Bennett
Pappas, Dr. and Mrs. George D.
Park, Mrs. Franklin A.
Parmenter, Miss Carolyn L.
Pendergast, Mrs. Claudia
Pendleton, Dr. and Miss Carolyn L.
Pennington, Miss Anne H.
Perkins, Mr. and Mrs. Courtland D.
Person, Dr. and Mrs. Philip
Peterson, Mr. and Mrs. E. Gunnar
Peterson, Mr. and Mrs. E. Joel
Peterson, Mr. Raymond W.
Philippe, Mr. and Mrs. Pierre
Porter, Dr. and Mrs. Keith R.
Press, Mrs. Frank and Billie
Prosser, Dr. and Mrs. C. Ladd
Psychos, Mr. Alexandre
Putnam, Mr. Allan Ray
Putnam, Mr. and Mrs. William A., III
Raymond, Dr. and Mrs. Samuel
Reynolds, Dr. and Mrs. George
Reznikoff, Mrs. Paul
Ricca, Dr. and Mrs. Renato A.
Riggs, Mr. and Mrs. Lawrason, III
Riina, Mr. and Mrs. John R.
Robb, Mrs. Alison A.
Robertson, Mrs. C. Stuart
Robertson, Dr. and Mrs. C. W.
Robinson, Dr. and Mrs. Denis M.
Rogers, Mrs. Julian
Root, Mrs. Walter S.
Roslansky, Mr. and Mrs. John
Ross, Dr. Virginia
Roth, Mr. Stephen
Rowe, Mr. and Mrs. William S.
Rubin, Dr. Joseph
Rugh, Mrs. Robert
Russell, Mr. and Mrs. Henry D.
Ryder, Mr. and Mrs. Francis C.
Saunders, Dr. and Mrs. John W.
Saunders, Mrs. Lawrence
Saunders, Lawrence Fund
Sawyer, Mr. and Mrs. John E.
Saz, Mrs. Ruth L.
Schlesinger, Dr. and Mrs. R. Walter
Scott, Dr. and Mrs. George T.
Scott, Mr. and Mrs. Norman E.
Sears, Mr. and Mrs. Harold B.
Segal, Dr. and Mrs. Sheldon J.
Senft, Dr. and Mrs. Alfred
Shapiro, Mrs. Harriet S.
Shemin, Dr. and Mrs. David
Shepro, Dr. and Mrs. David
Smith, Mrs. Homer P.
Smith, Mr. Van Dorn C.
Snider, Mr. Eliot
Solomon, Dr. and Mrs. A. K.
Specht, Mrs. Heinz
Spiegel, Dr. and Mrs. Melvin
Steele, Mrs. M. Evelyn
Steinbach, Mrs. H. Burr
Stetson, Mrs. Thomas J.
Stetten, Dr. DeWitt, Jr.
Stewart, Mr. and Mrs. Peter
Stunkard, Dr. Horace
Sturtevant, Mrs. A. H.
Swanson, Dr. and Mrs. Carl P.
Swope, Dr. and Mrs. Gerard L.
Swope, Mrs. Gerard, Jr.
Taylor, Dr. and Mrs. W. Randolph
Tietje, Mr. and Mrs. Emil D., Jr.
Timmins, Mrs. William
Tolkien, Mr. and Mrs. Norman N.
Trager, Mrs. William
Trigg, Mr. and Mrs. D. Thomas
Troll, Dr. and Mrs. Walter
Tully, Mr. and Mrs. Gordon F.
Ulbrich, Mrs. Mary Steinbach
Valois, Mr. and Mrs. John
Veeber, Mrs. Ronald A.
Waksman, Dr. and Mrs. Byron H.
WARD, DR. ROBERT T.  
WARE, MR. AND MRS. J. LINDSAY  
WATT, MR. AND MRS. JOHN B.  
WATTERSON, DR. RAY  
WEISBERG, MR. AND MRS. ALFRED M.  
WHEELER, DR. AND MRS. PAUL S.  
WHITNEY, MR. AND MRS. GEOFFREY G. JR.  
WICHTERMAN, DR. AND MRS. RALPH  
WICKERSHAM, MR. AND MRS. A. A.  
TILNEY  
WICKERSHAM, MR. AND MRS. JAMES H., JR.  
WILHELM, DR. HAZEL, S.  
WITMER, DR. AND MRS. ENOS E.  
WOLFINSOHN, MR. AND MRS. WOLFE  
WOODWELL, DR. AND MRS. GEORGE M.  
YTENMA, MRS. CHESTER L.  
ZINN, DR. AND MRS. DONALD J.  
ZIPF, DR. ELIZABETH  
ZWILLING, MRS. EDGAR

III. CERTIFICATE OF ORGANIZATION

(On File in the Office of the Secretary of the Commonwealth)

No. 3170

We, Alpheus Hyatt, President, William Stanford Stevens, Treasurer, and William T. Sedgwick, Edward G. Gardiner, Susan Mims and Charles Sedgwick Minot being a majority of the Trustees of the Marine Biological Laboratory in compliance with the requirements of the fourth section of chapter one hundred and fifteen of the Public Statutes do hereby certify that the following is a true copy of the agreement of association to constitute said Corporation, with the names of the subscribers thereto:

We, whose names are hereunto subscribed, do, by this agreement, associate ourselves with the intention to constitute a Corporation according to the provisions of the one hundred and fifteenth chapter of the Public Statutes of the Commonwealth of Massachusetts, and the Acts in amendment thereof and in addition thereto.

The name by which the Corporation shall be known is THE MARINE BIOLOGICAL LABORATORY.

The purpose for which the Corporation is constituted is to establish and maintain a laboratory or station for scientific study and investigations, and a school for instruction in biology and natural history.

The place within which the Corporation is established or located is the city of Boston within said Commonwealth.

The amount of its capital stock is none.

In Witness Whereof, we have hereunto set our hands, this twenty seventh day of February in the year eighteen hundred and eighty-eight, Alpheus Hyatt, Samuel Mills, William T. Sedgwick, Edward G. Gardiner, Charles Sedgwick Minot, William G. Farlow, William Stanford Stevens, Anna D. Phillips, Susan Mims, B. H. Van Vleck.

That the first meeting of the subscribers to said agreement was held on the thirteenth day of March in the year eighteen hundred and eighty-eight.

In Witness Whereof, we have hereunto signed our names, this thirteenth day of March in the year eighteen hundred and eighty-eight, Alpheus Hyatt, President, William Stanford Stevens, Treasurer, Edward G. Gardiner, William T. Sedgwick, Susan Mims, Charles Sedgwick Minot.
(Approved on March 20, 1888 as follows:

*I hereby certify* that it appears upon an examination of the within written certificate and the records of the corporation duly submitted to my inspection, that the requirements of sections one, two and three of chapter one hundred and fifteen, and sections eighteen, twenty and twenty-one of chapter one hundred and six, of the Public Statutes, have been complied with and I hereby approve said certificate this twentieth day of March A.D. eighteen hundred and eighty-eight.

CHARLES ENDICOTT
Commissioner of Corporations)

IV. ARTICLES OF AMENDMENT

(On File in the Office of the Secretary of the Commonwealth)

We, James D. Ebert, President, and David Shepro, Clerk of the Marine Biological Laboratory, located at Woods Hole, Massachusetts 02543, do hereby certify that the following amendment to the Articles of Organization of the Corporation was duly adopted at a meeting held on August 15, 1975, as adjourned to August 29, 1975, by vote of 444 members, being at least two-thirds of its members legally qualified to vote in the meeting of the corporation:

VOTED: That the Certificate of Organization of this corporation be and it hereby is amended by the addition of the following provisions:

"No Officer, Trustee or Corporate Member of the corporation shall be personally liable for the payment or satisfaction of any obligation or liabilities incurred as a result of, or otherwise in connection with, any commitments, agreements, activities or affairs of the corporation.

"Except as otherwise specifically provided by the Bylaws of the corporation, meetings of the Corporate Members of the corporation may be held anywhere in the United States.

"The Trustees of the corporation may make, amend or repeal the Bylaws of the corporation in whole or in part, except with respect to any provisions thereof which shall by law, this Certificate or the bylaws of the corporation, require action by the Corporate Members."

The foregoing amendment will become effective when these articles of amendment are filed in accordance with Chapter 180, Section 7 of the General Laws unless these articles specify, in accordance with the vote adopting the amendment, a later effective date not more than thirty days after such filing, in which event the amendment will become effective on such later date.

*In Witness whereof and Under the Penalties of Perjury,* we have hereto signed our names this 2nd day of September, in the year 1975, James D. Ebert, President; David Shepro, Clerk.

(Approved on October 24, 1975, as follows:

I hereby approve the within articles of amendment and, the filing fee in the amount of $10 having been paid, said articles are deemed to have been filed with me this 24th day of October, 1975.

PAUL GUZZI
Secretary of the Commonwealth)
V. BYLAWS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

(Revised August 11, 1978)

I. (A) The name of the Corporation shall be The Marine Biological Laboratory. The Corporation's purpose shall be to establish and maintain a laboratory or station for scientific study and investigation, and a school for instruction in biology and natural history.

(B) Marine Biological Laboratory admits students without regard to race, color, sex, national and ethnic origin to all the rights, privileges, programs and activities generally accorded or made available to students in its courses. It does not discriminate on the basis of race, color, sex, national and ethnic origin in employment, administration of its educational policies, admissions policies, scholarship and other programs.

II. (A) The members of the Corporation ("Members") shall consist of persons elected by the Board of Trustees, upon such terms and conditions and in accordance with such procedures, not inconsistent with law or these Bylaws, as may be determined by said Board of Trustees. Except as provided below, any Member may vote at any meeting either in person or by proxy executed no more than six months prior to the date of such meeting. Members shall serve until their death or resignation unless earlier removed with or without cause by the affirmative vote of two-thirds of the Trustees then in office. Any member who has attained the age of seventy years or has retired from his home institution shall automatically be designated a Life Member provided he signifies his wish to retain his membership. Life Members shall not have the right to vote and shall not be assessed for dues.

(B) The Associates of the Marine Biological Laboratory shall be an unincorporated group of persons (including associations and corporations) interested in the Laboratory and shall be organized and operated under the general supervision and authority of the Trustees.

III. The officers of the Corporation shall consist of a Chairman of the Board of Trustees, President, Director, Treasurer and Clerk, elected or appointed by the Trustees as set forth in Article IX.

IV. The Annual Meeting of the Members shall be held on the Friday following the Second Tuesday in August in each year at the Laboratory in Woods Hole, Massachusetts, at 9:30 a.m. Subject to the provisions of Article VIII(2), at such meeting the Members shall choose by ballot six Trustees to serve four years, and shall transact such other business as may properly come before the meeting. Special meetings of the Members may be called by the Chairman or Trustees to be held at such time and place as may be designated.

V. Twenty five Members shall constitute a quorum at any meeting. Except as otherwise required by law or these Bylaws, the affirmative vote of a majority of the Members voting in person or by proxy at a meeting attended by a quorum (present in person or by proxy) shall constitute action on behalf of the Members.

VI. (A) Inasmuch as the time and place of the Annual Meeting of Members are fixed by these Bylaws, no notice of the Annual Meeting need be given. Notice of any special meeting of Members, however, shall be given by the Clerk by mailing notice of the time and place and purpose of such meeting, at least 15 days before such meeting, to each Member at his or her address as shown on the records of the Corporation.

(B) Any meeting of the Members may be adjourned to any other time and place by the vote of a majority of those Members present or represented at the meeting, whether or not such Members constitute a quorum. It shall not be necessary to notify any Member of any adjournment.
VII. The Annual Meeting of the Trustees shall be held promptly after the Annual Meeting of the Corporation at the Laboratory in Woods Hole, Massachusetts. Special meetings of the Trustees shall be called by the Chairman, the President, or by any seven Trustees, to be held at such time and place as may be designated. Notice of Trustees' meetings may be given orally, by telephone, telegraph or in writing; and notice given in time to enable the Trustees to attend, or in any case notice sent by mail or telegraph to a Trustee's usual or last known place of residence, at least one week before the meeting shall be sufficient. Notice of a meeting need not be given to any Trustee if a written waiver of notice, executed by him before or after the meeting is filed with the records of the meeting, or if he shall attend the meeting without protesting prior thereto or at its commencement the lack of notice to him.

VIII. (A) There shall be four groups of Trustees:

(1) Trustees (the "Corporate Trustees") elected by the Members according to such procedures, not inconsistent with these Bylaws, as the Trustees shall have determined. Except as provided below, such Trustees shall be divided into four classes of six, one class to be elected each year to serve for a term of four years. Such classes shall be designated by the year of expiration of their respective terms.

(2) Trustees ("Board Trustees") elected by the Trustees then in office according to such procedures, not inconsistent with these Bylaws, as the Trustees shall have determined. Except as provided below, such Board Trustees shall be divided into four classes of three, one class to be elected each year to serve for a term of four years. Such classes shall be designated by the year of expiration of their respective terms. It is contemplated that, unless otherwise determined by the Trustees for good reason, Board Trustees shall be individuals who have not been considered for election as Corporate Trustees.

(3) Trustees ex officio, who shall be the Chairman, the President, the Director, the Treasurer, and the Clerk.

(4) Trustees emeriti who shall include any Member who has attained the age of seventy years (or the age of sixty five and has retired from his home institution) and who has served a full elected term as a regular Trustee, provided he signifies his wish to serve the Laboratory in that capacity. Any Trustee who qualifies for emeritus status shall continue to serve as a regular Trustee until the next Annual Meeting whereupon his office as regular Trustee shall become vacant and be filled by election by the Members or by the Board, as the case may be. The Trustees ex officio and emeriti shall have all the rights of the Trustees, except that Trustees emeriti shall not have the right to vote.

(B) The aggregate number of Corporate Trustees and Board Trustees elected in any year (excluding Trustees elected to fill vacancies which do not result from expiration of a term) shall not exceed nine. The number of Board Trustees so elected shall not exceed three and unless otherwise determined by vote of the Trustees, the number of Corporate Trustees so elected shall not exceed six.

(C) The Trustees and Officers shall hold their respective offices until their successors are chosen in their stead.

(D) Any Trustee may be removed from office at any time with or without cause, by vote of a majority of the Members entitled to vote in the election of Trustees; or for cause, by vote of two-thirds of the Trustees then in office. A Trustee may be removed for cause only if notice of such action shall have been given to all of the Trustees or Members entitled to vote, as the case may be, prior to the meeting at which such action is to be taken and if the Trustee so to be removed shall have been given reasonable notice and opportunity to be heard before the body proposing to remove him.

(E) Any vacancy in the number of Corporate Trustees, however arising, may be filled by the Trustees then in office unless and until filled by the Members at the next Annual Meeting. Any vacancy in the number of Board Trustees may be filled by the Trustees.

(F) A Corporate Trustee or a Board Trustee who has served an initial term of at least 2 years duration shall be eligible for re-election to a second term, but shall be ineligible for re-election to any subsequent term until two years have elapsed after he last served as Trustee.
IX. (A) The Trustees shall have the control and management of the affairs of the Corporation. They shall elect a Chairman of the Board of Trustees who shall be elected annually and shall serve until his successor is selected and qualified and who shall also preside at meetings of the Corporation. They shall elect a President of the Corporation who shall also be the Vice Chairman of the Board of Trustees and Vice Chairman of meetings of the Corporation, and who shall be elected annually and shall serve until his successor is selected and qualified. They shall annually elect a Treasurer who shall serve until his successor is selected and qualified. They shall elect a Clerk (a resident of Massachusetts) who shall serve for a term of 4 years. Eligibility for re-election shall be in accordance with the content of Article VIII (F) as applied to Corporate or Board Trustees. They shall elect Board Trustees as described in Article VIII (B). They shall appoint a Director of the Laboratory for a term not to exceed five years, provided the term shall not exceed one year if the candidate has attained the age of 65 years prior to the date of the appointment. They may choose such other officers and agents as they may think best. They may fix the compensation and define the duties of all the officers and agents of the Corporation and may remove them at any time. They may fill vacancies occurring in any of the offices. The Board of Trustees shall have the power to choose an Executive Committee from their own number as provided in Article X, and to delegate to such Committee such of their own powers as they may deem expedient in addition to those powers conferred by Article X. They shall from time to time elect Members to the Corporation upon such terms and conditions as they shall have determined, not inconsistent with law or these Bylaws.

(B) The Board of Trustees shall also have the power, by vote of a majority of the Trustees then in Office, to elect an Investment Committee and any other committee and, by like vote, to delegate thereto some or all of their powers except those which by law, the Articles of Organization or these Bylaws they are prohibited from delegating. The members of any such committee shall have such tenure and duties as the Trustees shall determine; provided that the Investment Committee, which shall oversee the management of the Corporation’s endowment funds and marketable securities, shall include the Chairman of the Board of Trustees, the Treasurer of the Corporation, and the Chairman of the Corporation’s Budget Committee, as ex officio members, together with such Trustees as may be required for not less than two-thirds of the Investment Committee to consist of Trustees. Except as otherwise provided by these Bylaws or determined by the Trustees, any such committee may make rules for the conduct of its business; but, unless otherwise provided by the Trustees or in such rules, its business shall be conducted as nearly as possible in the same manner as is provided by these Bylaws for the Trustees.

X. (A) The Executive Committee is hereby designated to consist of not more than ten members, including the ex officio Members (Chairman of the Board of Trustees, President, Director and Treasurer); and six additional Trustees, two of whom shall be elected by the Board of Trustees each year, to serve for a three-year term.

(B) The Chairman of the Board of Trustees shall act as Chairman of the Executive Committee, and the President as Vice Chairman. A majority of the members of the Executive Committee shall constitute a quorum and the affirmative vote of a majority of those voting at any meeting at which a quorum is present shall constitute action on behalf of the Executive Committee. The Executive Committee shall meet at such times and places and upon such notice and appoint such sub-committees as the Committee shall determine.

(C) The Executive Committee shall have and may exercise all the powers of the Board during the intervals between meetings of the Board of Trustees except those powers specifically withheld from time to time by vote of the Board or by law. The Executive Committee may also appoint such committees, including persons who are not Trustees, as it may from time to time approve to make recommendations with respect to matters to be acted upon by the Executive Committee or the Board of Trustees.

(D) The Executive Committee shall keep appropriate minutes of its meetings and its action shall be reported to the Board of Trustees.
BYLAWS

(E) The elected Members of the Executive Committee shall constitute as a standing “Committee for the Nomination of Officers,” responsible for making nominations, at each Annual Meeting of the Corporation, and of the Board of Trustees, for candidates to fill each office as the respective terms of office expire (Chairman of the Board, President, Director, Treasurer, and Clerk).

XI. A majority of the Trustees, the Executive Committee, or any other committee elected by the Trustees shall constitute a quorum; and a lesser number than a quorum may adjourn any meeting from time to time without further notice. At any meeting of the Trustees, the Executive Committee, or any other committee elected by the Trustees, the vote of a majority of those present, or such different vote as may be specified by law, the Articles of Organization or these Bylaws, shall be sufficient to take any action.

XII. Any action required or permitted to be taken at any meeting of the Trustees, the Executive Committee or any other committee elected by the Trustees as referred to under Article IX may be taken without a meeting if all of the Trustees or members of such committee, as the case may be, consent to the action in writing and such written consents are filed with the records of meetings. The Trustees or members of the Executive Committee or any other committee appointed by the Trustees may also participate in meeting by means of conference telephone, or otherwise take action in such a manner as may from time to time be permitted by law.

XIII. The consent of every Trustee shall be necessary to dissolution of the Marine Biological Laboratory. In case of dissolution, the property shall be disposed of in such a manner and upon such terms as shall be determined by the affirmative vote of two-thirds of the Board of Trustees then in office.

XIV. These Bylaws may be amended by the affirmative vote of the Members at any meeting, provided that notice of the substance of the proposed amendment is stated in the notice of such meeting. As authorized by the Articles of Organization, the Trustees, by a majority of their number then in office, may also make, amend, or repeal these Bylaws, in whole or in part, except with respect to (a) the provisions of these Bylaws governing (i) the removal of Trustees and (ii) the amendment of these Bylaws and (b) any provisions of these Bylaws which by law, the Articles of Organization or these Bylaws, requires action by the Members.

No later than the time of giving notice of the meeting of Members next following the making, amending or repealing by the Trustees of any Bylaw, notice thereof stating the substance of such change shall be given to all Corporation Members entitled to vote on amending the Bylaws.

Any Bylaw adopted by the Trustees may be amended or repealed by the Members entitled to vote on amending the Bylaws.

XV. The account of the Treasurer shall be audited annually by a certified public accountant.

XVI. The Corporation will indemnify every person who is or was a trustee, officer or employee of the Corporation or a person who provides services without compensation to an Employee Benefit Plan maintained by the Corporation, for any liability (including reasonable costs of defense and settlement) arising by reason of any act or omission affecting an Employee Benefit Plan maintained by the Corporation or affecting the participants or beneficiaries of such Plan, including without limitation any damages, civil penalty or excise tax imposed pursuant to the Employee Retirement Income Security Act of 1974; provided, (1) that the Act or omission shall have occurred in the course of the person’s service as trustee or officer of the Corporation or within the scope of the employment of an employee of the Corporation.
or in connection with a service provided without compensation to an Employee Benefit Plan maintained by the Corporation, (2) that the Act or omission be in good faith as determined by the Corporation (whose determination made in good faith and not arbitrarily or capriciously shall be conclusive), and (3) that the Corporation’s obligation hereunder shall be offset to the extent of any otherwise applicable insurance coverage, under a policy maintained by the Corporation or any other person, or other source of indemnification.

VI. REPORT OF THE DIRECTOR

... The future is neither ahead nor behind, on one side or another. Nor is it dark or light. It is contained within ourselves; it is drawn from ourselves; its evil and its good are perpetually within us. The future that we seek from oracles, whether it be war or peace, starvation or plenty, disaster or happiness, is not forward to be come upon. Rather its gestation is now...

—Loren Eiseley

Introduction

Three changes have led to another one: a change in the form of this Report. First among them was the interest of Trustees in additional meetings, one to be held early in the summer. That interest caused action in February, 1984: scheduling of a meeting for (the 8th and 9th) June, 1984. A particular argument in favor was the need for more time for review of MBL research and scientific policy. The second change followed establishment of the Laboratory’s industrial liaison program, whose activities will begin in the summer of 1984. As a part of this program (dubbed the ISP, Interactive Science Program), we have established a database for all MBL investigators and faculty, randomly accessible via their affiliations and research activities. When it is correct and in full use, the database will allow not only periodic rectification of the files, but also inclusion of abstracts on significant research outcomes. It will be printed out in its entirety for the 1984 Decennial Review visitors, and doubtless for many others. Finally, there is a current effort by our Public Information staff to issue new publications on MBL research, some for fund-raising and other external distribution, and some for internal readers.

One result of these actual and proposed changes will be a comprehensive review, in 1984, of all research and training programs at the MBL, and the likely decision to issue a separate report or reports. There is too much of it to fit in the August Biological Bulletin. The purposes of this Director’s Report will necessarily change. It is, after all, primarily an internal document, read (presumably) by some Corporation members and Trustees; but because of its form of publication and its location amidst legal, statistical, financial, and other membership data, it does not and cannot effectively serve the important purpose of representing MBL science.

Yet the Biological Bulletin is the MBL’s own journal; and its publication of the Annual Report is widely perceived to be important. That cannot change. Some form of Director’s Report must be incorporated; it will continue to be seen by many subscribers, but it will be read for the most part by active members of the MBL family. I have chosen, therefore, to try a somewhat different use for it than the yearly history, by Department and by program: to address MBL people quite directly; to avoid discussion of the content of research or teaching, except as these may be immediate issues of policy, saving review of annual accomplishments for other publications; and finally, to address issues of MBL policy and organization with a good deal more frankness than is typical of the alumni magazines produced by college
publications offices. This first trial is concerned with progress and problems. It may entail some risk; but I have never known the truth to cause real trouble when it is truth about something excellent.

Is Progress Necessary?

Readers of about my age may remember a volume by Thurber and White, entitled "Is Sex Necessary?" Its distinguishing feature was the absence of sex. Such is not my intention in choosing the heading for this section. I raise the question about the necessity of progress because it is sometimes raised, as such or by implication, within the Corporation. In the time-honored way, the force of the question is blurred by demurrers that argue, not the necessity, but the definition. That fools few listeners. Most of us have a pretty good idea of the difference between rest and motion. Most questions attack the idea that it is practical, or necessary, or even in good taste, to move. "Why not," such questions really ask, "stand still?" "After all, things are not so very bad just now; and they were much better some time ago."

It is a view with which I can sympathize in principle. I see no progress in electronically-amplified popular music, for example, because it's bad for the Organ of Corti, and most of it isn't music anyway. Nor do I believe that political TV "debates" are debates; that "found objects" are art; that computer games are more than pinball machines; that Transactional Analysis is more effective than reading fiction; or that "computer-literacy" is any kind of literacy.

But the MBL is different. I put the matter bluntly: the MBL of the nineteen-fifties could not hope to live in the nineteen-eighties. Most excuses for our financial support in those good old years—and I mean excuses, not the truth (that the MBL was and is the world's most productive Annual Congress of Biology)—have evaporated. With important exceptions such as squid, sea animals, and plants for research can now be shipped to inland locations and used there with some inconvenience. Scientific meetings, and opportunities for travel to them, have multiplied, despite declining grant support. There are several times as many biomedical disciplines and working scientists today as there were in 1950; since the MBL hasn't grown in size to match, the percentage of top people in each field who can be MBL regulars has necessarily declined: we still have a disproportionate share, but we don't any longer have, as we could once claim, nearly all of them. No place has.

The facilities requirements for biomedical science, e.g., equipment and buildings, have grown beyond all expectation. It becomes more difficult and expensive, year by year, to equip MBL laboratories for the advanced work that must be done and taught in them. We are still far ahead of the game, and our courses remain unique in quality; but other institutions are moving aggressively into the business in most MBL fields. Nor can we go back to teaching descriptive, undergraduate-level courses. We couldn't charge the necessary tuition; there would be no grant support for them; and there is strong objection to the idea in many quarters, for it would mean giving up the intellectual frontier we occupy.

It is necessary, in short, for the MBL to understand the times; and to keep, not just abreast, but ahead of them. Change, with minimum dislocation of good, ongoing work; and with minimum hurt to persons, but change measured and according to plan. There is nothing new in this. Old organizations retain support because the public sees their value in simple and immediate terms, not as imponderables or with nostalgia.

The situation might be represented by that universal device for measuring cardiovascular competence: the analytical treadmill. Biomedical science is a treadmill.
For reasons qualitative as well as quantitative, its tilt up is increasing year by year. Doing it, one can’t just stop and stand still. Stopping means falling off. That was not true as late as 1960, but it is true today. Therefore progress is necessary. We must ask how much progress we are making in the key domains of MBL operations, and what problems there are. Why, for example, too little progress is one area, if that is the judgment; why signs of declining progress elsewhere, even if we are still on track; what are the interactions and contradictions between progress in one domain and the problems of others? These are the kinds of issues I hope to identify below: not to discuss them comprehensively, for that is disallowed by available space and inappropriate for publication with data meant to cover just the year 1983. But I do want to identify some domains and the tensions between progress and problems. I hope that readers among our colleagues may be set to thinking, on their own, about the subject.

Research

The broad measures of our progress in research are seen in many places: Director’s Reports of the past few years; statistical data presented to the Corporation and to our donors; the very many publications and achievements, recognized by elections, public honors, and awards, of current members of this community. There are other measures of MBL excellence, a little less direct but nonetheless compelling for those who understand the machinery of science and its support. One example will suffice: the funding of research grant proposals and its relationship to demand for MBL space and accommodations, summer and year-round. Under prevailing policies of government agencies that support most MBL science, the number of grants of all types awarded each year has been stabilized at what is necessarily a smaller figure than of earlier years. Although total dollars awarded per grant have risen, purchasing power of the grant dollar has declined. Yet the two direct indicators of success in grant-getting, under the tough peer-reviews that determine it, show the MBL’s position, unlike that of many research universities, to be strengthening. Grants to the MBL have been rising, over the past few years, at the remarkable annual rate of 20%. While the number of grants and—more important—the percentage of applicants receiving grants in all fields of MBL interest have stabilized nationally at lower values than in the 1970’s, the MBL remains chock-full in summer. The number of requests for year-round research facilities at the MBL has risen or remained level each year since 1978. Despite the absence of any general system of tenure for scientists, people want to make full-time MBL careers; and many are leaders in their fields.

MBL scientists are therefore drawn from a sub-population of the nation’s best-qualified biologists: those “approved” applicants who also succeed in getting funded. The dollar squeeze has damaged fine programs elsewhere, and hurt—often unjustly—some distinguished investigators. But the MBL continues to get a full share of the survivors, who must be doing, on the whole, highest-quality science. The squeeze has had, moreover, the interesting (and sometimes painful) consequence that new or younger investigators may get some form of funding preference over the established. Those younger ones, too, want to come to the MBL. A study of recent applicants for MBL laboratory space shows that the funding squeeze, far from reducing the MBL family to a core of the old and established, has in fact led to some turnover and an encouraging number of new and younger applicants.

But there are consequent problems and there will be more. The treadmill will not stop or be lowered to horizontal.
MBL science is the best science; and thus it gets more remote by the month from
the microscope, the finger bowls, and the aquaria that could equip an MBL investigator
during the early decades. Younger people and new disciplines make demands—
legitimate ones—that were unanticipated even ten years ago. They need such unheard-
of facilities (for the old MBL) as a proper vivarium for mammals, because, for example,
they depend upon immunology and cell culture for the antibodies that are routine
tools of cytology and neurobiology. They need larger, more sophisticated, and better-
supported facilities for recombinant DNA technology than we have. Computer-assisted
imaging and image processing have revolutionized light and electron microscopy.
But visiting investigators cannot all bring such gear or the attached technicians with
them: it must be here and functional for summer research. As these facilities are
established for the year-round programs, they require more space, energy, and trained
support staff. Tinker shops are vanishing; skilled instrument makers, shops, and
assistants are in rising demand. We must have production-scale mariculture of species
essential for research, against the certainty that some of those will become too hard
to fish for, and because specimen health and genetics must be defined, as they are
not in the wild.

If the MBL is to continue to represent—as has been its mission—the best current
thought and techniques in biology, then it will have to spend much more, not less,
in support of research over the next few years. If it does not, the best science will be
done elsewhere: by former MBL investigators who find that they must stay at home
in the summers, despite the losses implied, or by those investigators going to other,
less comprehensive institutions, equipped, however, for the technical support of their
research specialties. Unless we find better methods of recovering the costs of research
support and services—including, of course, library and administration—the notable
progress made toward placing and keeping the MBL where it belongs on the intellectual
ladder of biology will stop. For the reasons mentioned, that means that the sign of
progress will be reversed, not merely zeroed.

Education

Kingsley Amis has described (using a very impolite name) the mind-set of certain
persons with persistent “views” as a pyramid. The base of this structure I see as at
the top, which is composed of many light-weight pieces; each one is an attitude, a
slogan, or a canned argument. From top to bottom, the pyramid’s pieces get weightier,
because the arguments they contain become more personal. At the bottom is the
point, and the point is heavy indeed: its argument is always personal, and it may be
selfish. The supernatural feature of this inverted pyramid is that it is not unstable:
the disproportionate mass of the point on the ground keeps it stuck upright.

Discourse with persons of such a mind-set can be fun if you know in advance
the composition of their point. You can be sure that even if discussion starts at the
top of the pyramid, it will end at the bottom, firmly planted in terra firma. I think
that Mr. Amis has made an important discovery about cognition. We’ll return to it
shortly.

Judged against the threats to quality science education that have damaged teaching
programs in many fine institutions, the MBL has succeeded remarkably well over
the past ten years. It has inched forward on the treadmill. Our internationally-known
summer courses show nothing like the declines of interest, applicant numbers, and
applicant quality that have plagued graduate education elsewhere, to which editorials
in Nature, Science, and publications of the NSF attest.* The mandated regular turnover

* A case, of more than superficial relevance, in point: Science-Education doctorates. It is well known
that the number of doctorates granted in natural science (life sciences, physical sciences, and mathematics)
and updating of MBL course leadership and content goes on, despite pressures from within and without. New courses have been established, e.g., Neural Systems, Parasitism, Microbial Ecology; and they have all succeeded by every strong measure of success.

The January Semester, among off-season programs, has vanished, more or less, because (1) the "free January" has vanished at nearly all of our feeder institutions, and (2) undergraduates are over-committed for tuition payments to their own colleges. But the off-season short course program has grown in quality and recognition. Non-MBL media coverage is good, independent witness. It is now receiving the imaginative input, not only of our own scientists, but also of research and marketing staff from industry, and most recently of clinical specialties (such as neurosurgery) to which MBL strengths are relevant.

Taken in toto, the educational program is more than ever, more even than at the founding, inseparable from the rest of the MBL. It is in fact an equal contributor, with independent research, to the values and character of this place. None of this would have been predictable with confidence in, say, 1974. We have made much progress.

Returning now to the mind-set pyramid, it is the main problem inherent in, and working to diminish or reverse, progress. The pyramid's point is different for each category of argument against MBL education as it has evolved. The resulting problem is the same, however, for the effort to sustain orderly operations. Below are some non-imaginary bases (up in the air) and their points (anchored, like grounding rods, in the soil). I admit to coloring them a little for emphasis.

"There are thousands of students out there who could pay realistic tuition fees to study beginning marine invertebrate zoology, marine botany, natural history, if and when you were to return the MBL to its proper and traditional role of teaching those subjects." The point: "Descriptive biology is still important; and that is what I know about. I want a shot at being an MBL faculty member, with all the rights and privileges appertaining thereunto."

"Make 'em pay!" (Students a meaningful tuition fee; Faculty for the research laboratories provided them gratis). The point: "I don't see any profit to myself, or my independent research, in the summer courses. Each one is an expensive little world. I don't want to compete with them for facilities and services. I especially don't want my grant money supporting them in luxury."

"We (the course faculty) bring enormous amounts of money to the MBL." The point: "I know the tuition income and the direct-cost budgets for the grants we have; I don't believe the MBL; as I disbelieve my own university, about indirect costs. There is bureaucracy, wasting money, everywhere."

"The provision of services and materials to the courses (independent investigators) should be more (less) centralized." The point: "Mr. _____ (Ms. _____), of the MBL support staff seems unaware that my needs are of the highest priority."

peaked in 1972 and has been declining ever since. But Science-Education doctorates are not the same thing: these are usually granted, after an interval of practical experience, to school and college teachers who have taken some time off for advanced study and the writing of a dissertation. Holders of such degrees are generally headed for Department chairmanships in secondary schools and toward liberal arts colleges. In 1982, the number of doctorates granted had fallen by 60 percent from the peak year, also 1972. The change reflects very complex market conditions, but one of its implications is clear: the demand for instruction in science at the secondary school and junior college level has fallen drastically, even more so than the number of students now enrolling for graduate study in pure science. The 60 percent fall is an underestimate: more than 22 percent of those earning Science-Education doctorates last year were foreigners, most of them holding temporary visas. Note that if, by a miracle, this situation were turned around next year, the half-time for a significant effect upon graduate studies would be of the order of eight years. These data are taken from the NSF's Mosaic. Vol. 15, No. 1, 1984.
"Well," the reader may say, if he has followed this far, "what of that? You are describing no more than ordinary human behavior. Why is that a particular problem?" My response would be that while it is not a heart-stopper among institutional problems, since we have managed it successfully and will continue to do so, it is particular for the MBL's educational program. Perhaps by discussing it, this small one can be disposed of.

The MBL educational program is unique in the world. Among courses providing advanced training in the biomedical sciences, with full-time exposure of students to the most talented faculty and sophisticated instrumentation, those of the MBL summer and short-course programs, taken as a whole, are irreplaceable; an international resource. It would be a violation of the MBL's historic mission to water them down in any way, even upon the questionable hope of tuition income better matched to costs. Program quality has continued to rise, or at least been maintained, despite (1) increased total costs; (2) decreased grant support for direct costs; (3) under-recovery or non-recovery of the indirect costs; and (4) the need for greater expenditures on faculty support, in order to maintain faculty quality in the face of resort-area living expenses.

The strains are felt and they cause vibration at the tops of some pyramids. The real problem causing strain tends to remain unaddressed, except by the few administrators and course directors who work regularly at it. I repeat: without the kind of educational program we have, the MBL would be a different, and a lesser place. The quality of MBL research is in no small measure a result of the combined contributions of independent investigation and the teaching program. That's progress. Entirely new ways of paying for that program must be found if the MBL is to go forward, or at least maintain position, on the treadmill. That's the problem.

Finances

I will deal simply with this issue, which is, of those taken up, the most complicated. It is also the least related to those scientific values which we, the Corporation and biologist-Trustees, have been educated to deal with. I can do so because there is no need to provide even a summary of progress; data in this and its predecessor volumes, notably the financial statements and reports of financial officers, summarize it well. The MBL has made good progress in controlling expenses; in keeping its operating budgets decently close to balance over the past few years; and in managing its small but critically important investments. We have the will and the means to keep it thus. But in the very means there is a problem that must grow every year until we find new ones.

I state it as transparently as possible, without doing violence to important details published elsewhere for the trained, or inquiring eye. Let me start with data from a real, but here unnamed, research university. This institution receives Federal agency support, as we do, for research and certain kinds of educational programs (e.g., Training Grants). It is among the distinguished scientific institutions. It has average indirect costs for a mid-sized city without a housing shortage. They are never fully recovered, but the recoverable costs are reimbursed by annually-negotiated agency payments figured as a percentage of total direct costs granted. The allocated share of the university's expenses for energy, maintenance, and technical services, payroll management, financial oversight, libraries, clerical and administrative services, becomes the "pooled sponsored research cost." This university has three different pooled cost rates in 1984. One is for the Medical Center; one for the campus that includes the College and most graduate education programs; and one for a large and specialized engineering development laboratory. The approved rates are, respectively, 50%, 70%,
and 53% of direct costs. This year, actual recoveries are slightly lower, as a result of a small concession on the 70% component alone.

Let us now make a realistic and very conservative comparison, using the MBL’s situation. In a recent year, for which we have full and audited data, the MBL received direct cost payments, on grants and contracts under its full administration, of about $2.97 million. These grants were almost entirely to year-round programs and for some of the courses. Now, the MBL’s operating expenses are not solely for work supported by in-house grants. We provide plant, services, housing, library, and so on for the summer population as well. In fact it is much larger than the year-round population, and its grants are made to other institutions. There is no easy way, then, to estimate the direct costs represented by all the grants held by all summer investigators, let alone to allocate correctly the fraction spent during an investigator’s months at the MBL. (For example, accounting for and payment of salaries may remain a responsibility of the home institution, but purchases made through the MBL, services such as supplying animals, insuring building safety and security, acquiring equipment, and housing accommodation are all handled here.)

An educated guess as to the direct-cost dollar value of summar research at the MBL can nevertheless be made. I have done so, showing the numbers, at a recent Trustees’ meeting. Reducing that last educated guess by about half, I still get an allocated direct cost of about $6 million. The total effective direct cost of grant-supported work at the MBL was therefore, in that recent year, more than $9 million.

That year the MBL spent $3.6 million on science support services; which amount was reduced by direct income to departments and from tuition fees to about $2 million. The equivalent of “pooled costs,” in other words, amounted to roughly 22% of total direct costs, for research and grant-supported instruction. Total indirect costs actually recovered, as laboratory rental fees, came to $1.6 million, i.e., 18%. This is to be compared with the cost recoveries given earlier for an average research university.

Such data are extractable in proper detail from published financial statements. They have the same outcome every year: the cost of research and advanced education at the MBL is lower than it is at other institutions performing comparable work; the fraction recovered by the MBL is notably lower than that recovered by peer organizations. For the year in question, our minimum under-recovery was several hundred thousand dollars. I stress “minimum,” because some of the support expense was managed by use of private funds. The difference was made up, the budget balanced, more or less, as it has been for the past several years, with investment income and gifts. That is a dangerous course to follow in perpetuity; not only because of increasing uncertainties of private philanthropy, but because it is a waste. It is a waste of the preparation of this and any future MBL Director and Executive Committee to give nearly full time and imagination to soliciting gifts, when they should be given to scientific work and leadership. Worse, it is a waste of privately generated funds, because they could be used for new research initiatives and facilities, rather than to pay routine bills.

There are very few independent laboratories that are as mature, scientifically and culturally, as the MBL. The MBL ought also to be mature in the financial sense that its peer organizations are; i.e., in possession of cost-recovery systems that make at least partial sense in relation to the volume and quality of work done. Such maturity is yet to be attained. In order for it to be attained, we require more than imaginative and expert technical work on the part of financial staff and paid outside advisors: we need clear understanding of the problem by all Trustees and Corporation members, and an unselfish willingness work toward financial systems that are just for the Laboratory as a whole, as well as for its scientists individually.

The symbol of today’s situation might be, better than a treadmill, the more
familiar one in Woods Hole of a small cruising sailboat (hull speed: 6.0 knots) heading into maximum current in the Hole (5.8 knots). The two possible outcomes—making it into Vineyard Sound or ending on the rocks east of Devil’s Foot—remain a toss-up unless something is done.

The wise skipper starts his engine.

Operating Range and “Ruggedizing”

The foregoing, which contains perhaps too much alternation between the sublime and the ridiculous, does so consciously. At the heart of the message I want to communicate is the issue of operating range for the machine—or organism—that is the MBL. If I have given the impression that the problems discussed are an immediate threat to this Laboratory, then I renounce it. That is not the intention. It is, rather, to suggest that the environment in which this machine is expected to work is different from what it was, and that it will continue to change, within reasonable predictable limits, in the decade ahead.

The environment of concern is mainly external: competing organizations; the pool of funds for science and instruction; the composition and personnel of new disciplines with which we are involved. But the internal environment—the MBL family itself—is also to be considered, although much less urgently than the external one.

Self-regulating machines must be designed to work within environmental limits considerably wider than a few percentage points about the mean. Thus a decent onboard computer for an automobile should be able to withstand, not only normal road vibrations at speed, but an occasional pothole. Its thermal environmental limits should be from well below freezing to at least 115°F. The operating range for computers aboard the space shuttle will be far broader, obviously: otherwise they would fail during the first few seconds of flight.

The design of such machines entails many principles, but three are followed universally and consciously: high component reliability, with some redundancy; “ruggedizing” (awful word!); and simplification.

These principles are often conflicting. The machine’s components should, for example, have operating limits at least a little wider than those chosen, with a suitable safety factor, for the complete machine. There should be redundancy, either by duplication of components or via the possibility of circuit-switching, in case of component or connection fails. But what about simplicity? Is it better (or less expensive in the end) to provide a backup chip for each one in service, with all the complications ensuing, or to avoid the complications by choosing a fail-safe chip in the first place, at much greater cost and bulk, but with simplification? There is no formal answer. That’s what engineering is about: you find one by a combination of thought and empirical testing.

“Ruggedizing” is even more subtle. Basically, it requires that connections among parts, and the housing for all, have wider operating limits even than the components. So you plate circuit boards with noble metals; use carbon fiber and plastics to insulate and hold things together; mount chassis in rubber or something better; and make the external switches moisture- and idiot-proof. But each of those, unless done with thought and care, can end by being more costly than all the components, or by introducing the probability of damage to the components during assembly.

I have tried, in the earlier sections and in what follows, to catalyze objective thinking about the MBL, as though it were a machine or a designable organism; to suggest some of the parameters of its present and future environments, external and internal; and to invite more collaboration among Corporation members and Trustees
in the work of design. For design there must be, if only for retrofitting (to add one more industrial cliche), however excellent the machine may be for its purposes at this time. Nobody in his right mind would judge the MBL a weak machine for its present purposes and time. It is one-of-a-kind, and it's working well. But we are responsible for seeing to it that the MBL works in future time, and that components designed into it are compatible with the future environment. We are responsible for "ruggedizing" it, so that the heat and vibrations, inside and outside, which are a part of the human condition, have no chance of driving it into malfunction.

Governance: The Future Within Us

Academic governance, as the writer of an essay on the subject argued recently at the very start of the piece, is the least (inherently) interesting thing that goes on in a university. It is nevertheless a matter of great practical importance: almost but not quite as important as the teaching and research. And as a matter of fact, governance is of passionate interest among students and faculty. (For the MBL, read students, faculty, and investigators.) Denial of that interest is commonplace; but those elected to serve as, e.g., Trustees are visibly and justifiably proud of it, as are the elected to any exclusive professional body. Those not nominated or elected to such bodies, and yet deserving of it—and there are many such—are hurt by the neglect; they feel pain for a while each year. One doesn’t need direct avowals as evidence of pride or hurt: the nature and tone of debate over causes célèbres tells the story. Why should the MBL, with its large collection of talented scientists, be different from the rest of Academe?

The interest in governance animates academic debates over process, rights, wrongs, responsibilities, even of style, with an emotional content much higher than that of legislatures and Boards of Directors in the outside world. Thus, the best efforts of TV and the press cannot invest with the academic sense of righteousness a debate on, say, town meeting versus mayoral systems for town government. The citizenry have other fish to fry. When the issue is merely selection of one over another local candidate for office, many sensible ones forbear to vote; counting that both a privilege of democracy and a vote. I do not necessarily approve: I merely note it.

But, in a faculty meeting, as Corporation members know from home, there is no telling why and on what subject the flash-point may be reached. It may be as weighty a topic as “Are we falling behind the competition in faculty salaries?”; or as seemingly-innocuous as the proposal from Women’s Studies for a seminar on “Women in Cosmology.” You never can tell. A few pyramids totter on their points, and the fur flies. It’s real and it is positive. Whatever the reasons, professors care about governance. The great thing is to keep that care channeled, applied toward progress.

Progress has been made here at the MBL. The original Certificate of Organization, dated the 20th March, 1888, was a simple but effective document. Since then there have been numerous revisions and amendments; no single one of them was, in retrospect, other than wise. The last Bylaw revisions of significance were made as recently as 1978. In the formal sense, then, progress in governance—the adjustment of rules and processes to needs of the times—has been steady. The emergent system is unique, just as the institution it serves is unique. But despite care about governance, and progress, problems remain to be solved.

Trustees of academic organizations are usually accomplished persons and are not paid members of the community whose well-being is, literally, in their trust. The general idea—one that has worked magnificently for American higher education—is that distinguished outsiders have the wisdom, the technical knowledge, and most important, the objectivity to be responsible, ultimately, for institutional policy; to
stand up for it to the faculty as well as to the public. It is sometimes said, in orienting new university Trustees to their tasks, that they have only two real jobs: (1) to select, compensate, and monitor the performance of the Chief Executive Officer; and (2) to “balance the present against the future,” in respect of institutional assets, their growth, and their utilization.

These two jobs take time, study, and unselfish devotion. To the extent that my own experience as a university Trustee and as Trustee of research laboratories other than the MBL is normal, the minimum job seems to call for three or four regular meetings per year, each one lasting at least a day and a half. Preparation for a meeting requires a week’s evenings of reading and writing, and sometimes many telephone conversations. Every Trustee has visiting committee responsibility, which calls for two to four more working days on location per year, and very much more study; in this case of work of the unit or administrative function visited.

Finally, because getting and managing gifts of money is the transcendent concern of scholarly organizations (scholars not normally being heavy earners), and because some Trustees are specialists in money (they have a great deal of it; or can earn it; or manage it professionally; or are close to other people who have a great deal of it), financial policy and action usually originate with the Trustees in consultation with the Chief Executive Officer. Implementation is the job of others: professional assistants (e.g., Vice Presidents) to the C.E.O.

In our system at the MBL there is a significant departure from that pattern. It is that twenty-four, at least, of the thirty-six Trustees are—in effect—working members of the faculty; dedicated scholars. They are specifically not outsiders. They have a high personal stake in the day-to-day operations of the place. Their views of the work of the Laboratory are technically expert, and not infrequently narrow. It could not be otherwise. MBL Board Trustees, of course, are more like those of other institutions; but the tone and style of the whole Board’s activities tend to be set by the majority.

The basic system has worked for nearly a century, which means that no responsible member of the community is going to propose re-writing the Bylaws. It has worked, and it has changed a little, from time to time, to accommodate to external pressures. So far, so good: that is progress. The system was established in 1888 to run “... a laboratory or station for scientific study and investigations, and a school for instruction in biology and natural history.” The clear understanding was that it would be a summer school and station, Woods Hole having been judged uninhabitable the rest of the year. The idea that biologists of the station would also be its owners and policy-managers, under no required constraint of advice from outsiders, was critical to survival of the place during the early decades. The idea was fought over; and happily it triumphed. The job of the resident MBL staff was to take care of the scientists during the summer; and to take care of the plant, such as it was, during the long months when the scientists were back at home.

To be sure, there were indispensable resident managers, the most important of whom must surely be our own Homer Smith: but the clear principle was that high-level policy is made by non-residents, while residents take care of the place, making such lower-level policy as may be needed for the provision of services, the payment of staff (not scientists), and the maintenance of order. A great scientific research hotel, open for the summers. No derogation is implied: it was the world’s best of its kind, but still a hotel.

The firm decision to stop being a summer-scientific research hotel was made almost a decade ago. No member of the present Administration, except for Mr. Smith, was here or had any direct role in that decision; hence I can be objective about it, with neither pride in the decision nor the urge to disclaim responsibility for it.

I believe that it was not only the right decision, but the only possible one. I have
offered grounds for that belief, in writing, and shall not repeat them here. Suffice it to say that the MBL, functioning as a year-round scientific organization, with extended programs (not just laboratories for rent) and a long-term development plan adopted by the Trustees (in 1979), stepped onto the treadmill of competition. Competition with other free-standing laboratories, with universities and colleges, public and private, and with scholarly organizations of every other kind. Competition for people, recognition, and support.

Many accommodations to that reality have already been made. Quietly, but fairly effectively, procedures have been established for assembling a resident administration (never a mistake-free undertaking, and always traumatic for people already on the scene), which the MBL did not really have until the late 1970's. The job is far from done, but it is being done. Year-round scientific programs have been established. Some have quit but more have flourished, without any reduction of the historic commitment to summer research and teaching. This, too, has not been mistake-free, and trauma has been known to occur at times. Yet the year-round programs exist and do the place honor, as I have shown in earlier Director's Reports. Procedures for regular and searching review of their performance have been established and are being refined. The problem of managing the differences between year-round laboratories and those on location, i.e., summer laboratories, has been met head-on and is being solved, with responsible help of the Research Space Committee and the Executive Committee, neither of which had any such responsibility under the original plan of governance.

We have found several millions of dollars, these past five years, for urgent physical rehabilitation of scientific facilities; and we have spent considerable sums on improvements of housing. Having stepped onto the treadmill, the MBL has managed not to fall off or slip back: we could, today, even tolerate some (unexpected) upward tilt of the bed.

Nevertheless the problems must be faced and solved. Changes in governance of the kind just noted are too much of a patchwork and are not widely understood. Some of them need to be codified. Some need to be extended; some should be reversed. The MBL needs more internal communication; informed guidance; technical management skills; and effective decision-making processes that are not available within the existing system, and which cannot simply be bought or imposed from above. There is no "above." We, the Corporation, are not just the faculty and day-to-day users of the place: we are also the above.

No simple handing-out of duties to the existing Board—-not even to the twelve Board Trustees—can do the job. Our team of elected officers has insufficient depth in the line positions. They control tens of millions of dollars, in market-value, worth of assets; and an annual volume of ordinary business of the order of ten million. The responsibilities of a thin Administration are great: it is perhaps too personal to describe them as "crushing;" but their undeniable weight is felt by too few persons and there is no practical way, in our system, to spread them over all MBL Trustees, let alone among the more than six hundred non-resident Corporation members. It could be done in 1960; it can't be done today.

I will not now discuss solutions to such problems; and we have already rejected Draconian measures, such as rewriting the Bylaws. But I am sure that there are solutions. I hope to be allowed in the next year or two to discuss them with those who care about the MBL. The aim here has been not to suggest specific devices by which we can stay on the treadmill and even gain on it, but rather to argue that such devices are needed, despite the fact that we have not fallen off; and to assert that they exist. They can vary greatly in form. Most versions require no fiddling with the Bylaws. No version requires denial of the MBL's historic missions in science and education,
or allowing program separatism, or the imposition of rules from outside. That was all rejected ninety years ago.

But before specific versions are proposed and argued, there must be real agreement among members of our MBL family that (1) we have made progress, and (2) its continuance requires the possibility of regular changes in governance. It would be the most important of all attractions for the next MBL Director, if he or she is to be the person of quality this great Laboratory deserves, to find that agreements (1) and (2) have been reached; that the way is clear to manage, as management must be done, a successful scientific enterprise of the late Twentieth and early Twenty-first centuries.

Only a Pangloss expects progress without problems. But problems arising out of necessary progress are usually soluble, once their existence is recognized, the alternatives are studied honestly, and their costs and benefits weighed with care. Even nation-states behave that way; once in a great while.

VII. REPORT OF THE TREASURER AND THE CONTROLLER

"Sweet are the uses of adversity . . ."—Shakespeare

Your Treasurer recalls that his father, an incurable optimist, would look upon his son's trying moments as "maturing experiences." This supportive comfort often would be accompanied by a Hoosier proverb, which observes that the same rain that rots the fallen log deepens the roots of the growing tree.

Financially speaking, the MBL had some "maturing experiences" in 1982, culminating in a deficit. The $161,000 excess of expenses over income that year was a modest setback relative to the magnitude of the total budget. Nevertheless, 1982's problem served to strengthen our resolve in 1983 to add momentum to various efforts to increase revenues while intensifying the disciplines of expense management. We are pleased to report that these management actions not only improved the balance between receipts and disbursements, but in fact produced a surplus of $47,000.

To understand 1983's achievement, one must look behind the figures. MBL's commitment to excellence has given the institution a stamina superior to the condition of many struggling not-for-profit organizations. Despite cutbacks in federal funding for research, MBL's laboratories continue to enjoy high levels of occupancy. The implication is that the calibre of the investigators applying for MBL laboratory space is such as to make them relatively more successful in their competition for available funds. Course enrollments, too, have remained high and continue to confirm the excellence of the MBL's educational and training programs. Thus, the historic quality of MBL activities have enabled it to sustain or increase revenues in most all categories.

Specifically, Grants and Restricted Projects increased 12 percent, from last year's $3,476,000 to $3,894,000 in 1983. Laboratory fee income was up 15 percent compared with the previous year. Private gifts increased from $883,000 to $1,199,000, a 33 percent gain.

Progress on the revenue side was matched with achievements in expense control. In the unrestricted budget, operating expenditures in support of research increased a modest $220,000, an increment of less than 6 percent over 1982. A switch from a service bureau's accounting system to an internally operated system, installed on our own recently acquired computer, resulted in faster turn-around on accounting and control reports. One consequence of improved management information was a highly successful effort to reduce Accounts Receivable in the over 90 days category by more than 50 percent. Throughout all operating areas, MBL employees once again demonstrated uncommon resourcefulness in finding ways to control costs while giving strong support to the MBL's purposes.
Two balance sheet categories deserve comment. Fixed Assets are slightly reduced from the 1982 figure, reflecting the fact that the recent pace of new construction declined in 1983 so that fewer new facilities and improvements were put "on the books" last year. This coupled with the normal provision for depreciation, produced an expected decline in the book value of Fixed Assets. The Fund Balance also shows a modest decrease from $164,000 to $149,000, which largely is the result of capitalizing the acquisition of a new computer ($63,600) and renovating Devil's Lane housing ($13,700). Both projects were directly charged to the Fund Balance.

We enter 1984 with more reasons for optimism than we had in 1983's early months. Although the outlook for research funding is no brighter, we feel a bit more comfortable with the MBL's ability to attract funded research to its laboratories. We see encouraging evidence that the arguments employed in our fund raising efforts are persuasive. We have better management tools with which to control expenses and to analyze the effectiveness of our operations. For all of these reasons, we expect to be in a position to give renewed attention to several key objectives for 1984.

Increased participation by the Corporation's membership and Trustees in the development of the MBL's endowment will be one such important objective. Income from invested funds and from trusts benefitting the MBL are important sources of support for our purposes, accounting for 5.6 percent of 1983 income. Nevertheless, our present endowment is not an adequate cushion against financial adversity as its income is entirely consumed by day-to-day operations and therefore unavailable for support to new scientific initiatives or needed improvements to our facilities.

With respect to endowment development, we are most anxious to leverage the challenge grant received from the Andrew W. Mellon Foundation. Successful matching of this grant will add $2.5 million to endowment funds available for library support.

Also in connection with fund raising efforts, two feasibility projects will be completed in 1984. One is studying the physical alternatives and associated costs for the development of a new Marine Resources Center. The second is addressing the feasibility of alternative solutions for additional housing, including the possibility of completing the Swope Center.

Nineteen-eighty-four also will see continued review of MBL's real estate holdings and the policies that have governed the role played by these assets in our financial strategy. Although not generating income, the MBL's undeveloped land in Woods Hole continues to appreciate very significantly because of its scarcity, and holding costs are inconsequential. Our policy to date has been to view this land as an asset to be held in reserve against the possibility of a future financial contingency or to be utilized in some manner consistent with or supportive to the MBL's scientific and educational purposes.

A third important objective for 1984 financial management will be the conclusion of the development and installation of a revised overhead recovery system. Although the need for a new approach has been recognized for some time, the process of reaching internal consensus while negotiating for approvals by cognizant agencies has required careful evaluation of alternatives and thorough preparation of supporting material. We are confident that a more rational approach will increase the MBL's overhead recovery, and of course, that provides a strong incentive to press forward, but at the same time any new system must be fair and equitable to all parties concerned.

Finally, and no less importantly, we will be striving again in 1984 to achieve the income and expense goals of a balanced budget. Put differently, we prefer not to have any "maturing experiences" in 1984.

Respectfully submitted,

John Speer     Robert Mainer
Controller     Treasurer
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>1,142</td>
<td>1,309</td>
<td>1,396</td>
<td>1,597</td>
<td>1,814</td>
<td>2,167</td>
<td>2,538</td>
<td>2,642</td>
<td>2,402</td>
<td>2,393</td>
<td>3,393</td>
<td>3,979</td>
</tr>
<tr>
<td>Expenses</td>
<td>1,234</td>
<td>1,396</td>
<td>1,597</td>
<td>1,814</td>
<td>2,167</td>
<td>2,538</td>
<td>2,611</td>
<td>3,070</td>
<td>3,955</td>
<td>3,807</td>
<td>4,026</td>
<td>3,979</td>
</tr>
<tr>
<td>Net Inc./Loss</td>
<td>92</td>
<td>(87)</td>
<td>(80)</td>
<td>(322)</td>
<td>106</td>
<td>(80)</td>
<td>(36)</td>
<td>323</td>
<td>(43)</td>
<td>(161)</td>
<td>47</td>
<td>47</td>
</tr>
</tbody>
</table>

**UNRESTRICTED**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grants</td>
<td>602</td>
<td>580</td>
<td>626</td>
<td>952</td>
<td>1,176</td>
<td>1,441</td>
<td>1,796</td>
<td>2,124</td>
<td>2,634</td>
<td>3,041</td>
<td>3,476</td>
<td>3,894</td>
</tr>
<tr>
<td>Total Exp. (U + R)</td>
<td>1,836</td>
<td>1,976</td>
<td>2,253</td>
<td>2,537</td>
<td>2,990</td>
<td>3,608</td>
<td>4,324</td>
<td>5,704</td>
<td>6,058</td>
<td>7,283</td>
<td>7,873</td>
<td>7,873</td>
</tr>
</tbody>
</table>

**RESTRICTED**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund Balance</td>
<td>321</td>
<td>(37)</td>
<td>(81)</td>
<td>(176)</td>
<td>374</td>
<td>627</td>
<td>545</td>
<td>721</td>
<td>808</td>
<td>689</td>
<td>149</td>
<td>149</td>
</tr>
<tr>
<td>Invest/Endowment Book Value</td>
<td>3,807</td>
<td>4,123</td>
<td>4,260</td>
<td>5,022</td>
<td>5,398</td>
<td>4,935</td>
<td>5,382</td>
<td>5,836</td>
<td>6,305</td>
<td>6,668</td>
<td>7,340</td>
<td>7,340</td>
</tr>
<tr>
<td>Physical Plant</td>
<td>10,009</td>
<td>9,728</td>
<td>9,447</td>
<td>9,129</td>
<td>8,848</td>
<td>8,596</td>
<td>8,362</td>
<td>8,007</td>
<td>8,405</td>
<td>10,065</td>
<td>11,563</td>
<td>11,563</td>
</tr>
<tr>
<td>Fund Raising (Private Gifts)</td>
<td>104</td>
<td>124</td>
<td>614</td>
<td>1,043</td>
<td>1,134</td>
<td>883</td>
<td>813</td>
<td>883</td>
<td>1,199</td>
<td>1,199</td>
<td>1,199</td>
<td>1,199</td>
</tr>
</tbody>
</table>

**KEY FINANCIAL INDICATORS 1972-1983**
To the Trustees of
Marine Biological Laboratory
Woods Hole, Massachusetts

We have examined the balance sheet of Marine Biological Laboratory as of December 31, 1983 and the related statements of current funds revenue and expenses and changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We previously examined and reported upon the financial statements of the Laboratory for the year ended December 31, 1982 which condensed statements are presented for comparative purposes only.

In our opinion, the financial statements referred to above present fairly the financial position of Marine Biological Laboratory at December 31, 1983 and its current funds revenue and expenses and the changes in fund balances for the year then ended, in conformity with generally accepted accounting principles, applied on a basis consistent with that of the preceding year.

Coopers & Lybrand

Boston, Massachusetts
June 7, 1984
MARINE BIOLOGICAL LABORATORY

STATEMENTS OF CHANGES IN FUND BALANCES

for the years ended December 31, 1983 and 1982

<table>
<thead>
<tr>
<th>Current Restricted Funds</th>
<th>Unrestricted</th>
<th>Unexpended Gifts</th>
<th>Unexpended Income of Endowment Funds</th>
<th>Endowment Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrestricted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balances at beginning of year</td>
<td>$163,758</td>
<td>$241,409</td>
<td>$358,417</td>
<td>$29,173</td>
</tr>
<tr>
<td>Increases:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrestricted current funds revenue</td>
<td>3,536,827</td>
<td>4,015,187</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants</td>
<td>257,067</td>
<td>453,952</td>
<td>267,108</td>
<td>138,556</td>
</tr>
<tr>
<td>Investment income</td>
<td>232,145</td>
<td>72,242</td>
<td>6,197</td>
<td>30,644</td>
</tr>
<tr>
<td>Realized gains on sale of investments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition to retirement fund</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreases:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction, research and general expenses</td>
<td>(3,979,231)</td>
<td>(3,718,027)</td>
<td>(158,811)</td>
<td>(16,639)</td>
</tr>
<tr>
<td>Indirect costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payments to pensioners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realized net gain (loss) on disposal of fixed assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net change in fund balances before transfers</td>
<td>46,808</td>
<td>(151,286)</td>
<td>117,246</td>
<td>14,005</td>
</tr>
<tr>
<td>Transfers to (from) funds:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition of fixed assets</td>
<td>(85,928)</td>
<td>(4,009)</td>
<td>(120,014)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>24,523</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balances at end of year</td>
<td>$149,161</td>
<td>$86,114</td>
<td>$355,649</td>
<td>$43,178</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unrestricted</th>
<th>Restricted</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,607,801</td>
<td>$576,496</td>
</tr>
</tbody>
</table>

REPORT OF THE TREASURER AND CONTROLLER
<table>
<thead>
<tr>
<th></th>
<th>Quasi-Endowment Funds</th>
<th>Plants Funds</th>
<th>Retirement Funds</th>
<th>1983 Total All Funds</th>
<th>1982 Total All Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrestricted</td>
<td>Restricted</td>
<td>Unrestricted</td>
<td>Restricted</td>
<td></td>
</tr>
<tr>
<td>Balances at beginning of year</td>
<td>$816,364</td>
<td>$2,585,433</td>
<td>$11,742,197</td>
<td>$163,676</td>
<td>$1,264,524</td>
</tr>
<tr>
<td>Increases:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrestricted current funds revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,536,827</td>
</tr>
<tr>
<td>Grants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4,015,187</td>
</tr>
<tr>
<td>Gifts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,199,136</td>
</tr>
<tr>
<td>Realized net income on sale of investments</td>
<td>96,859</td>
<td>67,000</td>
<td>67,749</td>
<td>505,836</td>
<td>302,045</td>
</tr>
<tr>
<td>Addition to retirement fund</td>
<td>49,255</td>
<td>69,849</td>
<td>36,299</td>
<td>160,554</td>
<td>12,000</td>
</tr>
<tr>
<td>Tuition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreases:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction, research and general expenses</td>
<td>(25,455)</td>
<td></td>
<td>(7,898,163)</td>
<td>(7,289,342)</td>
<td>(773,349)</td>
</tr>
<tr>
<td>Indirect costs</td>
<td></td>
<td></td>
<td>(974,640)</td>
<td>(26,718)</td>
<td></td>
</tr>
<tr>
<td>Payments to pensioners</td>
<td></td>
<td></td>
<td>(46,158)</td>
<td>(46,158)</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>(430,323)</td>
<td></td>
<td>(430,323)</td>
<td>(360,812)</td>
<td></td>
</tr>
<tr>
<td>Realized net gain (loss) on disposal of fixed assets</td>
<td>(9,966)</td>
<td></td>
<td>(9,966)</td>
<td>441</td>
<td></td>
</tr>
<tr>
<td>Net change in fund balances before transfers</td>
<td>49,255</td>
<td>166,708</td>
<td>(424,836)</td>
<td>(41,545</td>
<td>145,134</td>
</tr>
<tr>
<td>Transfers to (from) funds:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition of fixed assets</td>
<td>192,158</td>
<td>(106,230)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>(20,500)</td>
<td>120,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balances at end of year</td>
<td>$865,619</td>
<td>$2,752,141</td>
<td>$11,489,019</td>
<td>$218,991</td>
<td>$1,409,658</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of the financial statements.
NOTES TO FINANCIAL STATEMENTS

A. Purpose of the Laboratory:

The purpose of Marine Biological Laboratory (the "Laboratory") is to establish and maintain a laboratory or station for scientific study and investigations, and a school for instruction in biology and nature history.

B. Significant Accounting Policies:

Basis of Presentation—Fund Accounting

In order to ensure observance of limitations and restrictions placed on the use of resources available to the Laboratory, the accounts of the Laboratory are maintained in accordance with the principles of "fund accounting." This is the procedure by which resources are classified into separate funds in accordance with specified activities or objectives. In the accompanying financial statements, funds that have similar characteristics have been combined.

Externally restricted funds may only be utilized in accordance with the purposes established by the donor or grantor of such funds. However, the Laboratory retains full control over the utilization of unrestricted funds. Restricted gifts, grants, and other restricted resources are accounted for in the appropriate restricted funds. Restricted current funds are reported as revenue when expended for current operating or other purposes. Unrestricted revenue is reported as revenue in the unrestricted current fund when earned.

Endowment funds are subject to restrictions requiring that the principal be invested with income available for use by the Laboratory. Quasi-endowment funds have been established by the Laboratory for the same purposes as endowment funds; however, these funds may be expended for various restricted and unrestricted purposes.

Reclassifications

The financial statements for 1983 reflect certain changes in classification of revenue and expenses. Similar reclassifications have been made to amounts previously reported in order to provide consistency of the financial statements. In addition, certain fund balances have been reclassified to appropriately reflect the donors' intentions.

Investments

Investments purchased by the Laboratory are carried at cost. Investments donated to the Laboratory are carried at fair market value at the date of the gift. For determination of gain or loss upon disposal of investments, cost is determined based on the average cost method.

Investment Income and Distribution

The Laboratory follows the accrual basis of accounting except that investment income is recorded on a cash basis. The difference between such basis and the accrual basis does not have a material effect on the determination of investment income earned on a year-to-year basis.

Investment income includes income from the investments of specific funds and from the pooled investment account. Income from the pooled investment account is distributed to the participating funds on the basis of the market value at the beginning of the quarter, adjusted for the cost of any additions or disposals during the quarter.

C. Land, Buildings and Equipment:

Following is a summary of the unrestricted plant fund assets:

<table>
<thead>
<tr>
<th></th>
<th>1983</th>
<th>1982</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>$763,660</td>
<td>$720,125</td>
</tr>
<tr>
<td>Buildings</td>
<td>14,480,320</td>
<td>14,360,395</td>
</tr>
<tr>
<td>Equipment</td>
<td>1,952,790</td>
<td>1,865,081</td>
</tr>
<tr>
<td></td>
<td>17,196,770</td>
<td>16,945,601</td>
</tr>
</tbody>
</table>
Less accumulated depreciation

<table>
<thead>
<tr>
<th></th>
<th>5,633,746</th>
<th>5,203,404</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>$11,563,024</td>
<td>$11,742,197</td>
</tr>
</tbody>
</table>

Depreciation is computed using the straight-line method over estimated useful lives of fixed assets.

D. Retirement Fund:

The Laboratory has a noncontributory pension plan for substantially all full-time employees which complies with the requirements of the Employee Retirement Income Security Act of 1974. The actuarially determined pension expenses charged to operations in 1983 and 1982 were $87,244 and $160,554, respectively. The Laboratory's policy is to fund pension costs accrued, as determined under the aggregate level cost method. As of the latest valuation date, based on benefit information at December 31, 1983, the actuarial present values of vested and nonvested benefits, assuming an investment rate of return of 6%, were approximately $1,129,553 and $40,446, respectively. At December 31, 1983, net assets of the plan available for benefits were approximately $1,653,358.

In addition, the Laboratory has a pension plan funded by contributions to the Teachers Insurance and Annuity Association.

E. Pledges and Grants:

As of December 31, 1983 and 1982, the following amounts remain to be received on gifts and grants for specific research and instruction programs, and are expected to be received as follows:

<table>
<thead>
<tr>
<th></th>
<th>December 31, 1983</th>
<th>December 31, 1982</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrestricted</td>
<td>Restricted</td>
</tr>
<tr>
<td>1983</td>
<td>$65,000</td>
<td>$293,285</td>
</tr>
<tr>
<td>1984</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$65,000</td>
<td>$381,150</td>
</tr>
</tbody>
</table>

In February 1979, the Laboratory initiated the MBL Second Century Fund, a phased effort, to secure $23,000,000 in support of capital rehabilitation, new construction, and endowment. As of December 31, 1983, the Laboratory has received pledges related to this effort of approximately $5,693,358 of which a substantial portion has been collected.
F. Investments:

The following is a summary of the cost and market value of investment assets at December 31, 1983 and 1982 and the related investment income and disposition of investment income for the years ended December 31, 1983 and 1982.

<table>
<thead>
<tr>
<th>Pooled</th>
<th>Cost</th>
<th>Market</th>
<th>Investment Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Government securities</td>
<td>$2,352,911</td>
<td>$1,769,146</td>
<td>$2,275,449</td>
</tr>
<tr>
<td>Corporate fixed income obligations</td>
<td>397,871</td>
<td>711,114</td>
<td>348,713</td>
</tr>
<tr>
<td>Common stocks</td>
<td>4,165,295</td>
<td>3,863,773</td>
<td>5,522,238</td>
</tr>
<tr>
<td>Money market securities</td>
<td>406,766</td>
<td>463,608</td>
<td>406,766</td>
</tr>
<tr>
<td>Real estate</td>
<td>17,549</td>
<td>17,549</td>
<td>17,549</td>
</tr>
<tr>
<td>Total pooled investments</td>
<td>7,340,392</td>
<td>6,825,190</td>
<td>8,570,715</td>
</tr>
<tr>
<td>Less: custodian fees</td>
<td></td>
<td></td>
<td>(30,282)</td>
</tr>
</tbody>
</table>

Unrestricted Current Fund

| Money market securities     | 550,000   | 665,000   | 550,000          | 665,000    | 40,265    | 86,067     |
| Total investments           | $7,890,392| $7,490,190| $9,120,715       | $8,446,908 | $505,836  | $587,379   |

Disposition of investment income:

| Restricted for current use: |            |            |                  |            |            |
| Utilized in current operations |            |            |                  |            |            |
| Available for future operations |            |            |                  |            |            |
| Total restricted current and quasi-endowment funds | 92,501 | 371,937 |

| Retirement fund | 67,749 | 55,874 |
| Unrestricted—utilized in current operations | 232,145 | 218,910 |
| Total investment income | $505,836 | $587,379
At December 31, 1983 the following summarizes the participation of the various funds in the investment pool.

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexpended income of endowment</td>
<td>$ 43,178</td>
</tr>
<tr>
<td>Unrestricted endowment</td>
<td>1,716,309</td>
</tr>
<tr>
<td>Restricted endowment</td>
<td>682,475</td>
</tr>
<tr>
<td>Unrestricted quasi-endowment</td>
<td>846,880</td>
</tr>
<tr>
<td>Restricted quasi-endowment</td>
<td>2,788,073</td>
</tr>
<tr>
<td>Retirement</td>
<td>1,263,477</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$7,340,392</strong></td>
</tr>
</tbody>
</table>
VIII. REPORT OF THE LIBRARIAN

This past year all the Library collections were brought back to Lillie and reshelved in new locations so that now, after two years of minor confusion, the collection is once more easily accessible to all users. The Rare Books/Archives area on the first floor is a handsome suite of three rooms, one a comfortable Discussion Room, furnished with rugs and Louis Agassiz's large table in the center. The books and archival material are secured in an environmentally controlled area. Fortunately, we now have an Archivist, Ruth Davis, who is organizing and cataloging all Class photographs, correspondence, Meeting minutes, and other archival material. We would be delighted to receive any material of this nature that may be in personal collections of MBL Corporation members.

In March of 1983 we initiated a most comprehensive Survey of the USE made of our entire Journal collection. Cathy Norton of the Library Staff is the Project Coordinator and the funding for this project came from the Rockefeller Foundation. It included purchase of a computer terminal and printer for the Library in order to process all the data received from the Study. Every Journal issue that was received from the first of March to the end of December was monitored each time it was used, and all bound journals in the stacks were marked each time they were returned to the shelves. It involved an inordinate amount of record-keeping the results of which will be available in the Fall of 1984, and in the next Annual Report. One most interesting tentative fact; MBL's BIOLOGICAL BULLETIN was referred to over 1,000 times during the ten month survey and was the tenth "most used" journal in the collection of 4,763 separate journal titles.

A second part of the Survey is a USER study which will continue through the summer of 1984. On a number of unannounced days all doors to the Library are locked with the exception of two entrances. All users on that day pass by a desk where they are registered as to institution affiliation. This information will be analyzed at the end of September.

Discussions were held with the National Marine Fisheries Service during the year concerning the incorporation of their library collection with ours in the Main Library. Space has been provided in the Book and Journal stack area for this eventuality.

IX. EDUCATIONAL PROGRAMS

SUMMER

BIOLOGY OF PARASITISM

Course Director

DAVID, JOHN, Harvard School of Public Health/Harvard Medical School

Other faculty, staff, and lecturers

ASKANASE, PHILIP, Yale University
CAULFIELD, JOHN, Harvard Medical School
CHANG, KWANG-POO, Chicago Medical School
COLTEN, HARVEY, Harvard Medical School
CROSS, GEORGE, The Rockefeller University
DAVID, ROBERTA, Harvard Medical School
DESSEIN, ALAIN, Harvard Medical School
Dwyer, Dennis, NIH
ELSCHACH, Peter, New York University
ENGLUND, PAUL, Johns Hopkins University
FEARON, DOUGLAS, Harvard Medical School
GITTER, CARLOS, Weizmann Institute of Science, Israel
HARN, DONALD, Harvard Medical School
KU, ALBERT, Harvard Medical School
LANDFPEAR, SCOTT, Harvard School of Public Health
LODISH, HARVEY, Massachusetts Institute of Technology
MARSSEND, PHILIP, University of Brasilia, Brazil
MCLAFFERTY, MARTHA, Harvard School of Public Health
METZGER, HENRY, NIH
MILLER, LOUIS, NIH
NELSON, GEORGE, Liverpool School of Tropical Medicine, England, U. K.
NUSSENSWEIG, RUTH, New York University
PEREIRA, MIERCIO, Tufts New England Medical Center
PERKINS, MARGARET, The Rockefeller University
PFEFFERKORN, ELMER, Dartmouth College
PIESENS, WILLY, Harvard University
PRATT, DIANNE, Harvard Medical School
RIFKIN, MARY, The Rockefeller University
ROBERTS, BRYAN, Harvard Medical School
ROSSIGNOL, PHILIPPE, Harvard School of Public Health
SHER, ALAN, NIH
SHERMAN, IRWIN, University of California at Riverside
SPIELMAN, ANDREW, Harvard School of Public Health
SWISTON, LINDA, Mount Holyoke College
WILSON, DARY, University of Pennsylvania
WIRTH, DYANN, Harvard School of Public Health
WYLER, DAVID, Tufts University Medical School

Students

ANAYA-VELAZQUEZ, LUIS, Center for Research and Advanced Studies of National Polytechnical Institute, Mexico
BHASN, VIRENDR, The Rockefeller University
CHAVEZ, LARRY, The University of New Mexico
CSEKO, YARA, Fundacao Oswaldo Cruz, Brazil
DOBBELAERE, DIRK, International Laboratory for Research on Animal Diseases, Kenya
EKAPANYAKUL, GALAYANEE, Mahidol University, Thailand
FAIRFIELD, ALEXANDRA, Cornell University Medical College
FLISER, ANA, Instituto de Investigaciones Biomedicas, Universidad Nacional Autonoma de Mexico
GOODMAN, HOWARD, Massachusetts General Hospital
KRAKOW, JESSICA, Johns Hopkins University School of Medicine
PERCY, AMY, University of California, Los Angeles
RIVAS-LOPEZ, LUIS, Instituto de Inmunologia y Biologia Microbiana, Spain
ROMERO, GUILLERMO, Instituto de Medicina Tropical "Alexander von Humboldt", Peru
SCHWARZ, RALPH, Deutsche Forschungsgemeinschaft, West Germany
SIBLEY, LAURENCE, Louisiana State University
WYMAN, CLAIRE, Johns Hopkins School of Hygiene and Public Health

EMBRYOLOGY

Course Directors

BRANDHORST, BRUCE, McGill University, Canada
JEFFERY, WILLIAM, University of Texas

1 All summer students listed completed the formal course program. Asterisk indicates those completing post-course research sessions.
EDUCATIONAL PROGRAMS

Other faculty, staff, and lecturers

ANGERER, ROBERT, University of Rochester
BATES, WILLIAM, University of Texas
BIGGERS, JOHN, Harvard Medical School
BRODEUR, BONNIE, University of Texas
BRODEUR, RICHARD, University of Texas
BROWER, DANIEL, University of California, Irvine
BROWN, DONALD, Carnegie Institute
BROYLES, ROBERT, University of Oklahoma College of Medicine
CAPCO, DAVID, Massachusetts Institute of Technology
CHAMBERS, EDWARD, University of Miami
CRAIN, WILLIAM, Worcester Foundation
CROSS, NICHOLAS, University of California, Davis
DAVIDSON, ERIC, California Institute of Technology
DESAINTIS, ROSARIA, Naples Marine Station, Italy
DRAGO, SALVATORE, University of Toronto
EISEN, ANDREW, University of Pennsylvania
ELINSON, RICHARD, University of Toronto
EMERSON, JULIE, University of California, San Francisco
EPPEL, DAVID, Hopkins Marine Station
ETKIN, LARRY, University of Tennessee
GOLDSMITH, MARIAN, University of Rhode Island
HOHEN, MERRILL, University of Washington
HOSHI, MOTONORI, Nagoya University, Japan
HUMPHREYS, THOMAS, University of Hawaii
JACOBSON, ALAN, University of Massachusetts Medical School
JAFFE, LAURINDA, University of Connecticut Health Center
JAFFE, LIONEL, Purdue University/ Marine Biological Laboratory
KALTHOFF, KLAUS, University of Texas
KLEIN, WILLIAM, Indiana University
MAJUI, YOSHIO, University of Toronto
MAXSON, ELLEN, Stanford University
MAXSON, ROBERT, Stanford University
MELTON, DOUGLAS, Harvard University
MILLER, JOHN, University of Calgary, Canada
MOHUN, TIMOTHY, University of Cambridge, U. K.
MOON, RANDY, Caltech
MORROW, LAURA, University of Texas
NELSON, ELLEN, University of Texas
NUCCITELLI, RICHARD, University of California, Davis
NUSELEIN-VOLHARD, CHRISTIANA, University of Tubingen, West Germany
PEDERSON, THORU, Worcester Foundation for Experimental Biology
PHILLIPS, CAREY, University of California, Berkeley
PHILLIPS, ERIC, University of Texas
PINTO, ANGELO, University of Toronto
RAFF, RUDY, Indiana University
RANKIN, MARY ANN, University of Texas
ROBINSON, KENNETH, University of Connecticut
ROSBASH, MICHAEL, Brandeis University
RUDERMAN, JOAN, Harvard Medical School
SARDET, CHRISTIAN, Villefranche, France
SCHLICHER, LYANNE, University of Connecticut
58 MARINE BIOLOGICAL LABORATORY

SCHULTZ, GILBERT, University of Calgary, Canada
SCHULTZ, THOMAS, University of Texas
SCOFIELD, VIRGINIA, Hopkins Marine Station
SHEETLES, BREWER, University of Texas
SPADLING, AL, Carnegie Institution
SPRAY, DAVID, Albert Einstein College of Medicine
TRINKAUS, J. P., Yale University
VACQUIER, VICTOR, University of California, San Diego
WASSARMAN, PAUL, Harvard Medical School
WEISCHAUS, ERIC, Princeton University
WINKLER, MATT, University of Texas
WOODLAND, HUGH, University of Warwick
ZIOMEK, CAROL, Worcester Foundation

Students

BAO, CHENG-YUAN, Case Western Reserve University
*BEACH, REBECCA, University of Connecticut, Storrs
*BEGOVAC, PAUL, University of Florida College of Medicine
*VON BRUNN, ALBRECHT, University of Texas, Austin
*CHUNG, MARGARET, Tufts University School of Medicine
*CONLON, RONALD, McGill University, Canada
*DEAROLF, CHARLES, The Johns Hopkins University
*HALSELL, SUSAN, University of Texas/Patterson Laboratories
*HOWLETT, SARAH, University of Cambridge, England, U. K.
*KLEIN, KAREN, University of Illinois
*LUNDMARK, CATHY, University of California, Berkeley
*LYNCH, EILEEN, The Rockefeller University
*LYONS, GARY, University of Pennsylvania School of Medicine
  MARGULES, DEBORAH, University of Michigan
* MILLER, MILL, Tulane University
*NAGY, LISA, University of California, Berkeley
*OSHIRO, DIANNE, University of Virginia
*PEREZ-GRAU, LLUIS, European Molecular Biology Laboratory, West Germany
*ROMANO, CHARLES, University of Massachusetts, Amherst
*SINGER, SUSAN, Rensselaer Polytechnic Institute
*STEVENS, MARY, University of California at Irvine
*SWALLA, BILLIE, University of Iowa
*WANG, ALLAN, University of Hawaii, Manoa

MARINE ECOCOLOGY

Course Directors

TEAL, JOHN, Woods Hole Oceanographic Institution
VALIELA, IVAN, Boston University Marine Program/Marine Biological Laboratory

Other faculty, staff, and lecturers

ALBERTE, RANDALL, University of Chicago
ANDERSON, DONALD, Woods Hole Oceanographic Institution
BANTA, GARY, Boston University Marine Program/Marine Biological Laboratory
CARON, DAVID, Woods Hole Oceanographic Institution
CONNELL, JOSEPH, University of California, Santa Barbara
EDUCATIONAL PROGRAMS

DACEY, JOHN, Woods Hole Oceanographic Institution
D'AVANZO, CHARLENE, Hampshire College
DENNISON, WILLIAM, University of Chicago
FRANK, PETER, University of Oregon
GALLAGHER, EUGENE, Marine Biological Laboratory
GIBLIN, ANN, Woods Hole Oceanographic Institution
GILBERT, PATRICIA, Woods Hole Oceanographic Institution
GRASSE, FREDERICK, Woods Hole Oceanographic Institution
HOBBIE, JOHN, Marine Biological Laboratory
HOWARTH, ROBERT, Marine Biological Laboratory
JANNASCH, HOLGER, Woods Hole Oceanographic Institution
JEFFERIES, ROBERT, University of Toronto, Canada
KOEHL, MIMI, University of California, Berkeley
LAMBERTSEN, R., University of Florida
LEVINTON, JEFFREY, SUNY, New Paltz
MADIN, LAURENCE, Woods Hole Oceanographic Institution
MANN, ROGER, Woods Hole Oceanographic Institution
MARSH, J., University of Guam
NIXON, SCOTT, University of Rhode Island
ODUM, WILLIAM, University of Virginia
PETERSON, SUSAN, Woods Hole Oceanographic Institution
REVELAS, GENE, SUNY, Stony Brook
RIETSMA, CAROL, SUNY, New Paltz
SANDERS, HOWARD, Woods Hole Oceanographic Institution
STOECKER, DIANE, Woods Hole Oceanographic Institution
WELSCHEMeyer, N., Harvard University
WOODWELL, GEORGE, Marine Biological Laboratory
WYNES, DAVID, Mount Desert Island Biological Laboratory

Students

*ACKERMAN, JOSEF, SUNY, Stony Brook
BERGGREN, RUTH, Oberlin College
COBLER, SUE, Northeastern University
DONALDSON, JACK, New College of the University of South Florida
*EVANS, ANN, Virginia Institute of Marine Science/College of William and Mary
FEDDELER, WILLIAM, Wayne State University
FREY, JONATHAN, Ohio Wesleyan University
GOLDBERG, SANDRA, Tufts University
HOGUET, NANCY, Barnard College
KESSING, BAILEY, New College of the University of South Florida
LASTA, MARIO, Instituto de Biologia Marina y Pesquera “Alte. Storni,” Argentina
*LIEBMAN, MATTHEW, SUNY, Stony Brook
McCORMICK, DEBORAH, University of Alaska, Anchorage
NEILL, CHRISTOPHER, Louisiana State University
PASCUAL, MARCELA, Instituto de Biologia Marina y Pesquera “Alte. Storni,” Argentina
PERKINS, ELEANOR, Marine Biological Laboratory
PROCHAZKA, KARAN, Cambridge, Massachusetts
SLOUGH, DEBRA, Butler University
TAMSE, ARMANDO, Boston University Marine Program/Marine Biological Laboratory
WAGENBACH, GARY, Carleton College

MICROBIAL ECOLOGY

Course Director

HALVORSON, HARLYN, Brandeis University
Other faculty, staff, and lecturers

ALEXANDER, MARTIN, Cornell University
ATWOOD, KIMBALL, Columbia University
AUSICH, RODNEY, Standard Oil of Indiana
BOSTIAN, KEITH, Brown University
CASTENHOLZ, RICHARD, University of Oregon
CAVANAUGH, COLLEEN, Harvard University
CRONIN, JOHN, University of Illinois
DAVIS, BERNARD, Harvard University School of Medicine
DWORKIN, MARTIN, University of Minnesota
GREENBERG, E. PETER, Cornell University
HANSEN, RICHARD, Gray Freshwater Biological Institute
HOBIE, JOHN, Marine Biological Laboratory
HUMPHREY, ARTHUR, Air Products and Chemicals, Inc.
JANNASCH, HOLGER, Woods Hole Oceanographic Institution
KEYNAN, ALEXANDER, Hebrew University, Jerusalem, Israel
KORNBERG, HANS, Cambridge University, England, U. K.
LEABETTER, EDWARD, University of Connecticut, Storrs
MORTENSON, LEONARD, Exxon Research and Engineering Company
ORNSTON, L. N., Yale University
PIERSON, BEVERLY, University of Puget Sound
POINDEXTER, JEANNE, Public Health Research Institute, New York, NY
RICH, ALEX, Massachusetts Institute of Technology
ROMESSER, JAMES, DuPont Corporation
RUBY, EDWARD, University of Southern California
SCHAECHTER, M., Tufts University
SHILO, MOSHE, Life Science Institute of Hebrew University, Jerusalem, Israel
VINCENT, WALTER, University of Delaware
WATERBURY, JOHN, Woods Hole Oceanographic Institution
WOSE, CARL, University of Illinois
WOLFE, RALPH, University of Illinois

Students

ACKERMAN, EUGENE, University of Arkansas
BOYER, JOSEPH, Virginia Institute of Marine Science/College of William and Mary
DECHO, ALAN, Louisiana State University
ESCHER, ANDREAS, Montana State University College of Engineering
HARTEN, JAMES, Vanderbilt University
HARTZELL, PATRICIA, University of Illinois
JOUPER, ASA, Gothenburg University, Sweden
KIEFT, THOMAS, New Mexico Highlands University
MALMCIONA-FRIBERG, KARIN, Gothenburg University, Sweden
MUEHLSTEIN, LISA, Wright State University
NOLL, KENNETH, University of Illinois
ROBERTSON, CHARLES, Skidaway Institute of Oceanography
SANTORO, NICHOLAS, Ohio State University
SKLADANY, GEORGE, Clemson University
SUTHERLAND, DALE, Creighton University
WRENN, BRIAN, University of Miami Rosenstiel School of Marine and Atmospheric Sciences
NEURAL SYSTEMS AND BEHAVIOR

Course Directors
HOY, RONALD, Cornell University
MACAGNO, EDUARDO, Columbia University

Other faculty, staff, and lecturers
ALKON, DANIEL, NINCDS/Marine Biological Laboratory
BENNET-CLARK, HENRY, Oxford University, England, U. K.
CALABRESE, RONALD, Harvard University
CAREW, THOMAS, Yale University
CHALFIE, MARTIN, Columbia University
FLANAGAN, THOMAS, Cold Spring Harbor Laboratory
GETTING, PETER, University of Iowa
GOULD, JAMES, Princeton University
GRINVALD, AMIRAM, Weizmann Institute, Israel
HAERTER, URSULA, Columbia University
HARRIS-WARRICK, RONALD, Cornell University
HOPKINS, CARL, Cornell University
KANDEL, ERIC, Columbia College of Physicians and Surgeons
KELLEY, DARCY, Columbia University
KRIVITZ, EDWARD, Harvard Medical School
KRISTAN, WILLIAM, University of California, San Diego
LENT, CHARLES, Brown University
MARDER, EVE, Brandeis University
MARLER, PETER, The Rockefeller University
MCVEY, MARGARET, The Rockefeller University
MENZEL, RANDOLP, Free University of Berlin, West Germany
MURPHEY, RODNEY, SUNY, Albany
MUSACCHIO, MICHELE, Columbia University
NELSON, MARGARET, Cornell University
NICHOLLS, JOHN, Stanford University School of Medicine/Biocenter, Basel, Switzerland
REHDER, VINCENT, Institut fur Neurobiologie, West Germany
SAHLEY, CHRISTINE, Yale University
SAASSON, DAVID, Columbia University
SEGIL, NEIL, Columbia University
SILVER, RAE, Columbia University
STEWARD, RANDY, Columbia University
WIESEL, TORSTEN, Rockefeller University
ZIPSER, BIRGIT, Cold Spring Harbor Laboratory

Students
*BAPTISTA, CARLOS, University of Lisbon, Portugal
BEASON, ROBERT, SUNY, Geneseo
*BIRD, EDYTHE, Yale University
BORST, ALEXANDER, Institut fur Genetik und Mikrobiologie, West Germany
COON, STEVEN, University of Maryland
*DELaney, KERRY, Princeton University
*GAIDE, MICHAEL, Free University of Berlin, West Germany
GILLIAM, DAVID, University of Colorado
KUTERBACH, DEBORAH, SUNY, Stony Brook
LANDER, ERIC, Harvard University
LANN00, MICHAEL, Dalhousie University, Nova Scotia, Canada
LESK, MARK, The Weizmann Institute of Science, Israel
LI, CHRISTINE, Harvard University
NOBLE, MICHAEL, St. Mary's Hospital Medical School, University of London, U. K.
RISKA, DIANE, University of California, Los Angeles
SIMS, STEPHEN, Columbia University
SMITH, JEFFREY, Harvard School of Public Health
STEVENS, CRAIG, University of Illinois, Chicago
WEINER, GEORGE, Harvard University
*WORDEN, MARY, University of Chicago

NEUROBIOLOGY

Course Directors
HILDEBRAND, JOHN, Columbia University
REESE, THOMAS, NINCDS/NIH/Marine Biological Laboratory

Other faculty, staff, and lecturers
ARMSTRONG, CLAY, University of Pennsylvania
BATTLE, BARBARA, National Eye Institute, NIH
BENTLEY, DAVID, University of California at Berkeley
BRAY, DENNIS
BURD, GAIL, The Rockefeller University
CONSTANTINE-PATTON, MARTHA, Princeton University
CHRISTAKIS, NICHOLAS, Yale University
DUNLAP, KATHLEEN, Tufts University Medical School
EVANS, PETER, University of Cambridge, England, U. K.
FISCHBACH, GERALD, Washington University School of Medicine
FURSHPAN, EDWIN, Harvard Medical School
GOY, MICHAEL, Harvard Medical School
HALL, LINDA, Albert Einstein College of Medicine
HUTTNER, SUSANNE, University of California, Los Angeles
JACOBSON, MARCUS, University of Utah College of Medicine
KACHAR, BECHARA, NINCDS, NIH
KENT, KARLA, Columbia University
KINNANE, JANET, Marine Biological Laboratory
LAFRATTA, JAMES, Harvard Medical School
LANDIS, DENNIS, Massachusetts General Hospital
LANDIS, STORY, Harvard Medical School
MARLER, JENN, McGill University, Canada
MATSUMOTO, STEVEN, Harvard Medical School
MICHAUD, JAYNE, Marine Biological Laboratory
NICAISE, GHISLAIN, Universite Claude Bernard, France
NICAISE, MARI, Universite Claude Bernard, France
NISHI, RAE, Harvard Medical School
O'CONNELL, MAUREEN, NINCDS, NIH
OLAGUE, PAUL, University of California, Los Angeles
PATTERSON, PAUL, Harvard Medical School
POTTER, DAVID, Harvard Medical School
PURVES, DALE, Washington University School of Medicine
RAVIOLA, ELIO, Harvard Medical School
REESE, BARBARA, NINCDS, NIH
ROSENBLUTH, JACK, New York University School of Medicine
SALZBERG, BRIAN, University of Pennsylvania
SCHNAPP, BRUCE, NINCDS, NIH/Marine Biological Laboratory
STEVENS, JOHN, Toronto Western Hospital, Canada
EDUCATIONAL PROGRAMS

THOENEN, HANS, Max Planck Institute for Psychiatry, West Germany
WALROND, JOHN, NINCDS, NIH/Marine Biological Laboratory
WIESEL, TORSTEN, Harvard Medical School
WILLARD, MARK, Washington University School of Medicine
ZIGMOND, RICHARD, Harvard Medical School

Students

BAETGE, GREG, Columbia University
BOARDMAN, IAN, University of Pennsylvania
BODMER, ROLF, Friedrich Miescher Institut, Switzerland
DE SANTIS, AMEDEO, Stazione Zoologica de Napoli, Italy
GOODMAN, LINDA, The Albert Einstein College of Medicine
MARSH, TERRY, National Jewish Hospital and Research Center
NEW, JOHN, Wesleyan University
PEINDO, ALEJANDRO, Columbia University
RUANO-ARROYO, GUALBERTO, Yale University School of Medicine
SCHRANK, ETHAN, University of North Carolina at Chapel Hill
WITTEN, JANE, University of Chicago

PHYSIOLOGY

Course Director

ROSENBAUM, JOEL, Yale University

Other faculty, staff, and lecturers

ACKERS, GARY, Johns Hopkins University
ALLEWELL, NORMA, Wesleyan University
ALTMAN, SIDNEY, Yale University
AUSUBEL, FRED, Harvard University
BALTIMORE, DAVID, Massachusetts Institute of Technology
BEGG, DAVID, Harvard Medical School
BLOODGOOD, ROBERT, University of Virginia
BORSY, GARY, University of Wisconsin
BRINKLEY, WILLIAM, Baylon University Medical School
BURGESS, DAVID, University of Miami
CENTONZE, VICKY, Dartmouth College
CHISHOLM, REX, Massachusetts Institute of Technology
CONDEELIS, JOHN, Albert Einstein College of Medicine
DREYFUS, GIDEON, Northwestern University
FINDLY, CRAIG, Yale University
GALL, JOSEPH, Yale University
GERACE, LARRY, Johns Hopkins University Medical School
GOLDMAN, ROBERT, Northwestern University Medical School
GREENE, KATHLEEN, Northwestern University Medical School
HEREFORD, LYNN, Brandeis University
HOTANI, Q-CHAN, University Kyoto, Japan
HUNT, TIMOTHY, Cambridge University, England, U. K.
INOUÉ, SHINYA, Marine Biological Laboratory
JOHNSON, ROSS, University of Minnesota
JONES, JONATHAN, Northwestern University Medical School
KAUMEYER, JOHN, University of Pennsylvania
KILMARTIN, JOHN, Medical Research Council, England, U. K.
KUCZMARSKI, EDWARD, Northwestern University
KUMAR, AJIT, George Washington University Medical Center
KURIYAMA, RYOKO, University of Wisconsin
Kuwabara, Patricia, University of Pennsylvania  
Lazarides, Elias, California Institute of Technology  
Lefebvre, Peter, University of Minnesota  
Lodish, Harvey, Massachusetts Institute of Technology  
May, Gregory, Yale University  
McCarthy, Michael, Wesleyan University  
Mitchell, David, Yale University  
Mooseker, Mark, Yale University  
Murray, Andrew, Harvard University  
Pant, Harish, National Institute on Alcohol Abuse and Alcoholism  
Reid, Martha, Earlham College  
Rich, Alexander, Massachusetts Institute of Technology  
Rothenthal, Eric, Harvard University Medical School  
Rushforth, Alice, Earlham College  
Schachman, Howard, University of California, Berkeley  
Sheetz, Michael, University of Connecticut Medical School  
Silflow, Carolyn, University of Minnesota  
Siostak, Jack, Dana Farber Cancer Research Center/Harvard University  
Sloboda, Roger, Dartmouth College  
Snell, William, University of Texas, Southwest Medical School  
Steffen, Pamela, Wesleyan University  
Stroud, Robert  
Tamm, Sidney, Boston University Marine Program  
Taylor, D. Lansing, Carnegie-Mellon University  
Thompson, Thomas, University of Virginia  
Tighman, Shirley  
Tilney, Lewis, University of Pennsylvania  
Tobin, Sally, Washington University  
Travis, Jeffrey, Yale University  
Tytell, Michael, Wake Forest University  
Vallee, Richard, Worcester Foundation  
Weinberg, Eric, University of Pennsylvania  
Zackroff, Robert, Northwestern University Medical School

Students

*Bornslaeger, Elayne, University of Pennsylvania  
Bruehl, Charles, Northwestern University  
*Carson, Monica, University of Pennsylvania  
*Conrad, Patricia, University of Massachusetts, Amherst  
*Coyne, Robert, Harvard University  
*Cupo, James, University of Rochester  
*Diener, Dennis, University of Kansas  
*Garrett, Esther, George Washington University  
*George, Elizabeth, University of Virginia  
*Gilbert, Susan, Dartmouth College  
*Green, Philip, University of North Carolina  
*Greer, Karen, Yale University  
*Happel, Anne, Harvard University  
Healy, Judith, Harvard University  
*Hill, David, Loyola University/Foster McGaw Hospital  
Honma, Mary, Harvard University  
*Intres, Richard, Wesleyan University  
*Jones, Stephanie, Vanderbilt University  
*Joyce, Catherine, University of Minnesota  
*Kelly, Thomas, Jr., University of North Carolina, Chapel Hill  
*Lum, Richard, University of Hawaii, Manoa
EDUCATIONAL PROGRAMS

*MILGRAM, AMANDA, Johns Hopkins University
*PAGLIARO, LEONARD, Wesleyan University
*RODRIGUEZ, OLGA, University of Puerto Rico, Rio Piedras
*SHUPE, KATHLEEN, University of Rochester
*TITUS, MARGARET, Brandeis University
*TUCKER, RICHARD, University of California, Davis
*WARD, ERIC, Washington University
WORDeman, LINDA, University of California, Berkeley
*WRIGHT, CONNIE, The George Washington University Medical Center

JANUARY

BEHAVIOR

Course Director

ATEMA, JELLE, Boston University Marine Program/Marine Biological Laboratory

Other faculty, staff, and lecturers

ALKON, DANIEL, NIH/Marine Biological Laboratory
BARLOW, ROBERT, Syracuse University Institute for Sensory Research
BRISBIN, I. LEHR, Savannah River Ecology Program
BRYANT, BRUCE, Boston University Marine Program/Marine Biological Laboratory
CALLARD, GLORIA, Boston University
CANICK, JACOB, Brown University/Woman and Infants Hospital
DETHIER, VINCENT, University of Massachusetts
DOLPHIN, WILLIAM, Boston University
DORSEY, ELLIE, Payne Laboratories
ERSKINE, MARY, Massachusetts Institute of Technology
FAY, RICHARD, Loyola University of Chicago Parmly Hearing Institute
FERME, PAULA, Boston University Marine Program
FRANCIS, ELIZABETH, Bates College
FRASER, JEAN, Boston University
HANDRICH, LINDA, Boston University Marine Program
HAUSFATER, GLEN, Cornell University
JACKLETT, JON, SUNY, Albany
JOHNSON, BRUCE, Boston University Marine Program
KAMIL, AL, University of Massachusetts
KREITHEN, MEL, University of Pittsburgh
KROODSMA, DONALD, University of Massachusetts
LANGBAUER, WILLIAM, Boston University Marine Program/Marine Biological Laboratory
LJEM, KAREL, Harvard University Museum of Comparative Zoology
MOLLER, PETER, American Museum of Natural History
PAYNE, KATY, Lincoln, Massachusetts
PAYNE, ROGER, Lincoln, Massachusetts
RISTAU, CAROLYN, The Rockefeller University
STUART, ALASTAIR, University of Massachusetts
SULZMAN, FRANK, SUNY, Binghamton
TAYAK, PETER, Woods Hole Oceanographic Institution
TRANIELLO, JAMES, Boston University
TROTT, THOMAS, Boston University Marine Program/Marine Biological Laboratory
WILCOX, STIMSON, SUNY, Binghamton

Students

CARTER, STEPHANIE, Boston University
CHU, KEVIN, Boston University Marine Program
EINOLF, DAVID, University of Delaware College of Marine Studies
COMPARATIVE PATHOLOGY OF MARINE INVERTEBRATES

Course Directors

BANG, BETSY GARRETT, Johns Hopkins University School of Hygiene & Public Health/ Marine Biological Laboratory
REINISCH, CAROL, Tufts University School of Veterinary Medicine

Other faculty, staff, and lecturers

ASKENASE, PHILIP, Yale University
CAMPBELL, DAVID, Johns Hopkins University School of Hygiene & Public Health
DUCKLOW, HUGH, Columbia University
ELSTON,RALPH, Battelle Marine Research Laboratory
FARLEY, AUSTIN, Oxford Marine Research Laboratory
FRAZIER, JOHN, Johns Hopkins University School of Hygiene & Public Health
LEIBOVITZ, LOUIS, Marine Biological Laboratory
LEONARD, LESLIE, Johns Hopkins University School of Hygiene & Public Health
LEVIN, JACK, University of California, San Francisco
MICHAELSON, EDWARD, Harvard University School of Public Health
PEARCE, JOHN, National Marine Fisheries Service
PRENDERGAST, ROBERT, Johns Hopkins Hospital
ROSENWASSER, LENNY, Tufts University School of Medicine
SINDERMAN, CARL, National Marine Fisheries Service
SPARKS, ALFRED, University of Washington School of Fisheries
STEPHENS, RAYMOND, Marine Biological Laboratory
STEWART, JAMES, Fisheries Research Branch, Nova Scotia, Canada
STRANDBERG, JOHN, Johns Hopkins University School of Medicine
WHITTAKER, J. RICHARD, Boston University Marine Program/Marine Biological Laboratory

Students

AYVAZIAN, SUZANNE, University of Lowell
CALLAHAN, JOYCE, Stonehill College
CAMPBELL, WALTON, Stamford, Connecticut
FISHER, WILLIAM, University of California, Davis
FORE, STEPHANIE, St. Andrews Presbyterian College
GIUDICE, GINA, Immaculata College
JANSEN, MAURA, Virginia Institute of Marine Science/College of William and Mary
KANUNGO, KALPATARU, Western Connecticut State University
LIMA, GAIL, Tufts University
MARGOSIAN, ARLENE, Trent University, Canada
RUANO, FRANCISCO, Instituto Nacional de Investigacao das Pescas, Portugal
TICE, KIMBERLY, Southampton College

SPRING

BIOPHYSICS OF NEURAL FUNCTION

Course Director

ALKON, DANIEL, NINCDS, NIH/Marine Biological Laboratory
EDUCATIONAL PROGRAMS

Other faculty, staff, and lecturers

ADELMAN, WILLIAM, JR., NINCDS, NIH/Marine Biological Laboratory
ATWOOD, HAROLD, University of Toronto
BARLOW, ROBERT, JR., Syracuse University
BRIGHTMAN, MILTON, NINCDS, NIH
CONNOR, JOHN, Bell Laboratories
DE FilICE, LOUIS, Emory University School of Medicine
DOWLING, JOHN, Harvard University
FARLEY, JOSEPH, Princeton University
GILBERT, CHARLES, Harvard Medical School
GOVIND, C. K., University of Toronto, Canada
JACKLET, JON, SUNY, Albany
KAPLAN, EHUD, The Rockefeller University
KRAVITZ, EDWARD, Harvard Medical School
LLINAS, RODOLFO, New York University Medical Center
MOORE, JOHN, University of Massachusetts
PAPPAS, GEORGE, University of Illinois
POTTER, DAVID, Harvard Medical School
RASMUSSEN, HOWARD, Yale University School of Medicine
RAYMOND, STEPHEN, Massachusetts Institute of Technology
SHEPHERD, GORDON, Yale University School of Medicine
WEISS, THOMAS, Massachusetts Institute of Technology

Students

APPFELDORF, WILLIAM, Yale University School of Medicine
BASS, CARL, Vanderbilt University
EARNEST, THOMAS, Boston University
FEINMAN, RICHARD, SUNY, Downstate Medical Center
GRAYSON, CAROLYN, University of Toronto, Canada
HERRON, PAUL, University of Massachusetts
HOWARD, HEIDI, Marlboro College
JACOBSON, SAMUEL, Massachusetts Eye and Ear Infirmary/Harvard Medical School
JOHNSON, KAREN, The University of Texas Medical Branch
MOSS, ANTHONY, Boston University Marine Program/Marine Biological Laboratory
SALTZMAN, CHARLES, University of North Carolina School of Medicine
SMITH, DOLORES, Tulane University School of Medicine
SULLIVAN, JOHN, Mount Sinai School of Medicine
UNNIKRISHNAN, K. P., Syracuse University
VINING, ELIZABETH, Iowa State University
WEISS, DAVID, Baylor College of Medicine/Texas Medical Center

SHORT COURSES

ANALYTICAL AND QUANTITATIVE LIGHT MICROSCOPY IN BIOLOGY, MEDICINE, AND MATERIALS SCIENCES

Course Director

INOUE, SHINYA, Marine Biological Laboratory

Other faculty, staff, and lecturers

AMATO, PHILIP, Carnegie Mellon University
BENCK, RAY, Cohu, Inc.
CHIASSON, RICHARD, Olympus Corporation of America
DUFFY, JACK, Fran M. Valenti, Inc.
ELLIS, GORDON, University of Pennsylvania
BASIC IMMUNOHistoCHEMICAL TECHNIQUES IN TISSUE
SECTIONS AND WHOLE MOUNTS

Course Directors
Beltz, BARBARA, Harvard Medical School
Burd, GAIL, The Rockefeller University

Other faculty, staff, and lecturers
Bibee, Mike, Carl Zeiss, Inc.
Ennekking, Kitty, Hacker Instruments
Heintz, John, The Rockefeller University
Merikas, Lewis, Hacker Instruments
EDUCATIONAL PROGRAMS

Presley, Philip, Carl Zeiss, Inc.
Tracy, Cheryl, Harvard Medical School
Wanless-Dorn, Vicki, Immuno Nuclear Corporation

Students

Battista, Arthur, New York University Medical School
Clasen, Dale, Kansas State University
Davis, Norman, University of Connecticut/The Biological Sciences Group
Heimberg, Carolyn, Boystown National Institute
Henderson, Judith, SUNY, Buffalo
Lysakowski, Anna, University of Illinois Medical Center
Newkirk, Robert, Tennessee State University
Prevette, David, Bowman Gray School of Medicine
Richards, Ann, Burroughs Wellcome Company
Schmied, Robert, Columbia University
Sloley, Brian, University of Waterloo
Smith, Louis, Baylor College of Medicine

Mariculture: Culture of Marine Invertebrates for Research Purposes

Course Director

Berg, Carl, Jr., Marine Biological Laboratory

Other faculty, staff, and lecturers

Alatalo, Philip, Marine Biological Laboratory
Bower, Carol, Institute for Aquarium Studies
Capo, Thomas, Marine Biological Laboratory
Capuzzo, Judith, Woods Hole Oceanographic Institution
Doyle, Roger, Dalhousie University
Fujita, Rodney, Marine Biological Laboratory
Garibaldi, Louis, New York Aquarium
Guillard, Robert, Bigelow Laboratories
Hanlon, Roger, Marine Biomedical Institute
Harrigan, June, Marine Biological Laboratory
Hughes, John, Massachusetts State Lobster Hatchery
Kerr, Louis, Marine Biological Laboratory
Leibovitz, Louis, Marine Biological Laboratory
Mann, Roger, Woods Hole Oceanographic Institution
Marcus, Nancy, Woods Hole Oceanographic Institution
Spotte, Stephen, Mystic MarineLife Aquarium
Sulkin, Stephen, Horn Point Laboratory
Turner, David, Institute for Aquarium Studies

Students

Al-Yamani, Faiza, University of Miami
Borrero, Francisco, University of South Carolina
Castelli, Maurizio, Virginia Institute of Marine Science
Checa, Miguel, Aquamundo, Peru
Corbitt, Michael, Sea Farms of Connecticut
DeFreese, Duane, Florida Institute of Technology
Detwyler, Robert, Norwich University
Ferry, Ricardo, University of Miami
Landau, Laurie, Philadelphia, Pennsylvania
Landy, Ronald, New York State College of Veterinary Medicine/Cornell University
OPtical microscopy and imaging in the biomedical sciences

Course Director

ALLEN, ROBERT, Dartmouth College

Other faculty, staff, and lecturers

AMATO, PHILIP, Carnegie Mellon University
ASHMEAD, ROBERT, Nikon Instrument Division, Nikon, Inc.
BALCOM, RICHARD, Olympus Corporation of America
BIBEE, MICHAEL, Carl Zeiss, Inc.
CHIASSON, RICHARD, Olympus Corporation of America
CLAYTON, CARY, Instrumentation Marketing Corporation
COWAN, DIANE, Boston University Marine Program/Marine Biological Laboratory
FUJIWAKE, Dr., Hamamatsu Photonics, K.K., Japan
HANSEN, ERIC, Dartmouth College School of Engineering
HAYDEN, JOHN, Dartmouth College
HINSCH, JAN, E. Leitz, Inc.
IZZARD, COLIN, SUNY, Albany
KLEIFGEN, JEROME, DAGE—MTI
KNUTRUD, PAUL, Interactive Video Systems
MONGIELLO, JOHN, A. O. Reicht Scientific
ORNDORFF, KENNETH, Dartmouth College
PRESLEY, PHIL, Carl Zeiss, Inc.
 Saporetti, Tony, Interactive Video Systems
TAYLOR, D. LANSING, Carnegie Mellon University

Students

AUFDERHEIDE, KARL, Texas A&M University
BANKER, GARY, Albany Medical College of Union University
BEVAN, ROSEMARY, University of Vermont School of Medicine
BRIDGMAN, PAUL, NIH
BUCKLAND-NICKS, JOHN, University of Alberta, Canada
ENDO, BURTON, Agricultural Research Service/Plant Protection Institute
FRANKEL, RICHARD, Massachusetts Institute of Technology
HOLDREN, DALE, University of Washington
HULBERT, WILLIAM, University of Alberta, Canada
HUXLEY, VIRGINIA, University of California, Davis
KUSUMI, AKIHIRO, Princeton University
PAWLEY, JAMES, HVEM Laboratory
RAKOWSKI, ROBERT, Washington University School of Medicine
SHEPHERD, GORDON, Yale University School of Medicine
WELSH, MICHAEL, University of Iowa Hospitals
PROTEIN ANALYSIS BY POLYACRYLAMIDE GEL ELECTROPHORESIS

Course Directors

STEPHENS, RAYMOND, Boston University School of Medicine/Marine Biological Laboratory
ZWEIDLER, ALFRED, The Institute for Cancer Research

Other faculty, staff, and lecturers

GOOD, MICHAEL, Marine Biological Laboratory
KERR, LOUIS, Marine Biological Laboratory
MASURE, H. ROBERT, Boston University School of Medicine

Students

ADAMS, SUSAN, VA Medical Center, Kansas City, Missouri
BROWER, DANNY, University of California, Irvine
CAMPENOT, ROBERT, Cornell University
CHEPKO, GLORIA, Albert Einstein School of Medicine
CHOU, TA-HSU, Michigan Cancer Foundation
DONADY, J. JAMES, Wesleyan University
FUSELER, JOHN, University of Texas Health Science Center, Dallas
GANZ, PETER, Brigham and Women's Hospital
HAYHOME, BARBARA, University of Nebraska, Omaha
KAZURA, JAMES, University Hospitals
KOOPMANS, HENRY, Columbia University
KUHNS, WILLIAM, University of North Carolina
LISMAN, JOHN, Brandeis University
LIU, H. MEI, The Miriam Hospital
MCGRATH, ANN, VA Hospital, San Francisco, California
PEARSON, JAMES, The Upjohn Company
RIPPS, HARRIS, New York University School of Medicine
ROESUADI, GURI, Battelle Marine Research Laboratory
TRONCOSO, JUAN, Johns Hopkins University
WALTER, ANNE, NIH—National Heart, Lung and Blood Institute

SMALL COMPUTERS IN BIOMEDICAL RESEARCH

Course Director

PALMER, LARRY, University of Pennsylvania School of Medicine

Other faculty, staff, and lecturers

COWAN, DIANE, Boston University Marine Program/Marine Biological Laboratory
JONES, JUDSON, University of Pennsylvania School of Medicine
PEACHEY, LEE, University of Pennsylvania

Students

BRUCE, RICHARD, Highlands Biological Station
CHEN, LEE, University of California
CHENG, TONI, Marine Biological Laboratory
HERMAN, LAWRENCE, New York Medical College
HESTER, KELLY, Texas A&M University College of Medicine
JACOBSON, SAMUEL, Bascom Palmer Eye Institute
KUHNS, WILLIAM, University of North Carolina School of Medicine
KUSUMI, AKIHIRO, Princeton University
MORAN, JOHN, The Upjohn Company
SHEFF, MICHAEL, The Miriam Hospital
SUNDELL, CYNTHIA, University of Pennsylvania
X. RESEARCH AND TRAINING PROGRAMS

SUMMER

PRINCIPAL INVESTIGATORS

ADAMS, JAMES A., Tennessee State University
ALBERTE, RANDALL S., University of Chicago, Barnes Laboratory
ALLEN, NINA S., Dartmouth College
ALLEN, ROBERT D., Dartmouth College
ANDERSON, PETER A. V., Whitney Laboratory
ARMSTRONG, CLAY M., University of Pennsylvania
ARMSTRONG, PETER B., University of California
ARNOLD, JOHN M., Kewalo Marine Laboratory, Pacific Biomedical Research Center
BAMBURG, JAMES R., Colorado State University
BARNES, ROBERT B., Jr., Syracuse University
BATTEN, BRUCE E., Tufts Medical School
BEAUGE, LUIS, Instituto de Investigacion Medica, Argentina
BEGENISICH, TED B., University of Rochester Medical Center
BENNM, MICHAEL V. L., Albert Einstein College of Medicine
BORTER, MAX M., University of Basel, Switzerland
BURSZTAJN, SHERRY, Baylor College of Medicine
CHANG, DONALD C., Baylor College of Medicine
CHAPPELL, RICHARD L., Hunter College
COHEN, LAWRENCE B., Yale University School of Medicine
COHEN, WILLIAM D., Hunter College
COOPERSTEIN, SHERWIN J., University of Connecticut Health Center
DE WEER, PAUL, Washington University School of Medicine
DUNHAM, PHILLIP B., Syracuse University
ECKERT, BARRY S., SUNY, Buffalo
ECKERT, BARRY S., SUNY, Buffalo
EHRENSSTEIN, GERALD, NIH
FARMAFARMAIAN, A., Rutgers University
FESTOFF, BARRY W., VA Medical Center
FISHMAN, HARVEY M., University of Texas Medical Branch
FRENCH, ROBERT J., University of Maryland
GILBERT, DANIEL L., NIH
GOLDMAN, ROBERT D., Northwestern University Medical School
GOVIND, C. K., Scarborough College
GRINVALD, AMIRAM, Weizmann Institute of Science
HAIMO, LEAH T., University of California, Riverside
HARRINGTON, JOHN P., University of Alaska
HASCHEMEYER, AUDREY, E. V., Hunter College
HEPLER, PETER K., University of Massachusetts
HIGHSTEIN, STEPHEN, Albert Einstein College of Medicine
HUMPHREYS, TOM, University of Hawaii
KAMINER, BENJAMIN, Boston University School of Medicine
KAO, C. Y., SUNY, Downstate Medical Center
INGOGLIA, NICHOLAS A., UMDNJ—New Jersey Medical School
KURIYAMA, RYOKO, University of Wisconsin
LANDOWNE, DAVID, University of Miami
LANGFORD, GEORGE M., The School of Medicine, University of North Carolina
LASEK, RAYMOND J., Case Western Reserve University
LAUFER, HANS, University of Connecticut
LEVIN, JACK, Veterans Administration Hospital, San Francisco
LIPICKY, JOHN, Food & Drug Administration
LLINAS, RODOLFO, New York University Medical Center
LONGO, FRANK J., University of Iowa
LOEWENSTEIN, WERNER R., University of Miami School of Medicine
MATSUMURA, FUMIO, Michigan State University
METUZALS, J., University of Ottawa, Canada
MAGLOTT, DONNA R., Howard University
MITCHELL, RALPH, Harvard University
MIYAMOTO, DAVID M., Seton Hall University
MORRELL, FRANK, Rush Medical College
MULLINS, L. F., University of Maryland
NAGEL, RONALD L., Albert Einstein College of Medicine
NARASHI, TOSHIRO, Northwestern University Medical School
NELSON, LEONARD, Medical College of Ohio
NOE, BRYAN D., Emory University
OBAID, ANA LIA, University of Pennsylvania School of Dental Medicine
OLINS, DONALD E., University of Tennessee
O'MELIA, ANNE F., George Mason University
OXFORD, GERRY S., University of North Carolina, Chapel Hill
PAPPAS, GEORGE D., University of Illinois, Chicago
PIERCE, SIDNEY K., University of Maryland
POZNANSKY, MARK J., University of Alberta, Canada
PRATT, MELANIE M., University of Miami School of Medicine
PUMPLIN, DAVID W., University of Maryland, Baltimore
QUIGLEY, JAMES P., SUNY, Downstate Medical Center
RAKOWSKI, ROBERT F., Washington University School of Medicine
REYNOLDS, GEORGE T., Princeton University
RIPPS, HARRIS, New York University School of Medicine
ROSS, WILLIAM NOEL, New York Medical College
RUSSELL, JOHN M., University of Texas Medical Branch
SAFFO, MARY BETH, Swarthmore College
SAHLEY, CHRISTIE L., Yale University
SALZBERG, BRIAN M., University of Pennsylvania
SANGER, JOSEPH W., University of Pennsylvania School of Medicine
SCHNEIDER, E. GAYLE, University of Nebraska Medical Center
SCHUEL, HERBERT, SUNY, Buffalo
SCOFIELD, VIRGINIA L., Stanford University School of Medicine
SEGAL, SHELDON J., Rockefeller Foundation
SELMAN, KELLY, University of Florida
SILVER, ROBERT BENJAMIN, University of Health Sciences, Chicago Medical School
SHEETZ, MICHAEL, University of Connecticut Health Center
SHEMIN, DAVID, Northwestern University
SPECK, WILLIAM T., Rainbow Babies & Children’s Hospital
SPIEGEL, EVELYN, Dartmouth College
SPIEGEL, MELVIN, Dartmouth College
STANLEY, ELIS F., Johns Hopkins Medical School
STUART, ANN E., University of North Carolina
SZENT-GYÖRGYI, ANDREW G., Brandeis University
TASAKI, ICHII, National Institute of Mental Health
TASHIRO, JAY SHIRO, Kenyon College
BEZANILLA, FRANCISCO, University of California, Los Angeles
TAYLOR, ROBERT E., NIH
TREISTMAN, STEVEN N., Worcester Foundation for Experimental Biology
TRINKAUS, JOHN PHILIP, Yale University
TROLL, WALTER, New York University Medical Center
TUCKER, EDWARD B., Vassar College
TYTELL, MICHAEL, Bowman Gray School of Medicine
WALLACE, ROBIN A., Whitney Marine Laboratory
WEISSMAN, GERALD, New York University Medical Center
WOLNIAK, STEPHEN M., University of Maryland
YEH, JAY Z., Northwestern University Medical School
ZIGMAN, SEYMOUR, University of Rochester School of Medicine & Dentistry

LIBRARY READERS

ADELBERG, EDWARD A., Yale Medical School
ALBRIGHT, JOHN T., Harvard School of Dental Medicine
ALKON, DANIEL, Marine Biological Laboratory
ARMETT-KIBEL, CHRISTINE, University of Massachusetts, Boston
ANDERSON, EVERETT, Harvard Medical School
ARMSTRONG, MARGARET, University of California
BANG, BETSY G., Marine Biological Laboratory
BARENHOLZ YEHEZKEL, Hebrew University, Jerusalem, Israel
BEAN, CHARLES P., General Electric Research and Development Center
BECKER, FREDERICK F., M. D. Anderson Hospital & Tumor Institute
BEIDLER, LLOYD, Florida State University
BOYER, JOHN F., Union College
BROYLES, ROBERT H., University of Oklahoma Health Sciences Center
BROWN, FRANK, Woods Hole, Massachusetts
BUCK, JOHN, NIH
CADELAS, GRASIELA C., Universidad de Puerto Rico
CARLSON, FRANCIS, John Hopkins University
CARRIESE, RITA, SUNY, Downstate Medical Center
CHATRJEE, DEB K., University of Illinois
CHILD, FRANK M., Trinity College
CLARK, ARNOLD, University of Delaware
COHEN, SEYMOUR S., SUNY, Stony Brook
COLLIER, JACK R., Brooklyn College
COLLIER, MARJORIE M., Saint Peter's College
COUCH, ERNEST F., Texas Christian University
COWLING, VINCENT F., SUNY, Albany
CROWLEY, WILLIAM F., Massachusetts General Hospital
DESSNER, DANIEL A., Kenyon College
DETTBARN, WOLF-D., Vanderbilt University Medical Center
DUNCAN, THOMAS, Marine Biological Laboratory
DUNN, STEPHEN, Harvard University
EBERT, JAMES, Carnegie Institute of Washington
EDDS, LOUISE L., Ohio University
EDER, HOWARD A., Albert Einstein College of Medicine
ELLNER, JERROLD, University Hospitals, Cleveland, Ohio
EPEL, DAVID, Stanford University
RESEARCH AND TRAINING PROGRAMS

FEINGOLD, DAVID S., New England Medical Hospital
FISHER, SAUL, New York University School of Medicine
FLAHERTY, CLAIRE V., Fairleigh Dickenson University
FLISSER, ANNA, Instituto de Investigaciones Biomedicas, Mexico
FRENKEL, NORBERT, Northwestern University Medical School
FRIEDLER, GLADYS, Boston University School of Medicine
FROST, JOHN KINGSBURY, John Hopkins School of Medicine
GABRIEL, MORDECAI L., Brooklyn College
GERMAN, JAMES L., The New York Blood Center
GOLDSTEIN, LESTER, University of Kentucky
GOLDSTEIN, MOISE H., John Hopkins University
GOODE, DENNIS, University of Maryland
GRANT, PHILIP, University of Oregon
GROSCH, DANIEL S., North Carolina State University
GROSSMAN, ALBERT, New York University Medical Center
HAN, JON, Kenyon College
HARDING, CLIFFORD V., Kresge Eye Institute of Wayne State University
HUBNAGEL, LINDA, University of Rhode Island
ILAN, JOSEPH D., Case Western Reserve University School of Medicine
INOUÉ, SADAYUKI, McGill University
INOUÉ, SHINYA, Marine Biological Laboratory/University of Pennsylvania
JOHNSON, MICHAEL, Harvard Medical School
JONES, MEGAN, Harvard University
KANE, ROBERT E., University of Hawaii
KALTENBACH, JANE C., Mount Holyoke College
KAWAI, MASATADA, Columbia University
KINSER, ROBINSON GAUCHUHI, Clinical Research Centre, Nairobi, Kenya
KIRSCHBAUM, DONALD M., College of Medicine, SUNY
KOSOWER, EDWARD M., Tel-Aviv University, Israel
KRAVITZ, EDWARD A., Harvard Medical School
LADERMAN, AIMLEE D., Smithsonian Institution
LAZAROW, PAUL B., The Rockefeller University
LEE, JOHN J., City College of New York
LEIGHTON, JOSEPH, The Medical College of Pennsylvania
LEVINE, RACHMIEL, City of Hope Medical Center, California
LEVINE, WALTER G., Albert Einstein College of Medicine
LEVITZ, MORTIMER, New York University Medical Center
LO, WOO-KUEN, Kresge Eye Institute of Wayne State University
LORAND, LASZLO, Northwestern University
MAENSCHEN, JANE, Arizona State University
MARINE RESEARCH, Falmouth, Massachusetts
MAUSER, MORTON, Woods Hole, Massachusetts
MAUTNER, HENRY G., Tufts University School of Medicine
MAUZERALL, DAVID, The Rockefeller University
MEINERTZHAGEN, I. A., Dalhousie University, Nova Scotia
MICIKAS, LYNDA, Temple University
MILLER, DANIEL G., PMI-Strang Clinic
MITCHELL, JAMES B., Moravian College
MIZELL, MERLE, Tulane University
MONSANTO COMPANY, St. Louis, Missouri
MONROY, ALBERTO, Stazione Zoologica, Napoli, Italy
MOORE, JOHN W., Duke University
MORSE, STEPHEN, Rutgers University
MUSICK, JIM, Ultra Pure Laboratories, Salt Lake City
O’RAND, ANGELA, Duke University
OSCHMAN, JAMES, Woods Hole, Massachusetts
ORME-JOHNSON, NANETTE ROBERTS, Tufts University
PEDERSON, THORU, Worcester Foundation for Experimental Biology
PEISACH, JACK, Albert Einstein College of Medicine
PERSON, PHILIP, V. A. Hospital, Brooklyn, New York
QUATTROCHI, JAMES J., Ohio State University College of Medicine
REINER, JOHN M., Albany Medical Center
RICE, ROBERT, Carnegie-Mellon University
ROSENBLUTH, RAJA, Simon Fraser University, Canada
ROWLAND, LEWIS P., Neurological Institute, New York
SCHWARTZ, MARTIN, University of Maryland, Baltimore County
SCHRATER, FAYE, Smith College
SHEMIN, DAVID, Northwestern University
SHEPHARD, FRANK, Deep Sea Research
SHERMAN, IRWIN W., University of California
SINGER, MAXINE, NIH
SLUDER, GREENFIELD, Worcester Foundation for Experimental Biology
SNYDER, JUDITH, University of Denver
SPECTOR, A., Columbia University
SPEIGEL, MEL, Dartmouth College
STEPHEN, MICHAEL J., Rutgers University
STUNCKARD, HORACE, American Museum of Natural History
SUSSMAN, MAURICE, University of Pittsburgh
TASHIRO, JAY S., Kenyon College
TRAGER, WILLIAM, The Rockefeller University
TWEDELL, KENYON S., University of Notre Dame
WAHIO, WALTER, Rutgers University
WANGH, LAWRENCE, Brandeis University
WITRIBERG, JONATHAN B., Albert Einstein College of Medicine
WITRIBERG, JONATHAN B., Albert Einstein College of Medicine
WOLKEN, JEROME J., Carnegie-Mellon University
ZAKS, SUMNER I., Miriam Hospital
ZELESKI, ILENE, Deep Sea Research
ZIMMERMAN, MORRIS, Merck, Sharp & Dohme Research Laboratories

OTHER RESEARCH PERSONNEL

ALLIEGRO, MARK, SUNY, Buffalo
ANDERSON, CATHLEEN, Syracuse University
AUGUSTINE, GEORGE, University of California, Los Angeles
BAKER, ROBERT G., New York University Medical Center
BEACH, ROBERT L., University of Virginia Medical Center
BETCHAKU, TEIICHI, Yale University School of Medicine
BLUMER, JEFFREY, Case Western Reserve University
BOOKMAN, RICHARD, University of Pennsylvania
BOSS, WENDY, University of North Carolina
BOWER, JAMES, New York University Medical Center
BRADY, SCOTT, Case Western Reserve University
BREITWIESER, GERDA E., University of Texas Medical Branch
BROWN, DOUGLAS, Dartmouth College
CAPUTO, CARLO, National Institutes of Mental Health
CARDEN, M., University of Ottawa, Canada
CARIELLO, LUCIO, Stazione Zoologica, Naples, Italy
CHUNG, MARGARET P., Tufts University Medical School
CLAPIN, D. F., University of Ottawa, Canada
CLARK, JOHN M., University of Massachusetts
COHEN, ROCHELLE S., University of Illinois
DEFEELICE, LOUIS, Emory University
DESIMONE, DOUGLAS, Dartmouth College
DENNISON, WILLIAM C., University of Chicago
DESSNER, DANIEL, Kenyon College
DiPOLO, RINALDO, Medica Instituto d'Investigacion, Argentina
DOWLING, JOHN E., Harvard University
EAGLES, P. A., University of London, U. K.
EHRLING, G. R., Northwestern University School of Medicine
EISEN, ANDREW, Children's Hospital, Boston
EISENBERG, ROBERT, Rush Medical College
EISNER, D., University College, London, U. K.
ELLNER, JERROLD, University Hospital, Cleveland
FATH, KARL, Case Western Reserve University
FEINMAN, RICHARD D., Downstate Medical Center, Brooklyn
FELDMAN, SUSAN C., New Jersey Medical School
FENNELL, G. J., New York University
FONG, PEYING, Yale University School of Medicine
FRANK, DODIE, Case Western Reserve University
GAINER, HAROLD, N.I.H.
GEORGE, TED, Case Western Reserve University
GILBERT, SUSAN, Dartmouth College
GIUDITTA, ANTONIO, International Institute of Genetics and Biophysics, Italy
GOLDBERG, JAY M., University of Chicago
GOLDMAN, ANNE E., Northwestern University
GOULD, ROBERT, New York Institute of Basic Research for Mental Retardation
GREGORY, WILLIAM, Albert Einstein College of Medicine
GRIZZLE, RAYMOND, Rutgers University
HAGELSTEIN, ERIC B., Northwestern University School of Medicine
HARONIAN, GRACE, University of Connecticut
HEIPLE, JEANNE, The Rockefeller University
HILL, W. DAVID, Bowman Gray School of Medicine
HIRAI, SETSURO, Rockefeller Foundation
HOLLOWAY, STEPHEN, Northwestern University School of Medicine
HORN, LYLE W., Temple University
HU, SHI LING, Downstate Medical Center, Brooklyn
HUANG, JAMES, Northwestern University School of Medicine
JACOBSEN, RONALD, Georgia Institute of Technology
JASLOVE, S., Albert Einstein College of Medicine
JOSEPH-SILVERSTEIN, JACQUELYN, Hunter College
KAO, PETER N., Columbia University College of Physicians and Surgeons
KAPLAN, EHUD, The Rockefeller University
KAUPP, BENJAMIN, KISHIMOTO, TAKEO, National Institute for Basic Biology, Japan
KJELLEBERG, STAFFEN, Gothenburg University, Denmark
KOIDE, SAMUEL S., Rockefeller Foundation
KRAWTHAMER, VICTOR, New York Medical College
LEUCHTAG, H. RICHARD, University of Texas Medical Branch
LEVIS, RICHARD, Rush Medical College
LEWENSTEIN, LISA, New York Medical College
MACKIN, ROBERT, Emory University
MARCUM, JAMES A., Massachusetts Institute of Technology
MARGOLIS, JONATHAN, Swarthmore College
MARSH, JAMES A., University of Guam
MARTZ, DEAN, Case Western Reserve University
MATTeson, DONALD R., University of Pennsylvania
MISEVIC, GRADIMIR, University of Basel, Switzerland
MORRELL, LEYLA DE TOLEDO, Rush Medical College
Moss, ROBERTA, SUNY, Buffalo
MORRELL, LEWIS, ROCKFORD, Rush Medical College
MOSHE, ROZDZIAL, University of California
MUELLER, EDWIN W., University of Virginia
MUELLER, CARLOs, Pacific Biomedical Research Center, Hawaii
RUESS, LYNNIE, Kenyon College
RUSSMAN, C., Albert Einstein College of Medicine
SANGER, JEAN M., University of Pennsylvania School of Medicine
SARMA, VIDYA, University of Maryland
SCOBIE, ELMEI, Dartmouth College
SCHUEL, REGINA, SUNY, Buffalo
SCRUGGS, VIRGINIA M., Northwestern University School of Medicine
SENSEMAN, DAVID M., University of Pennsylvania
SLAUGHTER, CATHERINE, University of Rochester Medical School
SMITH, CATHARINE, University of Rochester Medical School
SMITH, STEPHAN, Yale University
SOCCI, ROBIN, Rutgers University
SODERHALL, KENNETH, University of Uppsala, Sweden
RESEARCH AND TRAINING PROGRAMS

SPRAY, DAVID C., Albert Einstein College of Medicine
STEINACKER, ANTOINETTE, Albert Einstein College of Medicine
STIMERS, JOSEPH, University of California, Los Angeles
STOCKBRIDGE, NORMAN, New York Medical College
SUGIMORI, M., New York University School of Medicine
SZAMIER, BRUCE, Marine Biological Laboratory
SZENTKIRALYI-SZENT-GYÖRGYI, EVA, Brandeis University
TANGUY, JOELLE, Laboratoire de Neurobiologie
TAYLOR, LAVENTRICE, University of North Carolina
TAYLOR, D. L., Carnegie Mellon University
TIEFERT, T., University of Maryland
TORRES, RAFAEL, University of California at Los Angeles
VALE, RONALD, Stanford University
VARNER, JUDITH, Klingelbergstrasse Biocenter, Switzerland
VOSSHALL, LESLIE, Syracuse University
WALCH, MARIANNE, Harvard University
WALTON, ALAN J., Open University, England, U. K.
WANG, LINFANG, Rockefeller Foundation
WEISS, J., Northwestern University School of Medicine
WHITE, RICHARD, Albert Einstein College of Medicine
WHITE, MICHAEL M., University of California, Los Angeles
WHITTEMURY, JONATHAN, University Peruana, Cayetano
WIENS, T. J., University of Manitoba, Canada
WIRTZ, K. W. A., State University of Utrecht, Netherlands
WU, CHAU H., Northwestern University School of Medicine
YAMAMOTO, DAISUKE, Northwestern University School of Medicine
YOKO, KAREN, Northwestern University School of Medicine
ZAVEVICIUS, JANE, New York University School of Medicine
ZAVILOWITZ, J., Albert Einstein College of Medicine
ZECEVIC, DEJAN, Institute of Biological Research, Belgrade, Yugoslavia

YEAR-ROUND PROGRAMS

(All of Marine Biological Laboratory unless otherwise indicated)

BOSTON UNIVERSITY MARINE PROGRAM (BUMP)

Staff (of Boston University unless otherwise indicated)

ALLEN, SARAH
ATEMA, JELLE
COGSWELL, CHARLOTTE, University of Connecticut
COWAN, DIANE
CROWTHER, ROBERT
D'AVANZO, CHARLENE, Hampshire College
GOVIND, C. K., University of Toronto, Canada
HAHN, DOROTHY
HARTMAN, JEAN, University of Connecticut
HUMES, ARTHUR
LOESCHER, JANE
MEEDEL, THOMAS
MIYAMOTO, DAVID
NAKAMURA, SHOGE
PEARCE, JOANNE, University of Toronto, Canada
RIETSMA, CAROL, SUNY, New Paltz
SCHWALBE, KAREN
TAMM, SIDNEY
TAMM, SIGNHILD
TAYLOR, MARGERY
VAJELA, IVAN
VAN ETTEN, RICHARD
VOIGHT, RAINER
WHITTAKER, J. RICHARD, Director

Graduate Students

BANTA, GARY
BARSHAW, DIANA
BRYANT, DONALD
BUCHSBAUM, ROBERT
CARACO, NINA
CHU, KEVIN
COHEN, ROSALIND
COSTA, JOSEPH
COULTER, DOUGLAS
FERME, PAOLA
FOREMAN, KENNETH
FUJITA, RODNEY
GOEHRINGER, DALE
GOODARD, KATHRYN
HALL, VALERIE
HANDBICH, LINDA
HETTENBACH, GAIL
HOWES, BRIAN
JOHNSON, BRUCE
LAVALLI, KARI
MERILL, CARL
MOSS, ANTHONY
NEIDINGER, RICHARD

POOLE, ALAN
TAMSE, ARMANDO
TROTT, THOMAS
WEBB, JACQUELINE
WHITE, DAVID
WILSON, JOHN
WOOD, SUSAN

Undergraduates

ALCESTE, CESAR
CHASE, JAMES
GADZIK, MARY BETH
GLICK, STEPHEN
INNAZZI, RUTH
KOENIG, PATRICIA
KOENIG, PATRICIA
KYRIAZI, CONSTANT
MAYBAUM, HILLARY
MCPhie, DONNA
MILLER, CYNTHIA
SIERRA, EVELYN
TARICANO, DIANE
WARREN, LISA
WISGIRDA, MARY

Developmental and Reproductive Biology Laboratory

GROSS, PAUL R., Director
O’LOUGHLIN, JOHN T.

Laboratory of Biophysics

ADELMAN, WILLIAM, J., JR., Chief

Section on Neural Membranes

Staff (of NINCDS-NIH unless otherwise indicated)

ADELMAN, WILLIAM J., JR., Chief
CLAY, JOHN R.
DEFELICE, LOUIS J., Emory University
FOHLMEISTER, JURGEN F., University of Minnesota
GOLDMAN, DAVID E., SUNY, Binghamton
HODGE, ALAN J., Marine Biological Laboratory
LEONARD, DOROTHY A.
MUELLER, RUTHANNE, Marine Biological Laboratory
RICE, ROBERT V., Carnegie-Mellon University
STANLEY, ELIS, Johns Hopkins University
TYNDALE, CLYDE L., Marine Biological Laboratory
VOLKMAN, MARY, Marine Biological Laboratory
WALTZ, RICHARD B., Marine Biological Laboratory

Section on Neural Systems

Staff

ALKON, DANIEL L., Chief
ACOSTA-URQUIDI, JUAN
COULTER, DOUGLAS, Boston University
FARLEY, JOSEPH, Princeton University
FORMAN, ROBIN
GART, SERGE, University of Vermont
GOH, YASUMASA
HARRIGAN, JUNE, Marine Biological Laboratory
HAY, BRUCE, University of California
JACKLET, JOHN, SUNY, Albany
KUZIRIAN, ALAN M.
KUZIRIAN, JEANNE
LEDERHENDLER, IZJA, Marine Biological Laboratory
LEIGHTON, STEPHEN, NIH
NEARY, JOSEPH T., Marine Biological Laboratory
RICHARDS, WILLIAM, Princeton University
SAKAIBARA, MANABU
SHOUKIMAS, JONATHAN J.
STULMAN, JAMES
TENGELSEN, LESLIE
WOOLF, THOMAS, University of Chicago

LABORATORY OF CARL J. BERG, JR.

Staff

ADAMS, NANCY L.
ALATALO, PHILIP
BERG, CARL J., JR.
MITTON, JEFFREY B., University of Colorado
ORR, KATHERINE S.

LABORATORY OF CAROL L. REINISCH

Staff

LEAVITT, DALE, Tufts University School of Veterinary Medicine
REINISCH, CAROL L., Tufts University School of Veterinary Medicine
SAKAMOTO, HIDEMI, Tufts University School of Veterinary Medicine

Visiting Investigators

CHARLES, ANN, Tufts University School of Veterinary Medicine
FARLEY, AUSTIN, National Marine Fisheries Service

LABORATORY OF D. EUGENE COPELAND

Staff

BLOCK, BARBARA, Duke University
COPELAND, D. EUGENE
MARINE BIOLOGICAL LABORATORY

LABORATORY OF ERIC KANDEL

Staff

BIDWELL, JOSEPH, Howard Hughes Medical Institute
CAPO, THOMAS, Howard Hughes Medical Institute
GAGOSIAN, SUSAN, Howard Hughes Medical Institute
GOOD, MICHAEL, Howard Hughes Medical Institute
KANDEL, ERIC, Columbia University
NADEAU, LLOYD, Howard Hughes Medical Institute
PAIGE, JOHN A., Howard Hughes Medical Institute
SCHWARTZ, JAMES H., Columbia University

LABORATORY OF FELIX STRUMWASSER

Staff

LOVELY, KAREN
VIELE, DANIEL P.
McINTYRE, JOSEPH
STRUMWASSER, FELIX, California Institute of Technology

LABORATORY OF J. RICHARD WHITTAKER

Staff

CROWTHER, ROBERT
LOESCHER, JANE L.
MEEDEL, THOMAS H.
WHITTAKER, J. RICHARD, Boston University/Marine Biological Laboratory

Visiting Investigators

MIYAMOTO, DAVID, Seton Hall University

LABORATORY OF JUDITH P. GRASSLE

Staff

GELFMAN, CECILIA
GRASSLE, JUDITH P.
MILLS, SUSAN

LABORATORY OF MARINE ANIMAL HEALTH

Staff

ABT, DONALD, University of Pennsylvania
LEIBOVITZ, LOUIS, Cornell University, Director
MONIZ, POLLY C.
OSOFSKY, NORMAN
RICKARD, CHARLES, Cornell University
SCHOTT, EDWARD F.
TAMSE, CATHERINE T.

LABORATORY OF NOEL DE TERRA

Staff

DE TERRA, NOEL
MOSS, ANN
RESEARCH AND TRAINING PROGRAMS

LABORATORY OF OSAMU SHIMOMURA

Staff

NEMETH, EDWARD
SHIMOMURA, AKEMI
SHIMOMURA, OSAMU, Boston University School of Medicine

Visiting Investigators

ANCTIL, MICHEL, University of Montreal, Canada
LA, SUNG, William Paterson College of New Jersey

LABORATORY OF RAYMOND E. STEPHENS

Staff

SHOUKIMAS, JONATHAN J.
STEPHENS, RAYMOND E., Marine Biological Laboratory/Boston University School of Medicine
STOMMEL, ELIJAH, Marine Biological Laboratory/Boston University School of Medicine

LABORATORY OF SENSORY PHYSIOLOGY

Staff

COLLINS, BARBARA ANN
COOK, PATRICIA B.
CORNWALL, CARTER, Boston University School of Medicine
CORSON, D. WESLEY
FEIN, ALAN
HAROSI, FERENC I.
HASHIMOTO, YOKO, Tokyo Women’s Medical College, Japan
LEVINE, JOSEPH S.
LIPELTZ, LEO, Ohio State University
MACNICHOL, EDWARD F., JR., Director
MANSFIELD, RICHARD, Boston University School of Medicine
PAYNE, RICHARD
SZUTS, ETÉ ZOLTÁN

LABORATORY OF SHINYA INOUÉ

Staff

AKINS, ROBERT E., University of Pennsylvania
BROWN, CAROLYN R., University of Pennsylvania
INOUE, SHINYA, Marine Biological Laboratory/University of Pennsylvania
INOUE, THEODORE D., Cornell University
LUTZ, DOUGLAS A., University of Pennsylvania
WOODWARD, BERTHA M.

Visiting Investigators

ELLIS, GORDON W., University of Pennsylvania
HORN, EDWARD, University of Pennsylvania
OKAZAKI, KAYO, Tokyo, Japan
OTTER, TIMOTHY, Albert Einstein School of Medicine
SCHWEITZER, PETER, University of Pennsylvania
TILNEY, LEWIS G., University of Pennsylvania
WOODRUFF, RICHARD I., West Chester State College
MARINE BIOLOGICAL LABORATORY

LABORATORY OF THOMAS S. REESE

Staff (of NIH)

ANDREWS, BRIAN
CHENG, TONY
KACHAR, BECHARA
KINNANE, JANET
MICHAUD, JAYNE
NEMETH, EDWARD

O'CONNELL, MAUREEN
PHILBIN, LINDA M.
REESE, BARBARA
REESE, THOMAS S.
SCHNAPP, BRUCE
WALROND, JOHN

NATIONAL FOUNDATION FOR CANCER RESEARCH

Staff

GASCOYNE, PETER R. C.
MCLAUGHLIN, JANE A.
MEANY, RICHARD A.
PETHIG, RONALD, University College of North Wales, U. K.
SZENT-GYÖRGYI, ALBERT, Director

NATIONAL VIBRATING PROBE FACILITY

Staff

JAFFE, LIONEL, Purdue University, Director
SCHIEFFEY, CARL E.
SHIPLEY, ALAN M.

Visiting Investigators

GOODALL, HARRY, University of Cambridge, U. K.
ROBINSON, KENNETH, University of Connecticut
SALTZMAN, CHARLES, University of North Carolina

THE ECOSYSTEMS CENTER

Staff

BERGQUIST, BERIT
BOONE, RICHARD
BORETOS, DIANE
COLE, JONATHAN
CORLISS, TERESA
D'AQUILLA, ANDREA
DAUKAS, PAULA
DUNGAN, JENNIFER
GARRITT, ROBERT
GIBLIN, ANNE E.
GORDON, DORIA
HELFRICH, JOHN V. K.
HOBIE, JOHN E.
HOUGHTON, RICHARD A.
HOWARTH, ROBERT W.
JUERS, DAVID
KLJOWSKI, VOYTEK
LARSSON, CHERYL
MACALUSO, MARYANNE
MANN, ALICIA

MARINUCCI, ANDREW C.
MARINO, ROXANNE
MARTYNA, JONATHAN
MATHERLY, WALTER J.
MELILLO, JERRY M.
MERKEL, SUSAN
MONTGOMERY, ELLYN T.
MONTGOMERY, MARY LOUISE
MOSS, ANN
NADELOFFER, KNUTE
PALM, CHERYL A.
PETERSON, BRUCE J.
RASK, SUSAN
SECHOKA, ELIZABETH
SHAEVER, GIUS R.
STEUDDLER, PAUL A.
STONE, THOMAS A.
TURNER, ANDREA
WOODWELL, GEORGE M., Director
RESEARCH AND TRAINING PROGRAMS

Trainees
CAVANAUGH, COLLEEN, Harvard University
SAMPOU, PETER, University of Rhode Island

XI. HONORS

FRIDAY EVENING LECTURES
PITTENDRIGH, COLIN, Hopkins Marine Station, Stanford University, 24 June, "The Structure and Evolution of Circadian Programs"
KRAVITZ, EDWARD A., Harvard University School of Medicine, 1 July, Lang Lecture, "The Well-Modulated Lobster: Neurohormones and Aspects of Lobster Behavior"
GURDON, JOHN B., M. R. C. Laboratory of Molecular Biology, 8 July, "Clones of Frogs and Some Principles of Development"
LAND, EDWIN H., Rowland Institute for Science, 15 July, "Recent Advances in Retinex Theory and Some Implications for Cortical Computations"
PURVES, DALE, Washington University School of Medicine, 21, 22 July, Forbes Lectures, I. "Formation and Maintenance of Synaptic Connections Between Neurons: Quantitative Aspects" II. "Formation and Maintenance of Synaptic Connections Between Neurons: Qualitative Aspects"
BERG, PAUL, Stanford University School of Medicine, 29 July, "The Prospects of Gene Replacement Therapy in Human Disease"

ASSOCIATES' LECTURE
WILSON, E. O., Harvard University, 12 August, "The Social Life of Ants"

SPECIAL LECTURES
SMITH, FEDERICK E., Harvard University, 13 July, Charles A. Lindbergh Lecture in Ecology, "Niche Theory, Genetic Systems, and the Survival of Species"

STEPS TOWARD INDEPENDENCE FELLOWS
BURSZTAJN, SHERRY, Baylor College of Medicine
GADSBY, DAVID C., The Rockefeller University
KURIYAMA, RYOKO, University of Wisconsin
OBAID, ANA LIA, University of Pennsylvania School of Dental Medicine
PRATT, MELANIE M., University of Miami School of Medicine
SAHLEY, CHRISTIE L., Yale University
SCHNEIDER, E. GAYLE, University of Nebraska Medical Center
SILVER, ROBERT, University of Chicago Medical School
WOLNIAK, STEPHEN, University of Maryland

BIOLOGY CLUB OF NEW YORK
ACKERMAN, JOSEF D., SUNY, Stony Brook
BERGREN, RUTH, Oberlin College
MARINE BIOLOGICAL LABORATORY

COBLER, SUE, Northeastern University
PROCHAZKA, KARAN, Cambridge, Massachusetts

GARY N. CALKINS MEMORIAL SCHOLARSHIP
COBLER, SUE, Northeastern University

FRANCES S. CLAFF MEMORIAL SCHOLARSHIP
FEDDELER, WILLIAM, Wayne State University

EDWIN GRANT CONKLIN MEMORIAL SCHOLARSHIP
LYONS, GARY

LUCRETTIA CROCKER SCHOLARSHIP
COBLER, SUE, Northeastern University
KESSING, BAILEY, New College
TAMSE, ARMANDO, Boston University

FOUNDERS SCHOLARSHIPS

These Scholarships were given in memory of:

W. E. GARREY      S. O. MAST
L. V. HEILBRUNN    E. WITSCHI

Recipients:

BODMER, ROLF, Friedrich Miesler Institute, Switzerland
VON BRUNN, ALBRECHT, University of Texas at Austin
COBLER, SUE, Northeastern University
DESANTIS, AMEDEO, Stazione Zoologica, Naples, Italy
GAIDE, MICHAEL, Free University of Berlin, West Germany
KESSING, BAILEY, New College
LASTA, MARIO, Institute of Marine Biology, Argentina
LIEBMAN, MATTHEW, SUNY, Stony Brook
PASCUAL, MARCELA, Institute of Marine Biology, Argentina
PEREZ-GRAU, LLUIS, European Molecular Biology Laboratory, West Germany
PROCHAZKA, KARAN, Cambridge, Massachusetts
TAMSE, ARMANDO, Boston University

IRENE P. GOLDRING SCHOLARSHIPS

DESANTIS, AMEDEO, Stazione Zoologica, Naples, Italy
PENG, YAN-YI, Northwestern University

ALINE D. GROSS SCHOLARSHIP

WORDEN, MARY, University of Chicago

MERKEL H. JACOBS SCHOLARSHIP

COBLER, SUE, Northeastern University
HONORS

ERNEST EVERETT JUST FELLOWSHIPS IN BIOLOGY
Josiah Macy, Jr. Foundation

Chavez, Larry, University of New Mexico
Ruano-Arroyo, Gualberto, Yale University
Taylor, LaVentricle D., University of North Carolina

ARTHUR KLORFEIN FUND

Baptista, Carlos, University of Lisbon, Portugal
Conlon, Ronald, McGill University
Gaide, Michael, Free University of Berlin, West Germany
Lesk, Mark, Weizmann Institute, Israel
Lyons, Gary, University of Pennsylvania School of Medicine
Noble, Michael, University of London, U. K.

STEPHEN W. KUFFLER FELLOWSHIPS

Gadsby, David, The Rockefeller University
Sahley, Christie L., Yale University

F. R. LILLIE FELLOWSHIP

Gurdon, J. B., M. R. C. Laboratory of Molecular Biology, Cambridge, England

ALLEN, R. MEMHARD SCHOLARSHIPS

Kessing, Bailey, New College
Lyons, Gary, University of Pennsylvania School of Medicine

JAMES S. MOUNTAIN MEMORIAL FUND, INC. SCHOLARSHIP

Bornslager, Elayne, University of Pennsylvania
Green, Philip, University of North Carolina
Ward, Eric, Washington University
Wright, Connie, George Washington University Medical Center

HERBERT W. RAND FELLOWSHIP

Soderhall, Kenneth, Institute of Physiological Botany, University of Uppsala

SOCIETY OF GENERAL PHYSIOLOGISTS

Bodmer, Rolf, Friedrich Miescher Institute, Switzerland
Diener, Dennis, University of Kansas
Noble, Michael, University of London, U. K.

XIII. INSTITUTIONS REPRESENTED

U.S.A.

Alaska, University of
Albert Einstein College of Medicine
American Museum of Natural History
M. D. Anderson Hospital and Tumor Institute
Arizona State University

Bascom Palmer Eye Institute
Battelle Marine Research Laboratory
Baylor College of Medicine
Bell Laboratories
Bigelow Laboratories
<table>
<thead>
<tr>
<th>Boston University</th>
<th>Florida State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowman Gray School of Medicine</td>
<td>General Electric Research and Development Center</td>
</tr>
<tr>
<td>Boystown National Institute</td>
<td>George Mason University</td>
</tr>
<tr>
<td>Brandeis University</td>
<td>Georgia Institute of Technology</td>
</tr>
<tr>
<td>Brigham and Women’s Hospital</td>
<td>Hatter Instruments</td>
</tr>
<tr>
<td>Bucknell University</td>
<td>Harvard Medical School</td>
</tr>
<tr>
<td>Burroughs Wellcome Company</td>
<td>Harvard School of Dental Medicine</td>
</tr>
<tr>
<td>California Institute of Technology</td>
<td>Harvard University</td>
</tr>
<tr>
<td>California, University of, Davis</td>
<td>Harvard University School of Public Health</td>
</tr>
<tr>
<td>California, University of, Irvine</td>
<td>Hawaii, University of</td>
</tr>
<tr>
<td>California, University of, Los Angeles</td>
<td>Highlands Biological Station</td>
</tr>
<tr>
<td>California, University of, San Francisco</td>
<td>Hopkins Marine Station, Stanford University</td>
</tr>
<tr>
<td>California, Veterans Administration Hospital, San Francisco</td>
<td>Horn Point Laboratory</td>
</tr>
<tr>
<td>Carnegie Institute of Washington</td>
<td>Howard University</td>
</tr>
<tr>
<td>Carnegie-Mellon University</td>
<td>Howard Hughes Medical Institute</td>
</tr>
<tr>
<td>Case Western Reserve University</td>
<td>Hunter College</td>
</tr>
<tr>
<td>Case Western Reserve University School of Medicine</td>
<td>Illinois, University of</td>
</tr>
<tr>
<td>Central Park Animal Hospital</td>
<td>Illinois, University of, Medical Center</td>
</tr>
<tr>
<td>Chicago, University of Children’s Hospital</td>
<td>Imaging Technology</td>
</tr>
<tr>
<td>City of Hope Medical Center</td>
<td>Immaculate College</td>
</tr>
<tr>
<td>Cohu, Inc.</td>
<td>Immuno Nuclear Corporation</td>
</tr>
<tr>
<td>Colorado, University of</td>
<td>Indiana University</td>
</tr>
<tr>
<td>Colorado State University</td>
<td>Instar Institute</td>
</tr>
<tr>
<td>Colorado Video</td>
<td>Institute for Aquarium Studies</td>
</tr>
<tr>
<td>Columbia University</td>
<td>Institute for Cancer Research, The</td>
</tr>
<tr>
<td>Columbia University College of Physicians and Surgeons</td>
<td>Instrumentation Marketing Corporation</td>
</tr>
<tr>
<td>Connecticut, Sea Farms of</td>
<td>Interactive Video Systems</td>
</tr>
<tr>
<td>Connecticut, University of</td>
<td>Iowa, University of</td>
</tr>
<tr>
<td>Connecticut, University of, Health Center</td>
<td>Iowa, University of, Hospitals</td>
</tr>
<tr>
<td>Cornell University</td>
<td>Jackson Laboratories, The</td>
</tr>
<tr>
<td>Crimson Camera Technical Sales, Inc.</td>
<td>Johns Hopkins Hospital</td>
</tr>
<tr>
<td>DAGE-MTI</td>
<td>Johns Hopkins Medical School</td>
</tr>
<tr>
<td>Dartmouth College</td>
<td>Johns Hopkins University</td>
</tr>
<tr>
<td>Dartmouth College School of Engineering</td>
<td>Johns Hopkins University School of Medicine</td>
</tr>
<tr>
<td>Deep Sea Research</td>
<td>Johns Hopkins University School of Hygiene and Public Health</td>
</tr>
<tr>
<td>Delaware, University of</td>
<td>Kansas State University</td>
</tr>
<tr>
<td>Delaware, University of, College of Marine Studies</td>
<td>Kentucky, University of</td>
</tr>
<tr>
<td>Denison University</td>
<td>Kewalo Marine Laboratory</td>
</tr>
<tr>
<td>Denver, University of</td>
<td>Kenyon College</td>
</tr>
<tr>
<td>Duke University</td>
<td>Kresge Eye Institute</td>
</tr>
<tr>
<td>Emory University</td>
<td>Leitz, Inc.</td>
</tr>
<tr>
<td>Emory University School of Medicine</td>
<td>Lowell, University of</td>
</tr>
<tr>
<td>Fairleigh Dickenson University</td>
<td>Louisiana State University</td>
</tr>
</tbody>
</table>
INSTITUTIONS REPRESENTED

Marine Biomedical Institute
Marine Research, Inc.
Marlboro College
Maryland, University of
Maryland, University of, Baltimore County
Massachusetts Eye and Ear Infirmary
Massachusetts General Hospital
Massachusetts Institute of Technology
Massachusetts State Lobster Hatchery
Massachusetts, University of, Boston
Merck, Sharp and Dome Research Laboratories
Mercy College
Miami, University of
Miami, University of, School of Medicine
Michigan Cancer Foundation
Michigan State University
Minnesota, University of
Minot Medical Hospital
Moravian College
Mount Allison University
Mount Holyoke College
Mount Sinai School of Medicine
Mystic Marinelife Aquarium

NINCDS
National Heart, Lung and Blood Institute
National Institute of Mental Health
National Institutes of Health
National Institutes on Alcohol Abuse and Alcoholism
National Marine Fisheries Service
Nebraska, University of
Nebraska, University of, Medical Center
New College
New Hampshire Medical College
New Jersey Medical School
New Mexico, University of
New York Aquarium
New York Blood Center
New York, City College of
New York, City University of, Brooklyn College
New York, City University of, Hunter College
New York, City University of, Herbert Lehman College
New York Institute of Basic Research for Mental Retardation
New York Medical College
New York, Neurological Institute
New York State College of Veterinary Medicine
New York, State University of, Albany
New York, State University of, Binghamton
New York, State University of, Buffalo
New York, State University of, College of Medicine
New York, State University of, Downstate Medical Center
New York, State University of, New Paltz
New York, State University, Stony Brook
New York University College of Dentistry
New York University Medical Center
New York University School of Medicine
New York, Veterans Administration Hospital
Nikon, Inc.
North Carolina, University of
North Carolina, University of, Chapel Hill
North Carolina, University of, School of Medicine
Northeast Fisheries Center
Northeastern University
Northwestern University
Northwestern University Medical School
Norwich University
Notre Dame, University of
Oberlin College
Ohio, Medical College of
Ohio State University College of Medicine
Ohio, University of
Oklahoma, University of, Health Sciences Center
Olympus Corporation of America
Oregon, University of
Oxford Marine Research Laboratory

Pacific Biomedical Research Center
Pennsylvania, Medical College of
Pennsylvania, University of
Pennsylvania, University of, School of Dental Medicine
Pennsylvania, University of, School of Medicine
Pittsburgh, University of
PMI-Strang Clinic
Princeton University
Puerto Rico, University of
Puget Sound, University of
Purdue University
Rainbow Babies and Children’s Hospital
Rensselaer Polytechnic Institute
Research Triangle Institute
A. O. Reichert Scientific
Rhode Island, University of
Rochester, University of, Medical Center
Rochester, University of, School of Medicine and Dentistry
Rockefeller Foundation
Rockefeller University, The
Rowland Institute of Science
Rush Medical College
Rutgers University

Saint Andrew's Presbyterian College
Saint Peter's College
Scarsborough College
Seton Hall University
Smith College
Smithsonian Institution
South Carolina, University of
South Florida, University of
Southampton College
Standard Oil of Indiana
Stanford University
Stanford University School of Medicine
Stonehill College
Swarthmore College
Syracuse University

Temple University
Tennessee State University
Tennessee, University of
Texas, University of, Health Science Center
Texas, University of, Medical Branch
Texas A and M University
Texas A and M University College of Medicine
Texas Christian University
Trinity College
Tufts Medical School
Tufts University
Tufts University School of Medicine
Tufts University School of Veterinary Medicine
Tulane University
Tulane University School of Medicine

Ultra Pure Laboratories
Union College
Union University
University Hospitals

Upjohn Company
United States Department of Agriculture, Plant Protection Institute
United States Department of Health and Human Services, Food and Drug Administration
Utah, University of, School of Medicine

Fran M. Valenti, Inc.
Vanderbilt University
Vanderbilt University Medical Center
Vassar College
Venus Scientific
Vermont, University of, School of Medicine
Veterans Administration Hospital
Virginia Institute of Marine Science
Virginia Medical Center

Wake Forest University
Wallace and Company
Washington, University of
Washington, University of, School of Fisheries
Washington University School of Medicine
Wauwinet Shellfish Company
Wayne State University
Wesleyan University
West Chester State College
Western Connecticut State University
Whitney Marine Laboratory
William and Mary, College of
William Paterson College
Wisconsin, University of
Wisconsin, University of, Madison
Woods Hole Oceanographic Institution
Worcester Foundation for Experimental Biology
Wyoming, University of

Yale University
Yale University Medical School

Carl Zeiss, Inc.

FOREIGN INSTITUTIONS

Alberta, University of, Canada
Basel, University of, Switzerland
Biozentrum der Universitat, Switzerland
Brasilia, University of, Brazil
Calgary, University of, Canada
Cambridge, University of, England, U. K.
Clinical Research Centre, Kenya
Dalhousie University, Canada
Deutsche Forschungsgemeinschaft, West Germany

Essex, University of, England, U. K.
European Molecular Biology Laboratory, West Germany
Fisheries Research Branch, Canada
Simon Fraser University, Canada
Free University of Berlin, West Germany
Fundacao Oswaldo Cruz, Brazil
Gothenburg University, Sweden
Guam, University of, Guam
Guelph, University of, Canada
Hamamatsu Photonics, Japan
Hebrew University, Israel
Institut fur Genetik und Mikrobiologie, West Germany
Institut fur Neurbiologie, West Germany
Institute of Biological Research, Yugoslavia
Institute of Marine Biology, Argentina
Instituto de Biologia Marina y Pesquera “Alte. Storni,” Argentina
Instituto de Inmunologia y Biologia Microbiana, Spain
Instituto de Investigacion Medica, Argentina
Instituto de Investigaciones Biomedicas, Universidad Nacional Autonoma de Mexico, Mexico
Instituto de Medicina Tropical “Alexander von Humboldt,” Peru
Instituto Nacional de Investigaciones del Pescado, Portugal
Israel Oceanographic and Limnological Research Ltd., Israel
International Institute of Genetics and Biophysics, Italy
International Laboratory for Research on Animal Diseases, Kenya
Klingelbergstrasse Biocenter, Switzerland
Life Science Institute of Hebrew University, Israel
Lisbon, University of, Portugal
Liverpool School of Tropical Medicine, England, U. K.
London, University of, England, U. K.
Mahidol University, Thailand
Manitoba, University of, Canada
Max-Planck Institute, West Germany
McGill University, Canada
Medical Research Council, England, U. K.
M. R. C. Laboratory of Molecular Biology, England, U. K.
Friedrich Miescher Institut, Switzerland
Montreal, University of, Canada
Nagoya University, Japan
Nagoya Marine Station, Italy
National Institute for Basic Biology, Japan
National Polytechnical Institute, Center for Research and Advanced Studies, Mexico
Open University, England, U. K.
Ottawa, University of, Canada
Oxford, University of, England, U. K.
Stazione de Zoologica, Naples, Italy
Tel-Aviv University, Israel
Tokyo Women’s Medical College, Japan
Toronto, University of, Canada
Toronto Western Hospital, Canada
Trent University, Canada
Tubingen, University of, West Germany
Universite Claude Bernard, France
Universite Laval, Canada
University College, England, U. K.
University College of North Wales, U. K.
University Kyoto, Japan
Uppsala, University of, Sweden
Utrecht, State University of, Netherlands
Venezuelan Institute for Scientific Investigation, Venezuela
Waterloo, University of, Canada
Weizmann Institute of Science, Israel
Western Ontario, University of, Canada

XIII. LABORATORY SUPPORT STAFF
Including Persons Who Joined or Left the Staff During 1983

Biological Bulletin

METZ, CHARLES B., Editor
CLAPP, PAMELA L.

Buildings and Grounds

GUNNING, A. ROBERT, Superintendent
LEY, DONALD B., Superintendent
ANDERSON, LEWIS B.
AVERETT, DONALD L.
BALDIC, DAVID
BALDIC, IRENE
BERRIOS, HECTOR
BERRIOS, JOSE R.
BOURGOIN, LEE
BRODERICK, MADELINE
CARINI, ROBERT J.

MOUNTFORD, REBECCA J.

COLLINS, PAUL J.
COSTA, ROBERT A.
DUTRA, STEVEN J.
ENOS, GLENN R.
EVANS, FRANCES G.
FUGLISTER, CHARLES K.
GEGGATT, RICHARD E.
GONSALVES, WALTER W., JR.
ILLGEN, ROBERT F.
KUIL, ELISABETH
LEWIS, RALPH H.
LOCHHEAD, WILLIAM M.  SMART, MERILYN A.
LOVERING, RICHARD A.  THRASHER, FREDERICK
LUNN, ALAN G.  VARAO, JOHN
MACLEOD, JOHN B.  deVEER, ROBERT L.
MILLS, STEPHEN A.  WARD, FREDERICK
PELLS, STANLEY  WEEKS, GORDON W.
ROMIZA, CARL  WHITTAKER, WILLIAM
ST. JEAN, SIMONE

Controller’s Office
SPEER, JOHN W., Controller  FLYNN, SUSAN
BINDA, ELLEN F.  HOBBS, ROGER W.
CAMPBELL, RUTH B.  HOUGH, ROSE A.
DAVIS, DORIS C.  MESSER, JILL
ELLIS, NANCY L.

Development Office
SALGUERO, CAROL G., Development Officer  SCARBOROUGH, BONNIE M.
BRAVO, LUZ  WEISS, NAN

Director’s Office
GROSS, PAUL R., President and Director  THIMAS, LISA MARIE

General Manager’s Office
SMITH, HOMER P., General Manager  JOHNSON, FRANCES N.
COLBURN, KAREN H.  PLUMMER, CYNTHIA C.
GEGGATT, AGNES L.  WAGNER, CAROL ANN

Grants and Educational Services
HOWARD, JOAN E., Coordinator  FOLEY, JOAnne A.
FERZOCO, SUSAN J.  VASQUEZ, EILEEN

Gray Museum
Tiffany, WESLEY N., Curator  BORETOS, C. DIANE
BUSH, LOUISE, Assistant Curator  MONTIERO, EVA S.

Library
FESSENDEN, JANE, Librarian  MARGOLIN, JILL
ASHMORE, JUDITH A.  MOSS, ANN H.
BERRIOS, JOSE R.  MOUNTFORD, REBECCA J.
GIBBONS, ROBERTO G.  NORTON, CATHERINE N.
HANLEY, JANICE S.  SWAIN, LAUREL E.
HOUGH, NANCY L.  deVEER, JOSEPH M.
JOSEPH, E. LENORA  WARD, MARY
LABORATORY SUPPORT STAFF

Marine Resources
VALOIS, JOHN J., Manager
BORETOS, C. DIANE
CHILD, MALCOLM
EARLY, JULIE
ENOS, EDWARD G., JR.
ENOS, JOYCE
EUSEBIO, SHAWN

NADEAU, LLOYD
FISHER, HARRY T., JR.
MONIZ, PRISCILLA
MURPHY, CHARLES F.
SMITH, A. DICKSON
TRAPASSO, BRUNO
VARAO, JOHN

Public Information Office
SHREEVE, JAMES M., Public Information Officer
ASHMORE, JILL M.
MACINNES, ARCH

Research Services
O'NEIL, BARRY T., Department Head
BARNES, FRANKLIN D.
BARNES, JOHN S.
EVANS, WILLIAM
GOLDER, LINDA M.
GOLDER, ROBERT J.
MARTIN, LOWELL V.
NICHOLS, FRANCIS H., JR.
SADOWSKI, EDWARD
SILVA, MARK S.
SYLVA, FRANK E.
COPELAND, D. EUGENE, Special Consultant
to Electron Microscope Laboratory
KERR, LOUIS M.

1983 Summer Support Staff
ANDERSON, JANICE A.
ASHMORE, MICHAEL W.
BINDA, JOHN H.
BLACK, ROBERT W.
BOWIN, BRET R.
BRUNELLI, CAROL ANNE
BRUNETTE, LISA
BURNETT, LYNN
CALLAGY, ANNEMARIE
CONEY, MICHAELA A.
DANIELS, JUDITH A.
DONOHOE, WILLIAM P.
DOWLING, CHRISTOPHER T.
DRESSEL, DOUGLAS M.
ENGLES, CHRISTOPHER R.
FISCHBACH, ELISSA D.
GOODMAN, ELIZABETH
HAHN, ERIKA
HANSON, ANTHONY
IRISH, BRADFORD G.
LAUFER, LEONARD

LAUTHER, GARY B.
LEE, JAMES M.
LUNN, JEFFERY R.
MANDYCH, ALEXANDER K.
MARTYNA, JONATHAN W.
MAXWELL, BRETT A.
MELLON, ARMOUR
OPPENHEIM, BERT
ROONEY, MARK C.
ROONEY, MICHELE N.
SANDLER, BENNETT
SCUTT, DIANE H.
SWOPE, STEPHEN P.
TARBELL, LESLIE J.
VALOIS, FRANCIS X.
VAN KOOY, DANA
WETZEL, ERNEST
WHITTAKER, WILLIAM A.
WYTTENBACH, ANN G.
WYTTENBACH, ROBERT A.
ZACKS, SUSAN