

MDIBL REGISTER

PAST PRESIDENTS

Dr. John S. Kingsley	1910-1922
Dr. Harold D. Senior	1922-1926
Dr. William Proctor	1926-1927
Dr. Hermon C. Bumpus	1927-1932
Dr. Warren H. Lewis	1932-1937
Dr. Ulrich Dahlgren	1937-1946
Dr. Dwight Minnich	1946-1950
Dr. William H. Cole	1950-1951
Dr. Homer W. Smith	1951-1960
Dr. Eli K. Marshall	1960-1964
Dr. Roy P. Forster	1964-1970
Dr. William L. Doyle	1970-1975
Dr. Jack D. Myers	1975-1978
Dr. Charles E. Wilde	1978-1979
Dr. Raymond Rappaport	1979-1981
Dr. Bodil Schmidt-Nielsen	1981-1985
Dr. Franklin H. Epstein	1985-1995

PAST DIRECTORS

Dr. Ulrich Dahlgren	1920-1926
Dr. Herbert V. Neal	1926-1931
Dr. William H. Cole	1931-1940
Dr. Roy P. Forster	1940-1947
Dr. J. Wendell Burger	1947-1950
Dr. Warner F. Sheldon	1950-1956
Dr. Raymond Rappaport	1956-1959
Dr. Alvin F. Rieck	1959-1964
Dr. William L. Doyle	1964-1967
Dr. Charles E. Wilde	1967-1970
Dr. H. Victor Murdaugh	1970-1975
Dr. Richard M. Hays	1975-1979
Dr. Leon Goldstein	1979-1983
Dr. David H. Evans	1983-1992
Dr. David C. Dawson	1992-1998
Dr. John N. Forrest, Jr.	1998-

CHAIR OF THE BOARD

Dr. James L. Boyer 1995-

2000-2001 OFFICERS

Chair, Board of Trustees	Dr. James L. Boyer
Vice Chair	Dr. Rolf K.H. Kinne
Director	Dr. John N. Forrest, Jr.
Secretary	Dr. John H. Henson
Treasurer	Mr. Richard J. Wright
Clerk	Nathaniel I. Fenton, Esq.

EXECUTIVE COMMITTEE

Dr. James L. Boyer, Chair
 Dr. Edward J. Benz
 Dr. John N. Forrest, Jr., Ex Officio
 Dr. Patricia H. Hand, Ex Officio
 Dr. Barbara Kent, Ex Officio
 Dr. Rolf K.H. Kinne
 Mrs. Emily Leeser
 Mr. Richard Wright

DIRECTOR'S ADVISORY COMMITTEE

Dr. John N. Forrest, Jr., Chair
 Dr. Edward J. Benz
 Dr. James L. Boyer
 Dr. Garry R. Cutting
 Dr. David H. Evans
 Dr. Biff Forbush, III
 Dr. Raymond A. Frizzell
 Dr. Patricia H. Hand, Ex Officio
 Dr. Barbara Kent
 Dr. David S. Miller
 Dr. J. Larry Renfro
 Dr. David W. Towle

Administrative Director Dr. Patricia H. Hand

TRUSTEES

Class of 2001

Terence Boylan
Rhinebeck, New York

J.H. Michael Agar
West Tremont, Maine

Murk-Hein Heinemann, M.D.
Associate Professor of Ophthalmology
Cornell University Medical College;
Chief, Ophthalmology Service
Memorial-Sloan Kettering Cancer Center

Helen Z. Steinkraus
Noroton, Connecticut

Class of 2002

James L. Boyer, M.D.
Ensign Professor of Medicine
Chief, Division of Digestive Diseases
Yale University School of Medicine

Frank Moya, M.D.
Chariman Emeritus
Department of Anaesthesiology
Mount Sinai Medical Center;
Chairman and President
Frank Moya, M.D. and Associates, P.A.
Miami, Florida

John N. Forrest, Jr., M.D.
Professor, Department of Internal Medicine
Yale University School of Medicine

Jessica Lewis, M.D.
Professor Emeritus, Department of Medicine
University of Pittsburgh
Pittsburgh, Pennsylvania and
Salisbury Cove, Maine

Rolf Kinne, M.D., Ph.D.
Director, Max-Planck Institute
Fuer Molekulare Physiologie
Dortmund, Germany

Alan B. Miller
Business Finance and Restructuring
Weil, Gotshal & Manges LLP
New York, New York

Richard J. Wright
D.P. Investments Corp.
New York, New York

Class of 2003

Edward J. Benz, Jr., M.D.
President
Dana Farber Cancer Research Center
Harvard University

Emily Leeser
Mount Desert, Maine and
New York, New York

Raymond A. Frizzell, Ph.D.
Professor and Chairman
Department of Cell Biology & Physiology
School of Medicine
University of Pittsburgh

Edith Rudolf
Mount Desert, Maine and
New York, New York

Neil Smith, M.D.
Rockport, Maine

Susan Scherbel
Hancock Point, Maine and
New York, New York

Class of 2004

Thomas W. Clark, M.D.
Southwest Harbor, ME and
Gwynedd, PA

Bliss Forbush III, Ph.D.
Professor and Director of Graduate Studies
Dept. of Cellular and Molecular Physiology
Yale University School of Medicine

John H. Henson, Ph.D.
Associate Professor
Department of Biology
Dickinson College

Barbara Kent, Ph.D.
Mount Desert Island Biological Laboratory

SCIENTIFIC PERSONNEL

Principal Investigators

Ned Ballatori, Ph.D.
Associate Professor of Toxicology
Department of Environmental Medicine
University of Rochester School of Medicine

Edward J. Benz, Jr., M.D.
Osler Professor & Director
Department of Internal Medicine
Johns Hopkins University School of Medicine

Nancy Berliner, M.D.
Associate Professor of Medicine and Genetics
Department of Internal Medicine
Hematology Section
Yale University School of Medicine

James L. Boyer, M.D.
Professor of Medicine
Chief, Division of Digestive Diseases
Director Liver Center
Yale University School of Medicine

Peter M. Cala, Ph.D.
Professor and Chair
Dept. of Human Physiology
School of Medicine
University of California, Davis

Gloria V. Callard, Ph.D.
Professor of Biology
Boston University

Associates

N. Bathia
C. Brooks
G. Connolly

A. Blakaj

K. Barnes
F. Chan

S.Y. Cai
R. Elferink
D. Seward
L. Wang

R. Rigor
Z. Zhuang

I. Callard
J. St. George
B. Wood

James B. Claiborne, Ph.D.
Professor, Department of Biology
Georgia Southern University

D. Gunning
N. Hair
S. Hall
K. Montey
B. Wall

Lars Cleemann, Ph.D.
Assistant Professor of Pharmacology
Georgetown University

Gary R. Cutting, M.D.
Professor of Pediatrics and Medicine
Aetna/US Healthcare Professor of Medical Genetics
Director, DNA Diagnostic Laboratory
Institute of Genetic Medicine
Johns Hopkins University School of Medicine

M. Emerson
A. Lankowski
J. Mickle

David C. Dawson, Ph.D.
Professor and Chair
Department of Physiology and Pharmacology
School of Medicine
Oregon Health Sciences University

Jonathan A. Dranoff, M.D.
Associate Research Scientist
Yale University School of Medicine

R. Natarajan

Marlies Elger, Ph.D.
Research Scientist
Innese Medizin/Nephrologie
Medizinische Hochschule Hannover

Franklin H. Epstein, M.D.
William Applebaum Professor of Medicine
Beth Israel Hospital
Harvard Medical School

T. Gard-Weiss
M. Schnermann
R. Solomon
K. Spokes

Susan K. Fellner, Ph.D.
Research Professor
Department of Cellular and Molecular Physiology
University of North Carolina at Chapel Hill

L. Parker

David H. Evans, Ph.D.
Professor of Zoology
University of Florida

J. Nowacki

Bliss Forbush III, Ph.D.
Professor and Director of Graduate Studies
Department of Cellular and Molecular Physiology
Yale University School of Medicine

D. Bowles
B. Dowd
A. Flemmer
J. Forbush
I. Giménez

John N. Forrest, Jr., M.D.
Professor of Medicine
Director of Student Research
Department of Internal Medicine
Yale University School of Medicine

S. Aller
R. Davis
S. Decker
S. Forrest
S. Gahndi
A. Pelletier
J. Pena
H. Seeger

Leonard R. Forte, Ph.D.
Professor and Senior Research (VA) Career Scientist
Department of Pharmacology
Missouri University School of Medicine
Harry S. Truman Memorial Veterans' Hospital

E. Brown

Gert Fricker, Ph.D.
Professor
Ruprecht-Karls-Universität Heidelberg
Institut für Pharmazeutische Technologie and Biopharmazie

S. Fricker
H. Gutman
C. Graeff

Raymond A. Frizzell, Ph.D.
Professor and Chair
Department of Cell Biology and Physiology
University of Pittsburgh School of Medicine

K. Peters
L. Tkach

Stephen Gehnrich, Ph.D.
Associate Professor
Department of Biological Sciences
Salisbury State University

N. Katona

Leon Goldstein, Ph.D.
Professor & Vice-Chair
Department of Molecular Pharmacology
Physiology & Biotechnology
Brown University

D.-L. Koomoa
A. MacLean
M. Musch
K. Wittels

Helene Guizouarn, Ph.D.
Laboratoire Jean Maetz
Physiol. Des membranes cellulaires

Hermann Haller, M.D.
Professor of Medicine
Dept. of Nephrology
Hannover Medical School

M. Fürstenau
M. Gollasch
M. Löhn
T. Kirsch
J. Litteral
P. Waldron

Criss Hartzell, Ph.D.
Professor
Department of Cell Biology
Emory University

Raymond P. Henry, Ph.D.
Professor
Department of Biological Sciences
Auburn University

H. Skaggs
E. Snyder

John H. Henson, Ph.D.
Associate Professor of Biology
Department of Biology
Dickinson College

J. McGreevy
K. Schulberg

Hartmut Hentschel, Ph.D.
Research Scientist
Innese Medizin/Nephrologie
Medizinische Hochschule Hannover

Karl J. Karnaky, Ph.D.
Associate Professor
Department of Cell Biology and Anatomy
Medical University of South Carolina

J. Bridges
A. Karnaky

George W. Kidder III, Ph.D.
Instrumentation Officer
Senior Scientist
Mount Desert Island Biological Laboratory

E. Smith

Rolf K.H. Kinne, M.D., Ph.D.
Director, Max-Planck-Institut
fuer Molekular Physiologie
Dortmund, Germany

Evamaria Kinne-Saffran, M.D., Ph.D.
Senior Investigator
Max-Planck-Institut
fuer Molekular Physiologie
Dortmund, Germany

Thomas J. Koob, Ph.D.
Section Chief, Skeletal Biology
Shriners Hospital for Children

M. Koob-Edmunds
J. Long
A. Summers
J. Trotter

Dietmar Kültz, Ph.D.
Assistant Professor of Physiology
The Whitney Laboratory
University of Florida

Petra H. Lenz, Ph.D.
Assistant Research Professor
Bekesy Laboratory of Neurobiology
University of Hawaii

David S. Miller, Ph.D.
Research Physiologist
Laboratory of Pharmacology and Chemistry
NIH/NIEHS

Martin Morad, Ph.D.
Professor of Pharmacology and Medicine
Department of Pharmacology
Georgetown University Medical Center

Alison I. Morrison-Shetlar, Ph.D.
Associate Professor, Director
Department of Biology
Georgia Southern University

Scott M. O'Grady
Professor
Dept. of Animal Science
University of Minnesota

David Petzel, Ph.D.
Associate Professor
Department of Biomedical Sciences
Creighton University School of Medicine

D. Hartline
A. Hower

L. Droulle
N. Grohoski
S. Notenboom
J. Stidham

A. Dorfman
M. Donally
S. Woo

J. Owens

P. Maniak

E. Wren

Robert L. Preston, Ph.D.
Professor of Physiology
Department of Biological Sciences
Illinois State University

B. Crisp
K. Gregory
V. Petit
J. Sherman

Raymond Rappaport, Ph.D.
Senior Research Scientist
Mount Desert Island Biological Laboratory

J. Larry Renfro, Ph.D.
Professor of Physiology
Department of Physiology & Neurobiology
University of Connecticut

S. Jerman

John R. Riordan, Ph.D.
Professor, Mayo Graduate School of Medicine
Mayo Clinic Scottsdale

T. Jensen

Stanley G. Shultz, M.D.
Department of Integrated Biology and Pharmacology
University of Texas Medical School at Houston

Patricio Silva, M.D.
Associate Professor of Medicine
Section Nephrology
Temple University

Bruce A. Stanton, Ph.D.
Professor
Department of Physiology
Dartmouth Medical School

M. Govindan

James D. Stidham, Ph.D.
Department of Biology
Presbyterian College

David W. Towle, Ph.D.
McGaw Professor of Biology
Lake Forrest College

D. Chang
R. Paulsen
C. Pierrot
D. Weihrauch

Alice R.A. Villalobos, Ph.D.
Assistant Professor
Department of Physiology and Neurobiology
University of Connecticut

Patrick J. Walsh, Ph.D.
Professor
Division of Marine Biology and Fisheries
University of Miami

M. Grosell

Ian G. Welsford, Ph.D.
Assistant Professor
Department of Biology
James Madison University

E. Pedigo

John Wise, Ph.D.
Assistant Professor
Department of Epidemiology and Public Health
Yale University School of Medicine

P. Antonucci
B. Bryant
M. Slotnick

Yong-Fu Xiao, M.D., Ph.D.
Assistant Professor
Cardiovascular Division
Beth Israel-Deaconess Medical Center

Q. Ke

2000 SUMMER FELLOWSHIP RECIPIENTS

Hancock County Scholars Recipients:

Josh Bridges, Sumner Memorial High School
Bronwyn Bryant, Orono High School
Da Chang, MDI High School
Maude Emerson, Groton School
Nicole Grohoski, ME School of Science and Math
Laurel Parker, Central High School
Andrea Pelletier, Bucksport High School
Eric Snyder, American Heritage School

Durham High School Recipients:

Courtney Brooks, Hillside High School
Erin Brown, Hillside High School
Ricky Davis, Hillside High School
Jessica Owens, Hillside High School

SETH:

Kyomi Gregory, Queens Gateway to Health Sciences HS
Valerie Petit, Queens Gateway to Health Sciences HS
Justin Sherman, Tappan Zee High School

Research Experience for Undergraduates:

Neeti Bathia, Duke University
Ben Crisp, Illinois State University
Sarah Decker, Middlebury College
Toby Gard-Weiss, College of the Atlantic (2000 *Silk Fellow*)
Shemel Jerman, Coker College
Nicholas Katona, Wesleyan College
Alex Lankowski, Dartmouth College
Karen Montey, Marian College
Radhika Natarajan, Yale University
Joanna Nowacki, University of Wisconsin
Martin Schnermann, Colby College
Patricia Waldron, Grinnell College

Mentors:

Karl Kamaky, Ph.D.
John Wise, Ph.D.
David Towle, Ph.D.
Garry R. Cutting, M.D.
Bruce A. Stanton, Ph.D.
David S. Miller, Ph.D.
Susan K. Fellner, M.D.
John N. Forrest, Jr., M.D.
Raymond Henry, Ph.D.

Mentors:

Ned Ballatori, Ph.D.
James L. Boyer, M.D.
Leonard R. Forte, Ph.D.
John N. Forrest, Jr., M.D.
George W. Kidder, Ph.D.
John N. Forrest, Jr., M.D.
Allison Morrison-Shetlar, Ph.D.

Mentors:

Robert L. Preston, Ph.D.
Robert L. Preston, Ph.D.
Robert L. Preston, Ph.D.

Mentors:

Ned Ballatori, Ph.D.
James L. Boyer, M.D.
Robert L. Preston, Ph.D.
John N. Forrest, Jr., M.D.
Franklin H. Epstein, M.D.
J. Larry Renfro, Ph.D.
Stephen Gehnrich, Ph.D.
Garry Cutting, M.D.
Bruce A. Stanton, Ph.D.
J.B. Claiborne, Ph.D.
Jonathan A. Dranoff, M.D.
David A. Evans, Ph.D.
Franklin H. Epstein, M.D.
Hermann Haller, M.D.

Salisbury Cove Research Fund:

Peter M.Cala, Ph.D., University of California, Davis (also Schmidt-Nielsen Fellow)
Susan K. Fellner, M.D., University of North Carolina at Chapel Hill
Leonard R. Forte, Ph.D., Missouri University
Stephen Gehnrich, Ph.D., Salisbury State University
Herman Haller, M.D., Medizinische Hochschule Hannover (also Milbury Fellow)
Criss Hartzell, Ph.D., Emory University
Raymond P. Henry, Ph.D., Auburn University
Dietmar Kultz, Ph.D., The Whitney Laboratory, University of Florida
Petra H. Lenz, Ph.D., University of Hawaii, Manoa
Scott M. O'Grady, Ph.D., University of Minnesota

Blum/Halsey Fellowship:

Jonathan A. Dranoff, M.D., Yale University School of Medicine

MDIBL CMTS Fellowship:

John R. Riordan, Ph.D., Mayo Clinic Scottsdale
Bruce A. Stanton, Ph.D., Dartmouth Medical School
Alice R.A. Villalobos, Ph.D., University of Rochester School of Medicine
Patrick J. Walsh, Ph.D., University of Miami
John Wise, Ph.D., Yale University School of Medicine
Yong-Fu Xiao, M.D., Ph.D., Beth Israel Deaconess Medical Center

Schmidt-Nielsen Fellowship Fund:

Peter M.Cala, Ph.D., University of California, Davis
(also SCRF awardee)

Milbury Fellowship:

Hermann Haller, M.D., Hannover Medical School
(also SCRF awardee)

MDIBL Dahlgren Fund:

David Petzel, Ph.D., Creighton University School of Medicine

MDIBL Bowditch Fund:

Ian G. Welsford, Ph.D., James Madison University

2000 SEMINARS

Seminars preceded by an asterisk were presented by investigators supported by the NIEHS Center for Membrane Toxicity Studies at the Mount Desert Island Biological Laboratory

Morning Transport Seminars

- July 3 "The role of the Na/H exchanger in volume and pH regulation and Disturbances" Peter M. Cala, Ph.D., Professor/Chairman, Dept. of Human Physiology, School of Medicine, University of California, Davis
- * July 10 "Regulation of Mrp's and other organic anion transporters in cholestatic liver and kidney" James L. Boyer, M.D., Ensign Professor of Medicine, Yale University School of Medicine
- * July 17 "Ionotropic properties of P2Y purinergic receptors expressed in *Xenopus* oocytes" Scott M. O'Grady, Ph.D., Professor, Department of Animal Science, University of Minnesota
- * July 24 "Guanylin Hormones, Receptor-Guanylate Cyclase and Cyclic GMP: From Traveler's Diarrhea to Colorectal Cancer" Leonard R. Forte, Ph.D., Professor of Pharmacology, University of Missouri; Senior Research Career Scientist, Harry S. Truman Memorial Veterans Hospital
- July 31 "How to get across---Unzipping the ins and outs of endothelial tight junctions" Hermann Haller, M.D., Professor of Medicine, Department of Nephrology, Hannover Medical School, Hannover, Germany
- August 7 "Membrane transporters in *C. elegans*" Kevin Strange, Ph.D., Professor of Anesthesiology/Pharmacology, Vanderbilt University School of Medicine
- August 21 "Role of basolateral K⁺ channels in crosstalk" Stanley G. Schultz, M.D., Professor, Department of Integrative Biology, University of Texas Medical School
- August 28 "Regulated traffic of CFTR and EnaC" Raymond A. Frizzell, Ph.D., Professor and Chair, Dept. of Cell Biology/Physiology, University of Pittsburgh School of Medicine

Friday Noon Brown Bag Seminars

- July 7 Introductory 5 minute talks by MDIBL Principal Investigators to summarize summer research projects
- July 14 Remainder of introductory 5 minute talks by MDIBL Principal Investigators
- July 21 "The need for speed: Fast reactions and myelinated axons in copepods" Petra H. Lenz, Ph.D., Associate Professor, Bekesy Lab. of Neurobiology, University of Hawaii at Manoa
- * "P2Y should you care?" Jonathan A. Dranoff, M.D., Associate Research Scientist, Division of Digestive Diseases, Yale University School of Medicine

- July 28 * "ABC transporters and PD2 proteins" Bruce A. Stanton, Ph.D., Professor,
Department of Physiology, Dartmouth Medical School
- * "Cloning of G-proteins and adenylate cyclase from the shark rectal gland" Steve
Aller and Harald Seeger, Yale University School of Medicine
- August 4 "What do fast block polyspermy, cardiac arrhythmias, and olfactory transduction
have to do with epithelial transport?" Criss Hartzell, Ph.D., Professor, Cell Biology
Department, Emory University
- * "Chromium and carcinogenesis" John P. Wise, Sr., Ph.D., Assistant Professor,
Dept. of Epidemiology & Public Health, Division Environmental Health Sciences,
Yale University School of Medicine
- August 11 "Ca²⁺ signaling in genetic hypertension" Susan Fellner, M.D., Professor, Cell and
Molecular Physiology, University of North Carolina at Chapel Hill
- * "Organic anion transport in choroid plexus" Alice Villalobos, Ph.D., Assistant
Professor, Department of Environmental Medicine, University of Rochester
School of Medicine

Wednesday Evening Public Seminars

- July 5 THE TENTH ANNUAL THOMAS H. MAREN MEMORIAL SEMINAR –
"Genetic analysis of electrolyte homeostasis in humans" Richard P. Lifton, M.D.,
Ph.D., Director/Professor, Program in Molecular Genetics, Department of Medicine,
Yale University School of Medicine (Host, Dr. John Forrest)
- * July 12 THE NINETEENTH WILLIAM B. KINTER MEMORIAL LECTURE –
"Hepatic clearance and excretion of toxic compounds" Peter J. Meier-Abt, M.D.,
Professor/Chief, Div. of Clinical Pharmacology/Toxicology, Dept. Internal
Medicine, University Hospital, Zürich, Switzerland
- * July 19 THE SIXTH HELEN F. CSERR MEMORIAL LECTURE - "Aquatic models for
human and environmental health: Fishing for answers"
Rebecca Van Beneden, Ph.D., Professor of Biochemistry and Marine Sciences;
Supervisor of the Automatic DNA Sequencing Facility, University of Maine
- July 26 "Proteins involved in synaptic vesicle trafficking in neurons" George J. Augustine,
Ph.D., G.B. Geller Professor, Department of Neurobiology, Duke University
Medical Center
- * August 9 THE FIFTH LEONARD SILK MEMORIAL LECTURE at COA – "Ethical
implications of the revolution in genetics" Arthur Caplan, Ph.D., Center for
Bioethics, University of Pennsylvania
- August 16 "Mechanisms of Anion Secretion in Airway Epithelial Cells" Robert J. Bridges,
Ph.D., Professor and Vice Chairman, Cell Biology and Physiology, School of
Medicine, University of Pittsburgh

Special Seminars

- July 21 "The Geologic History of Mount Desert Island" L. Kirk Lurvey, Ranger, Acadia

National Park

- * August 8 “Genetic analysis of zebrafish digestive organ development and physiology”
Michael Pack, M.D., Assistant Professor, Department of Medicine, University of Pennsylvania

All Campus Ethics Seminar Series

Weekly, beginning June 29 “Responsible Conduct in Research”, coordinated by Dr. Judith Swazey, Acadia Institute for Medicine and Society, and Michael McKernan, MDIBL. Compulsory for all fellowship recipients.

Students’ “Basic” Lecture Series

Weekly, beginning July 11 presentations by MDIBL Investigators of research projects on-going at the Laboratory

2000 WORKSHOPS AND COURSES

*** NIH/NIEHS CMTS Bioinformatics Workshop**

April 28-29 Two Day Workshop to establish a Marine and Freshwater Toxicology Genomics Database – sponsored by NIH/NIEHS Center for Membrane Toxicity Studies at Mount Desert Island Biological Laboratory

“Bioinformatics of Genes and ESTs Relevant to Membrane and Cellular Toxicology”

Keynote Speaker – Samuel Wilson, Ph.D., Deputy Director NIEHS
“Environmental Genomics”

Bioinformatics of Genes and ESTs Relevant to Membrane and Cellular Toxicology
Co-Chairs: James L. Boyer, M.D., Yale University School of Medicine; Center Director and John N. Forrest, Jr., M.D.

“Nomenclature and Homologies: Strategies in the Formation of Specialized Gene Databases”, Judith Blake, Ph.D., The Jackson Laboratory, Bar Harbor, ME

“Resources at the NCB1 Available for Integration with Sequence Based Databases and Gene Expression Arrays” Stephen Edwards, Ph.D., National Center for Biotechnology Information, National Library of Medicine, NIH

“Mouse Genome Databases as a Model for an Annotated Toxicology Informatics Database” Janan Eppig, Ph.D., Director of Bioinformatics, The Jackson Laboratory

“Status of the Zebrafish Genome Database: Linkage to Web Pages Organized by Research Interests” Monte Westerfield, Ph.D., Zebrafish Database, University of Oregon

“BIND, A Database System for Storing Biomolecular Interactions” Chris Hogue, Ph.D., University of Toronto

“Gene Census and the Future of Bioinformatics: Using Computation to Analyze Gene Sequences and Macromolecular Structures” Paul Harrison, Ph.D., Department of Molecular Biophysics & Biochemistry, Yale University, Bass Center

“Expedited Gene Discovery from Serially Subtracted & Normalized Libraries in Rats, Mice and Humans” Marcelo B. Soares, Ph.D., Associate Professor of Pediatrics and Physiology and Biophysics, The University of Iowa

Break-out Sessions –

- Topics:
- 1) Identifying the top 50 Genes relevant to marine and freshwater environmental toxicology: Criteria for selection. Moderators: Seth Kullman and James Boyer
 - 2) Planning for a Toxicology Informatics Database and Marine EST databases. Moderators: Janan Eppig and John N. Forrest
 - 3) Organizing molecular probes and reagents: practical and political considerations. Moderators: David Towle and David Petering
 - 4) Identification of restricted (non-Medline) information relevant to environmental and membrane toxicology; how to collect and organize restricted information. Moderators: Ned Ballatori and Patrick Walsh

Courses

May 1-20	Bates College, Short Semester in Experimental Biology Course Directors - Pam Baker, Ph.D. and Lee Abrahamsen, Ph.D., Bates College
May 5-21	Houghton College, Biological Oceanography Course Director - Jim Wolfe, Ph.D.
May 22-June 2	Washington College, Community Ecology of Coastal Maine Course Director - Martin Connaughton, Ph.D.
June 11-16	Yale University School of Medicine, Intensive Pedagogical Experience in Laboratory Research Course Directors - John N. Forrest, Jr., M.D. and David Kessler, J.D., M.D.
June 18-25	An Intensive Course in Quantitative Fluorescent Microscopy Course Director - Simon C. Watkins, Ph.D., University of Pittsburgh School of Medicine
June 26-28	Marine Physiology and Molecular Biology for High School Summer Fellows Faculty - J.B. Claiborne, Ph.D. and Allison Morrison-Shetlar, Ph.D.
August 27-September 10	Short Course in Functional Genomics

Course Director - Douglas Crawford, Ph.D., University of Missouri

September 12-15 Biomedical Exchange Program Forum

Course Director - Hilmar Stolte, M.D.

Symposium

* July 13

SEVENTH ANNUAL MOUNT DESERT ISLAND BIOLOGICAL LABORATORY (MDIBL) ENVIRONMENTAL HEALTH SCIENCES SYMPOSIUM. Sponsored by the NIEHS Toxicology Center at the MDIBL, the Kinter Memorial Lectureship Fund, the Liver Center at the Yale University School of Medicine, and the MDIBL

“Xenobiotic And Drug Transporters In Human Health And Disease”

“Principles of transmembrane transport” Rolf Kinne, M.D., Ph.D., Director Max-Planck Institute for Mol. Physiol., Dortmund

“Mammalian solute transporter families and superfamilies” Matthias Hediger, Ph.D., Professor, Harvard Medical School

“Genome based comparison of transporters” Karen A. Ketchum, Ph.D., Celera Genomics

“Regulation of hepatic excretion” James L. Boyer, M.D., Director, CMTS; Professor, Yale University School of Medicine

“Expression cloning of a polygenic organic solute transporter from skate liver” Ned Ballatori, Ph.D., Associate Professor, University of Rochester School of Medicine

“MDR2 and lipid transporters” Ronald Oude Elferink, M.D., Professor, Amsterdam Academisch Medisch Centrum

“Comparison of the CFTR and MRP1 ATPases” John R. Riordan, Ph.D., Professor, Mayo Clinic Scottsdale

“Mechanisms of renal excretion” David S. Miller, Ph.D., NIEHS

“The OAT family of transporters” John B. Pritchard, Ph.D., NIEHS

“Phosphate and sulfate transporters” J. Larry Renfro, Ph.D., Professor, University of Connecticut

“Transport of anionic conjugates by MRP2 and other transporters” Joerg Koenig, M.D., Professor, Deutsches Krebsforschungszentrum, Heidelberg

“Microsomal enzyme inducers and MRP2 expression” Curtis D. Klaassen, Ph.D., Professor, University of Kansas

“Significance of MRP2 expression in mammary tissue” Karl J. Karnaky, Ph.D., Associate Professor, Medical University of South Carolina

“Xenobiotic transport at the blood-brain barrier” Gert Fricker, Ph.D., Professor,
Institut f. Pharmazeut. Tech. und Biopharm., Heidelberg

PUBLICATIONS

Ballatori, N. Molecular mechanisms of hepatic metal transport. In: Molecular Biology and Toxicology of Metals. R.K. Zalups and D.J. Koropatnick, eds., Taylor and Francis, London, Chapter 12, pp. 346-381, 2000.

Ballatori, N. Connolly, G.C. and Boyer, J.L. Elasmobranch hepatocytes. In: The Hepatocyte Review. M.N. Berry and A.M. Edwards, eds., Kluwer, The Netherlands, Chapter 5, pp. 37-47, 2000.

Ballatori, N., Rebbeor, J.F., Connolly, G.C., Seward, D.J., Lenth, B.E., Henson, J.H., Sundaram, P. and Boyer, J.L. Bile salt excretion in skate liver is mediated by a functional analog of Bsep/Spgp, the bile salt export pump. *Am. J. Physiol.* 278:G57-G63, 2000.

Dranoff, J.A., O'Neill, A.F., Franco, A.M., Cai, S.-Y., Connolly, G.C., Ballatori, N., Boyer, J.L. and Nathanson, M.H. A primitive ATP receptor from the little skate *Raja erinacea*. *J. Biol. Chem.* 275:30701-30706, 2000.

Preston, R.A., Preston, E.J.D. and Middaugh, D.R. Enzymatic racemization of amino acids in marine invertebrate tissues. *Proc. Soc. Integrative and Comparative Biology*, Jan 3-7, 2001, Chicago, IL. p. 349 (abs)

Rebbeor, J.F., Connolly, G.C., Henson, J.H., Boyer, J.L. and Ballatori, N. ATP-dependent GSH and glutathione S-conjugate transport in skate liver: role of an Mrp functional homologue. *Am. J. Physiol.* 279:G417-G425, 2000.

AUTHORS

Agress, Lesley	79	Forte, Leonard	51, 122
Aller, Stephen	119, 125, 130, 133	Fricker, Gert	10
Antonucci, Peter	29	Fricker, Stefanie	10
Bailey, David	73	Frizzell, Raymond	55, 130
Ballatori, Ned	21, 83	Gard-Weiss, T	23, 25, 27
Boyer, James	21, 83	Gehnrich, S.	114
Bridges, Josh	53	Goldstein, Leon	67, 81
Brown, Erin	51	Gollasch, Maik	99
Bryant, Bronwyn	29	Govindan, Malu	4
Burrage, Peter	119	Graeff, Claudia	10
Cai, Shi-Ying	83	Gregory, Kyomi	116
Cala, Peter	68	Grohoski, Nicole	10
Callard, Gloria	96	Grosell, Martin	91
Chakravarty, D.	18	Gunning, Danielle	71
Chang, Xiu-ao	6	Haller, Hermann	99, 102, 106, 109, 112
Claiborne, James B.	58, 60, 71	Hartline, Daniel	74
Crisp, Benjamin	116	Hartzell, Criss H.	8
Davis, Richmond	130	Henry, Raymond	35, 62, 114
Decker, Sarah	51, 122	Henson, John	77
Dranoff, Jonathan	19	Hentschel, Hartmut	102, 106, 109, 112
Droulle, Lucy	10	Hower, Amy	74
Dudas, Paul	73	Jensen, Timothy J.	6
Elger, Marlies	102, 106, 109, 112	Jerman, Shemel	65
Emerson, Maude	4	Karnaky, Karl Jr.	14, 51, 53, 122
Epstein, Franklin P.	23, 25, 27	Ke, Qingen	1
Evans, D.	15, 16	Kidder, George	76, 79
Fellner, Susan	86, 88	King, Jonathan	79
Ferry-Graham, L.	31	Kinne, Rolf	81
Forrest, John N., Jr.	1, 4, 51, 55, 119, 122, 125, 130, 133	Kinne-Saffran, Eva	81
Forrest, Suzanne	51, 122	Kirsch, Torsten	99, 102, 109

Koob, Thomas	40, 44, 48	Renfro, Larry	65, 73
Koob-Edmunds, Lena	40	Rigor, Robert	68
Koomoa, Dana-Lynn	67	Riordan, John R.	6
Kultz, Dietmar	18	Schnermann, M.	23, 25, 27
Lankowski, Alexander	4	Schulberg, Katrina	77
Lee, So Yeong	19	Sedmerova, Martina	53
Lenz, Petra	74	Seeger, Harald	119, 125, 130, 133
Lewis, Heather	116	Sherman, Justin	117
Li, Liqiong	21	Silva, Patricio	23, 25, 27
Li, Min	4	Skaggs, Hollie	62
Litteral, Jennifer	99, 102, 106	Smith, D.	14
Loehn, Matthias	99	Snyder, Eric	62
Loffing, Jan	4	Spanings-Pierrot, C.	33
Luft, Friedrich	99	Spokes, K.	27
MacLean, Ainsley	67	Stern, Abraham	44
Maniak, Peter	19	Summers, Adam	31
Masereeuw, R.	12	Towle, David	33, 114
McGreevy, Jeanine	77	Trotter, John	40
Mickle, John E.	4	Villalobos, Alice	65, 73
Miller, David S.	10, 12, 53, 65	Wade, Sarah	53
Morad, Martin	37	Waldron, Patricia	99
Morrison-Shetlar, Alison	58, 60, 71	Wall, Brian	58, 60
Musch, Mark	67	Walsh, Patrick	91
Notenboom, Syvia	12	Wang, Chunhua	96
Nowacki, J.	15, 16	Wang, Wei	21, 83
O'Grady, Scott	19	Weihrauch, Dirk	33, 114
Parker, Laurel	86, 88	Wellner, Maren	102, 109
Parker, Sonda	73	Welsford, Ian	79
Pelletier, Andrea	51, 122	Wise, John P. Jr.	29
Pena, John	130, 133	Wittels, Kathleen	67, 81
Penrod, Stephanie	79	Woo, Sun-Hee	37
Peters, Kathryn	55, 130	Wood, Chris	91
Petit, Valerie	117	Wren, E.	14
Petzel, D.	14, 53	Xiao, Yong-Fu	1
Preston, Robert	116, 117	Yang, Yinke	1
Quach, Le	109	Zhuang, Zhenpeng	68

SPECIES

<i>Acheta domesticus</i> (brown cricket)	53
<i>Asterias forbesi</i> (starfish)	117
<i>Baelaena mysticetus</i> (bowhead whale)	29
<i>Calanus finmarchicus</i> (copepod)	74
<i>Callinectes sapidus</i> (blue crab)	62
<i>Carcinus maenas</i> (green shore crab)	35, 62, 114
<i>Cucumaria frondosa</i> (orange footed sea cucumber)	40
<i>Echinarachnius parma</i> (sand dollar)	8
<i>Fundulus heteroclitus</i> (killifish, mummichog)	4, 10, 12, 14, 18, 58, 76,79
<i>Leucoraja erinacea</i> (hedgehog skate)	31, 48, 102, 106
<i>Limulus polyphemus</i> (horseshoe crab)	117
<i>Lunatia heros</i> (moon snail)	117
<i>Mya arenaria</i> (soft-shelled clam)	116
<i>Myoxocephalus octodecimspinosus</i> (longhorned sculpin)	71, 91
<i>Myxine glutinosa</i> (hagfish)	44
<i>Pachygrapsus marmoratus</i> (grapsid crab)	33
<i>Pseudopleuronectes americanus</i> (winter flounder)	68, 73
<i>Raja erinacea</i> (little skate)	19, 21, 29, 60, 81, 83, 91
<i>Strongylocentrotus droebachiensis</i> (green sea urchin)	77
<i>Squalus acanthias</i> (spiny dogfish, shark, dogfish)	1, 4, 6, 10, 15, 16, 23, 25, 27, 29, 37, 51, 55, 65, 67, 86, 88, 96, 102, 109, 112, 119, 122, 125, 130, 133
<i>Xenopus laevis</i> (African claw toed frog)	19, 99

KEY WORDS

2, 4-dichlorophenoxyacetic acid	65	Collagen	44
14-3-3 protein	18	Copepod	74
Acid-base regulation	58, 60, 71	Copper homeostasis	91
Acclimation	76	Copper toxicity	91
Actin	27, 77	Cortisol	73
Adaption	18	Crab gill	114
Adenylyl cyclase	125	Cricket	53
Alanine	116, 117	Crustaceans	35
Angiotensin	14	Cyclic AMP	125
Anion transport	6	Cytochrome P450	1
Aorta	15, 16	Cytoskeleton	77
Apoptosis	8	D-amino acids	116, 117
Arginine kinase	33	Dogfish	15, 16
Behavior	76	Dermis	40
Bile salt	83	Development, Renal	106
Biomaterial	48	Drug transport	10
Blood-brain barrier	10	Echinoderm	40
Blood cells	112	Egg capsule	48
Ca ²⁺ -activated transient outward K ⁺ current	37	Escape response	74
Ca ²⁺ current	37	Farnesol	99
Calcium channel subunits	99	Flow	31
Calcium mobilization	88	Fundulus	79
Calcium signaling	88	Gene expression	33, 102
Carbonic anhydrase	35, 62, 73, 114	Genotoxicity	29
Catch connective tissue	40	GHRH	119
CDNA subtraction	102	Gill	71
Cell cycle	8	G protein	19
CFTR	6, 55, 119, 130, 133	Glutathione	6
cGMP	51	Granulocytes	112
Chloride Current	1	Guanylin	51, 122
Chloride secretion	23, 25, 51, 119, 122, 125, 133	Heart shock proteins	79
Choroid plexus	65	Heat stable enterotoxin	122
Cloning	79, 125, 130, 133	Heavy metals	62
		Hematopoiesis	112
		Hypercapnia	58, 60

Inner medullary collecting duct	81	Phosphatase	77
Ion channels	8, 19	Procaine	27
Ion transport	68	Prostaglandin	15
Ionic strength	81	Proteinases	48
Ionotropic receptor	19	Purinergic receptor	19
Jasplakinolide	27	Racemases	116, 117
Kidney	106	Racemization	116
Kidney development	102	Receptors	15
Liver excretion	21	Rectal gland	119, 122, 133
Malpighian tubule	53	Rectal gland artery	88
Marine elasmobranch	91	Red blood cells	67, 68
Marine mammals	29	Renal proximal tubule	12
Marine teleost	91	Renal transport	73
Mechanical properties	44	Respiration	31
Mercury	1	Sand dollar	8
Metals	29	Salinity	33
MRP	6	Sea cucumber	40
MRP 2	10, 12, 53	Serine	117
Must	96	Shark	29
Myelin	74	Shark rectal gland	51, 125
Na ⁺ /H ⁺ exchange	58, 60, 71	Sheath	44
Nephrogenesis	109	Skate	31
Nephrotoxicity	12	SNARE proteins	55, 130
NHE	58, 60, 71	Sodium/Proton exchange	68
Nitric oxide	12	Sulfate	73
Norepinephrine	88	Superoxide	16
Notochord	44	Taurine	67, 81
OATP	83	Temperature	74, 76
Opercular epithelium	14	These	96
Organic anion	65	Time course	23
Organic anion transporter	21	Trafficking	55, 130
Osmolarity	79	Transport	65
Osmoregulation	18, 33, 35, 62, 76, 114	Trimethylamine	67
Ost*, Ost	21	Uptake	83
Oviparity	48	VAMP	130
PDZ	4	Vascular endothelial growth factor	109
Peroxynitrite	16	Vascular smooth muscle Ca ²⁺ channels	99
P glycoprotein	4, 10		

Ventricular myocyte	37
VIP	27, 133
Volume regulation	68
Voltage clamp	8, 99
Xenobiotic transport	53
<i>Xenopus</i> oocytes	119