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Department of Environmental Medicine
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Director, Marine Cell Lines and Stem Cell Program
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Christopher J. Bayne, Ph.D.
Professor of Zoology
Oregon State University, Corvallis

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Professor of Medicine
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Nancy Berliner, M.D.
Professor of Medicine and Genetics
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James L. Boyer, M.D.
Ensign Professor of Medicine
Director Liver Center
Yale University School of Medicine

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Dept. of Human Physiology
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Medizinische Hochschule Hannover

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Professor
Dept. of Biology
Dickinson College

Jessica E. Davis
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Hartmut Hentschel, Ph.D.
Research Scientist
Max-Planck Institut fuer Molekulare Physiologie
Dortmund, Germany

Shawn E. Holt, Ph.D.
Associate Professor
Department of Pathology and Human Genetics
Massey Cancer Center
Medical College of Virginia
Virginia Commonwealth University

Lynne Elmore, Ph.D.

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

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

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

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Petra H. Lenz, Ph.D.
Associate Research Professor
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Pacific Biomedical Research Center
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Donald L. Lovett, Ph.D.
Associate Professor
Department of Biology
The College of New Jersey

Thomas Ricart
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Carolyn Mattingly, Ph.D.
Scientific Curator
Comparative Toxicogenomics Database
Mount Desert Island Biological Laboratory

Glenn Colby
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Greg Mayer, Ph.D.
Assistant Professor
RSMAS
University of Miami

John Berry, Ph.D.

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

Amy Aslamkhan, Ph.D.
Carsten Baehr
Kate DiPasquale
Sylvia Notenboom

Stine Pedersen, Ph.D.
Research Adjunct
Dept. of Human Physiology
School of Medicine
University of California, Davis

Shannon Fyrberg
Kate Healy

Chris Petersen, Ph.D.
Professor of Biology
College of the Atlantic

Rebecca Anderson
Yaniv Brandvain
Jill Marty
Santiago Salinas

David Petzel, Ph.D.
Associate Professor
Dept. of Biomedical Sciences
Creighton University School of Medicine
Visiting Scientist
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Illinois State University

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Jennifer Thompson
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J. Denry Sato, D.Phil. Deputy Director Marine Cell Lines and Stem Cell Program Mount Desert Island Biological Laboratory	M. Christine Chapline
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University of Washington

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Colby College

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Emily Hand
Jocelyn LeBlanc
Eric Luth
Aubris Pfeiffer
J. Kearney Shanahan

David W. Towle, Ph.D.
Senior Research Scientist
Director, Marine DNA Sequencing Center
Mount Desert Island Biological Laboratory

Stuart Linton, Ph.D.
Lindsay Parrie
Maria Voznesensky

John P. Wise, Ph.D.
Associate Professor of Biosciences
Laboratory of Environmetnal and Genetic Toxicology
Director, Center for Integrated and Applied Toxicology
University of Southern Maine

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Jon Moreland
Benjamin Smith

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University of Pittsburgh

Warren Hill, Ph.D.
John Mathai, Ph.D.
Josh Zeidel

Leonard I. Zon, M.D.
Professor of Pediatrics
Children's Hospital
Harvard Medical School
Investigator, Howard Hughes Medical Institute

2003 SUMMER FELLOWSHIP RECIPIENTS

HIGH SCHOOL RECIPIENTS

(* Hancock County Scholars)

High School Research Fellowship:	Mentors:
*Julie Burns, MDI High School	JB Claiborne, Ph.D.
Shannon Fyrberg, Gould Academy	Stine Peterson, Ph.D.
*Emily Hand, MDI High School	Andrea Tilden, Ph.D.
*Kathryn Healy, MDI High School	Stine Peterson, Ph.D.
*Katie Hessler, Ellsworth High School	Franklin Epstein, M.D.
Alexander Peters, Rye Country Day School	John N. Forrest, Jr., M.D.
Pearl Ryder, Maine School of Science and Mathematics	Jonathan Epstein, M.D.
Steven Smith, Central Aroostook High School	Hermann Haller, M.D.
Renee Thibodeau, Carrabassett Valley Academy	Bruce Stanton, Ph.D.

NIEHS CMTS Community Environmental Health Laboratory:

Joe Adams, MDI High School	Jane Disney, Ph.D.
Danielle Bartlett, MDI High School	
Robin Folger, MDI High School	
Jonathan Hollenbeck, MDI High School	
Orrin Johnson, MDI High School	
Jennifer Reynolds, MDI High School	
Bik Wheeler, MDI High School	

Secondary Education through Health:

Julia Curtis-Burnes, Environmental Sciences HS	Joseph Shaw, Ph.D.

Undergraduate Fellowship Recipients

NIEHS CTMS Community Environmental Health Laboratory:

Katherine Davisson, Williams College	Jane Disney, Ph.D.

NSF Research Experience for Undergraduates (REU):

Kim Borley, Ohio University	Hermann Haller, M.D.
Kentrell Burks, Morehouse College	John N. Forrest, Jr., M.D.
Amanda Cass, Mount Holyoke College	Christine Smith
Kate DiPasquale, Vassar College	David Miller, Ph.D.
Ashley Gordon, Univ. Maryland Baltimore County	J. Larry Renfro, Ph.D.
Nathaniel McCray, Morehouse College	H. Rex Gaskins, Ph.D.
Will Motley, Middlebury College	John N. Forrest, Jr., M.D.
J. Genevieve Park, Massachusetts Inst. Technology	Ned Ballatori, Ph.D. James L. Boyer, M.D.
Lindsay Parrie, College of the Atlantic (*2003 Silk Fellow*)	David Towle, Ph.D.
Gabriel Rodrigues, Rutgers University	Petra Lenz, Ph.D.
Chris Sighinolfi, Pennsylvania University	Franklin Epstein, M.D.
David Slager, Calvin College	Robert Preston, Ph.D.
Maria Voznesensky, Northwestern University	Petra Lenz, Ph.D. David Towle, Ph.D.

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Sarah Carr, The University of Maine	Keith Hutchison, Ph.D. The University of Maine
Meredith Crane, Colby College	David Towle, Ph.D.
Nishad Jayasundara, College of the Atlantic	John Wise, Ph.D.
Eda Kapinova, College of the Atlantic	Derry Roopenian, Ph.D. The Jackson Laboratory
Jocelyn LeBlanc, Colby College	Andrea Tilden, Ph.D.
William Olver, The University of Maine	Derry Roopenian, Ph.D.
Jason Rafferty, Bates College	David Barnes, Ph.D. J. Denry Sato, Ph.D.
Camden Ramsay, Bowdoin College	Shaoguang Li, M.D., Ph.D. The Jackson Laboratory
Regina Readling, Bates College	Xiaosong Wang, M.D. The Jackson Laboratory
Whitney Schrader, Bowdoin College	Rick Thompson, Ph.D. Bowdoin College
Benjamin Smith, University of Southern Maine	John Wise, Ph.D.

NSF Collaborative Research at Undergraduate Institutions (CRUI):

Becky Anderson, Illinois State University	*all students mentored by:*
Jamie Baldwin, Illinois State University	George Kidder, Ph.D.
Yaniv Brandvain, College of the Atlantic	Chris Peterson, Ph.D.
Becky Clifford, Illinois State University	Robert L. Preston, Ph.D.
Caisie Goldsmith, Illinois State University	
Jill Marty, Illinois State University	
Santiago Salinas, College of the Atlantic	
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Carolina Klein, M.D., Yale University SOM	John N. Forrest, Jr., M.D.

Adrian Hogben Fellowship:

Katherine Smith, University of New Hampshire	Ray Henry, Ph.D.

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Salisbury Cove Research Fund:

Jonathan A. Epstein, M.D., University of Pennsylvania
H. Rex Gaskins, Ph.D., University of Illinois Urbana-Champaign
Greg Mayer, Ph.D., University of Miami
Robert Roer, Ph.D., University of North Carolina, Wilmington
Joseph R. Shaw, Ph.D., Dartmouth College
Céline Spanings-Pierrot, Ph.D., University of Montpellier II
Erik R. Swenson, M.D., University of Washington
Andrea Tilden, Ph.D., Colby College
Leonard I. Zon, M.D., Children's Hospital, Harvard University, HHMI

MDIBL Named Fellowships:

Shawn Holt, Ph.D., Virginia Commonwealth Univeristy, *Blum-Halsey Fellowship*
Paul Collodi, Ph.D., Purdue University, *F.H. Epstein Investigatorship*
Christopher Bayne, Ph.D., Oregon State University, *Bowditch Fellowship*
Stine Pedersen, Ph.D., August Krogh Institue, University of Copenhagen, *Schmidt-Nielsen Fellowship*
Peter F. Straub, Ph.D., Richard Stockton College, *Bradley Fellowship*
Joseph R. Shaw, Ph.D., Dartmouth College, *Forster Fellowship*

Maik Gollasch, M.D., Ph.D., Humboldt University Berlin, *Boylan Fellowship*
Erik Swenson, M.D., University of Washington, *Maren Fellowship*
Jonathan Epstein, M.D., University of Pennsylvania, *Maren Fellowship*

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Celia Y. Chen, Ph.D., Dartmouth College
Paul Collodi, Ph.D., Purdue University
Jonathan A. Epstein, M.D., University of Pennsylvania
H. Rex Gaskins, Ph.D., University of Illinois Urbana-Champaign
Shawn E. Holt, Ph.D., Medical College of Virginia, Virginia Commonwealth University
Joseph R. Shaw, Ph.D., Dartmouth College
Peter F. Straub, Ph.D., Richard Stockton College

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Greg Mayer, Ph.D., The University of Maine
Antonio Planchart, Ph.D., Bates College
J. Denry Sato, D.Phil., Mount Desert Island Biological Laboratory
Nicole Theodosiou, Ph.D., Bowdoin College

2003 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 Membrane Transport Seminars

July 8 "NHE1-roles and regulation in flounder red blood cells and beyond" Stine F. Pedersen, Ph.D., Research Adjunct, Department of Human Physiology, School of Medicine, University of California-Davis

July 14 "Mechanisms of small molecule flux across biological membranes" Mark L. Zeidel, M.D. , Professor and Chairman, Department of Medicine, University of Pittsburgh

*July 21 "Is there a regulated sulfate-carbonic anhydrase metabolon?" J. Larry Renfro, Ph.D., Professor of Physiology, Department of Physiology and Neurobiology, University of Connecticut

*July 28 "Can we tame the 800-pound gorilla of the blood-brain barrier?" David S. Miller, Ph.D., Research Physiologist, Laboratory of Pharmacology and Chemistry, NIH/NIEHS

August 4 "Volume-regulated osmolyte channels in skate RBC: Floating some new ideas on lipid rafts" Leon Goldstein, Ph.D., Professor/Vice Chair, Department of Molecular Pharmacology, Physiology and Biotechnology, Brown University

August 11 "Atrial Magic: A Novel Signalling Pathway" Martin Morad, Ph.D., Professor of Pharmacology and Medicine, Department of Pharmacology, Georgetown University Medical Center

Friday Noon Brown Bag Seminars

July 11 Introductory 5 minute talks by MDIBL Principal Investigators to summarize summer research projects

July 18 Remainder of Introductory 5 minute talks by MDIBL Principal Investigators to summarize summer research projects

July 25" Osmoregulation in juvenile blue crabs" Robert Roer, Ph.D., Professor, Graduate School, University of North Carolina at Wilmington

*August 1 "CFTR is a hydrolizable-ligand gated channel" Jack Riordan, Ph.D., Professor, Mayo Clinic, Scottsdale

*August 15 "Trophic transfer of metals in aquatic food webs" Celia Y. Chen, Ph.D., Research Assistant Professor, Department of Biology, Dartmouth College

*August 22 "Non-mammalian models for studies of the origin and evolution of immune Systems" Christopher J. Bayne, Ph.D., Professor of Zoology, Oregon State University at Corvallis

Wednesday Evening Public Seminars

July 2 "A tale of two growth factors: Science with social consequences" Denry Sato, Ph.D., Deputy Director, Marine Cell Line and Stem Cell Program, Mount Desert Island Biological Laboratory

*July 9" The Comparative Toxicogenomics Database: Discovering the Role of Genes in Environmental Health" Carolyn Mattingly, Ph.D., Scientific Curator, Bioinformatics Department, Mount Desert Island Biological Laboratory

July 16 THE NINETH HELEN F. CSERR MEMORIAL LECTURE – "Making new neurons in old brains: It's the difference between night and day!" Barbara S. Beltz, Ph.D., Allene Lummis Russell Professor in Neuroscience; Chair, Department of Biological Sciences; Director, Neuroscience Program, Wellesley College

July 22 **(Tuesday)** THE THIRTEENTH ANNUAL THOMAS H. MAREN MEMORIAL SEMINAR "Genetics research in the post-genome era" Richard P. Woychik, Ph.D., Director, The Jackson Laboratory

July 30 THE TENTH JOHN W. BOYLAN MEMORIAL LECTURE - William Kennedy, Professor of English at the University at Albany, distinguished author, and Pulitzer Prize recipient for "Ironweed" (1983)

August 6 THE EIGHTH LEONARD SILK MEMORIAL LECTURE "National Regulation in a Globalized Economy: A Disaster in the Making" Jack A. Blum, Esq., Expert on criminal law and international taxation; Attorney in the law offices of Lobel, Novins & Lamont, Washington, DC

*August 13 "Cardiovascular formation and function, from development to disease" Jonathan A. Epstein, M.D., Associate Professor of Medicine, Cardiovascular Division, University of Pennsylvania

Special Seminars and Presentations

March 4 "Springtime in Antarctica" David Petzel, Ph.D., Associate Professor, Department of Biomedical Sciences, Creighton University School of Medicine; Visiting Scientist, Mount Desert Island Biological Laboratory

*May 14 "Resistance is futile, prepare to be inhibited. Multitoxin resistance in fish exposed to pollutants is associated with P-glycoprotein activity" Shannon Bard,

Ph.D., American Liver Foundation Postdoctoral Fellow, Department of Physiology, Tufts University School of Medicine

June 4 "Dissecting PCP Pathway Functions in Vertebrate Development through Strabismus and SAPs" Maiyon Park, Ph.D., Research Associate, HHMI/Department of Pharmacology, University of Washington

July 11 THE MOUNT DESERT ISLAND BIOLOGICAL LABORATORY NATURAL SCIENCES SEMINAR: "Early life on planet earth." Andrew H. Knoll, Ph.D., Fisher Professor of Natural History at Harvard

July 18" A directed proteomics approach to germline stem cell establishment" James Denegre, Ph.D., Research Associate, The Jackson Laboratory

July 29" Effect of water drinking on human autonomic regulation" Friedrich C. Luft, M.D., Professor of Medicine; Head of Nephrology and Hypertension, Franz Volhard Clinic Medical Faculty, C. Humboldt University, Berlin, Germany

*August 22 "What Physiologists can learn from the genomes of fishes" Sydney Brenner, D.Phil, President and Director of Science, The Molecular Sciences Institute; Distinguished Research Professor, The Salk Institute; 2002 Nobel Prize winner in Medicine or Physiology

2003 CONFERENCES AND WORKSHOPS

April 25-27 **30th Anniversary Maine Biological and Medical Sciences Symposium** Sponsored by Mount Desert Island Biological Laboratory and The Jackson Laboratory, in conjunction with the Maine Biomedical Research Infrastructure Network.

Friday, April 25

Welcoming remarks: John N. Forrest, Jr., M.D., Director, MDIBL

"Past, Present and Future Approaches Involving the Mouse to Study the Role of Genes in Human Biology and Disease" Keynote address: Richard Woychik, Ph.D., Director, The Jackson Laboratory

Saturday, April 26

SESSION 1: *Functional Genomics*

"Molecular Physiology of the Sodium Pump" Keynote speaker: David Towle, Ph.D., Mount Desert Island Biological Laboratory

"A Potential Transcription Factor Binding Site Found at the Crossroad of Bioinformatics and Molecular Biology" Antonio Planchart, Ph.D., Bates College

"Molecular Mechanisms of Renal Tissue Regeneration in the Adult Little Skate (*Leukoraja erinacea*)" Jennifer Litteral, Mount Desert Island Biological Laboratory

"Identification of ERF2 Homologs in Dictyostelium: Potential Protein Palmitoyltransferases" Brent Wells, University of Maine

"Isolation of the Alpha 3 Isoform of the Sodium-Potassium Atpase in *Fundulus heteroclitus*" Patricia Waldron, Mount Desert Island Biological Laboratory

"Bridging the Digital Biology Divide" Carol Bult, Ph.D., The Jackson Laboratory

"Integrating Genomic Sequence with Functional Data: Comparative Genomic Approaches for Studying the Piebald Deletion Complex of Mouse Chromosome 14" Kevin Peterson, The Jackson Laboratory

"Mining mRNA 3: Untranslated Regions for Regulatory Motifs" Joel Graber, Ph.D., The Jackson Laboratory

"A Directed Proteomics Approach to Early Development" James Denegre, Ph.D., The Jackson Laboratory

"Induction of the Na^{++} K^{r}–Atpase -Subunit mRNA in Branchial Tissues of the American Lobster *Homarus americanus*" Lindsay Parrie, College of the Atlantic

"The Importance of Biomedical Research in Stimulating the Maine Economy" Warren Cook, President, JAX Research Systems, The Jackson Laboratory

SESSION 2: *Environmental Science*

* "Application of Cell Culture Studies in Environmental Toxicology and the Development of the Center for Integrated and Applied Environmental Toxicology at the University of Southern Maine" Keynote speaker: John Wise, Sr., Ph.D., University of Southern Maine

*"Pluripotent Differentiation of Murine ES-D3 Embryonic Stem Cells" Denry Sato, Ph.D., Mount Desert Island Biological Laboratory:

*"Toward Understanding Osmoregulation in Fundulus Heteroclitus" George Kidder, Ph.D., Mount Desert Island Biological Laboratory

*"Atmospheric CO2 Sequestration in Forest Ecosystems and Mitigation of Greenhouse Warming" John Lichter, Ph.D., Bowdoin College

*"Environmental Monitoring: A Question of Scale" John Anderson, Ph.D., College of the Atlantic

*"Air Pollution: A Key Element of Maine's Environmental Public Health Tracking System" Norman Anderson, MSPH, Maine Lung Association

*"DNA-Binding Studies of Potential Anticancer Dirhodium Acetate Compounds" Amity Burr, Colby College:

"Expression Profile of the Immunoglobulin G FC Receptor in Humorally Mediated Autoimmune Disease" Eda Kapinova, College of the Atlantic

"The Effects of *Vaccinium angustifolium* Extract on Lymphocyte-Culture Cell Proliferation" Jon Connolly, Ph.D., Husson College; and Patrick McArthur, Ph.D., Husson College

Sunday, April 27

SESSION 3: *Physiology and Human Health*
**Keynote speaker:* Joseph Verdi, Ph.D., Maine Medical Center Research Institute:
"Stem Cells and Regenerative Medicine: Facts, Fiction and the Future"

"Unraveling the "Phenome"--Large-Scale Phenotyping at The Jackson Laboratory" Kevin Seburn, Ph.D., The Jackson Laboratory

*"Opoid Inverse Agonists and Neutral Antagonists: In Vivo Functional Significance to Pain and Drug Addiction" Edward Bilsky, Ph.D., University of New England

"Telegenics–Using Telemedicine to Bring Genetics Educational and Clinical Services to Maine Patients and Providers: An Outreach Pilot Project Using Interactive Television Telemedicine" Dale Lea, RN, MPH, CGC, APNG, FAAN, Foundation for Blood Research

"Quantitative Gene Expression Profiling Implicates IL-1 Beta, Rank, and P-Selectin in a Periodontal Disease Mouse Model" Geoffrey Hart, Bates College

"Susceptibility of Old A/J Mice to Porphyromonas Gingivalis-Induced Alveolar Bone Loss During Periodontal Disease" Maria Joachim, Bates College

Grantsmanship Workshop: (Moderator: Barbara Tennent, Ph.D., The Jackson Laboratory)
Workshop leaders: Gerald Selzer, Ph.D., Program Director, National Science Foundation, Division of Biological Infrastructure

*Roundtable Luncheon: "Networking for the Future" - Functional Genomics, Environmental Sciences, Physiology and Human Health, and Grant writing

*August 8-10 **Mount Desert Island Stem Cell Symposium**
Co-hosted by The Mount Desert Island Biological Laboratory and The Jackson Laboratory, Sponsored by the Maine Biological Research Infrastructure Network

Friday, August 8

Welcome and Introduction to the Symposium: John N. Forrest, Jr., M.D., Director, MDIBL
"Initiation of Mammalian Development" Plenary Speaker: Davor Solter, M.D., Ph.D., Max-Planck-Institute of Immunobiology:

SESSION 1: *Neural Stem Cells* (Barbara Knowles, Chair)

"Adult Neural Stem Cells and Therapeutic Potential" Joe Verdi, Ph.D., Maine Medical Center Research Institute

"Neural Stem Cells and their Plasticity Potential" Sean Morrison, Ph.D., University of Michigan

Saturday, August 9

SESSION 2: *Human Embryonal Stem Cells: Scientific and Political Updates*

Roundtable discussion (John Gearhart, Moderator)
Alan Trounson, Ph.D., Monash Medical Center
John Gearhart, M.D., Johns Hopkins Medical Institute
Peter Andrews, Ph.D., University of Sheffield

SESSION 3: *Comparative I: Developmental Dynamics and Stem Cells in Model Systems* (Paul Collodi, Chair)

"Crustacean Stem Cells: The New Kid on the Block" Barbara Beltz, Wellesley College

"Modulators of Neuro-muscular Interactions and Disease" Gregory Cox, The Jackson Laboratory
"Utility of Zebrafish for the Study of Stem Cells" Leonard Zon, HHMI and The Children's Hospital

"Mouse Models of Adult Onset Neurodegeneration" Susan Ackerman, The Jackson Laboratory

Banquet Panel discussion "Cardiac Stem Cells and Stem Cell Therapy" Mark Keating, Ph.D.
"An International Society for Stem Cell Research" Leonard Zon, M.D.

Sunday, August 10

SESSION 4: *Comparative II: Stem Cells and Technology in Model Systems* (David Barnes, Chair)

"Repair of the renal tubule by adult stem cells" Lloyd Cantley, Ph.D., Yale University School of Medicine

"Cardiac Regeneration in Fish" Mark Keating, Ph.D., Harvard University

"Gene Discovery in Mice" John Schimenti, Ph.D., The Jackson Laboratory

"Zebrafish Cloning" Shuo Lin, Ph.D., UCLA

"Zebrafish ES Cells" Paul Collodi, Ph.D., Purdue University

Final Comments, David Barnes, Ph.D., MDI Biological Laboratory

2003 COURSES

*March 9-21	Functional Genomics of Membrane Transport UMaine and Bowdoin BRIN Short Course Course Director, Denry Sato, Ph.D., MDIBL
March 17-28	Molecular Biology Research Techniques College of the Atlantic BRIN Short Course Course Director, David Towle, Ph.D., MDIBL
April 2-3	Field Experience in Bioinformatics Colby College BRIN Field Experience Course Director, Clare Congdon, Ph.D., Colby College
*May 26-June 6	Physiology of Marine and Maritime Organisms Illinois State University and College of the Atlantic CRUI Course Directors - George Kidder, Ph.D., MDIBL; Robert Preston, Ph.D., Illinois State University; Chris Petersen, Ph.D., College of the Atlantic

May 31-June 6Structure and Function of Polarized Epithelial Cells
University of Pittsburgh School of Medicine, Intensive Laboratory Research Experience
Course Directors - Raymond Frizzell, Ph.D. and Mark Zeidel, M.D., Univ. of Pittsburgh School of Medicine and MDIBL

*June 7-13	Structure and Function of Polarized Epithelial Cells Yale University School of Medicine, Intensive Laboratory Research Experience Course Director – John N. Forrest, Jr., M.D., Yale Univ. School of Medicine and MDIBL

*June 13-14	10th Annual Environmental Health Sciences Symposium Field Portable and Confirmatory Assay Technologies for Mycotoxins and Phycotoxins Satellite Workshop to the Gordon Conference on Mycotoxins and Phycotoxins sponsored by the U.S. Food and Drug Administration, Center of Food Safety and Nutrition, and NOAA Marine Biotoxins Program Organizers - Steve Musser, Ph.D., USFDA/CFSAN, College Park, MD Mark Poli, Ph.D., USAMRIID, Frederick, MD
*June 13-20	Fifth Annual Intensive Course in Quantitative Fluorescent Microscopy Course Director - Simon C. Watkins, Ph.D., University of Pittsburgh School of Medicine
June 23-25	Marine Physiology and Molecular Biology Research training course for high school interns Course Director - Jim Stidham, Ph.D., Presbyterian College and MDIBL

PUBLICATIONS

Publications preceded by an asterisk were prepared by investigators funded by the NIEHS Center for Membrane Toxicity Studies at the Mount Desert Island Biological Laboratory

*Bender, R.C., Bixler, L.M., Lerner, J.P. and C.J. Bayne. Schistosoma mansoni sporocysts in culture: host plasma hemoglobin contributes to in vitro oxidative stress. *J. Parasitology.* 88:14-18, 2002.

Buskey, E.J., Lenz, P.H., and D.K. Hartline. Escape behavior of planktonic copepods to hydrodynamic disturbances: high-speed video analysis. *Mar. Ecol. Prog. Ser.* 235:135-146, 2002.

*Cai, S.-Y., C.J. Soroka, N. Ballatori, and J.L. Boyer. Molecular characterization of a multidrug resistance-associated protein from the little skate, *Raja erinacea. Am. J. Physiol.* 284:R125-R130, 2003.

Choe, K. P. and D. H. Evans. Compensation for hypercapnia by a euryhaline elasmobranch: effect of salinity and roles of gills and kidneys in fresh water. *J. Exp. Zool.* 297A:52-63, 2003.

*Dudas, P.L. and J.L. Renfro. Transepithelial sulfate transport by avian renal proximal tubule epithelium in primary culture. *Am. J. Physiol.* 283:R1354-1361, 2002.

Elger M, Hentschel H, Litteral J, Wellner M, Kirsch T, Luft F, and H. Haller. Neprhogenesis is induced by partial nephrectomy in the elasmobranch *Leucoraja erinacea. J Am Soc Nephrol.* 14:1506-1518, 2003.

Evans, D.H. Osmoregulation in aquatic vertebrates. Encyclopedia of Life Sciences (4 pages; http:// www.els.net/els/public/home/default.asp?sessionid=public), 2003.

Evans, D.H., Harrie A. C., and M. S. Koslowski. Characterization of the effects of vasoactive substances on the bulbus arteriosus of the eel, *Anguilla rostrata. J. Exp. Zool.* 297A; 45-51, 2003.

Evans, D.H., Piermarini, P.M., and K.P. Choe. Homeostasis: Osmoregulation, pH Regulation, and Nitrogen Excretion. In: Biology and Ecology of Sharks and Their Relatives., Carrier, J.C. et al., eds. CRC Press, in press.

Evans, D.H., Rose, R.E., Roeser, J.M., and J.D. Stidham. NaCl transport across the opercular epithelium of the Fundulus heteroclitus is inhibited by an endothelin to nitric oxide, superoxide, and prostanoid signaling axis. *Am. J. Physiol.,* in press.

*Fan, L. and P. Collodi. Progress towards cell-mediated gene transfer in zebrafish, *Brief. Functional Genom.Proteom.* 1:131-138, 2002.

Fellner, S.K. and L. Parker. Effects of changes in ionic strength on the polycationic sensing receptor in shark rectal gland artery and tubules. *J. Exp. Zool.*, in press.

Goldstein, L., D.L. Koomoa and M.W. Musch. ATP release from hypotonically stressed skate RBC: Potential role in osmolyte channel regulation. *J. Exp. Zool.* 296A:160-163, 2003.

Guizouarn, H., M.W. Musch and L. Goldstein. Evidence for the presence of three different anion exchangers in a red cell. Functional expression studies in Xenopus oocytes. *J. Membr. Biol.* 193:109-120, 2003.

Hagedorn, M., D. Weihrauch, D.W. Towle, and A. Ziegler. Molecular characterization of the SER Ca2+-ATPase of *Porcellio scaber* and its expression in sternal epithelia during the moult cycle. *J. Exp. Biol.* 206:2167-2175, 2003.

Hartline, D.K., Rodrigues, G., Burdick, D. and P.H. Lenz. A cross-species comparison of escape responses to photic and hydrodynamic stimuli in calanoid copepods. Program # 465.1 Abstract viewer and itinerary planner, Washington, D.C.: Society of Neuroscience, CD-ROM/Online, 2003.

Hassett, R.P. Effect of toxins of the (red-tide) dinoflagellate *Alexandrium* spp. on the oxygen consumption of marine copepods. *Journal of Plankton Research* 25: 185-192, 2003.

*Henry, R.P., Gehnrich, S., Weihrauch, D., and D.W. Towle. Salinity-mediated carbonic anhydrase induction in the gills of the euryhaline green crab, *Carcinus maenas*. *Comp. Biochem. Physiol.* 136A:243-258, 2003.

*Henson, J.H. S. Kolnik, C. Fried, R. Nazarian, J. McGreevy, K. L. Schulberg, M. Detweiler and V.A. Trabosh. Actin-based centripetal flow: phosphatase inhibition by Calyculin A alters flow pattern, actin organization and actomyosin distribution. *Cell Motility and the Cytoskeleton* 56:252-266, 2003.

*Hill, W.G., Mathai, J.C., Gensure, R.H., Zeidel, J.D., Apodaca, G., Saenz, J.P., Kinne-Saffran, E., Kinne, R., and M.L. Zeidel. Permeabilities of teleost and elasmobranch gill apical membranes: Evidence that lipid bilayers alone do not account for barrier function. *American Journal of Physiology ñ Cell Physiology*, in press.

*Karnaky, K.J., Hazen-Martin, D., and D.S. Miller. The xenobiotic transporter, MRP2, in epithelia from insects, sharks, and the human breast: implications for health and disease. *J. Exp. Zool.*, 300:91-97, 2003.

*Kidder, G. W., C. E. Goldsmith, J. L. Baldwin, C. W. Petersen and R. L. Preston. Osmotic and osmoregulatory water fluxes in *Fundulus*. Abstracts, *Society for Intg. and Comp. Biol. Annual Mtg*. 40.5, p 277, 2004.

*Kidder, G. W. III, C. E Goldsmith, M. J. Neville, C. W. Petersen, and R. L. Preston. Basal oxygen consumption in Fundulus heteroclitus. Abstracts, *Society for Integ. and Comp. Biol. Annual Meeting* 39:2, p 212, 2003.

Koob, TJ, AP Summers. Tendon: Bridging the gap. *Comp. Biochem. Physiol. A Mol. Integr. Physiol.* 133:905-909, 2002.

Lenz, P.H., Hower, A.E., and D.K. Hartline. Force production during pereiopod power strokes in *Calanus finmarchicus. J. Mar. Systems,* in press.

Long, J.H., Jr., Koob-Emunds, M.M., Sinwell, B. and T..J. Koob. The notochord of hagfish, *Myxine glutinosa*: Viscoelastic properties and mechanical functions during steady state swimming. *J. Exp. Biol.* 205:3819-3831, 2002.

*Lucu, C, and D. W. Towle. Na++K+-ATPase in gills of aquatic Crustacea. *Comp. Biochem. Physiol.* A 135:195-214, 2003.

*Miller, D.S. Confocal imaging of xenobiotic transport across the blood-brain barrier. *J. Exp. Zool.*, 300:84-90, 2003.

*Miller, D.S. Confocal imaging of xenobiotic transport across the choroid plexus. *Adv. Drug Delivery Rev.*, in press.

*Miller, D.S., Graeff, C., Droulle, L., Fricker, S., and G. Fricker. Xenobiotic efflux pumps in isolated fish brain capillaries. *Am. J. Physiol.*, 282:R191-R198, 2002.

*Notenboom, S., Miller, D.S., Smits, P., Russel, F.G.M., and R. Masereeuw. Role of NO in endothelin regulated drug transport in the renal proximal tubule. *Am. J. Physiol.*, 282:F458-F464, 2002.

Pedersen, S.F. A novel NHE1 from red blood cells of the winter flounder: Regulation by multiple signaling pathways. Proceedings from the Dayton Cell volume regulation and signal transduction meeting 2003, in press.

Pedersen, S.F. and P.M. Cala. Comparative biology of the ubiquitous Na+/H+ exchanger, NHE1: lessons from erythrocytes. *J. Exp. Zool.*, submitted.

Pedersen SF, King SA, Rigor RR, Zhuang Z, Warren JM and PM. Cala. Molecular cloning of NHE1 from Winter flounder RBCs: Activation by osmotic shrinkage, cAMP, and calyculin A. *Am J Physiol* 284:C1561-1576, 2003.

*Pelis, R.M. and J.L. Renfro. Active sulfate secretion by the intestine of winter flounder is through exchange for luminal chloride. *Am. J. Physiol.* 284(2):R380-388, 2003.

*Pelis, R.M. and J.L. Renfro. Cortisol alters carbonic anhydrase-mediated renal sulfate secretion. *Am. J. Physiol.* 285:R1430-R1438, 2003.

Piermarini, P.M., Verlander, J.W., Royaux, I.E., and D.H. Evans. Pendrin immunoreactivity in the gill epithelium of a euryhaline elasmobranch. *Am. J. Physiol.* 283:R983-R992, 2002.

*Preston, R. L., R. J. Clifford, R. J., Thompson, J. A., Slager, D. L., Petersen, C. W., and G. W. Kidder. Changes in apparent CFTR mRNA expression in developing killifish oocytes. Abstracts, *Society for Intg. and Comp. Biol. Annual Mtg.* P3.113, p 346, 2002.

*Seward, D.J., A.S. Koh, J.L. Boyer, and N. Ballatori. Functional complementation between a novel mammalian polygenic transport complex and an evolutionarily ancient organic solute transporter, OSTa -OSTb. *J. Biol. Chem.* 278:27473-27482, 2003.

*Straub, P.F., M.L. Higham, A. Tanguy, B.L. Landau, W.C. Phoel, L.S. Hales, and T.K.M. Thwing. Suppression subtractive hybridization cDNA libraries to identify differentially expressed genes from contrasting fish habitats. *Marine Biotechnology.* in press.

Strus, J., R. Dillaman, R. Roer and M. Tusek. Ultrastructural evidence of calcium transport in the integument of intramolt isopod crustacean *Ligia exotica. Proc. 6th Multinational Congress on Microscopy - Eur. Ext.*: 43-44, 2003.

AUTHORS

SPECIES

KEY WORDS