THE BULLETIN

Mount Desert Island
Biological Laboratory
Salsbury Cove
Maine 04672

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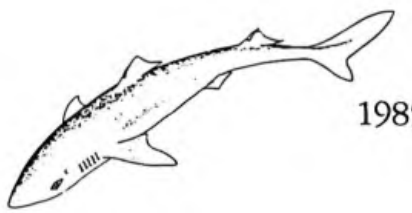

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INTRODUCTION

The Mount Desert Island Biological Laboratory is an independent non-profit biological station. It is located on the north shore of Mount Desert Island, which lies in the Gulf of Maine about 120 miles northeast of Portland near the mouth of the Bay of Fundy. The island, well known for its Acadia National Park, provides a variety of habitats including shallow and deep saltwater, a broad intertidal zone, saltwater and freshwater marshes, freshwater lakes and streams, forests and meadows.

The Laboratory is the largest cold water research facility in the Eastern United States, and its unique site and complement of year-round and summer investigators provide an outstanding environment for the study of various aspects of the physiology of marine and freshwater fauna. During 1985 the scientific personnel included 53 principal investigators, 27 associates, and 59 assistants/technicians, representing 57 institutions in 24 states and 4 foreign countries.

HISTORY AND ORGANIZATION

The Mount Desert Island Biological Laboratory was founded in 1898 at South Harpswell, Maine by J.S. Kingsley of Tufts University. Its present site at Salsbury Cove was donated by the Wild Gardens of Acadia. Relocation was completed in 1921. The Wild Gardens of Acadia was a land-holding group headed by George B. Dorr and John D. Rockefeller, Jr. which was instrumental in the founding of Acadia National Park.

The Laboratory was incorporated in 1914 under the laws of the State of Maine as a non-profit scientific and educational institution. Its original purpose was to teach undergraduate marine biology; however, the direction soon changed to providing a facility for marine research. Since the pioneering work of H.K. Smith, E.K. Marshall, and Roy P. Forster on various aspects of renal and osmoregulatory physiology of local fauna, the Laboratory has become known worldwide as a center for investigations in electrolyte and transport physiology, developmental biology and electrophysiology.

The Mount Desert Island Biological Laboratory is owned and operated by the Board of Trustees and Members of the Corporation; at present there are 406 members. Officers of the Corporation - President, Vice-President, Director, Secretary, Treasurer - and an Executive Committee are elected from among the trustees. The President and Executive Committee oversee the general administration and goals of the Laboratory. The Director, with the aid of a full-time Administrative Director and small staff, handles the daily operations.

NIEHS Toxicology Center

The MDIBL has recently established a toxicology research center under the Marine and Freshwater Biomedical Sciences Specialized Center of Research Program (MFBS SCOR) sponsored by the National Institute of Environmental Health Sciences. Initial studies at the Center will focus on the toxic effects of heavy metals and other environmental contaminants on membrane transport systems. Inquiries into Center activities are welcome.

FACILITIES

The Laboratory now owns about 250 acres. In addition to rocky shores, the site contains a freshwater pond and brook and land which varies from meadow and forest to sphagnum bog. This provides a great diversity of fauna. The Administrative Director can provide an estimate of the availability of any particular species.

Laboratories

All laboratories are single-story buildings of frame construction located along the shore.

Halsey Laboratory consists of 4 laboratories on a concrete slab. Flowing seawater is available in the labs or on an adjoining roofed deck. Summer use only.

Hegner Laboratory contains 8 laboratories of varying size on a concrete slab. Although not winterized, all laboratories are insulated in order to accommodate investigators requiring controlled temperature and humidity for their experiments. The labs have running seawater as well as access to aquaria and other holding tanks adjacent to the building.

The Instrument Shed is a small building containing one laboratory and a common room for general equipment and a water still. Summer use only.

Karnofsky Laboratory is a year-round research building. It contains 4 large laboratories and an office set on a concrete slab. Flowing seawater is accessible on an attached, enclosed deck.

The Kidney Shed is a single large laboratory which can accommodate two compatible research groups. It is equipped with saltwater both in the lab and on an adjacent deck. Summer use only.

Lewis Laboratory contains 2 insulated laboratories on a concrete slab. Seawater tables are on an adjoining roofed deck. Summer use only.

Marshall Laboratory, a year-round facility, houses 5 laboratories, an office, and a common-use tissue culture lab. Flowing seawater is available on an enclosed deck and in a central holding facility located in the basement.

Neal Laboratory contains 4 large and 4 small laboratories. Flowing seawater is available in all labs as well as at tables attached to the outside of the building. Summer use only.

Union Station has 2 laboratories on a concrete slab. Flowing seawater is available in the labs and on an adjoining roofed deck. Summer use only.

Study Space

Three small buildings away from the center of activity are available during the summer for study and writing.

Other Buildings

The Office is a centrally located year-round structure. The upper level contains the administrative offices and an instrument room. A conference room and reference library are housed on the lower level.

The Maintenance Shop is a year-round structure located near the laboratory complex.

The Director's Office contains a small summer office and a research laboratory.

Dahlgren Hall, the former village schoolhouse, has been converted into a lecture hall which can seat 120 people. Seminars and other meetings are held here during the summer.

Support Facilities

1. Equipment for general use includes micro-, high-speed and ultra-centrifuges, balances, pH meters, spectrophotometers, flame photometers, gamma and scintillation counters, and osmometers. There also is a tissue culture facility which includes incubators, hoods, and an inverted microscope.

2. Year-round seawater system and 2 centralized holding facilities.

3. A dock consisting of 2 floats with live-wells and attached live-cars for maintaining specimens.

4. Two power boats - 22' and 16' - and rowing skiffs are available for specimen collecting.

Housing **

Seventeen cottages are maintained by the Laboratory as rental units for summer investigators and their families. Two efficiency apartments are also rental units on a year-round basis. Privately owned cottages and rooms are available near the Laboratory or in neighboring communities.

Four summer cottages have been converted into dormitories for 40 young men and women.

A Dining Hall, run by a cook/manager, is the eating and socializing area for the dormitory residents. It is also used for informal seminars and receptions.

** [Salsbury Cove is a small community with a post office and a general store; therefore an automobile is essential for family mobility. Bar Harbor, 6 miles away, and Ellsworth, 12 miles north on the mainland, offer excellent shopping facilities and hospitals.]

APPLICATIONS & FELLOWSHIPS

Research space is available for the entire summer season (June 1 - September 30) or a half-season (June 1 - July 31 or August 1 - September 30). Applications for the coming summer must be submitted by January 31 of each year. Investigators are invited to use the year-round facilities at other times of the year, but such plans should include prior consultation with the MDIBL Office concerning available facilities and specimen supply.

A limited number of fellowships and scholarships are available to research scientists and students. These funds may be used to cover the cost of laboratory rent, housing and supplies. Applications for fellowships are generally due in December of the year preceeding the summer research period.

For further information on applications and financial aid, contact:

Dr. David L. Wynes, Administrative Director
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ACKNOWLEDGMENTS

The Mount Desert Island Biological Laboratory is indebted to the National Science Foundation and National Institutes of Health for substantial support. Funds for renovations of buildings and new construction have permitted the Laboratory to expand and upgrade its facilities, and contributions to operating costs have greatly improved the efficiency of research activities. The individual research projects which have been served by the Laboratory are variously funded by private and government agencies, and all of these projects have benefited from the NSF and NIH grants to the Laboratory.

We are also indebted to the Lucille Markey Charitable Trust for their support of scientific instrumentation and research fellowships for young investigators.

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1985 SEMINARS

Morning Transport

July 8 "Keeping Track of K Channels in Epithelial Cells." David Dawson, Ph.D., University of Michigan Medical School

July 15 "Ion Transport in Flounder Intestinal Epithelium." Raymond Frizzell, Ph.D., University of Alabama in Birmingham

July 22 "Reconstitution: A Biochemical Approach to the Resolution of Epithelial Transport Processes." William P. Dubinsky, Ph.D., University of Texas Health Science Center at Houston

July 29 "Possible Roles of the Cytoskeleton in Transport." Richard Hays, M.D., Albert Einstein College of Medicine

Aug. 5 "Conductive Pathways in the Rectal Gland." Rainer Greger, M.D., Max Planck Institut fur Biophysik

Aug. 12 "Hypertonic Volume Regulation in the Mouse Thick Ascending Limb ." Steven Hebert, M.D., Harvard Medical School and Brigham & Women's Hospital

Aug. 19 "Signal Transduction in Epithelia." John N. Forrest, M.D., Yale University School of Medicine

Aug. 26 "Regulation of Na-K-ATPase." Diana Marver, Ph.D., University of Texas Health Science Center at Dallas

Noon

June 20 "Neural and Local Control of Arterioles in the Microcirculation of Hypertensive Rats." Julian H. Lombard, Ph.D., Medical College of Wisconsin

June 27 "Effect of Temperature on the Transmembrane Potential of Liver Cells." Robert Wondergem, Ph.D., Quillen-Dishner College of Medicine, East Tennessee State University

"Atrial Natriuretic Factor: A Stimulator of Rectal Gland Function." Richard Solomon, M.D., Roger Williams General Hospital

July 11 "Permeation Properties of Gramicidin Channels in Lipid Bilayers." David Busath, M.D., Brown University

"Seawater Adaptation in Goldfish." Jerome Lowenstein, M.D., New York University Medical Center

July 18 "Patterns in the Genetic Structure of Sea Anemone Populations." Richard Hoffmann, Ph.D., Iowa State University

1985 SEMINARS

Noon

"Urea Transport and Electrical Properties of Shark Nephron." Steven Hebert, M.D., Harvard Medical School and Brigham and Women's Hospital, and Peter Friedman, Ph.D., Dartmouth Medical School

Aug. 1 "Maternal Care for Shark Pups in utero." Gregg A. Kormanik, Ph.D., University of North Carolina-Asheville

"Renal Effects of Changes in Dietary Nitrogen Intake." Bodil Schmidt-Nielsen, Ph.D., MDI Biological Laboratory

Aug. 8 "Electrogenic Na-HCO3-Symport in Cultured Corneal Endothelial Cells." Michael Wiederholt, M.D., Frei Universitat, Berlin

Aug. 15 "The Harpswell Laboratory 1898-1920: The Predecessor to MDIBL." Mary Francis Williams, Ph.D., Randolph-Macon Woman's College

Aug. 22 "Spermatogenesis in the Squalus." Gloria Callard, Ph.D., Boston University

Aug. 29 "Atrial Natriuretic Factor: What We Have Learned This Summer." Franklin Epstein, M.D., Harvard Medical School and Beth Israel Hospital; Jose Zadunaisky, M.D. and Ph.D., New York University Medical Center; Jeffrey Stoff, M.D., University of Massachusetts Medical School; Richard Solomon, M.D., Roger Williams General Hospital; Gerald DiBona, M.D. and Ulla Kopp, Ph.D., University of Iowa College of Medicine

Evening

June 25 "The Jackson Laboratory - The Quiet Beginning to Star Wars." Richard Fox, Ph.D., The Jackson Laboratory

July 2 "Aquatic Toxicology Past and Present: A One Man's Version." Joseph Hunn, Ph.D., U.S. Department of Interior Fish and Wildlife Service, Columbia National Fish Research Lab

July 9 "Fish Locomotion at Altered Body Temperature." Bruce Sidell, Ph.D., University of Maine

July 16 "The Role of CO2 in Secretory Processes: A Comparative Approach." Thomas H. Maren, M.D., University of Florida

July 23 "Mechanism of Bile Formation and Hepatic Transport: A New Approach in Hepatocyte Couplets." James L. Boyer, M.D., Yale Medical School

July 30 "The Rectal Gland of the Shark: Its Contributions to Human Physiology and Disease." Franklin Epstein, M.D., Harvard Medical School

1985 SEMINARS

Evening

Aug. 7 "Natural History of Humpback Whales in the North Atlantic." Steven Katona, Ph.D., College of the Atlantic

Aug. 13 "Marine Bird Reproductive Ecology." Ronald Butler, Ph.D., Duquesne University

Aug. 20 "Some Aspects of the Neuroendocrine Control of Prolactin, ACTH, and MSH in Teleost Fishes." Madeleine Olivereau, Ph.D., Institut Oceanographique, Paris, France

Special Seminars

June 21 "Carbonic Anhydrase and Sodium Uptake in Perfused Crab Gills." Lou Burnett, Ph.D., University of San Diego, and David Towle, Ph.D., University of Richmond

July 26 "Ion Channels in Epithelia: Studies Using Fluctuation Analysis." Willy Van Driessche, Ph.D., K.U. Leuven Campus, Gasthuisberg, Belgium

Nov. 19 "A New Experimental System to Study Nuclear Function." David S. Miller, Ph.D., National Institute of Environmental Health Sciences

1985 PUBLICATIONS

Callard, G.V. and P. Mak. Exclusive nuclear location of estrogen receptors in Squalus testis. Proc. Natl. Acad. Sci. USA 82:(March), 1985.

Callard, G.V., J.A. Pudney, P. Mak and J. Canick. Stage-dependent changes in steroidogenic enzymes and estrogen receptors during spermatogenesis in the testis of the dogfish Squalus acanthias. Endocrinology 117:1328-1335, 1985.

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