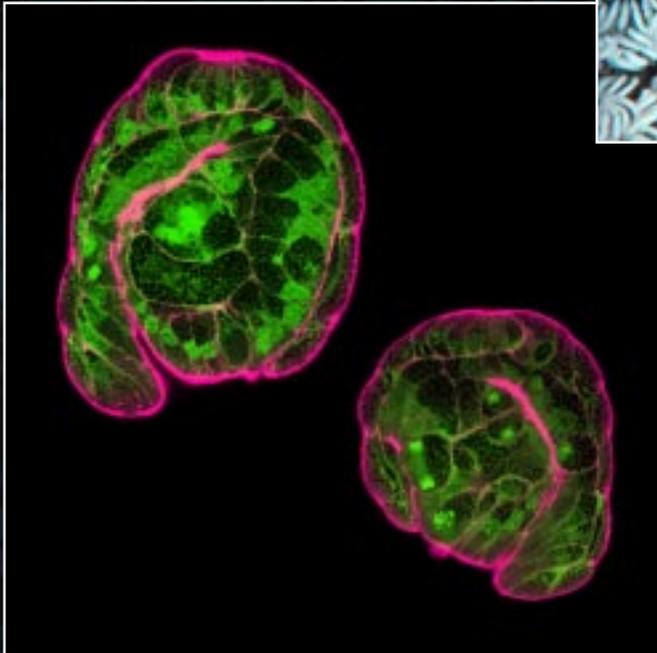


University of Washington

Friday Harbor Laboratories

Opportunities for Research and Education



Friday Harbor Laboratories

The Laboratories are well-situated for research on many aspects of marine biology and oceanography. The waters around San Juan Island are relatively free from pollution, and although the salinity is in general like that of the open ocean, there are a few estuarine situations of low salinity. There are swift tideways as well as quiet bays and lagoons. A tidal range of about three meters exposes diverse intertidal areas of rock, sand, and mud. The flora and fauna are exceptionally rich. Representatives of nearly all major groups of marine algae and invertebrates can be collected at the shore, and depths down to 300 meters can be explored by dredging and other collecting techniques. Organisms important for research in physiology, development, and ecology are available.

The islands of the San Juan Archipelago are generally rocky, forested, and rimmed by precipitous shores. The islands were strongly glaciated and have valleys with lakes, swamps, and bogs. The varied terrestrial and freshwater habitats offer diverse flora and fauna.

The 484 acre tract of land on which the Laboratories are sited and the marine waters of the region in general, are biological preserves. The Laboratories also control biological preserves at False Bay and Argyle Lagoon on San Juan Island, at Point George and Cedar Rock on Shaw Island, and other areas. These preserves provide a wide range of protected terrestrial and marine environments for short- and long-term research projects.

Research is conducted throughout the year. It is a principal function of the Friday Harbor Laboratories to provide facilities for visiting investigators from national and international institutions. Less emphasis is placed on a permanent, resident research program. Laboratory space and housing for investigators and visiting classes are available year-round. Investigators and students are encouraged to use the facilities outside the busy instructional period in summer. Accommodations may also be available for college-level educational groups for meetings and symposia. Individuals who wish to apply for research space and housing should do so online at <http://depts.washington.edu/fhl/resinfo.html>. A list of independent investigators at Friday Harbor Laboratories for the previous year is available at http://depts.washington.edu/fhl/res_index.html.

FHL endorses San Juan County's Marine Stewardship Area. FHL visitors are asked to assist in protecting fish and invertebrates through rigorous efforts to minimize harvest. At the end of a visit, FHL visitors are asked to return organisms to their original site, or to pass them on to other scientists or students.



Fernald Laboratory at FHL (W. Calvin)

The Friday Harbor Laboratories are located on San Juan Island in Washington state, part of an archipelago that lies near the Canada-USA border. The town of Friday Harbor may be reached by scheduled airline service from Seattle, and by Washington State Ferries from Anacortes about 75 miles north of Seattle.

Courses and Research Apprenticeships

FHL offers coursework and research apprenticeships in the spring and autumn for undergraduates and post-baccalaureate students. The instructional programs in summer are intended primarily for graduate students with the exception of Marine Invertebrate Zoology. Well-qualified undergraduates may be admitted to graduate level courses with the consent of the Director and the faculty of the courses involved. Courses are taught by faculty of the University of Washington and other universities and research institutions. Courses may be taken sequentially, but not concurrently.

Research Apprenticeships are intense, full-time research training experiences offered to qualified undergraduates and post-baccalaureates. Small groups (5-12 students) work on a focused research problem guided by faculty and graduate student mentors. Students selected for participation receive financial support.

Additional information and on-line application can be found at <http://depts.washington.edu/fhl/classinfo.html>.

For Further Information:

<http://depts.washington.edu/fhl>

Phone:

(206) 543-1484 or
(360) 378-2165

Scientific Facilities

Laboratories and Equipment The teaching and research laboratories consist of twelve buildings with running sea water. A photographic darkroom, walk-in cold rooms, microtechnique room, flume, and shop are available. Analytical equipment for general use includes centrifuges, computers, scintillation counter, an HPLC, nucleotide sequencer, PCR thermocyclers and other equipment for molecular biology, spectrophotometers, culture chambers, fluorescence microscope, video equipment, scanning laser confocal microscopes, and electrophysiological equipment. A scanning electron microscope and transmission electron microscope may be used by investigators who have or can obtain appropriate training.

Stockroom The FHL stockroom provides most reagents, labware, photographic materials, and small items of equipment at no cost to students or investigators. Persons needing unusual materials, large quantities, radioisotopes or special equipment should make arrangements in advance.

Marine Equipment A 58-foot steel research vessel, the R/V Centennial, equipped for dredging, trawling, net hauls, and water sampling is available for classwork and research. The services of an R.O.V. submarine capable of working to 1,000 foot depths is also available. Rowboats & outboard-powered boats are provided.

Facilities for Diving Divers certified by the University of Washington may use four boats and a limited number of tanks and weights for specific projects approved by the Diving Officer (DO). Study site information as well as check-out dives are provided by the DO.

Library The Friday Harbor Laboratories library provides a core collection of books, journals, and electronic resources with a focus on the marine sciences. Areas of emphasis include developmental biology, cell biology and marine ecology. The library provides computer access to the UW libraries catalog, journal indexes, electronic reference, news sources, and journals.

Synoptic Collection A collection of preserved marine animals and plants is available as an aid to identification and location. In addition, files of collecting and study-site surveys and color transparencies of local marine life and habitats are maintained for reference and study.

Importation of Species Most imports of marine species into Washington State for research are illegal without a permit from the Washington State Department of Fish and Wildlife. Permits, when granted, will require strict quarantine of non-native organisms with no contact with the FHL seawater system.

Vertebrate Research Persons intending to work with fish at FHL must have UW Animal Care Committee approval before holding fish in laboratory aquaria for experimental purposes.



Rockweed grazed by snails (M.Dethier)



2006 Calendar

Spring Quarter: March 27 to June 3 Student Applications due January 15

Course:

- Marine Zoology / Marine Botany

Research Apprenticeships:

- *Comparative Biology of Egg Maturation and Fertilization*
- *Marine Molecular Ecology*
- *Neuroethology of Orientation: Analysis Using an Invertebrate Model*

Summer Session A: June 12 to July 15 Student Applications due March 1

Courses:

- Marine Invertebrate Zoology
- Comparative Invertebrate Embryology
- Functional Morphology and Ecology of Marine Fishes

Summer Session B: July 17 to August 19 Student Applications due March 1

Courses:

- Marine Algae
- Coastal and Estuarine Fluid Dynamics
- Predator-Prey Interactions
- Larval Biology

Summer Sessions A & B: June 12 to August 19 Student Applications due March 1

Research Apprenticeship:

- *Biophysics of the Aquatic Gel Phase*

Autumn Semester: August 21 to December 9 Student Applications due June 10

Research Apprenticeship:

- *Ecological and Evolutionary Analysis of Spatial Variation in Marine Systems*

Autumn Quarter: September 25 to December 9 Student Applications due July 1

Research Apprenticeships:

- *Pelagic Ecosystem Function in the San Juan Archipelago*
- *Marine Fish: Ecology, Habitat Requirements and the Design of MPAs*
- *Gene Network Dynamics and Cellular Behavior*

Spring Quarter

MARINE ZOOLOGY/MARINE BOTANY

March 27 - June 3, 2006

M-F 8-5

8 credits - Biology 430 + 8 credits Biology 445

Dr. Emily Carrington & Dr. Megan Dethier

A survey of groups of marine animals and plants represented in the San Juan Archipelago; natural history, functional morphology, ecology, distribution, habitat, adaptation, trophic interrelationships, and evolution. Considerable field work and individual research projects are included. The courses are integrated and students must register for both. Prerequisites: Appropriate background in biological sciences and permission of instructors. Enrollment limited to 20 students.

For additional information contact:

ecarrington@u.washington.edu or

mdethier@u.washington.edu and visit

<http://depts.washington.edu/fhl/zoobot.html>

Research Apprenticeships

COMPARATIVE BIOLOGY of EGG MATURATION and FERTILIZATION

March 27 - June 3, 2006

15 credits - Biology 499

Dr. Dave Carroll, Dr. Lisa Moore & Dr. Steve Stricker

How do eggs mature to a point where they can be successfully fertilized and once mature, how is the egg triggered by sperm to begin embryogenesis? Currently, most research conducted on egg maturation and fertilization has been done using a few intensively studied model organisms, such as sea urchins, frogs, and mice. This course aims to broaden the overall scope of such analyses and test various currently held paradigms, by taking advantage of the rich invertebrate fauna available in the vicinity of Friday Harbor Labs. Students will initially receive introductory lectures related to egg maturation, fertilization and the techniques used to study these topics before embarking on both individual and group projects. By combining specific pharmacological inhibitors and agonists with various methods, students will be able to assess the potential roles of various signaling components and apoptotic pathways as they affect maturation and fertilization in a wide variety of animals. Enrollment limited to 8 students.

For additional information contact:

dcarroll@fht.edu, lmoore@fit.edu or

sstr@unm.edu

MARINE MOLECULAR ECOLOGY

March 27 - June 3, 2006

15 credits - Biology 499

Dr. Christiane Biemann & Jessica Marks

Apprentices will use DNA markers to understand the ecology, evolution and conservation of marine organisms. Lectures and lab exercises will provide an overview of the principles, tools, and techniques commonly employed in molecular ecology, with an emphasis on fertilization ecology and invertebrate life histories. Apprentices will pursue research projects of their choosing; from design,

field sampling and labwork to analysis and scientific data presentation. Apprentices will emerge with skills in PCR, DNA sequencing and fragment analysis, and an appreciation for the possibilities and pitfalls of applying molecular methods in marine ecology and conservation. Enrollment limited to 8 students.

For additional information contact:

biemann@pdx.edu or Jessica.Marks@bio.uib.no



Acidian Corella inflata embryo at the 2-cell stage
(M. Boyle)

NEUROETHOLOGY of ORIENTATION: ANALYSIS USING an INVERTEBRATE MODEL

March 27 - June 3, 2006

15 credits - Biology 499

Dr. Shaun Cain & Dr. Jim Murray

In this apprenticeship, the overriding theme of the research team will be to investigate the neural control of behavior in both isolated central nervous system preparations and in unrestrained, freely behaving animals. Apprentices will be exposed to a variety of techniques commonly used in neurobiological and neuroethological research, including anatomical, molecular, biochemical, electrophysiological and behavioral methods, as well as new techniques to record from cells in unrestrained animals. The primary experimental animal used will be the marine mollusc *Tritonia diomedea*, due to the unique nervous system this animal possesses combined with the limited number of orientation tasks it performs. Enrollment limited to 8 students.

For additional information contact:

crabby@u.washington.edu or

james.murray@mac.com

Summer Quarter

MARINE INVERTEBRATE ZOOLOGY

Session A June 12 - July 15, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Biology 432

Dr. Mike Hart & Dr. Bruno Pernet

This course will study the comparative biology of marine invertebrate animals, focusing on morphology, functional biology, life history, and evolutionary relationships. Overviews of the major taxa and many smaller groups will be given in daily lectures, but the backbone of the course consists of the study of living animals in the laboratory and fieldwork in the diverse marine habitats surrounding San Juan Island. Enrollment limited to 20 students.

For additional information contact:

mike_hart@sfu.ca or bpernet@csulb.edu

COMPARATIVE INVERTEBRATE EMBRYOLOGY

Session A June 12 - July 15, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Biology 536

Dr. Billie J. Swalla & Dr. Sally Leys

This course will provide extensive hands-on laboratory experience with the fertilization and development of most invertebrate phyla. The lectures will focus on cellular and molecular analysis of evolutionary changes in development as well as reproduction and gametogenesis. The course will emphasize morphological processes and discuss similarities and differences in embryos. Several field trips will acquaint students with the rich invertebrate fauna of the San Juan Islands.

The class is at the graduate student level, but exceptionally qualified undergraduate students will be considered. Enrollment limited to 12 students.

For additional information, contact:

bjswalla@u.washington.edu or

sleys@ualberta.ca



Marine Zoology/Marine Botany students wrap up at Botany Beach (P. Harner)

FUNCTIONAL MORPHOLOGY and ECOLOGY of MARINE FISHES

Session A June 12 - July 15, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Fish 565

Dr. Adam P. Summers & Dr. Lara Ferry-Graham

The course will use the diverse marine fish community of the San Juan Islands as a tool for exploring the relationship between functional morphology and ecology. Students in the course will learn: I) the evolutionary history and relationships of the major radiations of bony and cartilaginous fishes; II) the tools and techniques of collecting; III) the tools and techniques of functional morphology. For the first several weeks of the course there will be daily lectures and field trips to familiarize students with the basic tools and animals needed for the latter portion of the course. During the second half of the course, students will pursue an independent research project. The course will culminate in an oral and written presentation of the results of the research project. Enrollment limited to 14 students.

For additional information contact:

asummers@uci.edu or

lfgraham@mml.calstate.edu



Dissection (R. Kocan)

MARINE ALGAE: SEAWEED BIODIVERSITY and ECOLOGY

Session B July 17 - August 19, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Botany 539

Dr. J. Robert Waaland & Dr. Thomas F. Mumford, Jr.

This course explores marine algae with emphasis on their role in marine ecosystems through discussions, field work and laboratory studies. The course will have four key components: I) investigating seaweed diversity and the practical skills essential for identification; II) the functional role of seaweeds in marine ecosystems; III) quantitative analysis of the distributions and abundances of seaweed populations; IV) methods for cultivation of seaweeds as a tool to elucidate algal life histories, growth patterns and rates, physiological responses, ecosystem mesocosm experiments and for production of food and chemicals. Enrollment limited to 12 students.

For additional information contact:

jrw@u.washington.edu or

tom.mumford@wadnr.gov

COASTAL AND ESTUARINE FLUID DYNAMICS

Session B July 17 - August 19, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Ocean 578

Dr. Parker MacCready & Dr. W. Rockwell Geyer

This is a class on the physics of estuarine and coastal regions, aimed at physical oceanography grad students. It emphasizes fundamentals of stratified, turbulent fluid mechanics with high level application of the fundamentals to estuarine, river plume and other systems. The field experiments are, in large measure, planned by the students as part of the educational experience. In the past these have led to student presentations of their research at national meetings. Enrollment limited to 12 students.

For additional information contact:

parker@ocean.washington.edu

PREDATOR-PREY INTERACTIONS: EXPERIMENTAL and FIELD APPROACHES

Session B July 17 - August 19, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Biology 533

Dr. Michal Kowalewski & Dr. Lindsey Leighton

This course will explore experimental and practical field approaches to predator-prey interactions. The lectures will review optimization models, behavioral/ecological aspects of predator-prey interactions, the long-term evolutionary consequences of predation, experimental/field methods used to study predation in modern environments and data acquisition strategies used by paleontologists in the fossil record. Students will also be required to conduct a small, independent research project during the course. Several field trips will be included to acquaint students with practical aspects of research on predator-prey interactions and may also serve to obtain data for individual student projects. Enrollment limited to 15 students.

For additional information contact:

michalk@ve.edu or leighton@geology.sdsu.edu

LARVAL BIOLOGY

Session B July 17 - August 19, 2006

5 weeks: M-F 8-5; S 8-12

9 credits - Biology 533

Dr. Richard Emlet & Dr. Richard Strathmann

Emphasis is on functional requirements and constraints for embryos, larvae and juveniles of marine animals. Topics include parental investment per ovum, fertilization, parental protection and retention of embryos, extraembryonic nutrition, larval feeding and swimming, functional morphology of embryos and larvae, dispersal, settling, mortality, recruitment, effects of larval nutrition on performance of juveniles, juvenile ecology, and evolutionary transitions between modes of development. The course includes two short research projects by groups of 2 or more students with a short written paper from each project and a demonstration of methods to the

whole class. Enrollment limited to 12 students.

For additional information contact:

remlet@darkwing.uoregon.edu or

rstrath@u.washington.edu

Research Apprenticeship

BIOPHYSICS of the AQUATIC GEL PHASE

Summer Quarter June 12 - August 19, 2006

10 weeks: M-F 8-5; S 8-12

15 credits - Biology 499

Dr. Pedro Verdugo

The apprenticeship will include: I) the remarkable power of methods and theory of polymer physics to investigate the dynamics of polymeric materials found in seawater; and, II) advanced techniques of cell and molecular biology to investigate both the cellular mechanisms of exopolymer production by phytoplankton and the kinetic and thermodynamics of exopolymer degradation by marine bacteria.

Apprentices will evaluate scientific literature, formulate scientific questions, design protocols to address their questions, conduct experiments, and critically evaluate and report their results. They will learn how to conduct water sampling transects, and will be trained in the use of several spectroscopic techniques. Confocal microscopy, image analysis, immunocytochemical methods, and tissue culture techniques will be used in studies of bacteria and phytoplankton.

Apprentices accepted to this team are expected to have a basic background in biology, completed their credits in general and organic chemistry and physics, and have an understanding of basic algebraic formulations. The class will be open to engineering, biology, chemistry and physics undergraduates. Enrollment limited to 8 students.

For additional information contact:

verdugo@u.washington.edu



Students collecting small fish and invertebrates (B. Matta)

Autumn Semester

Research Apprenticeship

ECOLOGICAL and EVOLUTIONARY ANALYSIS of SPATIAL VARIATION in MARINE SYSTEMS

August 21 - December 9, 2006

20 credits - Biology 499

Dr. Sarah Gilman & Melissa Frey

Apprentices will investigate how marine populations balance local adaptation, phenotypic plasticity and dispersal to counteract the challenges of living in a spatially heterogeneous environment. A primary objective of the course is to train apprentices in both experimental and molecular approaches to marine ecology. Through lectures, readings and discussions, as well as field excursions and demonstration labs, students will gain hands-on knowledge of marine ecology and the natural history of the San Juan Islands, experimental design, basic techniques in molecular ecology and current ecological and evolutionary theory of environmental heterogeneity. Enrollment limited to 12 students.

For additional information contact:

gilmans@u.washington.edu or mafrey@ucdavis.edu



Oceanographic sampling (A. Nousek)

Autumn Quarter

Research Apprenticeships

PELAGIC ECOSYSTEM FUNCTION in the SAN JUAN ARCHIPELAGO

September 25 - December 9, 2006

15 credits - Ocean 499

Dr. Jan Newton & Dr. Breck Tyler

The primary research objective of this apprenticeship is to investigate the physical-biological coupling of oceanographic processes and biota. Apprentices will examine the workings of a marine ecosystem in order to understand how coupling with oceanographic processes leads to spatial and temporal variation in biotic patterning. We will use the natural laboratory of the waters adjacent to San Juan Island to begin to explore the mechanisms responsible for variability in the region. Apprentices will develop and implement techniques to assess: I) physical and biological oceanographic conditions in San Juan Channel and investigate the relative importance of river vs. oceanic forcing by comparison with long-term oceanographic data; II) distribution and abundance of principal prey species and attempt to link these with oceanographic patterns and processes; and, III) distribution and abundance of marine birds and mammals and investigate how oceanographic properties and processes affect the feeding habits of these top marine predators. Enrollment limited to 8 students.

For additional information contact:

newton@apl.washington.edu



Algae dredge aboard R/V Centennial (P. Harner)

MARINE FISH: ECOLOGY, HABITAT REQUIREMENTS and the DESIGN of MARINE PROTECTED AREAS

September 25 - December 9, 2006

15 credits - Research Apprenticeship - Fish 492

Dr. Don Gunderson & Dr. Gary Greene

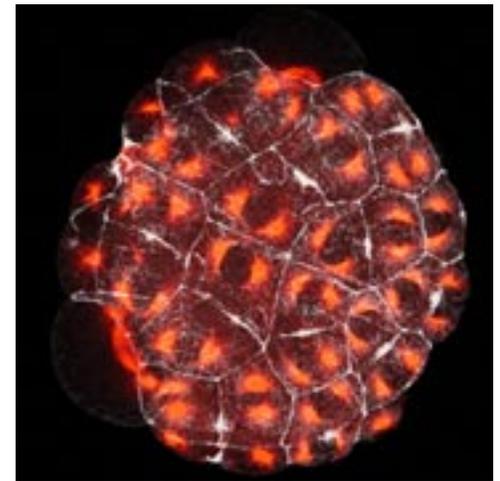
Several species of groundfish in the San Juan Islands have been overexploited, and are at extremely low levels of abundance. Marine Protected Areas (MPAs) have been proposed as one approach to rebuilding them and several exist within close proximity to Friday Harbor Laboratories. The San Juan Channel is a natural laboratory for examining ecological processes on similar habitats within and outside Marine Protected Areas. Undergraduates will choose relevant field projects and conduct laboratory experiments on

live fish. Faculty and researchers at FHL will provide critical expertise on invertebrate communities, marine botany, and general ecology. Interaction with the Marine Resources Committee offers students exposure to the importance of policy and local governments in resource management, and the scientific support required to guide their decisions. This apprenticeship is offered as a course in the School of Aquatic and Fishery Sciences. Enrollment limited to 8 students.

For additional information contact:

dgun@u.washington.edu

Note: Fish 492 will substitute for some degree requirements in the University of Washington SAFS major and may be used to fulfill SAFS's Capstone Requirement. Please direct enquiries to Lin Murdock <linm@u.washington.edu>. Students in other majors and schools should check with their departmental adviser to assess how the credits may be applied.



Actin (white) and microtubules (orange) in an early embryo of the ascidian *Boltenia* (G. von Dassow)

GENE NETWORK DYNAMICS and CELLULAR BEHAVIOR

September 25 - December 9, 2006

15 credits - Biology 499

Dr. Garrett Odell, Dr. Ed Munro & Dr. George von Dassow

Lectures and lab demonstrations will introduce fundamentals of empirical and computational analysis of gene network dynamics and cover specific topics including: I) simulation software packages; II) immunocytochemistry and confocal microscopy of fixed specimens; and III) techniques for imaging living cells and embryos using computer-controlled light microscopes. Apprentices will work in small groups on detailed case studies of specific gene networks at work both in living cells and *in silico*, fusing observations, experiments, and computer simulations. Possible topics include: I) networks of regulatory and signaling molecules underlying specific examples of developmental pattern formation in various embryos; and, II) cytoskeletal networks underlying cytokinesis, cell-cell adhesion, cell locomotion, and morphogenesis. Apprentices will make frequent presentations of their projects as they proceed, and will make a final, public seminar presentation. Enrollment limited to 12 students.

For additional information contact:

munroem@u.washington.edu

The Whiteley Center

The Helen Riaboff Whiteley Center provides a refuge for established scholars and artists to study, write, create, and interact with collaborators in a peaceful and stimulating environment. Scholars of any discipline from universities and institutes may work at the Center for stays of several days to three months, undisturbed by the conflicting demands of their academic and artistic careers.

The Study Center building provides four study rooms, a meeting room, access to the internet and AV equipment. Seven cottages located adjacent to the Study Center provide housing for scholars.

The Whiteleys have established this Center as a place of collegial interaction, a tribute to the faculty of the UW, and a gift to scholars of all nations.

For additional information and application, visit <http://depts.washington.edu/fhl/Whiteley>.



Whiteley Study Center (A. Whiteley)

Scholarships & Fellowships

Scholarship and fellowship support is available to qualified students in need. This funding derives from generous donations from alumni and friends of the Laboratories. Financial aid is awarded on the basis of need and merit, and admission decisions are not influenced by financial aid requirements. Support is available to both undergraduate and graduate students.

For additional information regarding scholarships and fellowships, please visit <http://depts.washington.edu/fhl/studentFellowships.html>.

Post-Doctoral Fellowships

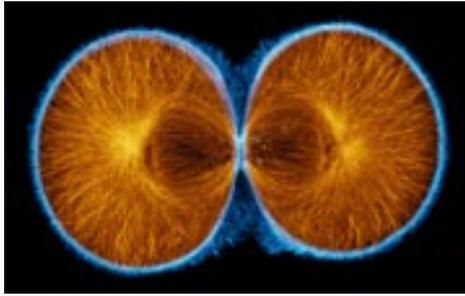
FHL will support a post-doctoral scientist for a two-year appointment to establish an active research program and assist the Director and Resident Associate Director in facilitating the efforts of visiting scientists and students. Applications are welcome from scientists with qualifications in any area of marine research readily supportable by FHL.

For additional information regarding post-doctoral fellowships, please visit <http://depts.washington.edu/fhl/resPdocFellowInfo.html>.

Mellon Faculty Support

Mellon Foundation fellowship support is available for qualified visiting faculty and researchers who bring cultural or ethnic diversity to FHL. It is intended for independent researchers and faculty who serve as research mentors at any time of the year. Interested persons should contact the Director at sebens@u.washington.edu.

The Center for Cell Dynamics



Green urchin zygote completing first cleavage, stained for microtubules (orange) and actin (blue) (G. von Dassow)

The Center for Cell Dynamics (CCD) at FHL is conducting innovative work combining experimental cell and developmental biology with computer simulation modeling. Funded by a NIGMS Center of Excellence award promoting the emerging field of computational biology, the Center is led by Dr. Garrett Odell.

The Center's mandate is to cross-train scientists in bench biology and mathematics/computational modeling techniques while working on complex problems that require both approaches. Our research focuses on understanding the mechanisms that underlie the process of cytokinesis, the gene networks that pattern embryonic development, and those that endow cells with motility/contractility.

Please visit our Web site at www.celldynamics.org for more information on the availability of collaborative post-doctoral and visiting faculty research opportunities.

The Anne Hof Blinks Research Fellowship Program

The Blinks Fellowship Program offers hands-on, full-immersion summer research internships to 4-7 motivated seniors, post-baccalaureates and graduate students. The program seeks students of diverse cultural backgrounds and interests. By linking fellows with marine scientists, fellows learn both the process and the substance of scientific research. The experience will expose fellows to life and work in a marine science research laboratory.

For additional information and project options, please visit <http://depts.washington.edu/fhl/blinkschol.html>. This program is funded by philanthropic donations to the Anne Hof Blinks Fellowship and generous support of the Andrew W. Mellon Foundation and FASEB.



Scholar at work (V. Iyengar)

Dr. Kenneth P. Sebens, Director

Dr. Kenneth Sebens assumed the directorship of FHL in September 2005. He succeeds A. O. Dennis Willows who served as Director for the previous 33 years. Our new Director was formerly Director of Northeastern University's Marine Science Center and East-West Marine Biology (Three Seas) Program (1985-1991), Director of the University of Maryland MEES Program (1991-1999) and Dean of the College of Science and Mathematics at UMass Boston. His areas of research are rocky subtidal community ecology, suspension feeding, hydrodynamic effects on benthos, and coral reef ecology. Dr. Sebens is a Professor in the Biology Department at the University of Washington.



Personnel

Administration & Support Staff

Director: Dr. Kenneth P. Sebens

Resident Associate Director: Dr. Richard Strathmann

Administrator: Scott Schwinge

Building & Grounds Supervisor: Fred Ellis, Jr.

Facilities Coordinator: Kathleen McDanold

Fiscal Specialist: Aimee Urata

Dining Hall Operations Manager: Laurie Spaulding

Marine Supervisor: Dr. David Duggins

R/V Skippers: Mark Anderson & Don English

Sr. Computer Specialist & R/V Skipper: Dr. Craig Staude

Director of Development: Robert Schwartzberg

Development Support: Rachel Anderson

Housing Coordinator: Vikky Dauciuinas

K-12 Education: Jenny Roberts & Alana Hysert

Computer Support: Alan Cairns

Librarian: Maureen Nolan

Stockroom: Brian McGlynn

Instruments & Equipment: Blanche Bybee

Student Coordinator: Stacy Markman

Center for Cell Dynamics Administration

Director: Dr. Garry Odell

Associate Director: Dr. Victoria Foe

Managing Director: Dr. Kimberly Littlefield

Business Manager: Charles Paxton

The University of Washington reaffirms its policy of equal opportunity regardless of race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam era veteran in accordance with University policy and applicable federal and state statutes and regulations. The University of Washington is committed to providing access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation in the application process, contact Friday Harbor Laboratories at fhlfac@u.washington.edu.



FHL dock and R/V Centennial (C. Ratcliffe)



Moon dance (A. Stimpert)

Front cover photos:
Scallop *Chlamys hastata* (K. Sebens), Nudibranch *Dirona albolineata* (K. Sebens), Single confocal sections through gastrulating embryos of the clam *Acila*, stained for actin (pink) and nucleic acids (green) (G. vonDassow), Zoanthids *Epizoanthus scotinus* (K. Sebens)



Friday Harbor Laboratories

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Friday Harbor, Washington 98250

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