

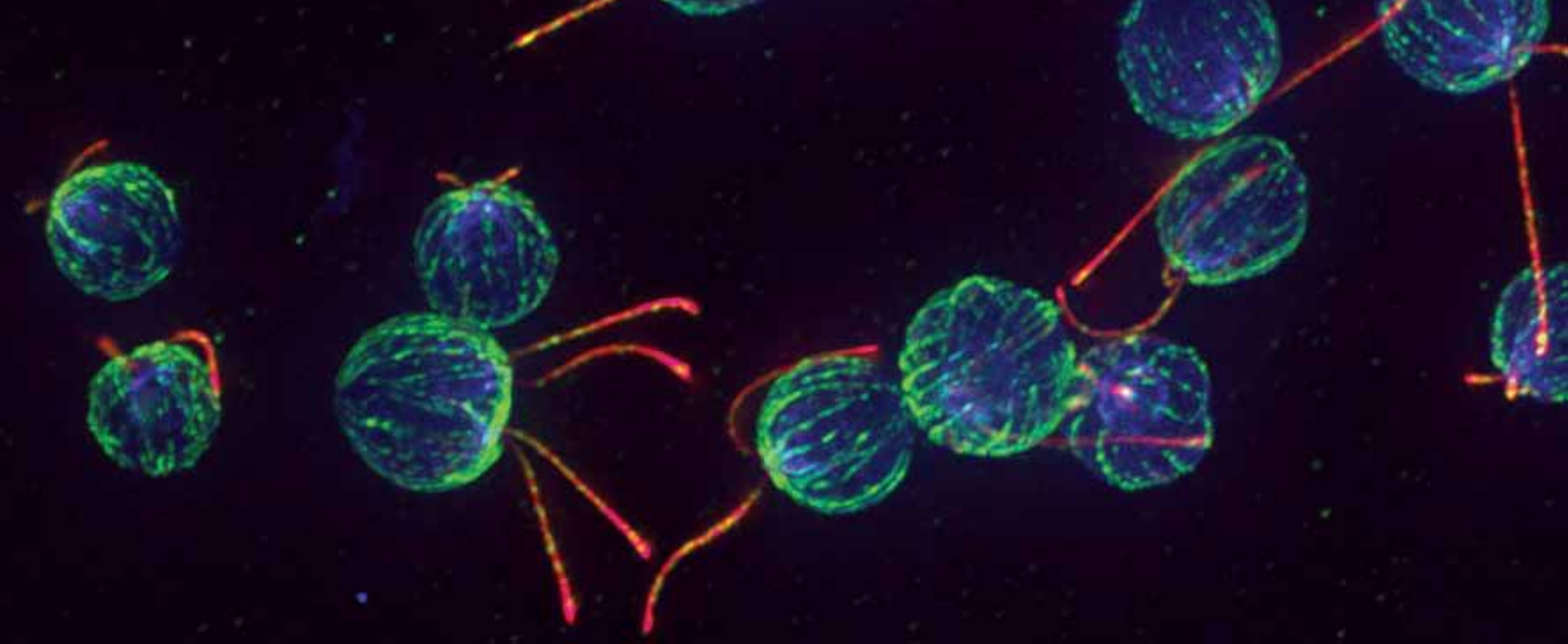
2012 MBL **ANNUAL REPORT**

## 2012 TOP HIGHLIGHTS

- **Harvard biologist and long-time MBL Trustee Joan Ruderman appointed President and Director of the MBL**
- **Michael Sheetz, James Spudich, and Ron Vale, who discovered the motor protein kinesin at the MBL in 1984, were awarded the Lasker Award for Basic Medical Research**
- **MBL Catalyst Campaign was completed, surpassing goal of \$125 million with \$136 million raised as of December 31, 2012**
- **\$835,889 in scholarships awarded to 252 highly qualified students**
- **MBL educational programs trained 562 students from 345 institutions in 52 countries**

The MBL Annual Report is published by the Marine Biological Laboratory. Although the greatest possible care has been taken in the preparation of this record, the MBL recognizes the possibility of omissions or inaccuracies. If any are noted, please accept our apology and advise us of any corrections to be made.

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### Visit us online!

To view the comprehensive report—including investigator, faculty, and course lists—please visit:

[mbl.edu/annualreport2012](http://mbl.edu/annualreport2012)

**2012 was a year of transitions.** Notably, the MBL welcomed its 14th Director and President Joan V. Ruderman, formerly MBL Trustee and Marion V. Nelson Professor of Cell Biology at Harvard Medical School. We concluded the Catalyst Campaign, which raised more than \$136 million dollars since 2006.

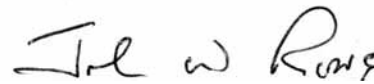
The lab also charted a course to form a landmark affiliation with the University of Chicago, involving months of discussion and input from many communities. This new link will contribute to both institutions' missions of research and education, and will help strengthen the MBL's financial foundation.

MBL and the University of Chicago have a long history together dating to their earliest days. The University is a renowned research institution with a great record of complementing the strengths and missions of its other affiliates. The affiliation strengthens both institutions' missions of leadership and innovation in scientific research and education. It also promises to foster areas of research and training in areas ranging from molecular mechanisms of basic cellular processes to global-scale ecosystem analysis. The affiliation also offers opportunities to build collaborative research and educational programs in areas including neuroscience, evolutionary and developmental biology, regenerative biology, cell biology, microbial sciences, molecular engineering, ecosystems science, and global environmental change.

While working toward the affiliation, the MBL continued to make its mark in our three major program areas: education, visiting research, and year-round research. The photo essay on pages 3-11 provides a summary of the year's highlights, including the Lasker Award for Basic Medical Research for work done in part at the MBL by three scientists with strong MBL ties.

We also worked to resolve ongoing deficits and cash shortfalls. Full details of this year's financials can be found on pages 14-15.

2012 was both challenging and revitalizing. We are tremendously grateful to our faculty, staff, trustees, overseers, funders, and other supporters for not only standing by the MBL, but also for helping position the MBL to fulfill its potential to impact the biological sciences in far-reaching ways.



John W. Rowe, MD  
*Chair, MBL Board of Trustees*



Joan V. Ruderman  
*MBL President and Director*



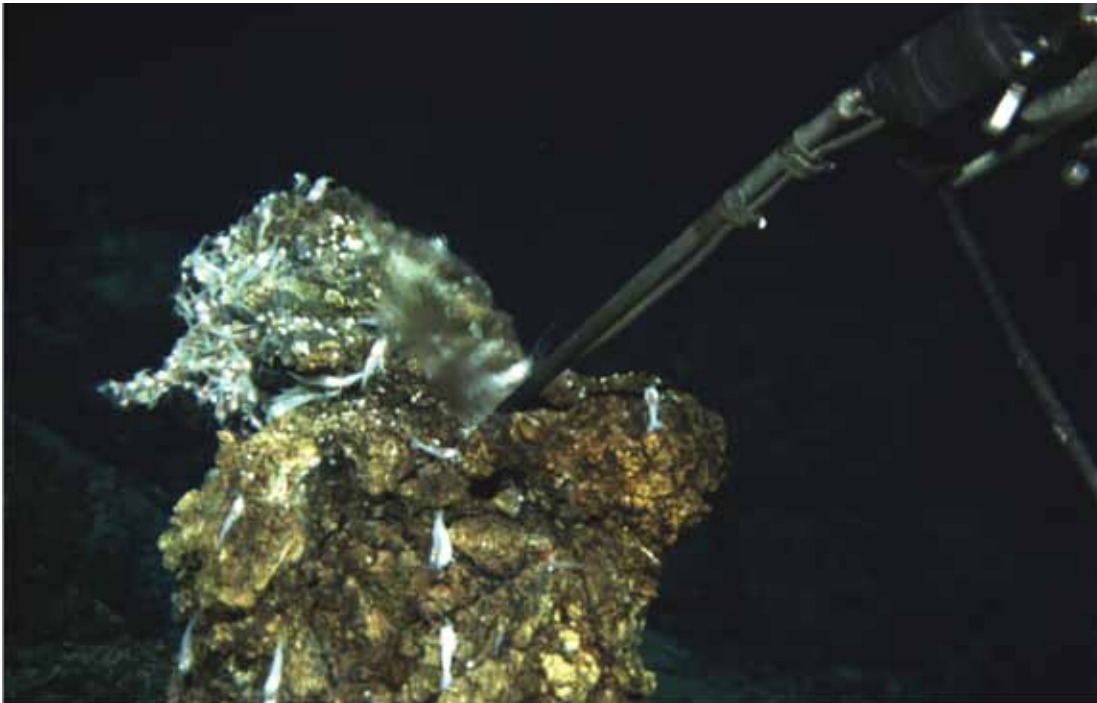
# RESEARCH AND EDUCATION HIGHLIGHTS



The MBL sparks biological discovery by providing a charged scientific environment and attracting the world's leading researchers. MBL science has helped reveal the mechanisms of cellular processes and their roles in disease, the processes that sustain life, and the genetic ancestry of life itself. It has also promoted a cross-fertilization of ideas, nurturing numerous scientific fields that continue to advance our understanding of human and environmental systems.

## EXPLORING THE HIDDEN REALM OF MICROBES BENEATH THE OCEAN FLOOR

Using remotely operated vehicles, **Bay Paul Center** Associate Scientist Julie Huber and her colleagues sampled the world's deepest hydrothermal vents in the Mid-Cayman Rise and discovered high-temperature microbial communities thriving in the hydrogen-rich fluids. Also in 2012 Huber and colleagues from several institutions received a \$2.25 million award from the Gordon and Betty Moore Foundation to undertake novel experiments—some at the bottom of the ocean—to understand the microbes and viruses in the seafloor rocks of Axial Seamount, a deep-sea volcano in the Pacific Ocean.



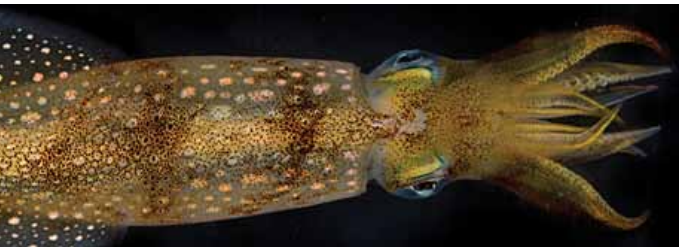
## HARVARD BIOLOGIST JOAN RUDERMAN NAMED MBL PRESIDENT AND DIRECTOR

Joan Ruderman was named President and Director of the MBL on November 3, 2012. Ruderman was previously the Marion V. Nelson Professor of Cell Biology at Harvard Medical School. She also served as Senior Science Advisor at the Radcliffe Institute for Advanced Study at Harvard University. Ruderman is best known for her work on fertilization and on the molecular mechanisms that regulate mitosis, the last part of the cell division cycle. Ruderman has a long affiliation with the MBL, having served on the Board of Trustees and its Executive Committee and as Speaker of the MBL Corporation. Ruderman is an alumna of the MBL Embryology course and a former MBL course faculty member and visiting scientist.



## VALE, SHEETZ, AND SPUDICH RECEIVE LASKER AWARD FOR BASIC MEDICAL RESEARCH

Scientists working at the MBL in the 1980s invented ways to study how “cargo” is moved within cells and, as a result, discovered a new biological motor protein, kinesin. In 2012, they received the Lasker Award for Basic Medical Research for that work. Michael Sheetz of Columbia University; James Spudich of Stanford University School of Medicine; and Ron Vale of University of California, San Francisco/Howard Hughes Medical Institute

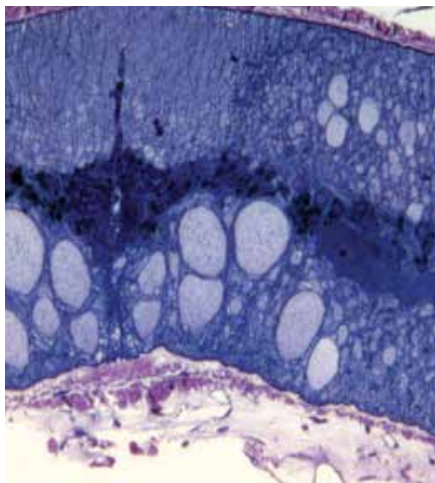


and **MBL Whitman Center** shared the award, which is among the most respected science prizes in the world, and often anticipates the Nobel Prize for its recipients. The team’s fundamental discoveries have spurred research on new treatments for cardiac problems, neurological disorders, and cancer.



## WHY ARE OUR SALT MARSHES FALLING APART?

Northeast U.S. coastal salt marshes are more vulnerable to nitrogen pollution than previously believed, according to a study published in *Nature* by **MBL Ecosystems Center** Senior Scientist Linda Deegan and colleagues working in New England’s largest coastal marsh at Plum Island, MA. The researchers found that by adding an amount of nitrogen that is about the same as concentrations from septic and fertilizer runoff to the water entering salt marsh creeks over eight years, they stimulated the decomposition in creek banks and induced slumping and marsh loss. The long-term study suggests that salt marshes in New England and perhaps other locations are less likely to act as “sponges” that take up large quantities of nitrogen indefinitely and more likely to be themselves damaged by nitrogen runoff to the coast.



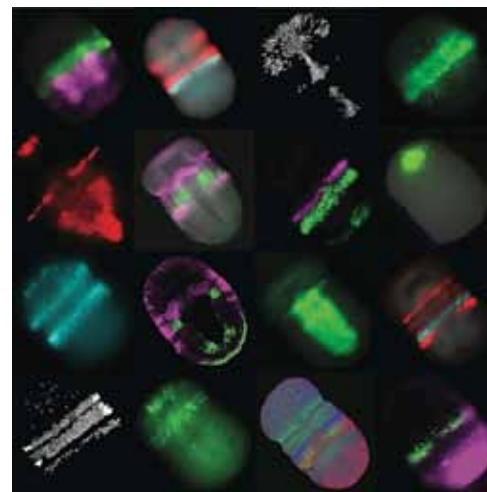
### NEUROSCIENTIST JOINS BELL CENTER

Jennifer Morgan, formally on the faculty at University of Texas-Austin, was appointed an Assistant Scientist in the **Eugene Bell Center for Regenerative Biology and Tissue Engineering**. With funding from the NIH, Morgan seeks to understand the mechanisms of neurodegeneration and regeneration in the vertebrate central nervous system. She is currently using the sea lamprey as a model organism for spinal cord regeneration following injury. She has discovered that the protein synuclein accumulates after injury and modulates neuronal survival such that reducing

synuclein accumulation may be a useful mechanism to increase regeneration after spinal cord injury. Her work holds promise for the development of novel therapeutic approaches for affected patients.

### AN EVOLUTIONARY SURPRISE

The evolutionary origin of the vertebrate brain is a mystery, because nothing anatomically like it has been found in invertebrates. Yet a clue to its origins was discovered by **Whitman Center** Investigators Ariel Pani, Chris Lowe, and their colleagues. The team discovered some of the genetic processes that regulate vertebrate brain development in, surprisingly, the acorn worm, a brainless, burrowing marine invertebrate whose lineage diverged from vertebrates more than 500 million years ago. In vertebrates, Pani says, these signaling centers are major components of a gene expression program “that sets up the foundation of how the brain develops.”



### CHRISTOPHER NEILL NAMED DIRECTOR OF ECOSYSTEMS CENTER

Christopher Neill, MBL Senior Scientist and the Phyllis and Charles M. Rosenthal Director of the Brown-MBL Partnership, was named Director of the **Ecosystems Center**. For more than two decades Neill has studied how deforestation in the Brazilian Amazon affects soil fertility, water quality, and stream habitats. In addition to a long-standing interest in local applied environmental research, Neill also has considerable experience in communicating science to the public and directs the Hands-on Environmental Laboratory for the MBL's Logan Science Journalism Program.





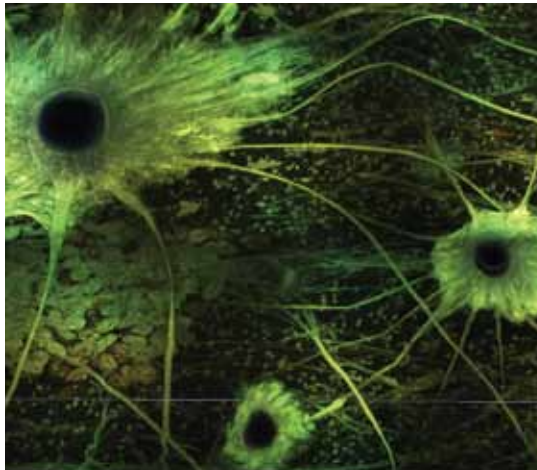


### HAVING SERIOUS FUN IN THE MBL'S PHYSIOLOGY COURSE

Several former directors of the **MBL Physiology Course** detailed their winning formula for instilling in students the passion for and ability to conduct “real research,” in *Science*. The article presented the overwhelmingly positive feedback from a poll of 2004-2010 course alumni; and the remarkable list of research papers and meeting abstracts that developed out of Physiology course projects. The course is one of 25 courses the MBL offers for advanced, laboratory-based research training in fields such as cellular physiology, embryology, neurobiology, and microbiology.

### NERVES CONTROL IRIDESCENCE IN SQUID'S REMARKABLE “ELECTRIC SKIN”

The mystery behind how squid control their skin's iridescence, an activity responsible for the animal's rainbow of color and extraordinary camouflage capability, was uncovered by **Sensory Physiology and Behavior Program** Assistant Research Scientists Paloma Gonzalez Bellido, Trevor Wardill, and their colleagues. The researchers reported that nerves in the animal's skin control the spectrum of shimmering hues, as well as their speed of change. The work marked the first demonstration of neural control of iridescence in an invertebrate species. How squid choose and hold particular skin colors to camouflage themselves remains unknown and is particularly interesting because the animals are completely colorblind.



### JOINT BROWN UNIVERSITY/MBL GRADUATE PROGRAM AWARDS FOUR PhDs



Four **Brown-MBL Program** Ph.D. students, Priya Dutta, Yuko Hasegawa, Shelby Riskin, and Susanna Theroux, defended their dissertations in 2012, bringing the total number of program Ph.D. graduates to date to ten. Graduate students in this joint program draw on the expertise of faculty mentors at Brown University and the MBL and often conduct research in the MBL's laboratories in Woods Hole or at field sites in Alaska, Antarctica, the Amazon, Africa, North America, Panama, and other locales.



**“SAFE” LEVELS OF ARSENIC IN DRINKING WATER HAVE NEGATIVE HEALTH EFFECTS ON PREGNANT/LACTATING MOTHERS AND OFFSPRING**

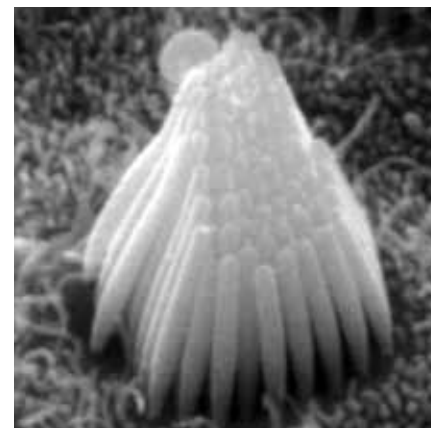
A study led by Joshua Hamilton, **Bay Paul Center** Senior Scientist and MBL Chief Academic and Scientific Officer and his colleagues at the Dartmouth Superfund Research Program on Toxic Metals reported that exposure to arsenic in drinking water deemed safe in the U.S. has negative health effects on pregnant mice and their offspring. The results add to the body of knowledge the team is developing pertaining to arsenic sources, its effects at the cellular level, the ways in which it affects the health of mammals like mice and, ultimately, how it causes disease and harmful health outcomes for humans.

**NEW PROGRAM IN SENSORY PHYSIOLOGY AND BEHAVIOR LAUNCHED**

The **Program in Sensory Physiology and Behavior** was formed to capitalize on the MBL's many strengths in sensory biology—especially vision, balance, and hearing research. Building on the growth and success of existing Marine Resources laboratories—as well as long-time strengths in sensory biology and neuroscience in the Whitman Center, Grass Laboratory, and summer courses—a central goal of the program is to synergize the many MBL sensory biology/neuroscience activities into a cohesive group and provide a career path for young scientists. Senior Scientist Roger Hanlon directs the program with Associate Director and Senior Scientist Stephen Highstein.

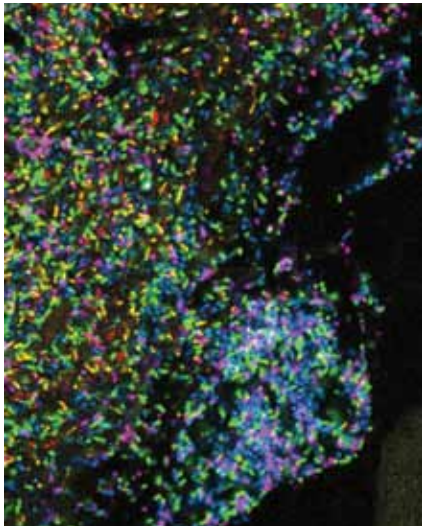
**NEW IMAGING TECHNIQUE SPURS INTERDISCIPLINARY COLLABORATION**

Tomomi Tani, an Associate Scientist in the **Cellular Dynamics Program**, perfected a technique using fluorescence polarization and a novel imaging system he developed that allows one to image single molecules inside living cells and determine their three-dimensional orientation. He applied the technique in a new collaboration with Cellular Dynamics Program Senior Scientist Rudolf Oldenbourg, an expert in polarization microscopy, and Amy Gladfelter, a Whitman Investigator from Dartmouth College who is an expert on septins, key proteins involved in cell division. This project has led to a successful NIH collaborative research grant and the recruitment of Assistant Research Scientist Shalin Mehta.



### HUMAN MICROBIOME PROJECT RELIES ON MBL INNOVATIONS, INSIGHTS

**Bay Paul Center** scientists Susan Huse, Hilary Morrison, and Mitchell Sogin were among more than 200 scientists who reported the results of the NIH's Human Microbiome Project, an effort to define the boundaries of bacterial variation found in healthy human beings. The project adopted several advanced genetic sequencing and analysis methods, some of which were originally developed by the MBL. The project discovered that the human body contains a few highly abundant bacterial types plus many more low-abundance types (the so-called "rare biosphere," a phenomenon first discovered in ocean samples by Sogin and his MBL colleagues).



### MARINE BACTERIA DISTRIBUTION "BIPOLAR"

A research team led by **Bay Paul Center** Associate Scientist Linda Amaral Zettler and Director Mitchell Sogin found "bipolar" species of bacteria that occur in the Arctic and Antarctic, but nowhere else. The findings show that bacteria follow biogeographical distribution patterns more typical of macroscopic organisms and their survival may be vulnerable to impacts of environmental stressors, climate warming, and degradation in habitat quality that affect biodiversity of animal and plant species.

### MBL RENEWS DIVERSITY EFFORTS

The leaders of the six scientific and educational organizations in Woods Hole, including the MBL, renewed their commitment to building a diverse and inclusive scientific community by signing an updated Woods Hole Diversity Initiative Memorandum of Understanding (MOU). The MOU, first signed in 2004, reaffirms the institutional commitments to work together to attract and retain a more diverse workforce, one that represents the changing demographics of the nation and the international community.





### ENCYCLOPEDIA OF LIFE REACHES MILESTONE; PROVIDES GLOBAL ACCESS

The **Encyclopedia of Life (EOL)** surged past one million pages of content with the addition of hundreds of thousands of images and specimen data from the Smithsonian Institution's National Museum of Natural History. EOL continued to fulfill its mission to provide "global access to knowledge about life on Earth" with the launch of EOL China in Beijing. This version included Chinese content, new layouts to accommodate Chinese characters, and the ability to search EOL using individual Chinese characters. EOL content was also successfully replicated between the Library of Alexandria in Egypt and MBL, a prerequisite step for developing worldwide EOL nodes.

### DRAFT OF NATIONAL CLIMATE ASSESSMENT RELEASED

The most comprehensive assessment of climate change effects for the United States ever produced was coordinated by **Ecosystems Center** Distinguished Scientist Jerry Melillo in his role as chair of the National Climate Assessment and Development Advisory Committee. Melillo organized more than 240 authors who wrote thirty chapters that covered the effects of climate change across multiple sectors including water resources, energy, agriculture, human health and rural communities. The National Climate Assessment, which operates under the U.S. Global Change Research Program, also contains region-by-region accounts of what climate change is happening and what the effects of those changes will mean for regional ecosystems and economies. A final version of the Assessment has passed review by the National Academy of Sciences and the public and will be released in early 2014.

### RESEARCH OPPORTUNITIES FOR UNDERGRADUATES

During the summer of 2012, nine **Brown undergraduate** students participated in MBL research programs, working on topics that varied from the microbial communities in the aquarium pet trade, to the effect of nitrogen on coastal salt marshes, to the makeup of the plant communities in suburban Boston house lots. Additionally, nine students from the **MBL's Semester in Environmental Science Program** Class of 2011 completed internships with program faculty.





## AMERICAN SOCIETY FOR CELL BIOLOGY PRESENTS AWARD TO THE PHYSIOLOGY COURSE

The American Society for Cell Biology presented an award to the Physiology course “for its tremendous impact on developing the classical and modern eras of cell biology.” The award was given in honor of the course’s 120th anniversary.

## DISTINGUISHED SCIENTIST JOINS THE MBL’S CELLULAR DYNAMICS PROGRAM

Jonathan Gitlin joined the MBL as a Senior Scientist in the **Cellular Dynamics Program**. For more than 35 years, Gitlin’s career has combined pediatric medicine, research, administration, and teaching at such renowned institutions as Boston Children’s Hospital, Washington University School of Medicine, and Vanderbilt Children’s Hospital. Gitlin’s research concentrates on birth defects related to genetics and nutrition. His laboratory uses zebrafish as a model to study embryonic development. Gitlin holds a joint appointment of senior research scientist in the Bell Center and is currently serving as its director.



## MBL RECEIVES GIFT OF T. H. MORGAN’S NOBEL PRIZE MEDAL AND DIPLOMA

Three granddaughters of Thomas Hunt Morgan, the late MBL scientist, trustee, and pioneer of modern genetics, donated his Nobel Prize medal and brilliantly colored diploma to the **MBL Archives**. In 1933, Morgan received the first Nobel Prize ever awarded in the field of genetics for his “discoveries concerning the role played by the chromosome in heredity.” Morgan first came to the MBL as a student in 1889 and returned nearly every summer for the next half-century to conduct research.

The Marine Biological Laboratory (MBL) is dedicated to scientific discovery and improving the human condition through research and education in biology, biomedicine, and environmental science. Founded in Woods Hole, Massachusetts in 1888, the MBL is a private, nonprofit institution and an affiliate of the University of Chicago.

#### LEADERSHIP

Chairman of the Board of Trustees:

**John W. Rowe**

President and Director:

**Joan V. Ruderman**

Speaker of the MBL Society:

**Colleen M. Cavanaugh**

#### SCIENTISTS AND AFFILIATED STAFF

The MBL has approximately 300 year-round employees, about half of which are scientists and science support staff. The staff is joined each year by more than 300 visiting scientists, summer staff, and research associates from hundreds of institutions around the world, as well as a large number of faculty and students participating in MBL courses.

#### AWARD-WINNING SCIENCE

Among the scientists with a significant affiliation with the MBL (scientists, course faculty and students) are 55 Nobel Prize winners (since 1929); 118 Howard Hughes Medical Institute investigators, early career scientists, international researchers, and professors (since 1960); 202 Members of the National Academy of Sciences (since 1960); and 178 Members of the American Academy of Arts and Sciences (since 1960).

#### AFFILIATION WITH THE UNIVERSITY OF CHICAGO

The MBL became an affiliate of the University of Chicago on July 1, 2013. This affiliation enhances both institutions' missions of leadership and innovation in scientific research

and education. The affiliation builds on shared values and historical ties between Chicago and the MBL, which was led by University of Chicago faculty members for the first four decades of its existence.

#### MAJOR PROGRAMS & RESEARCH AREAS

**Ecosystems Center:** Ecosystems processes, biogeochemistry, and climate change

**Bay Paul Center for Comparative Molecular Biology & Evolution:** Microbial ecology; genetics and metagenomics; molecular evolution

**Bell Center for Regenerative Biology & Tissue Engineering:** Cell, developmental and regenerative biology; tissue engineering and regeneration

**Cellular Dynamics Program:** Microscopy, imaging and cellular dynamics; cellular physiology and biocurrents; biosensors

**Program in Sensory Physiology & Behavior:** Sensory biology (especially vision, balance, hearing); cephalopod camouflage; animal behavior

**Whitman Center for Visiting Research:** Collaborative research by leading scientists from around the world

#### EDUCATIONAL PROGRAMS

**MBL Courses:** 25 courses providing advanced, laboratory-based research

training in fields such as cellular physiology, embryology, neurobiology, and microbiology, including (in 2012) 582 students from 384 institutions and 48 countries; and 888 faculty, staff, and lecturers from 282 institutions and 20 countries.

Educational programs also include undergraduate education and independent research, graduate training, the Brown-MBL Graduate Program in Biological and Environmental Sciences, postdoctoral training, and community continuing education programs.

#### OTHER PARTNERSHIPS

*The Brown-MBL Partnership* fosters research collaborations between scientists from the MBL and Brown University, and includes undergraduate training, a joint graduate program, graduate training grants, and collaborative research programs.

*The Woods Hole Consortium* is a research and educational alliance between the MBL, Woods Hole Oceanographic Institution, and Woods Hole Research Center.

*Encyclopedia of Life:* The MBL is one of 13 Global Partner institutions in the Encyclopedia of Life, a website dedicated to providing online access to knowledge about the 1.9 million named species of animals, plants, and other life forms on Earth. The EOL's Biodiversity Informatics Group is based at the MBL.

#### SCIENTIFIC CONFERENCES

The MBL annually hosts scientific meetings, conferences, and departmental retreats, accommodating more than 2,600 participants from around the world.

#### RESOURCES

The MBLWHOI Library houses one of the world's foremost print and electronic literature collections in the biological, biomedical, ecological, and oceanographic sciences; and conducts digitization and informatics projects.

*The W. M. Keck Ecological and Evolutionary Genetics Facility* is a high-throughput DNA template production and sequencing facility in the MBL's Josephine Bay Paul Center.

*The Marine Resources Department* is an advanced facility for maintaining, culturing, and providing aquatic organisms essential to biological, biomedical, and ecological research.

*National Xenopus Resource:* breeds and maintains *Xenopus* (frog) genetic stocks; provides training in *Xenopus* husbandry, cell biology, imaging, genetics, transgenesis, and genomics.

#### FINANCES

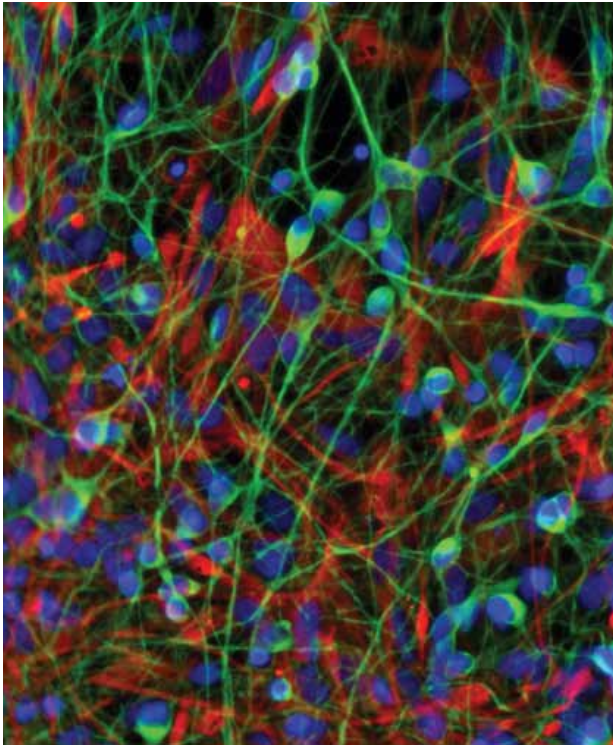
2013 Operating Budget: \$40.7 million (52% government grants and contracts; 20% nonfederal grants and contracts; 5% contributions; 7% endowment earnings; 16% other)  
Endowment: \$69 million (as of 12/31/12)  
Net Assets: \$110 million (as of 12/31/12)



# FINANCIALS







The financial statements of the Marine Biological Laboratory for the fiscal year ending December 31, 2012, were audited by Grant Thornton LLP.

Complete financial statements are available on request from  
Financial Services  
Chief Financial Officer  
MBL  
7 MBL Street  
Woods Hole, MA 02543

## 2012 continued the trend of challenging financial times

for the MBL. While the balance sheet shows an increase in net assets from \$107.3 million at the end of 2011 to \$109.7 million on December 31, 2012, the increase is due entirely to investment market gains, a \$2 million gain on the sale of some long-held private stock, and a gain of \$1.2 million from the sale of surplus real estate. The results from operations show a deficit of nearly \$6 million for the year. Government grant revenue declined in 2012 due to the winding down of the federal stimulus funding received during the prior few years. MBL leadership and the Board of Trustees spent most of 2012 assessing the financial situation and identifying actions to mitigate the operational cash shortfalls that have plagued the MBL in recent years.

On the positive side, 2012 saw the completion of the Catalyst Capital Campaign, which raised a record amount of funding for the MBL. This comprehensive campaign provided support for MBL programs, operations, physical plant, and endowment. The value of the MBL's endowment rose from \$54.9 million at the end of 2006 to \$69.4 million at the end of 2012. The physical plant is in very good condition and the severe storms that impacted much of the East Coast during the year left the MBL largely unscathed.

### FUTURE EXPECTATIONS

It has become clear that the growth initiatives of the past several years have strengthened the scientific staff of the MBL and improved the physical infrastructure on campus, but that the business model has not kept pace. By the end of 2012, MBL leadership and the Board had begun to explore the potential of affiliating with a strong research university partner in order to stabilize the financial position of the MBL, and also to open new opportunities for global scientific and educational initiatives. Following several months of discussions, an affiliation was formed with University of Chicago on July 1, 2013. With the success of the Catalyst Campaign, the highly acclaimed research and educational programs currently in place, and the opportunities afforded by the affiliation, the MBL's future looks bright.

Paul R. Dupee, Treasurer



**Statements of Financial Position**

December 31, 2012 and 2011

Assets	2012	2011
Cash and cash equivalents	\$ 1,332,031	\$ 1,990,094
Cash held for others	430,483	298,619
Accounts receivable, net of allowance for doubtful accounts of \$35,000 in 2012 and 2011	697,520	825,062
Contributions receivable, net	3,228,301	7,327,936
Receivables due for costs incurred on grants, contracts	3,872,180	4,881,482
Inventory and prepaid expenses	517,660	637,773
Investments, at fair value	72,103,586	63,630,089
Charitable remainder trusts	554,089	251,319
Plant assets, net	68,772,203	71,530,516
Other assets	919,143	877,960
<b>Total assets</b>	<b>\$ 152,427,196</b>	<b>\$ 152,250,850</b>
<b>Liabilities and Net Assets</b>		
Accounts payable and accrued expenses	\$ 3,125,863	\$ 3,382,042
Future program resources	430,483	298,619
Deferred income	1,985,976	2,059,426
Annuities and unitrusts payable	516,119	504,026
Advances on contracts	-	507,267
Line of credit	-	250,000
Interest rate swap	6,220,676	6,302,139
Liability for post-retirement benefits	-	439,147
Long-term debt	30,415,000	31,185,000
<b>Total liabilities</b>	<b>42,694,117</b>	<b>44,927,666</b>
<b>Commitments and contingencies</b>		
<b>Net assets:</b>		
Unrestricted	40,438,285	38,950,341
Temporarily restricted	18,105,918	14,111,391
Permanently restricted	51,188,876	54,261,452
<b>Total net assets</b>	<b>109,733,079</b>	<b>107,323,184</b>
<b>Total liabilities and net assets</b>	<b>\$ 152,427,196</b>	<b>\$ 152,250,850</b>

**Statement of Activities and Changes in Net Assets**

Year ended December 31, 2012

	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
<b>Operating support and revenues:</b>				
Government grants	\$ 20,544,313	\$ -	\$ -	\$ 20,544,313
Non-Federal grants and contracts	3,982,418	900,000	-	4,882,418
Laboratory rentals	1,451,710	-	-	1,451,710
Tuition, net	718,267	-	-	718,267
Fees for conferences and services	4,365,749	-	-	4,365,749
Contributions	2,120,415	1,842,329	1,372,503	5,335,247
Investment income (loss)	(7,225)	6,268	-	(957)
Investment earnings used for operations	596,625	2,653,024	-	3,249,649
Other revenue	744,717	-	-	744,717
Present value adjustment to annuities	(15,568)	251	-	(15,317)
Change in donor intent	4,245,789	254,211	(4,500,000)	-
Net assets released from restrictions	5,297,809	(5,352,730)	54,921	-
<b>Total operating support and revenues</b>	<b>44,045,019</b>	<b>303,353</b>	<b>(3,072,576)</b>	<b>41,275,796</b>
<b>Expenses:</b>				
Research	27,696,077	-	-	27,696,077
Visiting research	3,930,669	-	-	3,930,669
Education	9,744,455	-	-	9,744,455
Conferences, housing and dining	3,823,871	-	-	3,823,871
Other expenses	2,032,313	-	-	2,032,313
<b>Total expenses</b>	<b>47,227,385</b>	<b>-</b>	<b>-</b>	<b>47,227,385</b>
<b>Change in net assets before non-operating activities</b>	<b>(3,182,366)</b>	<b>303,353</b>	<b>(3,072,576)</b>	<b>(5,951,589)</b>
<b>Non-operating revenue (expense):</b>				
Change in value of interest rate swap	81,463	-	-	81,463
Post retirement - related charges other than periodic pension costs	488,445	-	-	488,445
Gain on sale of property	1,222,052	-	-	1,222,052
Contributions for plant	13,246	1,000	-	14,246
<b>Change in net assets from non-operating activities</b>	<b>1,805,206</b>	<b>1,000</b>	<b>-</b>	<b>1,806,206</b>
<b>Investment income and gains (losses):</b>				
Net investment income and gains	2,887,666	6,917,261	-	9,804,927
Less investment earnings used for operations	(596,625)	(2,653,024)	-	(3,249,649)
Deficiencies in historical values	574,063	(574,063)	-	-
<b>Excess investment income</b>	<b>2,865,104</b>	<b>3,690,174</b>	<b>-</b>	<b>6,555,278</b>
<b>Change in net assets</b>	<b>1,487,944</b>	<b>3,994,527</b>	<b>(3,072,576)</b>	<b>2,409,895</b>
<b>Net assets, December 31, 2011</b>	<b>38,950,341</b>	<b>14,111,391</b>	<b>54,261,452</b>	<b>107,323,184</b>
<b>Net assets, December 31, 2012</b>	<b>\$40,438,285</b>	<b>\$18,105,918</b>	<b>\$51,188,876</b>	<b>\$109,733,079</b>

# GIFTS





**What a year!** In 2012 we raised \$13,511,207 in research foundation and private support, and completed the most ambitious fundraising campaign that the MBL has ever undertaken—the \$125 million Catalyst Campaign. Thanks to our trustees, overseers, devoted scientists, alumni, friends, foundations, and staff, I am thrilled to report that we not only met, but exceeded our campaign goal, raising more than \$136 million between June 2006 and December 2012 for MBL programs! The number itself is remarkable, but the fact that we surpassed our goal during a challenging economy can only be described as amazing. Thank you to everyone who made this achievement possible.

In 2013, with the 125th anniversary of the MBL, we look to honor the past and celebrate the future of this amazing institution. For 125 years, the MBL has been at the forefront of biological discovery. Today, we are poised to continue making extraordinary discoveries and significant advancements.

Throughout our long history, the MBL has relied on the strength of its community to lead the way forward. The success of the Catalyst Campaign is a wonderful example of this important partnership. On behalf of the Development Committee, the Catalyst Campaign Executive Committee, MBL students, scientists and staff, I offer my deepest thanks to the individuals, companies and foundations listed here.

— Jeffrey Pierce, Chair

A handwritten signature in black ink, appearing to read 'JP', written in a cursive style.

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## PHOTOS

*Cover and Table of Contents:* The green alga *Chlamydomonas reinhardtii*, which has Channelrhodopsin proteins important in optogenetic research. (Laura Hilton, courtesy of Lynne Quarmby, Simon Fraser University)

*Page 3:* Nerves in red can be easily traced among the distinctive chromatophores and iridophores that they innervate. (Wardill, Gonzalez-Bellido, Crook & Hanlon, *Proceedings of the Royal Society B: Biological Sciences*)

*Page 4:* Sampling fluids for microbiology and geochemistry at Von Damm Vent field. (Chris German/Woods Hole Oceanographic Institution); Joan Ruderman (Bachrach Studios)

*Page 5:* Longfin squid (Tom Kleindinst); After eight years of nutrient enrichment, the edge of this salt marsh at Plum Island Estuary has fragmented and turf has slumped into the channel. (Christopher Neill)

*Page 6:* Cross-section of a lamprey spinal cord stained with toluidine blue. (Paul Oliphint, Jennifer Morgan); Chris Neill (Tom Kleindinst); Fluorescent staining with each square shows where different genes are turned on in acorn worm embryos. Multiple colors in a single image show the activities of different genes in the same embryo. (A. Pani)

*Page 7:* Physiology course (Tom Kleindinst); Confocal imaging of squid skin reveals relative morphology of chromatophores with their radial muscles (large brown chromatophore in center) and an underlying iridescence iridophore (Paloma Gonzalez-Bellido and Trevor Wardill); Brown-MBL students at Plum Island LTER. (David Rand)

*Page 8:* Water faucet (dreamstime.com); A single hair cell from a frog ear (J. Meyers)

*Page 9:* Intestinal section from a gnotobiotic mouse model inoculated with selected bacterial species found in the human gut. (Yuko Hasegawa/MBL); The waters of the Antarctic Peninsula, one of several sites where water samples were collected for MBL studies of bacterial distributions (Hugh Ducklow)

*Page 10:* Tree frog (Encyclopedia of Life); L to R Semester in Environmental Science alumni Hansen Johnson, Fiona Jevon, and Andrew Miano climb Alaska's Brooks Range while on a break from their work as summer research interns at the Toolik Lake Field Station. (MBL)

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*Page 14:* Coronal section of an entire mouse brain, stained to delineate anatomical boundaries in many brain regions. (Allen Institute for Brain Science)

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