

MBL Investigators Turn to Sea Urchin Eggs to Test Potential Therapeutic Benefits of Heat Shock Proteins for Cell Repair



“Heat shock proteins are the molecular equivalent of a bandage for the cell,” says MBL summer investigator Dr. Michael Tytell. He and Dr. Carol Browne, both from the Wake Forest University School of Medicine, have been studying the role that this family of proteins plays in cellular repair. They hope their research will yield a key to new therapeutic drugs that could be used for treating conditions such as stroke, spinal cord injury, and other traumatic injuries that result in nerve cell death.

When cells are under a metabolic stress, whether caused by exposure to excess heat, lack of oxygen, exposure to toxins, lack of energy, and so on, enzymes and other proteins that are necessary for proper cell function begin to unfold and become dysfunctional. Left unchecked, this condition would become lethal to the

cell. But injured cells respond to these stresses by increasing production of heat shock proteins, or Hsps, a family of proteins that enable other cellular proteins to maintain their proper conformation. The fact that heat shock proteins have been highly conserved throughout evolution – they are found in cells ranging from bacteria like *E. coli* to humans – suggests that they are very important to basic cell function, says Tytell.

While increased Hsp production within an injured cell itself improves that cell’s chance of survival, an Hsp-based drug would have to be administered extracellularly after an injury to be useful as a therapy. There is no known mechanism by which large proteins such as Hsps can pass through the cell membrane, but Tytell and his colleagues have been able to reproduce the rescue effect *in vitro* by administering the protein dissolved in a saline solution.

This past summer at the MBL, Tytell and Browne used sea urchin oocytes and primitive coelomocytes as a model system to study the effects of exogenous Hsp (proteins produced outside the organism) on living cells. While the mechanism is still unclear, they have found evidence that the presence of exogenous Hsp does impact intracellular function.

Although Tytell says there is still much basic research to be done before heat shock proteins can offer hope as a drug, he was encouraged enough by early results to apply for a patent for the use of a 70 kDa heat shock protein, Hsp70, for the treatment of cells under stress. He was awarded the patent in 1994 and has since formed a company, Prosperon Pharmaceuticals Inc., which he hopes will one day take on the task of developing Hsp-based therapeutic drugs.

—Angela Damery

Science News

From the Center for Advanced Studies in the Space Life Sciences...

Understanding Mechanisms of Evolution was held September 22-25 at the J. Erik Jonsson Center for the National Academy of Sciences, in Woods Hole. The meeting chairman was Professor Eric Davidson of the California Institute of Technology. Davidson has long been associated with the Marine Biological Laboratory’s Embryology course. He is a leader in the field of evo-devo, and a member of the National Academy of Sciences. Meeting organizers also included Kevin Peterson of Dartmouth College and R. Andrew Cameron of the California Institute of Technology.

This workshop was sponsored by the Center for Advanced Studies in the Space Life Sciences (CASSLS) at the MBL.

OneCard Access Control System for Labs and Dorms Will Be Activated in November

The MBL’s expanded OneCard Access Control System is scheduled to go online in mid- to late November. Once the system is live, entry into the Lillie, Loeb, Whitman, Swope, and Ebert Hall buildings after normal business hours will be limited to those holding new, activated access cards. After mid-November, **everyone** at the MBL must have updated his or her photo and picked up a NEW OneCard. Once the new system has been activated, old OneCards will not work.

To facilitate the process of issuing new cards prior to the activation date, departments will be assigned a date in early November, during the hours of 10:00 AM and 2:00 PM to visit Lillie 121 and have their photo taken. Everyone **MUST** present a photo ID (old MBL picture ID, driver’s license, etc.) when having their picture taken. New cards may be picked up the following day or later in the Digital Processing Center (Lillie 203). NOTE: if you have money for copying on your current OneCard, you will need to bring along the old card and transfer money to the new card when you pick it up. The old cards will continue to work until the new access system is activated.

New OneCards will be activated automatically when the system goes live. After the system has been activated, new OneCards may be picked up in the Digital Processing Center (Lillie 203).

What’s New?

The new system will continue to provide off-hours access to the Library and Microscopy Lab. It will also now provide card access to Lillie, Loeb, Whitman, Ebert Hall and Swope as well as the computer room in Lillie 204.

continued...

Gifts and Grants

The Andrew W. Mellon Foundation awarded a grant of \$850,000 in support of “Transformations of Nitrogen as it Moves through Terrestrial Landscapes.” This is a three-year research program conducted by The Ecosystems Center.

The Alfred P. Sloan Foundation awarded a grant of \$45,000 to support a new course “Advances in Genome Technology & Bioinformatics.” This course introduces key computational biology activities that promise to provide a cohesive blend of practical and theoretical information on genome science and bioinformatics.

The National Institutes of Health (NIH) awarded the following grants:

- \$763,769 for “*Giardia*: A Model for Ancient Eukaryotic Genome Analysis.” Mitchell Sogin is the principal investigator.

- \$163,159 for the course, “Neural Systems and Behavior.” Lenny Dawidowicz is the principal investigator.

- \$51,243 for the course, “Neural Development and Genetics of Zebrafish.” Lenny Dawidowicz is the principal investigator.

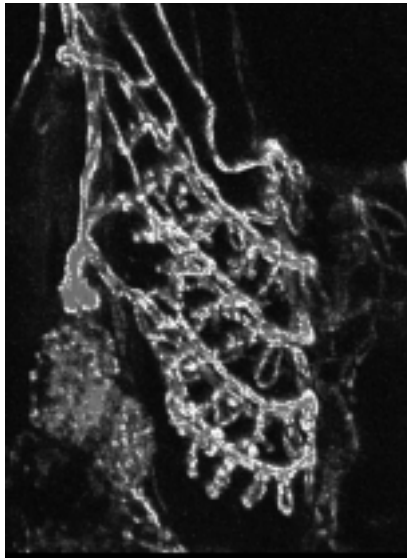
The Department of Defense awarded \$179,600 (over two years) for “Investigation of Marine Biological Applications on Hardened Materials.” Roger Hanlon is the principal investigator.

The Hudson River Foundation awarded \$36,782 for “Primary Production, Respiration, and the Processing of Organic C and Nutrients in the Hudson River Estuary.” Robert Howarth is the principal investigator.

The American Heart Association awarded \$49,500 for “Mechanisms Underlying Zinc-Induced Neuronal Damage During Stroke: Modulation of Voltage-Gated Calcium Channels.” Stefan McDonough is the principal investigator.



Some of the “big hitters” take a break



OneCard, continued from page 1

Access control coverage of the new system is currently planned as follows. Hours of operation will be reevaluated in the coming months and are subject to change.

Lillie: Exterior doors, Library doors, and Microscopy Lab will be locked between 5:00 PM and 8:00 AM, Monday through Friday, and 24 hours on weekends and holidays. The door to Lillie room 204 will be locked 24 hours/day, every day.

Loeb: Exterior doors will be locked between 5:00 PM and 8:00 AM, Monday through Friday, and 24 hours on weekends and holidays.

Whitman: Exterior doors will be locked between 5:00 PM and 8:00 AM, Monday through Friday, and 24 hours on weekends and holidays.

Ebert Hall: Exterior doors will be locked 24 hours /day every day.

Swope: Main exterior doors will be locked between 10:00 PM and 6:30 AM daily; all other doors will be locked between 5:00 PM and 8:00 AM daily.

The new OneCard access system will use proximity technology. This means you do not have to swipe the card to open the doors. You just have to pass the card within a few inches of the reader for it to register. As in the past, the OneCard’s magnetic strip technology may also be used for:

- Meal plans in the Swope cafeteria
- Copy machines in Lillie and Loeb
- Library book circulation
- On-line interlibrary loan
- On-line Virtual Catalog book ordering
- Remote access via the proxy server to licensed databases and journals
- Network access permissions

An individual’s access to locked areas will vary depending on his or her MBL affiliation. For example, if you are not a resident of Swope, you will not have off-hours access to the Swope dormitory. Access will be appropriately assigned during the data entry process for an individual’s OneCard:

- Employees - assigned office or lab building(s) and Lillie
- BUMP - Loeb and Lillie
- SES - Loeb and Lillie
- Sodexo - Swope only

Note: The system will be adjusted to accommodate events and conference activities. Replacement cards will cost \$20.

Library Access Cards for all other Woods Hole institutions will be issued during November. OneCard contacts will be notified when and where to get their cards.

Annual MBL Picnic was Fun for All Ages

The Annual MBL Picnic was held at the Woods Hole Ball Park this year on Thursday, September 12th. More than 250 people enjoyed great picnic fare provided by Sodexo and cooked and served by MBLers from every department. The event included tennis matches, softball, and fun on the playground. Rich Cutler oversaw some vigorous games of horseshoes. Instead of the usual softball tournament, staff participated in a single pick-up game of softball. Stefan McDonough and Mike Toner divided up the players and everyone had a great time. For some it was the end of a summer of playing on the MBL All-Stars softball team and for others it was a chance to play for the first time in a long time.

A round of grateful applause is in order to Sodexo for the food and supplies, to Richard Boucher for making sure everything got to the park and returned, and to those who pitched in so that everyone could have a good time. The volunteers included Tom Abbott, Debbie Aguiar, Paul Atwood, Mary Beckwith, Richard Boucher, Rick Brereton, Don Burnette, Jack Callahan, Frank Carotenuto, Ken Crosby, Rich Cutler, Eve Czerwiec, Lenny Dawidowicz, Abdoullah Diarra, Mike Elias, Adrian Green, Bonnie Griffin, Heather Haas, Joe Hayes, Patti Jones, Susan Joslin, Scott Lindell, Suzanne Livingstone, Herb Luther, Jane MacNeil, Michelle McCafferty, Stefan McDonough, Guy Mendoza, Dennis Miller, Pam Oldham, Carmen Palacios, Gina Rullo, Diane Sanzone, Amy Stout, Mike Toner, Carol Wagner, Jen Walton, and Zhenwen Wan.

A Message from the Equal Employment Opportunity Coordinator

Diversity: Fact or Science Fiction?

The MBL has always been a research and education center for scientists from all over the world and has a long history of practicing the principles of diversity. But do you know what famous television show is known for its long history of practicing diversity? It is the science fiction series *Star Trek*, which started in the 1960s. Through the years, the Starship Enterprise has been home to Lieutenant Uhura (African American and woman), Captain Chekov (Russian), Captain Sulu (Asian American), Romulan Khan played by Ricardo Montalban (Hispanic American), and a wide variety of aliens from all over the solar system. Surely *Star Trek* was ahead of its time when considering diversity.

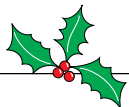
However, there is another perspective we might take when analyzing the role each of the characters played. There was Captain James T. Kirk (a white man), Chief Engineer Montgomery Scott known as "Scotty" (a white man), Chief Medical Officer "Bones" McCoy (a white man), and First Officer Spock (a mostly white but-with-strange-ears man). So was *Star Trek* truly diverse?

This is a great example of how people from different perspectives can view the same information and have different interpretations. Neither is necessarily right or wrong. Each interpretation is valid, and each could be argued with strong rationale. We often make different interpretations of the information we receive based on our own past experiences. It is not hard to understand how different people with diverse cultural experiences can interpret the same information quite differently.

This illustration came from Dr. Steve Long-Nguyen Robbins, who is Director of the Woodruff Institute for the Study of Racism and Diversity at Aquinas College in Grand Rapids, MI. He gave me permission to restate it here in his desire to open people's minds to the benefits of diversity. He believes that we run into problems when we convince ourselves that our own interpretations are the only correct ones and that all others must be flawed — when we believe we are so right that we do not even entertain the perspectives of others and we become unwilling to listen. The disadvantage in this, says Dr. Robbins, is that we short-change ourselves of possible solutions to problems that often come only when different perspectives are considered.

So how tolerant are you of other people and their ideas? Are you willing to listen and give other perspectives a chance? Your level of tolerance, willingness, and openness to different people and their beliefs greatly impacts your ability to grow in the 21st Century, especially when one in every nine Americans is foreign born today. So, go ahead, take a walk in someone else's shoes. Pretend for a day that you are an alien from another solar system and see how good you are at making new friends.

— Jane MacNeil, eeo@mbl.edu



Where's the Party?

It's getting to be that time of year again...time to plan the MBL's annual holiday party that is. This year's committee, headed by Kristine Johnson and Kelly Holzworth has set a date of **Friday, December 13, 4-7 PM** for the party. The MBL quad will be set ablaze in holiday lights. Guests will enjoy food and spirits while strolling through the surrounding buildings. Lively music will keep the pace of the evening. Stay tuned for more information.

Employee News

Optional employee benefits such as the recently introduced group auto/home is just the beginning of what will soon be available to MBL employees at a discounted group rate. In November you will hear more about a supplemental voluntary life insurance program. To assist you with your evaluation of these plans and to put your own personal financial house in order you may be interested in an educational seminar that will highlight basic financial planning issues.

Putting Your Financial House in Order

An overview of the basic Financial Planning Process will be held on Thursday, November 7, 9-10 AM, in Candle House 104/5. This seminar will be offered by Paul S. Seibert, Jr., CFP, and CLU. A number of the most common issues of financial planning will be discussed in some detail. Among the areas to be included are:

- Retirement Income Planning
- Education Funding
- Family Risk Management (Insurance) Issues
- Family Budget & Credit Issues
- Tax Issues

To reserve a seat please e-mail Human Resources at humanres@mbl.edu or call ext. 7422.

Please mark your calendar:

Employee Benefits/Health and Wellness Fair
Thursday, November 14, 2002
Time 9:30 AM - 1:30 PM
Meigs Room

Benefit providers will be on hand to answer your questions.

Flu Shots

Flu shots previously sponsored with the Woods Hole Oceanographic Institution will not be provided this year. Interested employees are encouraged to contact personal physicians or watch for postings in the local newspapers and pharmacies for flu shot locations near you.

New employees

Please welcome the following people to the MBL:

Carrie Brady, Assistant, Financial Services
Christopher Crockett, Research Assistant,
The Ecosystems Center
James House, Plumber Buildings Services &
Grounds
Kenda Nunes, Accounts Receivable Assistant,
Financial Services
Gil Palchick, Research Assistant, BioCurrents

Recycling News



- We'll be collecting computer and electronic equipment in early November. Watch for signs.
- Last call for free filing cabinets! Going, going.....

For information about the MBL's recycling program, contact Joe Hayes, jhayes@mbl.edu, ext. 7530.

November 2002 Calendar

Tuesday, November 5

NLM/MBL Course

“Transporting Large Files”

Lillie 103, 12:00-1:00 PM

To register, please contact Jean

Monahan, jmonahan@mbl.edu; x7341.

Wednesday, November 6

BUMP/MBL Seminar Series

TBA

TBA

Candle House, 104/105

Friday, November 8

The Ecosystems Center Distinguished

Scientist Seminar Series

“Globalization, Global Change, and the Evolution of Emerging Diseases”

Donald Burke, Johns Hopkins

University

Lillie Auditorium, 3:00 PM

Friday, November 8

Falmouth Forum Series Presentation

“Presidential Leadership in a Time of Crisis”

Theodore C. Sorensen, Former Special

Counsel and Advisor to President John

F. Kennedy

Lillie Auditorium, 7:30 PM

Tuesday, November 12

The Ecosystems Center Seminar Series

“Carbon Balance and Seasonality of

Carbon Exchange in an Old-Growth

Amazon Rainforest: Seeing Both the

Forest and the Trees”

Scott Saleska, Harvard University

Location, Time, TBA

Tuesday, November 12

NLM/MBL Course

“Intro to MBL Webmail”

Lillie 103, 12:00-1:00 PM

To register, please contact Jean

Monahan, jmonahan@mbl.edu; x7341.

Wednesday, November 13

BUMP/MBL Seminar Series

TBA

TBA

Candle House, 104/105

Wednesday, November 20

BUMP/MBL Seminar Series

TBA

TBA

Candle House, 104/105

Friday, November 22

The Ecosystems Center Distinguished

Scientist Seminar Series

“Toward Sustainable World Fisheries”

Daniel Pauly, The University of British

Columbia

Lillie Auditorium, 3:00 PM

Friday, November 22

Falmouth Forum Series Presentation

“The Muslim World Beyond Arabia”

Ambassador Walter C. Carrington, U.S.

Ambassador to Nigeria, 1993-1997,

the Republic of Senegal, 1980 - 1981

Lillie Auditorium, 7:30 PM

Wednesday, November 27

BUMP/MBL Seminar Series

TBA

TBA

Candle House, 104/105

Meetings and Courses

10/6-11/2, Advances in Genomic Technology & Bioinformatics Course

10/27-11/3, Review and Update of

Neuroscience for Neurosurgeons

11/5-11/8, 2nd International Workshop

on CD1 Antigen Presentation &

NK T cells

11/8-11/10, Kravitz Reunion

11/9, New England Molecular

Evolutionary Biologists' Meeting XIII

11/15-11/16, UMass Autoimmune

Diabetes Retreat

11/16-11/17, New England Immunology

11/17-11/23, Elderhostel

11/21-11/24, Teachers' Workshop

For more information, please call (508) 289-7214.

MBL Shuttle Schedule

(Monday-Friday only)

Departs

Departs Devils Lane	Departs Lillie
MORNING	
7:45 AM	8:05
8:25	8:45
9:05	
MID-DAY/AFTERNOON	
11:45 AM	11:55
12:05 PM	12:15
12:25	12:35
12:45	12:55
1:05	1:15
1:25	1:35
EVENING (Stoney Beach optional)	
4:45 PM	5:05
5:25	5:45
6:05	6:25
6:45	

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