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Tim Hughes

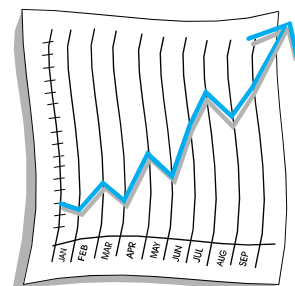
## A Broken Record

Fiscal year 2007 (July 06 – June 07, FY07) was an uncommonly busy year for grant submissions from the MBC. A record breaking 68 grants were submitted by 13 different MBC researchers! Tim Hughes, MBC Assistant Director, cannot recall another year like it. “MBC has always been productive, but we have never processed so many grants before. But everything went very smoothly with UMBI’s Office of Research and Development, even with the new NIH online submission system and the first-time state stem cell program,” he remarked.

The sources of funding to which MBC researchers have turned are broader than ever before, including foundations, companies, and the State of Maryland. In the past, faculty members have relied heavily on federal sources like the NIH. However, federal funding levels have dropped below 10%, so essentially only 1 NIH grant application in 10 is being funded. With such a low funding level from traditional sources, researchers now have to look to elsewhere.

Not all submissions have or will result in funded grants, but even in a tightening economy, MBC researchers continue to maintain productive laboratories. As for next year, a significant portion of this year’s submissions will not be decided upon until after July 1, so we will have to wait to see if the record number of submissions results in a significant increase in funding.

Several of the new grants are unusual. Besides two stem cell grants that will be funded in FY08 (See story below), Dr. W. Jonathan Lederer also received a large equipment grant. The \$737,850 grant will go to the purchase of a new, shared state-of-the-art confocal microscope.



## MBC Wows Stem Cell Commission

The Maryland Stem Cell Commission announced its choices for grant awards on May 18, 2007. The MBC, which had put in five grant requests (*Inside MBC*, Vol. 10, No. 1), was amply rewarded for its efforts, having two of the five recommended for funding. Dr. W. Jonathan Lederer and Dr. Shengyun Fang both received notice that their submissions had been selected for funding in FY08.

The grants were divided into two categories, a substantial three-year one for work that had preliminary data and a smaller two-year grant for novel, but unsupported ideas. Of the 24 funded grants, 7

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## New VP for ORD

Dr. Ted Roumel has joined UMBI as Vice President for Asset Protection and Chief Commercialization Officer. He will also oversee the Office of Research and Development. Dr. Roumel was formerly Director of Technology Transfer at NIH. He replaces Dr. Claude Nash, who held the position with a slight change in title.

## UMBI Town Hall Meetings

The first UMBI-wide town hall meeting was held June 1 at COMB and via video conferencing. UMBI President Dr. Jennie Hunter-Cevera discussed the upcoming move of IHV, new opportunities for collaboration, and then addressed staff questions submitted by email, as well as those posed during the meeting. Two more town hall meetings are planned. MBC will be the site for the December 14 meeting.

## Faculty Meeting Visitors

The May and June faculty meetings included guests. Dr. William F. Koch, Deputy Director Chemical Science and Technology Laboratory, National Institute of Standards and Technology (NIST) spoke at MBC's May faculty meeting. NIST is a long-time collaborating institution at UMBI's Center for Advanced Research (CARB) in Biotechnology, supporting many of the CARB faculty. NIST is looking to expand its collaboration with UMBI to include the other centers. Dr. Koch explained what NIST was interested in pursuing and how it is organized. He was also given a brief overview of some of the research at the MBC. The long term prospects for NIST support at the MBC are very encouraging.

The June meeting included two UMBI Central VP's. Dr. Ted Roumel (see above) came to introduce himself to the faculty. He indicated that he is very excited at the prospects for UMBI's future with regard to licensing intellectual property. The second visitor was Mr. David Bobbitt, VP for Institutional Advancement. UMBI has redone its logo and is developing a unified visual presentation across centers. This process is known as "branding" and it is expected to increase UMBI's name recognition. Mr. Bobbitt introduced the new logo and discussed the next steps in the process.



Above: slopes and s'mores; right, car companion; right low, frisbee research

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### **Congratulations!**

Andrew Ziman, mentored by Dr. W. Jonathan Lederer, donned cap and gown for UMBI's graduation ceremonies, which includes a formal "hooding," where he received the hood symbolizing his receiving a PhD. He had defended his thesis in April.

Graduate Student Darryl Auston defended his thesis on May 18. Darryl was mentored by Dr. Joseph Kao. His thesis was entitled "Intracellular Calcium Regulation in Vagal Sensory Neurons."

# Hitting the Slopes?

UMBI held its first off-site faculty retreat June 18-19 at the Wisp Resort in western Maryland. While Wisp is better known as a ski resort, it does have year round facilities, including a golf course and trails, all overlooking Deep Creek Lake. The retreat was held off site to increase faculty interaction.

The retreat was centered on three broad research themes. The first session called Protein Folding/Misfolding/Interactions was held the first afternoon. MBC Associate Professor Ilia Baskakov talked about "Protein Misfolding, Prions, Amyloids," and MBC Assistant Professor Dr. Shengyun Fang discussed his work on protein degradation pathways entitled "Identification of SVIP as the First Endogenous Inhibitor of ER-Associated Degradation." Two other speakers rounded out the first session. It was followed by happy hour and poster presentations. MBC presented five posters.

The next day the morning session on Innate Immunity was followed by the afternoon session on Pathobiology, chaired by MBC Director Dr. W. Jonathan Lederer. MBC Professor Mervyn Monteiro spoke on "Using Ubiquitin to Eliminate Misfolded Proteins Involved in Human Pathology." The retreat broke up late in the afternoon, allowing participants time to get home for dinner.

In addition to the speakers mentioned above, MBC attendees included

Andria Apostolou, Dr. Kadir Aslan, Petek Ballar, Dr. Giovanni Benard, Timothy Hughes, Dr. Joseph Kao, Dr. Mariusz Karbowski, Dr. Valeriy Ostapchenko, Dr. Michael Previte, Dr. Ying Sun, Dr. Bruce Vogel, Dr. Hongmin Wang, Pamela Wright, Dr. Xuehong Xu, Dr. Hui Yang, Dr. Yongxia Zhang, and Dr. Yongwang Zhong.

Some participants took advantage of the location to come up early and enjoy a mini-vacation, including family in the outing. Others managed to get in 9 holes before the second day's talks started. A bonfire with s'mores brought the group together for the evening of the 18th. Even pets were included. Participants seemed to enjoy both the science and each other. The organizers, including MBC's Dr. Fang, should be congratulated on a successful event.



MBC speakers: Dr. Monteiro, top; Dr. Fang, left; and Dr. Baskakov, below.



Dr. V. Vakaharia, CBR, tries to make his point to Dr. M. Previte from MBC.



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Above, marshmallow roasting.  
Left, posters and beer, the perfect combination.

## MBC Happenings

### Comings and Goings

**Ms. Caroleann Aitken** is a new Accounting Associate assigned to the Institute of Fluorescence. High school student, **Andrew McClain**, is a summer student in Dr. Mervyn Monteiro's laboratory. **Ms. Regina Savtchenko** joined Dr. Ilia Baskakov's laboratory as a Research Assistant.

### Grants and Contracts

**Dr. Joseph Kao**, 1/1/07, UMB/USM Nanobio, "Optical Nanoprobes of *In Vivo* Lipid Signals," \$60,000, yr 1 of 1.

**Dr. W. Jonathan Lederer**, 4/1/07 Columbia University/NIH, "Intracellular Calcium and Sudden Cardiac Death," \$381,918, yr 1 of 5.

**Dr. George Rodney**, 5/1/07, NIH, "Calmodulin & Calmodulin Binding Domains in E-C Coupling," \$129,330, yr 4 of 6

**Dr. W. Jonathan Lederer**, 5/1/07, NIH, "Confocal High Speed Imaging System," \$737,850, yr 1 of 1

**Dr. Chris Geddes**, 5/1/07, NIH, New Award, "Plasmonic Detection of Free-Bilirubin in Neonates," \$177,702, yr 1 of 2.

### Publications

Matveeva EG, Gryczynski I, Barnett A, Leonenko Z, **Lakowicz JR**, Gryczynski Z. Metal particle-enhanced fluorescent immunoassays on metal mirrors. *ANALYTICAL BIOCHEMISTRY* 363 (2): 239-245 APR 15 2007

Stokes MGM, Titball RW, Neeson BN, Galen JE, Walker NJ, Stagg AJ, Jenner DC, Thwaite JE, Nataro JP, **Baillie LWJ**, Atkins HS. Oral administration of a *Salmonella enterica*-based vaccine expressing *Bacillus anthracis* protective antigen confers protection against aerosolized *B. anthracis*. *INFECTION AND IMMUNITY* 75 (4): 1827-1834 APR 2007

Previte MJR, **Geddes CD**. Microwave-triggered chemiluminescence with planar geometrical aluminum substrates: Theory, simulation and experiment. *JOURNAL OF FLUORESCENCE* 17 (3): 279-287 MAY 2007

**Ruknudin AM**, Wei SK, Haigney MC, **Lederer WJ**, **Schulze DH**. Phosphorylation and other conundrums of Na/Ca exchanger, NCX1. *ANNALS OF THE NEW YORK ACADEMY OF SCIENCES* 1099: 103-118 2007

Zhang YX, **Aslan K**, Previte MJR, **Geddes CD**. Metal-enhanced fluorescence from copper substrates. *APPLIED PHYSICS LETTERS* 90 (17): Art. No. 173116 APR 23 2007

Ni JH, Auston DA, Freilich DA, Muralidharan S, **Sobie EA**, **Kao JPY**. Photochemical gating of intracellular  $Ca^{2+}$  release channels. *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY* 129 (17): 5316-+ MAY 2 2007

Previte MJR, **Aslan K**, Zhang YX, **Geddes CD**. Metal-enhanced surface plasmon-coupled phosphorescence. *JOURNAL OF PHYSICAL CHEMISTRY C* 111 (16): 6051-6059 APR 26 2007

Ray K, Badugu R, **Lakowicz JR**. Sulforhodamine adsorbed Langmuir-Blodgett layers on silver island films: Effect of probe distance on the metal-enhanced fluorescence. *JOURNAL OF PHYSICAL CHEMISTRY C* 111 (19): 7091-7097 MAY 17 2007

Sun Y, Breydo L, Makarava N, Yang QY, Bocharova OV, **Baskakov IV**. Site-specific conformational studies of prion protein (PrP) amyloid fibrils revealed two cooperative folding domains within amyloid structure. *JOURNAL OF BIOLOGICAL CHEMISTRY* 282 (12): 9090-9097 MAR 23 2007

Gover TD, Moreira THV, **Kao JPY**, Weinreich D. Calcium homeostasis in trigeminal ganglion cell bodies. *CELL CALCIUM* 41 (4): 389-396 APR 2007

### Stem Cells, continued

were three year grants and 15 were two year grants. MBC got one of each. Dr. Lederer will receive \$1,724,988 over three years for his grant entitled "Human Mesenchymal Stem Cell Treatment for Heart Damage," while Dr. Fang will receive \$219,420 over two years for a grant entitled "Ubiquitination-dependent regulation of Oct-4 Activity." Dr. Lederer was the only researcher from the entire University System of Maryland to be awarded a three-year grant. Dr. Fang was one of seven from USM to be funded with the smaller grant. Johns Hopkins University received the rest of the grants, with one three-year grant going to a Maryland biotech company. The actual start dates for these grants have not been announced as of yet.

Dr. Lederer's grant uses adult stem cells to look at the possible benefits for repairing damaged areas in heart. The preliminary work was done in conjunction with Dr. Terry Rogers of UMB and Dr. Aarif Khakoo at the University of Texas at Houston, with the help of a local high school student Rushi Talati (*Inside MBC* Vol. 8, No. 3). Dr. Rogers and Dr. Khakoo are also participating in the proposed studies. Preliminary work revealed that there are benefits that appear to depend on stem cell production of interesting "factors." If supported by future findings, these factors could be therapeutically useful, even if stem cell grafting is not effective.

Dr. Lederer was extremely pleased when he confirmed that he had indeed been selected. "While our current work is preliminary, it shows the scientific strength of the MBC and UMBI and also emphasizes the importance of collaborative science when conducting cutting edge research."

With an announced \$23 million in funding available for 2008, stem cell research in Maryland will continue. Undoubtedly, UMBI researchers will continue to compete in this expanding research area.

Keller M, **Kao JPY**, Egger M, Niggli E. Calcium waves driven by "sensitization" wave-fronts. *CARDIOVASCULAR RESEARCH* 74 (1): 39-45 APR 2007

### Talks and Travels

**Dr. Mervyn Monteiro**, invited seminar, Nathan Kline Institute, New York, NY, "Taking out the Garbage: The role of Novel Ubiquitin-Containing Proteins in the Disposal of Misfolded Proteins in Cells," May 3, 2007.

**Dr. Chris Geddes**, invited seminar, Fraunhofer Inc, Delaware, "Microwave-accelerated Metal-enhanced Fluorescence (MAMEF)," May 15, 2007.

**Dr. Joseph Kao**, invited seminar, Sigma Xi Society, University of Cincinnati, "Controlling Biology with Light," May 21, 2007.