

BioMET

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Center for Biomedical Engineering and Technology - University of Maryland School of Medicine in conjunction with the Fischell Department of Bioengineering, School of Engineering, University of Maryland, College Park

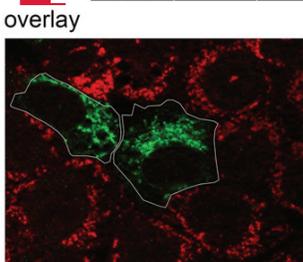
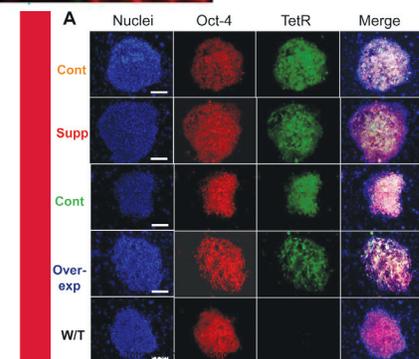
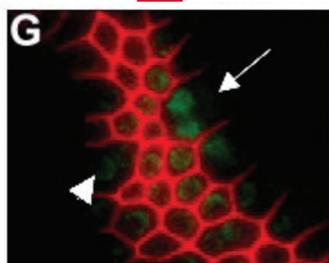
Eleventh Annual Retreat

The eleventh annual retreat did not go exactly as planned. However, the science did not suffer, despite two missing speakers. As usual, much of the research involved fluorescent microscopy and advanced bioimaging, one of the unifying themes of BioMET's diverse programs and of which examples are shown here. Besides representative presentations from BioMET laboratories, two long term collaborators, Dr. Chris Ward from UM School of Nursing and Dr. Silvia Muro from the Fischell Department, brought us up-to-date on their interesting research programs, the former in skeletal muscle and the later in nanobiology.

BioMET was honored with the presence of two deans. Dean E. Albert Reece of UM School of Medicine joined BioMET for the morning session. This was Dean Reece's second retreat visit, and BioMET is always delighted to welcome him. The afternoon session included a visit from the new School of Nursing Dean, Dr. Jane M. Kirschling. This was the first time many BioMET faculty had had the pleasure of meeting Dean Kirschling.

While two of the outside speakers could not make it at the last minute due to some confusion, Dr. Paul S. Fishman from UM School of Medicine did present his interesting work on using clostridial neurotoxin for developing therapeutics for neurodegenerative diseases.

Overall, the retreat again proved a useful means for bringing BioMET researchers together, and a great way to engage colleagues from other schools and institutions within the university system.



BIOMET SCIENTIFIC PROGRAMS

LABORATORY OF MOLECULAR CARDIOLOGY

LABORATORY OF NANOBIOLOGY

LABORATORY FOR NEURODEGENERATIVE DISEASES

LABORATORY FOR PRION DISEASES

PROGRAM IN CANCER BIOLOGY

PROGRAM IN CELL STRUCTURE AND DEVELOPMENT

PROGRAM IN MITOCHONDRIAL DYNAMICS



UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE



SOM Dean E. Albert Reece called for a show of unity for medical research at a rally on April 8. BioMET faculty, including BioMET Director, W. Jonathan Lederer, donned white coats to support the hundreds from UMB at the rally. More information can be found at <http://somweb.som.umaryland.edu/absolutenm/templates/?a=2258&z=41>.

Congratulations to Dr. Gregory Payne, former UMBI colleague now a professor in the Fischell Department with a joint in the Institute for Bioscience and Biotechnology Research), has received a Guest Professorship at Wuhan University, one of China's top ten educational institutions. The three-year appointment is with Wuhan's School of Resource and Environmental Science.

Hagen Takes New Role

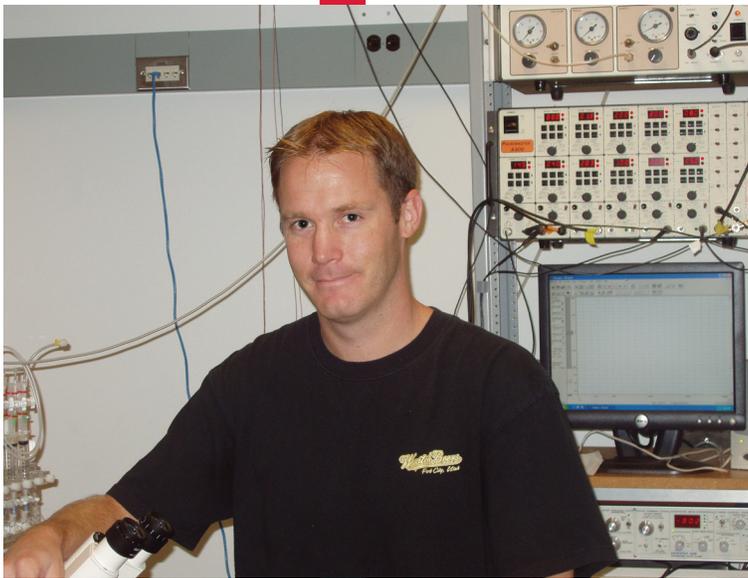
Research Associate Dr. Brian Hagen has assumed a new position within BioMET. He will now be responsible for all the imaging equipment within BioMET, particularly the confocal microscopy systems within the Laboratory of Molecular Cardiology. His new position as Project Manager comes at a particularly critical time, as BioMET prepares to move all the imaging systems to new space. These systems are highly specialized and highly sensitive. The moves have to be coordinated with Zeiss, the manufacturer, since to maintain warranty Zeiss will be responsible for packing up and unpacking the systems, along with recalibration in the new space.

Complicating the move issue are the vibration tables under each microscope, which are not part of the Zeiss system. The new building has more intrinsic vibration than our current building. While measurements have indicated that the building vibration is within the range of the tables' tolerances,

though just barely, what is not clear is whether these tables will still be adequate once they are in place with the systems on top. Dr. Hagen will be assessing these issues as part of his new position.

In addition, the current imaging rooms are specially outfitted with ceiling mounted racks that permit equipment to hang down and bring electrical and network services close to the systems. Since ceiling mounted racks are not possible in the new building, Dr. Hagen will be responsible for the design and implementation of floor based replacement racks.

While all of this is going on and afterwards, Dr. Hagen will continue to work on the research projects that had been part of his previous position as a research associate. It is his extensive experience in research and with the imaging systems at BioMET that made him the ideal candidate for this new position.



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Get Well Soon

BioMET Business M
underwent neck surge
with a herniated disc.
weeks, which means s
the office until May. B
wishes for a speedy rec

Moving Update

The work on Pharmacy 5th floor continues to move ahead. By the end of April all the new walls were in place and dry wall was up. Shelving had begun to appear in laboratory spaces; plumbing including air-gas-vacuum was in place. New lighting fixtures were installed, as well all the electrical wiring. Note the new undercounter lighting that each of the laboratories will have, shown in Dr. Kao's laboratory top right. Also shown is one of Dr. Lederer's imaging rooms (bottom right), Dr. Karbowski's imaging room (below) and Dr. Lederer's main laboratory (left).



Monteiro Receives ALS Foundation Award

Neurodegenerative diseases, such as Parkinson's, Alzheimer's, and Huntington's, are some of the most devastating maladies in the world. The neurodegeneration in all of these diseases and many related ones centers on problems with protein processing. Dr. Mervyn Monteiro's work has illuminated many of the pathways that when altered contribute to the etiology of neurodegenerative diseases. He has discovered novel proteins that both contribute to disease progression or can alter its course.

To his work on the three diseases mentioned above, Dr. Monteiro will now add work on Amyotrophic Lateral Sclerosis, or Lou Gehrig's Disease, having received an exploratory grant from the ALS Foundation. He had been asked to apply based on his work in the field. While many neurodegenerative diseases are non-specific in the affected cell type, ALS only attacks the motor neurons. However, protein processing errors leading to accumulation of mis-folded or unwanted proteins still underlie the disease. Dr. Monteiro's work on elucidating the role of ubiquitin, a protein he discovered and that has been shown to reverse Huntington's disease in animal models, will now be applied to ALS.

Manager, Jami Kasco, is on leave to alleviate issues. She will be out 10 days. She will not be back in the office. BioMET sends its best wishes for a speedy recovery.

BIOMET HAPPENINGS

Publications

Boyman L, Williams GS, Khananshvili D, Sekler I, Lederer WJ. NCLX: The mitochondrial sodium calcium exchanger. *J Mol Cell Cardiol.* 2013 Mar 26;59C:205-213.

Prosser BL, Ward CW, Lederer WJ. X-ROS signalling is enhanced and graded by cyclic cardiomyocyte stretch. *Cardiovasc Res.* 2013 Epub 2013 Mar 21.

Wei X, Li T, Hagen B, Zhang P, Sanchez PG, Williams K, Li S, Bianchi G, Son HS, Wu C, Defilippi C, Xu K, Lederer WJ, Wu ZJ, Griffith BP. Short-term mechanical unloading with left ventricular assist devices after acute myocardial infarction conserves calcium cycling and improves heart function. *JACC Cardiovasc Interv.* 2013 Apr;6(4):406-15.

Lederer WJ, Bers DM, Eisner DA. Calcium signaling in heart: Multiscale, diverse, rapid, local, and remarkable. *J Mol Cell Cardiol.* 2013 Epub 2013 Mar 13.

Kao JP, Muralidharan S. Characterizing caged molecules through flash photolysis and transient absorption spectroscopy. *Methods Mol Biol.* 2013;995:57-77.

Grants and Contracts

Awards

Dr. Mervyn Monteiro, 3/1/2013, Amyotrophic Lateral Sclerosis Foundation, "Deciphering the mechanism by which mutations in ubiquilin-2 cause ALS," \$83,137, yr 1 of 1.

Submissions

Dr. Mervyn Monteiro, NIH, "Validation Ubiquilin for Huntingtons Disease," Total Request: \$422,125.

Talks and Travels

Dr. Benjamin Prosser, invited speaker, "Pulling on the heart strings - Stretch-dependent ROS and Ca²⁺ signaling," University of Vermont Medical Center, Burlington, VT, March 7 2013.

Dr. Benjamin Prosser, invited speaker, "Pulling on the heart strings - Stretch-dependent ROS and Ca²⁺ signaling," Cardiovascular Institute, Perelman School of Medicine, University of Pennsylvania. Philadelphia, PA, March 13, 2013.

Dr. Shengyun Fang, invited speaker, "UiFC for detection of K48 ubiquitin chains in vitro and in live cells," Progenra Inc. Malvern, PA, March 27, 2013.

Dr. Ilia Baskakov, symposium speaker, "Conformational switching Within Individual Amyloid Fibrils: An Insight From Atomic Force Fluorescent Microscopy", PITTCON 2013 Conference, Philadelphia, PA, March 17-21, 2013.

Dr. Ilia Baskakov, symposium speaker, "Electrogenic Activity of Cyanobacteria", ESF-EMBO Symposium "Molecular Bioenergetics of Cyanobacteria", Pultusk, Poland, April 15-19, 2013.

New Procards and Other Contracts

Procards are the university issued credit cards that faculty and other staff involved in ordering supplies have to facilitate such purchases. Recently, the contract for such cards was awarded to a new provider. So everyone had to pick up new cards and turn in old. The change was effective April 25. While this change was not particularly disruptive, it did require those who have reoccurring or regular monthly charges to call vendors to change to the new card number.

The university regularly reviews such contracts to ensure the costs for providing such services are reasonable and the lowest possible. University wide contracts for other services and products are also available. The entire list can be found at <http://www.procurement.umaryland.edu/Contracts/cwc.cfm>.

New contracts for a number of suppliers were recently announced. Miller's Minuteman Press now holds the university printing contract, primarily for letterhead, business cards etc. Airgas has had its university wide contract renewed for specialty gases such as CO₂ and liquid nitrogen.

It behooves everyone who engages in purchasing items to check out the preferred vendor list. University costs are often significantly lower than list or catalogue prices, and local vendors do not generally charge delivery costs. If you have any questions about vendors, please check with BioMET Business Manager Jami Kasco. Saving money is in everyone's interest, especially since grants are being cut.

One point of which everyone should be aware, you can get educational pricing for computers and software, even for personal use. Your university ID is sufficient. Also, the university bookstore carries a number of software packages of popular programs all at the educational rate. Some software educational packages may not include all the extras, but the basic programs are complete.

MPOWER Update - One Year Later

Editor's Note: While BioMET may not participate in all activities relating to the new initiative, the success of the entire enterprise benefits everyone. Thus, all activities of the new initiative will be highlighted in BioMET Now. As before, all members of the BioMET community are encouraged to look at the MPOWER web site at mpowermaryland.com for current information.

MPOWERing is one year old, and progress is very evident, as noted in a recent report on UMB web site, <http://www.umaryland.edu/news/?ViewStatus=FullArticle&articleDetail=20258>. The more high profile efforts included a new commercialization organization, UM Ventures; a new collaboration between UMCP's School of Public Health and UMSOM's program in epidemiology and public health, and a new Center of Excellence in Regulatory Science and Innovation. BioMET continued to work with the Fischell Department of Bioengineering, hosting 5 interns last summer, four of whom had paid internships worth a total of \$20,000. While not directly sponsored by MPOWERing, these internships are within the spirit of this new collaboration. Efforts are already underway for more paid internships for the coming summer.

BioMET continues to look for ways to participate in this new initiative. Faculty are encouraged to develop or expand collaborations with UMCP. In addition, as rules for joint appointments are being promulgated, BioMET expects to expand its faculty with a position in Computational Biology, with a joint appointment at UMCP. The position was first advertised in April, and applications have begun to arrive.