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# BioMET

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

## Lederer Named UMB Researcher of the Year

One of the greatest honors is being recognized by your peers as an outstanding colleague. This year BioMET Director W. Jonathan Lederer received

such an honor when he was selected as Researcher of the Year at the University of Maryland Founding Campus. His nomination and subsequent selection by his colleagues is a testament to his successful scientific career, as well as his extreme collegiality.

As Researcher of the Year, Dr. Lederer gave an address to the University on October 15th. But the actual award was given at the Founders Week Gala held October 17th. The theme of the gala was UMB Superheroes, and each of the awardees (in addition to Researcher of the Year, three other awards are given: Entrepreneur of the Year, Teacher of

the Year, and Public Servant of the Year) starred in their own video presentation. Dr. Lederer's classic superhero pose taken from the video, was a delightful surprise to BioMET attendees and their guests. The video can be seen in its entirety on the BioMET web page.

Founders Week events are important both for internal morale boosting and for thanking external supporters. These types of events bring together stake holders of many kinds, and give the administration a way to set goals and themes for future fundraising efforts. Even though UMB is a state institution, that is not the major source of funds. Philanthropic support is essential to support ongoing programs and especially to initiate new programs to maintain the quality of a UMB education. UMB is a teaching institution, and a medical provider. To maintain a cutting-edge requires more funding than any state could supply.

More about the entire event can be found at <http://www.umaryland.edu/news/?ViewStatus=FullArticle&articleDetail=21600&homepage=1>.



Left to right: SOM Dean E. Albert Reece, BioMET Director W. Jonathan Lederer, UMB President Jay Perman. Photo by Rick Lippenholz

### BIOMET SCIENTIFIC PROGRAMS

LABORATORY OF  
MOLECULAR CARDIOLOGY

LABORATORY OF  
NANOBIOLGY

LABORATORY FOR  
NEURODEGENERATIVE DISEASES

LABORATORY FOR  
PRION DISEASES

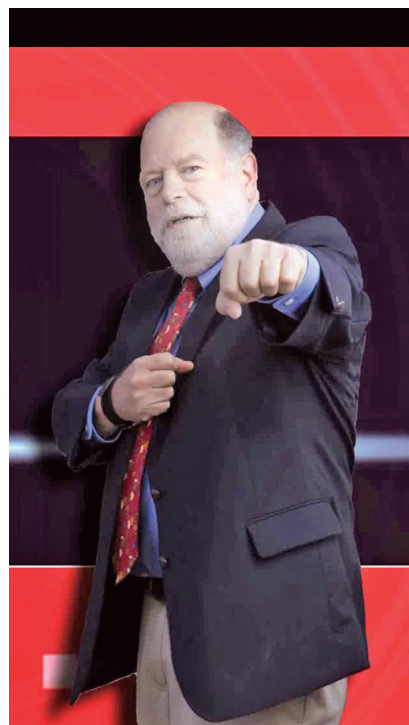
PROGRAM IN  
CANCER BIOLOGY

PROGRAM IN  
CELL STRUCTURE AND  
DEVELOPMENT

PROGRAM IN  
MITOCHONDRIAL DYNAMICS



UNIVERSITY of MARYLAND  
SCHOOL OF MEDICINE





The University broke ground for the new Health Sciences Facility (HSF) III building on 9/17/13. This 10 story building will expand and complement the research facilities already in place. BioMET Director W. Jonathan Lederer attended the groundbreaking with all the other departmental chairs and center directors. The full story can be found at <http://www.umaryland.edu/news/?ViewStatus=FullArticle&articleDetail=21400&homepage=1>

The Fischell Department of Bioengineering held its 7th Annual Fischell Festival. The festival highlights the current research of students and faculty. Dr. Robert Fischell, the department's namesake, gave the keynote address on the status of several new inventions, including an implantable device to control epileptic seizures and another used to "short circuit" migraines. BioMET Director, Dr. W. Jonathan Lederer, represented BioMET at the Festival.

## Down Under Visitor

BioMET Director Dr. W. Jonathan Lederer's laboratory is considered one of the most innovative in the world when it comes to imaging cardiac cells. So when Dr. David Saint of the University of Adelaide had the opportunity for a sabbatical, he asked if he could come. Dr. Lederer, who was an old friend from Oxford days, immediately said yes, and the trip was on. Dr. Saint brought his wife with him for a 4 month stay.

While Dr. Saint worked in the laboratory, Kathy Saint, who was originally from Vancouver, BC explored Baltimore and the surrounding areas, sometimes with her sister from Canada. She had been given a brief tour to get the lay of the land from Research Coordinator, Pamela Wright. Both Saints loved staying in Baltimore and exploring the surrounding area. They are shown, below, visiting the Gunpowder Bison and Trading Company. Pamela Wright and her husband treated the Saints to a bison cookout after a walk on the NCR trail. The picture below was taken at the Gunpowder Bison Ranch near Moncton, Maryland.

Dr. Saint's stay was not all play. He and Dr. Liron Boyman, a postdoctoral fellow in the Lederer laboratory, spent much time developing a new line of research. The data generated was substantial and is expected to be the basis for a collaborative paper in the near future.



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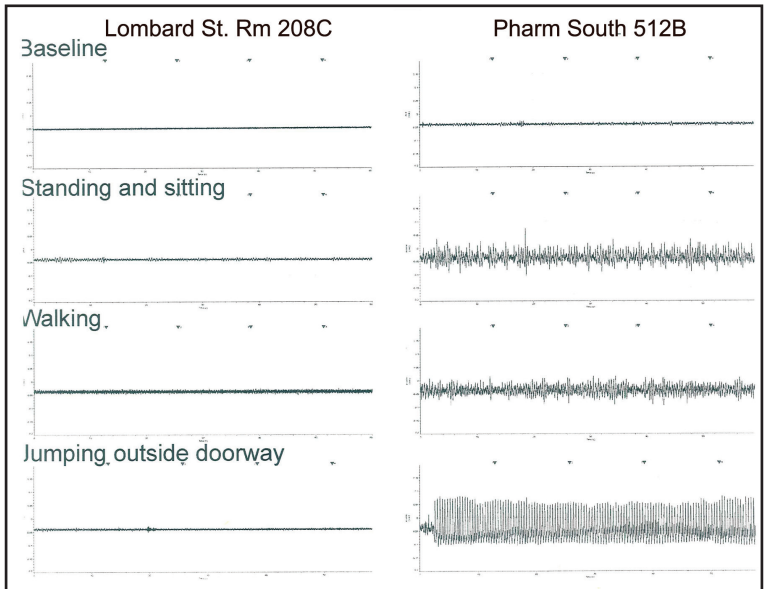
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## On Hold

The last faculty member slated to move into Pharmacy South was Dr. W. Jonathan Lederer. His move was the most complicated because his confocal microscope set-ups required Zeiss, the manufacturer of the systems, to pack them up and unpack them after the move. Given the complexity of these systems and the time required to both pack and unpack, the moves could only be scheduled over a three month period. However, before all of the moves could take place, a major issue with the building, one that had been anticipated to some degree, derailed the move.

Microscope systems are extremely sensitive to vibrations. In order to eliminate vibrations, each system rests on a "vibration table." These tables have hydraulic pistons that absorb vibrations, either from the floor or the researcher using the equipment. Even the slightest bump can cause the cell being imaged to go out of focus. The Pharmacy South building was known to have significant vibration issues. An individual walking could be felt by another individual. Prior to renovations, the vibrations inherent in the building were measured and compared to the specifications of the tables. It appeared that the tables should be able to dampen the vibrations. However, with the first installation of a scope and table it was found that the tables could not dampen the building vibrations. However, as can be seen in a comparison figure of one of the Lombard St. rooms (left) to a renovated Pharm South room (right), the vibrations on the table were not dampened sufficiently. All moving has stopped until a solution can be found.



Two options have been identified: 1) buy all new tables with more dampening power, though this still might not be sufficient, or 2) reinforce the building infrastructure to eliminate the source of the vibrations. As of the end of October, it is the later option that is being pursued, though no final decision has been made. This option requires study by engineers, both internally and externally. Until a decision is made and the solution implemented, Dr. Lederer's move is on hold. It may be many months before it restarts.

This is a significant set-back. Despite everyone's best efforts, the greatest fear for the space allotted BioMET has been realized. For the individuals already moved in, they have had to cope with the vibration issue. Dr. Karbowski has been most affected. His microscope cannot be utilized during the day at all. He has begun setting up his experiments to run overnight, requiring him or someone else to be staying late. It is also not clear how intrusive new construction will be if the infrastructure solution is implemented.

In the meantime, renovations to the Pharmacy South animal facility, required by BioMET's assignment to the building, are moving ahead. The other BioMET site is also continuing on schedule.

## Government Shutdown Impacts Grant Submissions

The budget impasse in Washington that shut the government down for 16 days had a significant impact on researchers, since the period, October 1 to October 16 included a large number of grant submission dates. NIH R01s, scheduled for submission on October 7; K01s, scheduled for October 15; and R21s, scheduled for October 16, were all in limbo. NSF submissions were also affected. Early notices from NIH had part of the online submission process, called grants.gov, operational, but nothing would be transferred from grants.gov to NIH until the government was back to work. That left researchers wondering if they should or should not submit. NIH had asked them not to submit, but did not tell them what would be happening to submission dates. Eventually, notices from both NIH and NSF came out, first indicating that new dates would be forthcoming and then the actual dates. Essentially all the October dates got moved approximately 6 weeks later. That does give many researchers a little more time to polish their submissions. BioMET had four submissions affected by the closing.

Not only were grant submissions affected but NIH's eCommons, the site for managing awards and reports, was also down. That came back online on October 21.

# BIOMET HAPPENINGS

## **Comings and Goings**

Saurabh Srivastava joined Dr. Ilia Baskakov's laboratory as a Research Fellow.

## **Publications**

Li H, Zhong Y, Wang Z, Gao J, Xu J, Chu W, Zhang J, **Fang S**, Du SJ. Smyd1b is required for skeletal and cardiac muscle function in zebrafish. *Mol Biol Cell*. 2013 Sep 25. [Epub ahead of print].

Liu C, Zhong Y, Apostolou A, **Fang S**. Neural differentiation of human embryonic stem cells as an in vitro tool for the study of the expression patterns of the neuronal cytoskeleton during neurogenesis. *Biochem Biophys Res Commun*. 2013 Sep 13;439(1):154-9.

## **Grants and Contracts**

### **Awards**

**Dr. Mervyn Monteiro**, 9/1/13, NIH, "Validation of Ubiquilin for Huntingtons Disease," \$230,250, yr 1 of 2.

**Dr. W. Jonathan Lederer**, 10/1/2013, Georg-August University (European Commission), "Identification and therapeutic targeting of common arrhythmia trigger mechanisms," \$ 139,671, yr 5 of 5.

### **Submissions**

Dr. Shengyun Fang, 9/20/13, NIH, "Split GFP Technology Applied to CPP Drug Delivery for Improving Cancer Therapy," \$767,500.

Proposal submission for federal agencies was suspended as of October 1, 2013. October submission dates were moved to November.

## **Talks and Travels**

Dr. Benjamin Prosser, invited seminar, Pennsylvania Muscle Institute Annual Symposium, University of Pennsylvania School of Medicine, Philadelphia, PA, "Pulling on the heart strings: mechano-chemo transduction in heart" 10/2//13.

**Dr. W. Jonathan Lederer**, symposium speaker, Cardiac Physiome Society Annual Meeting, Bar Harbor, ME, "Cardiac Calcium Signaling: Stability Versus Instability," October 17-19, 2013.

## **Teaching**

Fall 2013

**Dr. Bruce Vogel**, GPLS 601, *Mechanisms in Biomedical Sciences*, 2.5 contact hours.

**Dr. Ilia Baskakov**, GPLS 601, *Mechanisms in Biomedical Sciences: Proteins*, 2 contact hours.

**Dr. Ilia Baskakov**, GPLS 701, *Advanced Molecular Biology*, 4 contact hours.

**Dr. Joseph Kao**, GPLS 630, *Fundamentals of Biostatistics*, 2 contact hours.

**Dr. Joseph Kao**, GPLS 601, *Mechanisms in Biomedical Sciences*, 5 contact hours.

**Dr. Joseph Kao**, GPLS 644, *A Practical Approach to Excitable Cells (Introduction to Membrane Biophysics)* 4 contact hours.

**Dr. Mervyn Monteiro**, GPLS 691, *Molecular Neuroscience and Biophysics*, 1.5 contact hours.

## **MPower Update**

*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](http://mpowermaryland.com) for current information.*

## **Faculty Candidates for BioMET Position**

BioMet began interviewing the short list of candidates for the new faculty position in computational biology the end of August. After interviewing candidates from Stanford University, Duke University, Mt. Sinai School of Medicine and George Mason University, the difficult decision came down to two candidates, who were asked to come back for another round of interviews and presentations in October. As of the end of October, the committee had yet to make its final recommendation.

The position is unusual for BioMET. It is a computational biology position, specifically to interface with the Fischell Department of Bioengineering. The computational biology area is primarily concerned with computer modeling of biological systems. Models or computer simulations cannot replace experiments, but well developed models can inform experimental design and direction. The experiments in turn test and constrain the models. This cycle between simulations and testing is a powerful method for the advancement of research. Many of the areas BioMET faculty study are particularly accessible to computer models. However, few individuals can master both modeling and experiments. Thus, computational biologists must be excellent collaborators with a wide variety of experimentalists. This makes the decision of choosing a new faculty member more difficult, since it is not just their scientific excellence that must be considered. Their ability to interface with ongoing research efforts and with both BioMET and bioengineering faculty members is a significant determinant in the selection.

While the MPowering organization is not directly involved in this faculty hire, it is certainly in its spirit. More importantly, though, it is very much in line with BioMET's mandate upon its creation. That is why the search committee included Dr. William Bentley, the chair of the Fischell Department of Bioengineering. BioMET's determination to fulfill its mandate and to forge a strong link to College Park underlies its efforts to hire a computational biologist who will be expected to be actively engaged in teaching and research in the Fischell Department. That department has already indicated it is ready to supply space to make this happen. This effort has also been endorsed by the School of Medicine Dean, E. Albert Reece, who has been very supportive of BioMET's efforts.

There is space within the new BioMET building for reciprocal faculty from College Park. As the Fischell Department expands, it too is interested in matching BioMET's effort for closer collaboration.