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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 Wins Harris Award



There are many awards for scientific achievement, some are extremely prestigious like the Nobel Prize, but most are less widely known, given out by scientific societies to their outstanding members, unacknowledged for the most part by non-scientists and even the broader scientific community. However, these awards are truly from peers in the field and, therefore, can be more gratifying than the better known ones. The Peter Harris Distinguished Scientist Award is one of these lesser known, society based awards. Dr. Harris was a well known scientist in the UK, who was an inspirational and influential cardiac researcher in the last half of the twentieth century. He was one of the driving forces behind the establishment of the International Society for Heart Research (ISHR). In 1986 the society established the Peter Harris Distinguished Scientist Award to be given out at the biennial World Congress in recognition of a lifetime of achievement in cardiovascular research. At this year's World Congress held in Bordeaux, France, BiOMET Director, W. Jonathan Lederer, shared the award with Roberto Bolli from the University of Louisville.

As Dr. Lederer pointed out, "It is humbling yet gratifying to be recognized by those researchers who are intimately familiar with the kind of work we do. They know what it took to make the discoveries my laboratory has made, the teamwork and the commitment. I cannot thank the society enough for this honor."

Dr. Lederer certainly has a lifetime of achievement in cardiovascular research, besides being a founding fellow of ISHR. As a graduate student at Yale University, he made the first of several major discoveries, the Transient Inward Current, a then undiscovered cardiac current. After graduation and a postdoctoral fellowship at Oxford, he came to the University of Maryland. Here, he and his then small laboratory discovered calcium sparks, the unitary calcium signal in all excitable cells. The heart does not beat without calcium signals! This fundamental discovery has changed the way heart research is conducted. Since then he has expanded his work and laboratory and continues to make significant discoveries that are once again changing the field. His laboratory recently detailed how calcium signals are linked to the actual physical contraction of a heart cell through "X-ROS" signaling. ROS refers to Reactive Oxygen Species, both a signaling moiety in cells and a problem when overproduced (a common target of antioxidants). The link to ROS was a total surprise and has opened up a whole new area of study, in part because the technology developed in conjunction with this work permits researchers to literally stretch a single heart cell, thus they can physically reconstruct the mechanics of heart contraction and relaxation.

Recently, the Lederer laboratory has been including computation biology and mitochondrial dynamics into its cardiac studies. One of hallmarks of Dr. Lederer's laboratory is the incorporation of new, state-of-the-art technologies and forays into related areas of research in search of new insights into heart function and heart disease.

Congratulations, Dr. Lederer.

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



USM retiring chancellor Brit Kirwan was UMB's graduation keynote speaker. Dr. Kirwan is retiring after 12 years as chancellor. You can also hear his farewell speech to the entire system at <http://www.umaryland.edu/news/archived-news/june-2015/newspresreleaseshottopics/kirwan-farewell.php>.

Fischell Department Chair, William Bentley, was featured on a Science Update podcast in May. He discussed his research on engineering bacteria to act as "smart drug delivery machines." The podcast is available at <http://www.scienceupdate.com/2015/05/ecoli/>.

Hockenberry and Wright Attend NIH Regional Meeting

Most of the external funding for BioMET research, as well as in the School of Medicine, comes from the National Institutes of Health (NIH). NIH has a large variety of funding programs, and sets the standards for many other agencies, as well. Interactions with NIH are conducted at two levels, administration and the individual principal investigator (PI). At each level there are sets of rules and policies that apply to every grant received. And the rules and policies do change over time.

NIH conducts a series of regional meetings to educate on all levels. Since both Brian Hockenberry and Pamela Wright are the major repositories of NIH rules and policy information at BioMET, they took the opportunity to attend the Baltimore meeting on May 7-8, 2015.

The meeting was divided into 3 tracks: All Participants, Administration and Investigator. Brian and Pamela divided up the topics and tracks so as to cover as many presentations that would be of direct benefit to BioMET as possible, with Brian going for more of the administrative topics and Pamela attending more of the investigator ones.

Pamela observed, "It was reaffirming that my usual advice to faculty submitting grants matched with NIH's advice, though they sometimes did a better job of presenting it. I would have like all our faculty, both junior and senior, to have attended the very first session on NIH Fundamentals. There was so much in there for researchers at all levels." Brian was also enthusiastic about the experience, "It really brought together a lot of information, some of which I had sort of known but never really put together and some of which was new to me. And there were topics that I had never thought about before."

The entire schedule is given to the right. BH denotes talks that Brian went to, and PW denotes talks that Pamela went to. What was nice was all of the slides from every talk was made available to participants. Brian has put the slides on the BioMET shared server (S:\05.2015 NIH Regional Seminar) for everyone to look at if there is a particular topic that is of interest. Both Pamela and Brian strongly encourage faculty and postdoctoral fellows, or any one putting in a proposal to NIH, to look through the slides. They are very well done and packed with information. Senior people will get a good overview of the changes NIH has begun to implement, and junior people will get excellent instruction on how to approach the grant writing process.

While it probably would not be worthwhile to travel any distance to an NIH meeting, going while it was just down the street made sense. It brought together both new and old information that will be of immediate use to BioMET administration and Faculty.

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Thursday Agenda

2-Day Seminar

TIME	ALL TRACKS	ADMINISTRATORS	INVESTIGATORS
7:00 AM – 8:25 AM	Registration		
8:30 AM – 9:30 AM	Plenary: NIH from 10,000 Feet with Dr. Sally Rockey Maryland AEB		
9:30 AM – 9:45 AM	Break		
9:45 AM – 11:00 AM	1A Rock Talk: A Conversation with Sally Rockey (3B) Baltimore AB	1C OMB Uniform Guidance Overview (3C) Maryland F	
BREAKOUT 1	1B Fundamentals of the NIH Grants Process and Need-to-Know Resources BH PW		
11:00 AM – 11:15 AM	Break		
11:15 AM – 12:30 PM	2A Managing Compliance with the NIH Public Access Policy Homeland	2C Current Issues at NIH (6E) Baltimore AB	2F Mapping Your Career with NIH Maryland AEB
BREAKOUT 2	2B Bonjour! Hola! International Collaborations and the NIH Grants Process ★ PW	2D NIH Peer Review Process for Administrators BH	
		2E Advanced Administrative Topics (9E) ★ Maryland D	
12:30 PM – 1:45 PM	Grab Lunch (bring to Q&A sessions, food map on pg. 26)		
1:00 PM – 1:30 PM		Ask Away: Q&As for Administrators Maryland AEB	Ask Away: Q&As for Investigators Baltimore AB
Q&As			
1:30 PM – 1:45 PM	Break		
1:45 pm – 3:00 PM	3A Interacting Electronically with NIH: Application Preparation & Submission Homeland	3C OMB Uniform Guidance Overview (1C) Baltimore AB	3F Finding and Understanding Funding Opportunity Announcements (FOAs) Maryland AEB
BREAKOUT 3	3B Rock Talk: A Conversation with Sally Rockey (1A) Federal Hill	3D After the Award is Made: Then What? (7C) Maryland F	BH PW
		3E Budget Basics for Administrators (6D) Maryland D	
3:00 PM – 3:15 PM	Break		
3:15 PM – 4:30 PM	4A Research Involving Human Subjects, HHS and NIH Homeland	4D Common Compliance Pitfalls & Strategies for Success (8C) Maryland D	4F Budget Building Blocks for Investigators Maryland AEB
BREAKOUT 4	4B NIH AREA (R15) Program Update Maryland F	4E From the Inbox: Pre-Award & Post-Award Issues (8D) Baltimore AB	PW
	4C Takin' Care of Business—SBIR/STTR BH		
4:30 PM – 4:45 PM	Break		
4:45 PM – 5:30 PM	5A Using RePORT to Your Advantage: Short Version (9A) Baltimore AB		5D NIH Loan Repayment Prog. Maryland D
BREAKOUT 5	5B Research Involving Human Subjects Q&A Homeland		5E New NIH Biosketch & SciEncv BH PW
	5C SBIR/STTR Networking Q&A Federal Hill		

Friday Agenda

2-Day Seminar

TIME	ALL TRACKS	ADMINISTRATORS	INVESTIGATORS
7:30 AM – 8:30 AM	Open Networking		
8:30 AM – 9:45 AM	6A Financial Conflict of Interest (FCOI): What you Need to Know BH	6D Budget Basics for Administrators (3E) Maryland F	6F Grant Writing for Success Maryland AEB
BREAKOUT 6	6B Research Involving Animals! Office of Laboratory Animal Welfare Homeland	6E Current Issues at NIH (2C) Baltimore AB	PW
	6C Interacting Electronically with NIH: Post-Submission Processing Maryland D		
9:45 AM – 10:00 AM	Break		
10:00 AM – 11:15 AM	7A How Well Do you Know the eRA Commons? Maryland D	7C After the Award is Made: Then What? (3D) Maryland C	7F NIH Peer Review Process for Investigators Maryland AEB
BREAKOUT 7	7B Inventions, Data Sharing, and Other Intellectual Property Considerations ★ BH	7D All About Costs Post-Award Primer Baltimore AB	PW
		7E NIH Career Development "K" Awards Homeland	
11:15 AM – 12:30 PM	Grab Lunch (bring to Q&A sessions, food map on pg. 26)		
11:45 AM – 12:15 PM	Ask Away: NIH AREA (R15) Q&As Maryland C	Ask Away: Q&As for Administrators Maryland AEB	Ask Away: Q&As for Investigators Baltimore AB
Q&As			
12:15 PM – 12:30 PM	Break		
12:30 PM – 1:45 PM	8A ClinicalTrials.gov and FDAAA for NIH Grantees Homeland	8C Common Compliance Pitfalls & Strategies for Success (4D) PW	8E Post-Review to Award for Investigators Maryland AEB
BREAKOUT 8	8B R&D Contracts: Who, What, Where, When, Why & How? BH	8D From the Inbox: Pre-Award and Post-Award Issues (4E) Maryland F	8F NIH Intramural Training Opportunities Maryland C
1:45 PM – 2:00 PM	Break		
2:00 PM – 3:15 PM	9A Using RePORT to Your Advantage: Long Version (5A) Maryland D	9D Research Training Awards PW	9F After Your First Award Maryland AEB
BREAKOUT 9	9B Preparing, Submitting and Tracking your Multi-project Grant Application Using ASSIST Maryland C	9E Advanced Administrative Topics (2E) ★ Baltimore AB	
	9C Research Integrity Homeland		

BIOMET HAPPENINGS

Comings and Goings

Dr. Brian Hagen has left Dr. Lederer's group. Lydia Chang has left Dr. Monteiro's laboratory. Humberto Joca, from the University of Minas Gerais, Belo Horizonte, Brazil, joined Dr. Lederer's laboratory as a visiting student.

Publications

Srivastava S, **Baskakov IV**. Contrasting Effects of Two Lipid Cofactors of Prion Replication on the Conformation of the Prion Protein. *PLoS One*. 2015 Jun 19;10(6):e0130283.

Gilpin KM, Chang L, **Monteiro MJ**. ALS-linked mutations in ubiquitin-2 or hnRNPA1 reduce interaction between ubiquitin-2 and hnRNPA1. *Hum Mol Genet*. 2015 May 1;24(9):2565-77.

Chang L, **Monteiro MJ**. Defective Proteasome Delivery of Polyubiquitinated Proteins by Ubiquitin-2 Proteins Containing ALS Mutations. *PLoS One*. 2015 Jun 15;10(6):e0130162.

Grants and Contracts

Submissions

Kao, J.P.Y., 5/24/2015, University of Chicago/NIH, "Directing tumor radiation therapy with quantitative EPR pH and thiol redox images," Total Request = \$1,255,140.

Vogel, B.E., 6/15/2015, NIH, "The Role of the Extracellular Matrix in Cytokinesis," Total Request = \$419,878.

Fang, S., 6/15/2015, NIH, "Proteomic profiling of ER dysfunction in cellular model of SOD1-linked ALS," Total Request = \$422,125.

Karbowski, M. 6/29/2015, NIH, "Mitochondrial Heterogeneity: Role of E3 Ub ligases," Total Request = \$422,125.

Talks and Travels

Dr. W. Jonathan Lederer, Keynote Speaker, "Local Ca²⁺ signaling in heart: temporal and spatial magic," Asian Biophysical Association Annual Meeting, Hangzhou, China, May 10, 2015.

Dr. W. Jonathan Lederer, Speaker, "X-ROS signaling in heart: Mechano-chemo transduction," Department of Physiology, University of Tennessee Health Science Center, Memphis, TN, May 21, 2015.

Dr. W. Jonathan Lederer, Invited Speaker, "X-ROS signaling in heart: Mechano-chemo transduction," International meeting on Calcium Binding Proteins, Vanderbilt University, Nashville, TN, May 31, 2015.

Dr. W. Jonathan Lederer, Speaker, "X-ROS Signaling in heart: Stretch and Redox-Dependent Modulation of Ca²⁺ Release in the Heart," SFB (Sonderforschungsbereich = Collaborative Research Center) 1002, 2015 Scientific Symposium, Goettingen, Germany, June 5, 2015.

Dr. Iliia Baskakov, Speaker, "Deformed templating and its role in evolution of synthetic prions", Animal Prion Workshop, International Meeting PRION 2015, Fort Collins, CO, USA, May 26-29, 2015.

Dr. Iliia Baskakov, "Prion Protein Sialylation and Prion Diseases", International Meeting PRION 2015, Fort Collins, CO, USA, May 26-29, 2015.

Dr. Iliia Baskakov, Reviewer, NIH Study Section BPNS, June 16-17th 2015

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 for current information.

While the MPower Initiative is still going on, the newsletter will no longer provide updates. There are programs and groups somewhat under the MPower umbrella, but they do not involve BioMET or its faculty. The trend seems to be for developing new programs directly under various deans. BioMET has not been included in these new programs. While BioMET will continue to honor its mandate to collaborate with UMCP's Fischell Department, this does not seem to fall under MPower's purview. BioMET is still committed to MPower and is willing to participate and support the initiative. However, its active participation will await an invitation, while keeping its doors open for any interest by MPower in BioMET.

Congratulations

Kate Gilpin received her PhD through the UMB Graduate Program in Life Sciences under the mentorship of Dr. Mervyn Monteiro. In addition to receiving her diploma, Kate was on the front banner of the UMB web page highlighting this year's graduating class. Well done, Dr. Gilpin!

BioMET Welcomes New HR Staffer

Following the departure of Human Resources specialist, Olivia Sterrett, BioMET had to wait until a hiring freeze was lifted to begin to advertise for a replacement. By April, the position was posted, but it was not until May that interviews could be scheduled. After four different candidates, all with excellent qualifications, talked with Assistant Director Brian Hockenberry, as well as Wendy Granger, Lynnel Harris and Pamela Wright, a consensus was quickly achieved. After a quick follow-up interview with the BioMET director, the position was offered to and accepted by Taf Thompson.

Taf will be responsible for payroll, visa, benefits and any other personnel matter, the same as Olivia was. If you have any questions or concerns, please do not hesitate to contact her in the BioMET business office.