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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

## NIH Biosketch Reinvented

The National Institutes of Health (NIH) is the major sponsor of grants for BioMET and the School of Medicine. So when they make a major modification to a core form, it is a big deal.

In November 2015, NIH sent out notice of a new biosketch format to be required after January 25, 2016. The new biosketch format took an entirely new approach

to documenting the "past experience and qualifications of researchers" (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-024.html>). According to the notice cited above:



National Institutes of Health  
Office of Extramural Research

The new format extends the page limit from four to five pages, and allows researchers to describe up to five of their most significant contributions to science, along with the historical background that framed their research. Investigators can outline the central findings of prior work and the influence of those findings on the investigator's field. Investigators involved in Team Science are provided the opportunity to describe their specific role(s) in the work. Each description can be accompanied by a listing of up to four relevant peer-reviewed publications or other non-publication research products, including audio or video products; patents; data and research materials; databases; educational aids or curricula; instruments or equipment; models; protocols; and software or netware that are relevant to the described contribution. In addition to the descriptions of specific contributions and documentation, researchers will be allowed to include a link to a full list of their published work as found in a publicly available digital database such as MyBibliography or SciENcv.

This new format is not an easy one to implement, and the limits imposed add to the complexity. Needless to say, there were significant complaints as to the rapidity of implementation and an extension to the requirement was announced December 5, 2015, pushing implementation back to applications submitted after May 25, 2015.

For younger researchers, the problem becomes one of how to describe significant findings when they have barely started their careers. For older, well-established faculty, it is a matter of what to leave out. The included full list of published works (mandatory, not just an option as implied in the quote above), helps older faculty somewhat, but requires them to create a public list some place. This can also be time consuming to set-up and requires routine maintenance to keep it current. And each public database has its strength and weaknesses.

Most BioMET faculty have begun the transition to this new format. Not since the addition of the Personal Statement section, along with a limited publication list, has the biosketch been so radically re-oriented. Whether this new approach to documenting qualifications helps reviewers or merely adds a burden to submitters is still up in the air; however, compliance is mandatory.

### 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



UMB celebrated Black History Month with recognition of individuals and campus groups who have made a difference here and around the world in matters of diversity. The names of the winners and remarks by President Perlman can be found at:

<http://www.umaryland.edu/news/archived-news/february-2015/newspressreleaseshottopics/umb-commemorates-dr-martin-luther-king-jrblack-history-month-.php>

Fischell Associate Professor Silvia Muro's work on nanotechnology drug delivery systems was highlighted in the January edition of the Fischell Department's web page news section. Dr. Muro has discussed her innovative encapsulated nanocarriers at the Annual BioMET Retreat.

## Newest Faculty Member



BioMET is delighted to announce the recent promotion of Dr. Liron Boyman to a faculty position. In recognition of Dr. Boyman's new American Heart Association Scientist Development Award, he was made a Research Associate through the Department of Physiology. Faculty academic appointments are associated with a basic science department, even though the faculty member may be a member of a research center.

Dr. Boyman received his PhD from Tel Aviv University and has been working with Dr. W. Jonathan Lederer since 2009.

His work centers on calcium signaling and cardiac mitochondria. This is a particularly hot area of research at this time, since new research has implicated mitochondria in a number of diseases and in apoptosis (programmed cell death). Given that over half the space in a cardiac cell is taken up by mitochondria, Dr. Boyman's research is likely to yield interesting results for both normal function and disease.

### Did You Know?

Dr. W. Jonathan Lederer, along with Drs. Ben Prosser and Chris Ward (SON), received notice that their patent for MyoTak, a biological adhesive, was issued December 30, 2014. The title of the patent is "Compositions and Methods for Adhesion of Intact Cells to an Apparatus." The actual product is already under license to Ionoptix.

### Congratulations!

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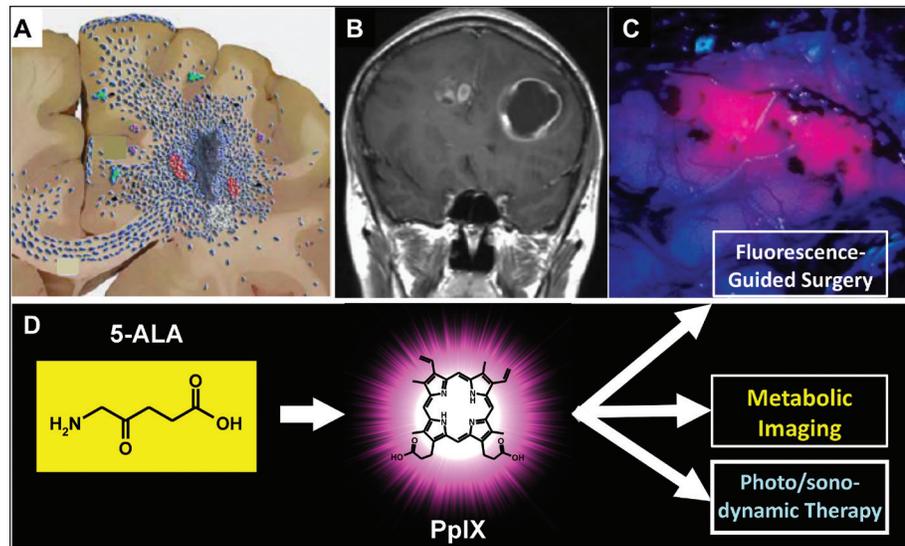
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## The Dean's Challenge

In the 2014, Dr. E. Albert Reece, dean of the School of Medicine (SOM), announced a new internal funding initiative called the The Dean's Challenge Award as part of his larger initiative, ACCEL-Med (Accelerating Innovation and Discovery in Medicine) Initiative. This new funding source would "provide the support needed to generate pilot data for new and ambitious research projects." (SOMNews, October, 2014 16(2):2). Given the disastrous federal budget problems in 2013, Dean Reece's prompt recognition of the implications to SOM research and the practical response was very well received.

BioMET Professor Joseph P.Y. Kao joined with colleagues to submit a proposal to the Challenge Award, one of nineteen groups to do so. Their proposal entitled "Metabolic Imaging and Sonodynamic Therapy for Invasive Brain Tumors using 5-Aminolevulinic Acid" was one of four awards. While the actual amounts involved may not be substantial, the goal is really to generate enough data to support a larger proposal to the National Institutes of Health or other funding agency. Dean Reece is particularly anxious to increase the number of multi-PI grants, such as program project or center grants, since these include substantial amounts of funding and support multiple faculty members simultaneously.

Figure from Kao award outlining the approach to tumor imaging and therapy proposed by the consortium of researchers. Dr. Kao is an expert in bioimaging and the development of fluorescent probes.



## Director's Research Highlighted

BioMET Director W. Jonathan Lederer's research was highlighted on the School of Medicine's web site (<http://somvweb.som.umaryland.edu/absolutenm/templates/?a=3003&z=41>).

Lederer's research group, along with colleagues at the University of Vermont, investigated how myosin-binding protein was integral to the coordinated contraction of a heart cell. While the signalling mechanisms via calcium have been relatively well-studied, the physical structures in relationship to calcium signals have largely defied study. The question as to how you can coordinate the physical aspects of contraction, which requires that all parts move together, within a calcium concentration gradient has long baffled scientists. Lederer et al. showed how the myosin-binding protein differentially sensitizes areas of the heart to contract at lower concentrations than other areas, so that all areas contract together.

The publication is notable for another reason, it was published in the inaugural issue of *Science Advances*, a new online publication of the AAAS.

(Previs, M.J., Prosser, B.L., Mun, J.Y., Previs, S. B., Gulick, J., Lee, K., Robbins, J., Craig, R., Lederer, W.J., Warshaw, D.M. (2015) Myosin-binding protein C corrects an intrinsic inhomogeneity in cardiac excitation-contraction coupling. *Science Advances* 1, e100205. PMC4380226)

# BIOMET HAPPENINGS

## Comings and Goings

Nhat Thanh Le joined Dr. Monteiro's laboratory. Olivia Sterrett has left the business office.

## Publications

Williams GS, **Boyman L, Lederer WJ**. Mitochondrial calcium and the regulation of metabolism in the heart. *J Mol Cell Cardiol*. 2015 Jan;78:35-45.

Li S, Xu S, Roelofs BA, **Boyman L, Lederer WJ**, Sesaki H, **Karbowski M**. Transient assembly of F-actin on the outer mitochondrial membrane contributes to mitochondrial fission. *J Cell Biol*. 2015 Jan 5;208(1):109-23.

Previs MJ, Prosser BL, Mun JY, Previs SB, Gulick J, Lee K, Robbins J, Craig R, **Lederer WJ**, Warshaw DM. Myosin-binding protein C corrects an intrinsic inhomogeneity in cardiac excitation-contraction coupling. *Sci Adv*. 2015;1(1). Published online 2015 Feb 20

Safren N, Chang L, Dziki KM, **Monteiro MJ**. Signature changes in ubiquilin expression in the R6/2 mouse model of Huntington's disease. *Brain Res*. 2015 Feb 9;1597:37-46.

Driesbaugh KH, Buzza MS, Martin EW, Conway GD, **Kao JP**, Antalis TM. Proteolytic activation of the protease-activated receptor (PAR)-2 by the glycosylphosphatidylinositol-anchored serine protease testisin. *J Biol Chem*. 2015 Feb 6;290(6):3529-41.

Deeds JR, Hoesch RE, Place AR, **Kao JP**. The cytotoxic mechanism of karlotoxin 2 (KmTx 2) from *Karlodinium veneficum* (Dinophyceae). *Aquat Toxicol*. 2015 Feb;159:148-55.

Chen L, Feng L, Wang X, Du J, Chen Y, Yang W, Zhou C, Cheng L, Shen Y, **Fang S**, Li J, Shen Y. Mesencephalic astrocyte-derived neurotrophic factor is involved in inflammation by negatively regulating the NF- $\kappa$ B pathway. *Sci Rep*. 2015 Feb 2;5:8133.

## Grants and Contracts

### Awards

**Lederer, W. J.**, 1/1/15, NIH, "Calcium Entrained Arrhythmias," \$979,572, Year 5 of 5.

Boyman, L., 1/1/15, AHA, "Mitochondrial Calcium Signaling in Heart: Physiological and Pathophysiological Implications," \$77,000, yr 1 of 4.

### Submissions

**Karbowski, M.**, 1/15/15, MSCRF, "Mitochondrial Biogenesis and Quality Control Mechanisms in Undifferentiated and Differentiating Human Neuronal Progenitor Stem Cells," Total Request = \$230,000.

**Fang, S.** 2/5/15, NIH, High-Content Screening to Identify Small Molecules for Refolding SOD1 Mutants," Total Request = \$1,151,250.

**Monteiro, M.** 2/19/15, NIH, "Generation of a mouse model to monitor ERAD in Neurons," Total Request = \$460,500.

**Kao, J.P.Y.**, co-PI, 2/19/2015, NIH, "Exploiting Altered Porphyrin Synthesis for Metabolic Imaging of Glioblastoma," Total Request = \$422,125

## Talks and Travels

**W. Jonathan Lederer**, 2/2/15, Chair, Scientific Advisory Board, Annual Meeting, NIH Virtual Cell Program, University of Connecticut Health Science Center, Farmington, CT.

## 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.*

MPower continues to influence biotechnology in Maryland, if the list of news articles referencing MPower initiatives is any indication. Of particular interest to many is the commercialization of university research, and in this area, MPower, through UM Ventures, has been very successful, according to a Baltimore Sun article reprinted on the MPower web page (<http://mpower.maryland.edu/entrepreneurial-culture-boosts-business/>).

## Fond Farewell

Olivia Sterrett, who has been with BioMET since late 2009, has left to pursue her advancement in human relations. Olivia completed her bachelor's degree in 2012 at the University of Baltimore. She handled all personnel related matters at BioMET, making sure that all essential paperwork was done, especially in relationship to visas and benefits. Once she completed her bachelor's degree, along with her significant experience in HR matters, she began searching for a position in an Human Resources Department. She finally found exactly what she wanted. The entire administrative staff will miss her efficiency and thoroughness, but is thrilled that she found her dream job.

Unfortunately, BioMET will not be able to replace her quickly, as there is a hiring freeze in place. This will place some stress on our new business manager, Wendy Granger. To have lost two long term administrators in such a short time is difficult. However, Assistant Director Brian Hockenberry is working with Wendy to parcel out responsibilities until a new HR associate can be hired. BioMET is fortunate that Wendy comes to us with HR experience, particularly with UMB's HR system.

