

INSIDE

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MEDICAL BIOTECHNOLOGY CENTER - UNIVERSITY OF MARYLAND BIOTECHNOLOGY INSTITUTE

Lighting Up the Night

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As the discoverer of calcium sparks, Dr. W. Jonathan Lederer, is used to surprising results but the party in his honor was truly a big surprise. He thought he was going to dinner with a few friends and former laboratory fellows who were in town for the annual Biophysical Society meeting. Little did he know that nearly 130 friends, colleagues, and current and former students, staff, and fellows, as well as his wife and two daughters, had come together to celebrate the sixty years since his birth, the thirty years since his first paper, and the nearly 15 years since the discovery of calcium sparks, which has revolutionized the way calcium signaling in heart is studied.

The event entitled *Sparks in the Night: Currents, Calcium, and Confocals* featured “sparking” name tags and fiber optic decorations to remind participants of the light based techniques that Dr. Lederer has pioneered in his efforts to understand heart function and the underlying causes of heart disease. The evening featured the Amazing Pepe, aka Dr. Jose Puglisi, in real life a researcher at Loyola University, Chicago, and reminiscences from various stages of Dr. Lederer’s career. From Dr. Richard Tsien, his graduate advisor, to Dr. Jennie Hunter-Cevera, his current boss, the stories and events that have shaped Dr. Lederer’s remarkable career both inspired and amused the guests.

To commemorate the event, a laser-etched crystal display piece, presented by Dr. Hunter-Cevera, combined the frontispiece from Dr. Lederer’s first publication in 1986, which announced the discovery of a new cardiac current; the frontispiece from the 1993 paper on the discovery of calcium sparks; and an illustration of a three dimensional reconstruction of a calcium spark, as well as the name and date of the event.

The organizing committee of Dr. David Eisner, University of Manchester; Dr. Mark Nelson, University of Vermont; and Dr. Peace Cheng, University of Peking, were helped by Dr. Lederer’s Assistant, Pamela Wright, in both getting the message out to colleagues and keeping it a secret from the guest of honor.

Sponsors were also most generous in supporting the effort, especially Carl Zeiss, Inc, the Totman Trust, and UMBI. Proceeds from the event will be used to support Dr. Lederer’s

cardiac research.

The dinner web site, www.umbi.umd.edu/~mbc/sparks, has pictures of the event, as well as a pdf version of the program.



Top: Still somewhat stunned, Dr. W. Jonathan Lederer arrives at the party, with two of the organizers, Dr. Mark Nelson and Dr. David Eisner. Dr. Jennie Rothschild, Dr. Lederer’s wife looks on, while Andy Ziman videotapes the arrival.



Right: Dr. Lederer holds the presentation piece given to him to commemorate the event.



UMBI News

New Associate VP for Academic Affairs

The long-vacant position of Associate Vice President for Academic Affairs has been filled with one of UMBI's own, Dr. John Trant, from the Center of Marine Biotechnology. The position had been vacant since MBC's Marian Jackson was appointed Vice President, after the passing of Dr. Jim Lovelace. Everyone is looking forward to having the important Academic Affairs office fully staffed.

UMBI President Honored

Dr. Jennie Hunter-Cevera was doubly honored by the Daily Record this March when she was listed as one of Maryland's Top 100 Women and as one of the 50 Most Influential Marylanders. The Daily Record is a statewide business publication. Congratulations, Dr. Hunter-Cevera.

Faculty Meeting Has Guests

MBC welcomed Dr. John Trant, UMBI's new Associate VP for Academic Affairs to its April Faculty Meeting. Dr. Trant is visiting all the centers to introduce himself and also outline what he hopes to accomplish in his new position. Since he is already very familiar with UMBI, having been a faculty member here, the usual getting-up-to-speed time should be considerably reduced.

In addition to Dr. Trant, Dean Drake and Stan Jackson from the Office of Research and Development (ORD) came to talk about the impact the new government sponsored projects online submission process, grants.gov, has had how UMBI handles grant submissions. In addition, they are asking the faculty to consider some suggestions on changes necessitated by the new process, especially when it comes to getting the final form of a grant to ORD. In the past, ORD could sign off on a draft copy and it was the researcher who had the responsibility to send in the final form. With online submissions, ORD is required to do the actual submission. With numerous grants all being submitted at the same time, ORD cannot possibly go through all of them in one day. ORD is trying to set a due date for faculty to submit the final form of a grant to ORD. The consensus at MBC was that 3 days in advance of the deadline would be doable.

Congratulations!

Andria Apostolou, Dr. Shengyun Fang's graduate student, won the Section award for her oral presentation entitled "Silencing the expression of SUPRESIN, an ER stress upregulated protein, increases cell proliferation and sensitizes cells to ER stress-induced cell death" at the annual UMB Graduate Research Conference held April 20. She is the third MBC student to win an award at the conference, but the first to win with an oral presentation. Great work, Andria!

Congratulations go out to another student, Andrew Ziman, who successfully defended his thesis entitled "Development Physiology of EC-Coupling in the Postnatal Rat" on April 27. Andrew is mentored by Dr. W. Jonathan Lederer

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How Sparks in the Night Became Spies in the Day

by Pamela Wright

This is what happens when you try to keep something from your boss!

The final preparations for the Sparks dinner for WJL (Dr. W. Jonathan Lederer, MBC director and my boss) included moving two car loads of stuff from MBC's building to the hotel four blocks away. Ceci Frederick, WJL's long-time laboratory manager, and I made arrangements to meet at noon on that Saturday to load her minivan and my station wagon with the boxes of programs and badges, decorations, projectors, computers, and one large metal rolling projector stand. Andy Ziman, WJL's graduate student, was meeting us later at the hotel to set-up the projectors and generally run AV for the event. Everything was going as planned until I heard WJL make arrangements with Dr. Silvia Guatimosim, a former faculty member visiting from Brazil, to meet at the MBC on Saturday to go over Dr. Lety Gomez's (another returning scientist) presentation! Nuts, he was going to be in the building Saturday morning! We had to go into stealth mode!

With WJL in the building on Saturday, Ceci and I would have to use the back entrance and loading dock to move the stuff, just in case WJL was still here when we came. A quick consult Friday finalized the arrangements. Both our cars are very recognizable, so we would come in via Lemon Lane, which bypasses the front of the building and park at the loading dock. As soon as I could, I would quietly move all the stuff we needed to load to the storage room in the back third floor hallway, which would allow us to stay away from the office area. The plan set, I began to move the projectors, a computer, and the boxes of programs I had tucked under my desk—one item at a time.

I had just returned to my office from one trip when things took a turn for the worse. WJL came in and wanted to know where a projector was! I quickly improvised and said that Dr. Fang still had it and I would go retrieve it by myself since we both didn't need to hike down the hall. I frantically headed down the hall, grabbed the projector from the storage room, and tucked my head into Dr. Fang's office to let him know I had used his name and his good nature. A quick smile told me he would play along—what a guy. With one projector and WJL tied up, at least I could finish moving stuff.

I had one really big problem to move—a 4 foot high metal rolling projector stand, which had stood unused in the conference room ever since I had come here. We needed one for a movie in the registration area. I slipped into the conference room, and started to remove the stuff stored on top. The slide viewer I placed on the counter, and turned to do the same with the slide projector. No go! The thing was padlocked onto the stand! I didn't have time to figure out how to get rid of it, so it had to come along. I started to move the stand. A loud creaky groan seem to reverberate through the room and down the halls. Clearly, this thing hadn't been moved in eons. I kept pushing, hoping that the unnatural sound didn't disturb WJL in his office around the corner. I got it down the hall with only strange looks from the usual laboratory denizens. It would clearly not fit into my usual storage room, so I opted for Marian Jackson's old microscope room. Thanks, Marian!

It was not even a half hour later, when Dr. Valeriy Lukyanenko, along with Silvia, asked for the other projector and the computer! It seems that WJL was going to go over Valeriy's presentations, as well as Lety's, and he wanted the other projector set up in the conference room. How would we be able to find all the stuff on Saturday? Only WJL could get into the AV closet and he wasn't likely to see any need to put it all back on Saturday. Silvia, Valeriy and I made arrangements to have all the equipment end up down in the laboratory, so Ceci and I could get it easily. It was their job to make sure WJL did not keep it! Silvia thought that they should be done by noon the next day but couldn't promise and I gave her my cell phone number to keep me informed. The only thing I could do was go home and hope for the best.

Saturday arrived and I quietly parked in front of the loading dock a couple of minutes ahead of Ceci. We could see WJL's car in its usual spot. That meant the projectors would not be able to come with us, unless we got lucky and he left. We didn't see anyone as we walked quietly down the darkened south hall to the back hallway and the two rooms where I had stashed the stuff. Using the projector stand and another cart I had acquired the day before, we got it all in one trip. As for the projectors, we would just have to be patient. The hotel was only 4 blocks away. Silvia would call when they were done. How long could it be? They had been there since 9 am!

Ceci and I busied ourselves at the hotel. There was everything to lug in, cars to park, a room to take our suitcases to, and decorations to pull out and get up. It was not even 1 o'clock. We even broke for lunch before heading up to the event area. Silvia called—no end in sight, but it was still early. As 2 o'clock came and went, then 3 o'clock, we began to get nervous. Andy Ziman was supposed to show up around 4 to set up the projectors, and we still had no projectors! We tried calling WJL's wife to hurry him along—but there are some things even she cannot do! Just after 4 o'clock, and still no Andy, we figured we had better be at the MBC to grab the projectors as soon as WJL left.

Parking in the loading dock, a horrible thought struck me—I had left my keys in the hotel room! I was the only one with a master; we had to have those keys. Ceci headed back to the hotel while I went up to the sixth floor lunchroom. It was the only one that over looked the parking lot so I could see him leave. He had to leave soon; the party was supposed to start at 6 and he had to go home and get dressed! Minutes dragged by. Then, for some unknown reason, Andy showed up in the parking lot. He knew the projectors were supposed to be in the labs for us. As I watched him, I realized I had to get to him to let him know what was happening. He was coming towards me just as I was getting off the freight elevator on the second floor. I filled him in on what was happening. Ceci showed less than 5 minutes later. It was past 4:30. We handed the keys to Andy; he would have to wait for WJL. As for us, Ceci and I still had one last and very important thing to do—dress!

MBC Happenings

Comings and Goings

Dr. Zachary White has left Dr. Kao's laboratory.

Grants and Contracts

Dr. Mervyn Monteiro, NIH, "Functional Studies of Calmyrin," 3/15/07, yr 2 of 4.

Dr. Joseph Kao, NIH, "Caged Probes for Cellular Physiology," 3/1/07, \$349,807, yr 1 of 5.

Dr. Chris Geddes, UMB-MARCE, "Anthrax Detection in Clinical Samples in 30 Seconds," 3/1/06, \$148,500, yr 2 of 2.

Dr. Chris Geddes, UMB-MARCE, Suppl., "Anthrax Detection in Clinical Samples in 30 Seconds," 3/1/06, \$29,700, yr 1 of 1.

W. Jonathan Lederer, UMB NIH Subcontract, "Strain Controlled LVADE Unloading & PostMI Remodeling," 4/1/06, \$148,500, yr 2 of 5.

Dr. Ilia Baskakov, Fisher BioServices, "Recombinant Prion Protein Purification," 4/1/07, \$216,000, yr 1 of 1.

Publications

Pustelny K, Bielanska J, Plonka PM, **Rosen GM**, Elas M. In vivo spin trapping of nitric oxide from animal tumors. *NITRIC OXIDE-BIOLOGY AND CHEMISTRY* 16 (2): 202-208 MAR 2007

Lenkowski PW, Batts TW, Smith MD, Ko SH, Jones PJ, Taylor CH, McCusker AK, Davis GC, **Hartmann HA**, White HS, Brown ML, Patel MK. A pharmacophore derived phenytoin analogue with increased affinity for slow inactivated sodium channels exhibits a desired anticonvulsant profile. *NEUROPHARMACOLOGY* 52 (3): 1044-1054 MAR 2007

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Brown LD, **Rodney GG**, Hernandez-Ochoa E, Ward CW, Schneider MF. Ca^{2+} sparks and T tubule reorganization in differentiating adult mouse skeletal muscle fibers. *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY* 292 (3): C1156-C1166 MAR 2007

Zhang J, **Lakowicz JR**. Metal-enhanced fluorescence of an organic fluorophore using gold particles. *OPTICS EXPRESS* 15 (5): 2598-2606 MAR 5 2007

Aslan K, Wu M, **Lakowicz JR**, **Geddes CD**. Metal enhanced fluorescence solution-based sensing platform 2: Fluorescent core-shell Ag@SiO_2 nanoballs. *JOURNAL OF FLUORESCENCE* 17 (2): 127-131 MAR 2007

Yang H, Zhong XY, Ballar P, Luo SQ, Shen YX, Rubinsztein DC, **Monteiro MJ**, **Fang SY**. Ubiquitin ligase Hrd1 enhances the degradation and suppresses the toxicity of polyglutamine-expanded huntingtin. *EXPERIMENTAL CELL RESEARCH* 313 (3): 538-550 FEB 1 2007

Chowdhury MH, Malyn SN, **Aslan K**, **Lakowicz JR**, **Geddes CD**. First observation of surface plasmon-coupled chemiluminescence (SPCC). *CHEMICAL PHYSICS LETTERS* 435 (1-3): 114-118 FEB 12 2007

Aslan K, **Geddes CD**. Microwave-accelerated ultrafast nanoparticle aggregation assays using gold colloids. *ANALYTICAL CHEMISTRY* 79 (5): 2131-2136 MAR 1 2007

Biophysics Re Dux

It has only been 3 years since the Biophysical Society held its annual meeting in Baltimore (See *Inside MBC*, Vol. 7, No 1), but the society was back for Maryland hospitality this March. For several of the laboratories in the MBC, it is the one scientific meeting that they go to every year. Since it was local, many graduate students and younger postdoctoral fellows, who may not normally go to a scientific meeting each year, can attend. The MBC gave 5 presentations and 11 posters. The entire list can be found in the March Monthly Report, available on the MBC web site in the Staff section.

Aslan K, Wu M, **Lakowicz JR**, **Geddes CD**. Fluorescent core-shell Ag@SiO_2 nanocomposites for metal-enhanced fluorescence and single nanoparticle sensing platforms. *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY* 129 (6): 1524-+ FEB 14 2007

de Leeuw E, Burks SR, Li XQ, **Kao JPY**, Lu WY. Structure-dependent functional properties of human defensin 5. *FEBS LETTERS* 581 (3): 515-520 FEB 6 2007

Sabanayagam CR, **Lakowicz JR**. Increasing the sensitivity of DNA microarrays by metal-enhanced fluorescence using surface-bound silver nanoparticles. *NUCLEIC ACIDS RESEARCH* 35 (2): Art. No. E13 JAN 2007

Talks and Travels

Dr. Mariusz Karbowski, invited speaker, "GTP- and Ubiquitin-dependent regulation of mitochondrial membrane dynamics" NIH Apoptosis Interest Group, NIH, Bethesda, MD, March 5, 2007

Dr. Mervyn Monteiro, session speaker, "Role of ubiquitin and erasin in the disposal of misfolded proteins," 18th International Conference AD/PD 2007, Alzheimer's and Parkinson's Diseases: Progress and New Perspectives, Salzburg, Austria, March 14-18, 2007.

Dr. Chris D. Geddes, "Ultra-Fast and Ultra-Sensitive Small Volume Assays: Microwave-Accelerated Metal-Enhanced Fluorescence (MAMEF) and Chemiluminescence (MT-MEC)," and "Plasmon-Controlled Fluorescence: A Paradigm Shift in Fluorescence and its Applications" Bio-Rad, Hercules, CA, March 20, 2007

Dr. Valeriy Lukyanenko, "Delivery of Nano-objects to Cellular Sub-Domains," Nanomedicine Research Day, Baltimore, Maryland, March 22, 2007.

Dr. Chris D. Geddes, "Anthrax Detection in 30 Seconds," Mid-Atlantic Regional Center of Excellence, Johns Hopkins University, Baltimore, March 22, 2007.

Dr. W. Jonathan Lederer, "Calcium Signaling in Heart," Department of Biochemistry, University of Maryland Baltimore, March 26, 2007.

Dr. Chris D. Geddes, "Ultra-Fast and Ultra-Sensitive Small Volume Assays: Microwave-Accelerated Metal-Enhanced Fluorescence (MAMEF) and Chemiluminescence (MT-MEC)" US Army, Aberdeen Proving Ground, Aberdeen, MD, March 26, 2007.