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“Rushi is one of the few high school students who has proved himself capable of working on this level.” Cecilia Fredericks

Starting Them Young

Mentoring young scientists is one of the many functions MBC faculty members have, but few of them are as young as the newest member of Dr. W. Jonathan Lederer’s laboratory, Rushi Talati. Rushi is just finishing his sophomore year at River Hill High School in Clarks-ville, MD. The high school is well known for its Math, Science or Technology Project class, which helps bright high school students find university mentors and allows them to leave school early to pursue a research project with their mentor.

The program is quite formal. Rushi must outline a potential project, find a mentor and the mentor has to promise to sup- port the student through the process. Rushi was interested in cardiac stem cells and how they could be made from embryonic or adult stem cells. Since this has not been done before and requires a high degree of sophisticated tissue culture tech- niques, Rushi is starting out by learning how to culture normal adult rat cardiac cells and the project has been focused on struc- tural changes in heart cells while in culture called detubulation. While Dr. Lederer supports the intellectual side of the project, it is Dr. Lederer’s long term laboratory manager, Cecilia “Ceci” Fredericks, who is handling the technical side by teaching Rushi the ins and outs of cell culture. While the initial cell isolation is done in a core facility,

Rushi is expected to learn how to manipulate the cultures and keep them healthy and uncontaminated. This is no easy task and requires a great deal of hand to eye coordination.

Until school was out for the summer, Rushi could not spend much time in the laboratory. Now that the summer has begun, he hopes to move right along. He is expecting to be competent enough at cell culture by the end of June to begin some initial experiments on detubulation of cultured heart cells.

Rushi says: “The best thing I like about working in this lab is the people; this experience is everything I imaged and more.” According to Ms. Fredericks, “When Rushi started as a 15 year old sopho- more he knew very little about the

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Dr. W. Jonathan Lederer, Rushi Talati and
Ms. Cecilia Fredericks

New BOV Members

The UMBI Board of Visitors has recently appointed ex-officio members, two of whom are members of the Maryland State legislature, Senator Lisa Gladden and Delegate Dan Morhaim. Another ex-officio member is Councilman Michael Knapp of Montgomery County. These names are familiar to many members of the MBC community who are constituents of these elected officials. Senator Gladden represents the district Dr. W. Jonathan Lederer resides in; Dr. Morhaim is one of Pamela Wright's delegates; and numerous MBC faculty and staff live in Montgomery County. MBC welcomes these additions to the Board of Visitors.

Meeting the Other Side

Technology transfer has two sides, one is the basic research side which MBC does and the other is the industrial or commercial side which most of the faculty know little about. One of the more unusual meetings available for UMBI staff and faculty is the annual meeting of the Biotechnology Industry Organization, BIO, which specializes in bridging the gap between the two sides. This organization brings together biotechnology companies from large pharmaceuticals to start-ups, entrepreneurs, academic institutions with intellectual property to develop, license or sell, government officials interested in biotechnology as a source of economic development and vendors from patent lawyers to clinical trial companies who support everyone else.

At several of the previous meetings UMBI has had a booth in the exhibition hall to highlight the intellectual property it has to offer and increase its profile in the state and in the nation. This year the booth was staffed by Jennifer Cavey and Shaun Koenig from the Office of Research and Development (ORD), with MBC's Pamela Wright joining them for a day and a half. For Mrs. Wright who is MBC's public relations liaison, among other things, the meeting was a chance to become familiar with the industrial/commercial side of biotechnology. She had attended scientific meetings before but this was decidedly different. "I do not know exactly how many individual exhibitors there were but the hall was huge. There were large areas organized by state or countries. Some states had only government or non-profit industry groups represented; others like Maryland had industry, government, academic and non-profit umbrella organizations included."



Pamela Wright at UMBI's booth.

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Congratulations!

Dr. Marian Jackson has been named Vice President for Academic Affairs at UMBI. She had been Acting VP since the death of Jim Lovelace in 2004 (*Inside MBC*, Vol. 7 No. 6) when she was Associate Vice President. Dr. Jackson still retains her faculty position at the Medical Biotechnology Center but understandably no longer maintains a laboratory here. MBC is grateful for her continued leadership within the UMBI community.

Under Review

Dr. Chris Geddes continues to be a leading editor in the area of fluorescence spectroscopy and techniques. This spring he and his co-editor, Dr. Joseph Lakowicz, had the second volume of *Reviews in Fluorescence* come out, as well as three volumes in the *Topics in Fluorescence Spectroscopy* series. Dr. Geddes is the founding editor of *Reviews*.

Both of these book series illustrate a different type of publication from the original research journal article. The chapters will be from different authors but the articles are not peer reviewed. Since the presentation of original and new research is not the purpose, there is no reason for peer review.

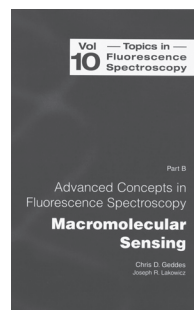
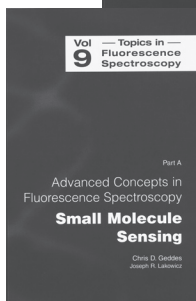
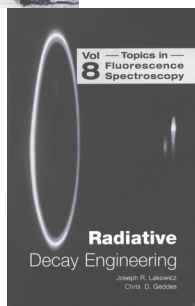
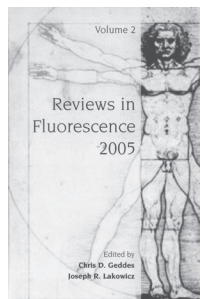
The articles in a Review or Topic series are written to summarize the current status of a field or area. For a Review series, each article will focus on a specific area and extensively discuss the literature and delineate controversies that may exist. The articles themselves would only be broadly related and not thematically linked. In a Topics series, the articles would be thematically linked but still not present new original research. The theme would be discussed in a multifaceted way and a summary article may be included.

These articles are very time consuming to write because of the extensive literature search and

amount of reading required but they are invaluable to every scientific field. For researchers outside a particular research area who find it necessary to become familiar with a new area as their own research begins to overlap it, review articles are the easiest way to get up to speed quickly. For students, review articles can save immense amount of time trying to understand concepts or controversies. These kind of articles can also stimulate cross fertilization of ideas and

techniques that might get buried if left in dedicated journals. While review articles are sometimes seen as “second class” publications because they lack original research and peer review, for many they are an exciting introduction to new areas of research and absolutely necessary to further scientific research.

“These kind of articles can also stimulate cross fertilization of ideas and techniques that might get buried if left in dedicated journals.”



Winding Down

With the end of the academic year in sight, the MBC seminar series also slows down. The final one of the “season” on June 23 was given by Dr. Luis Fernando Santana from the University of Washington who spoke on “Constitutively Active L-type Calcium Channels.” Dr. Santana is no stranger to this area. He got his Ph.D. from the University of Maryland Baltimore with Dr. W. Jonathan Lederer and also did a post doctoral fellowship with Dr. Lederer. They continue to collaborate bicoastally.

Dr. Santana presented some of his work on channels using TIRF or Total Internal Reflection Fluorescence microscopy. The technique allows tagged molecules close to a glass surface to be imaged in great detail and with great contrast. This technique has been problematic in cardiac calcium channel imaging but Dr. Santana seems to having it working quite well.

MBC Happenings

Comings and Goings

Dr. Muhua Yu from Sun Yat-sen University of Medical Science is visiting Dr. Shengyun Fang's laboratory for several months. **Dr. Yongwang Zhong** has joined MBC as a Research Associate with Dr. Fang. **Dr. Ying Sun** is a new Research Associate with Dr. Ilia Baskakov. **David Herr** has joined Dr. Bruce Vogel's laboratory as a General Assistant for the summer. **Dr. Vadym Degtyar** has left the Institute of Molecular Cardiology to take a position at the University of Michigan. Long time Administrative Assistant **Tongo Best** has resigned for health reasons.

Grants and Contracts

Dr. Mervyn Monteiro, 5/1/2005, NIH, "Functional Studies of Ubiquilin," \$294,030, yr 4 of 4.

Dr. Ilia Baskakov, 6/1/2005, NIH, "Self-propagating Mechanism of Prion Disease," \$309,066, yr 3 of 4.

Publications

Bocharova OV, Breydo L, Salnikov VV, Gill AC, **Baskakov IV**. Synthetic prions generated *in vitro* are similar to a newly identified subpopulation of PrP^{Sc} from sporadic Creutzfeldt-Jakob disease. *PROTEIN SCIENCE* 14 (5): 1222-1232 MAY 2005

Sobie EA, Song LS, Lederer WJ. Local recovery of Ca²⁺ release in rat ventricular myocytes. *JOURNAL OF PHYSIOLOGY-LONDON* 565 (2): 441-447 JUN 1 2005

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Li MX, Georgakopoulos D, Lu G, Hester L, Kass DA, Hasday J, **Wang YB**. P38 MAP kinase mediates inflammatory cytokine induction in cardiomyocytes and extracellular matrix remodeling in heart. *CIRCULATION* 111 (19): 2494-2502 MAY 17 2005

Bocharova OV, Breydo L, Salnikov VV, **Baskakov IV**. Copper(II) inhibits *in vitro* conversion of prion protein into amyloid fibrils. *BIOCHEMISTRY* 44 (18): 6776-6787 MAY 10 2005

Takimoto E, Champion HC, Li MX, Ren SX, Rodriguez ER, Tavazzi B, Lazzarino G, Paolucci N, Gabrielson KL, **Wang YB**, Kass DA. Oxidant stress from nitric oxide synthase-3 uncoupling stimulates cardiac pathologic remodeling from chronic pressure load. *JOURNAL OF CLINICAL INVESTIGATION* 115 (5): 1221-1231 MAY 2005

Chen HR, Chung NN, Lemieux C, Zelent B, Vanderkooi JM, **Gryczynski I**, Wilkes BC, Schiller PW. [Aladan(3)]TIPP: A fluorescent 5-opioid antagonist with high 5-receptor binding affinity and delta selectivity. *BIOPOLYMERS* 80 (2-3): 325-331 2005

Badugu R, **Lakowicz JR, Geddes CD**. Anion sensing using quinolinium based boronic acid probes. *CURRENT ANALYTICAL CHEMISTRY* 1 (2): 157-170 JUN 2005

Murata S, Herman P, Iwashina M, Mochizuki K, Nakazawa T, Kondo T, Nakamura N, **Lakowicz JR**, Katoh R. Application of microscopic Förster resonance energy transfer to cytological diagnosis of the thyroid tumors. *JOURNAL OF BIOMEDICAL OPTICS* 10 (3): Art. No. 034008 MAY-JUN 2005

Talks and Travels

Dr. Joaquin Muriel, Session Speaker, "Fibulin-1 "C" and "D" Isoforms have Distinct Functions and Localizations in *C. elegans* and Assemble in a Hemicentin Dependent Manner". 15th International *C. elegans* Meeting. Los Angeles, CA. June 25-29th, 2005.

Rushi Continued

workings of a state of the art research lab. I must say he is a very fast learner... He is one of only a few high school students we have had in the lab over the last 17 years, usually due to the rigorous intellectual nature of what we do, we only accept graduate students to do rotations in the lab. Rushi is one of the few high school students who has proved himself capable of working on this level. He has a bright future ahead of him." Dr. Lederer has also been very pleased with his progress so far. "I always enjoy interacting with energetic and inquisitive young people. Rushi is that and more—a delightful young man who is a pleasure to work with."

Rushi also credits his high school teacher, Ms. Barbara Jewett, for guidance and help in finding a mentor.

BIO Meeting Continued

There were three major categories of exhibitors: government, service providers, and large pharmaceutical companies. While many of these exhibitors also had representatives active in the sessions, the target audience for most exhibitors was small start-ups, growing biotech companies and anyone interested in either creating a start-up or attracting them as clients. General academic scientists were not in evidence according to Mrs. Wright.

When Mrs. Wright was asked what she thought about doing it again, she said: "The meeting was interesting and different, but not something that would really benefit MBC directly. It is a necessity for UMBI to be there. Keeping UMBI visible and part of the technology transfer equation is extremely beneficial for our faculty. It also keeps our ORD aware of the trends and major players. This will also benefit our faculty. As far as my own experience goes, while I found it a great source of good graphic ideas, any conference with exhibitions would have done that."

Dr. Hali Hartmann, Invited Speaker, "Electrophysiological Abnormalities and Sudden Cardiac Death in JNK-Activated Mice," Telemetry User Group for Small and Large Animals, Sponsored by DSI, a Division of Transoma Medical, U.S. Army Medical Research, Institute of Chemical Defense, Aberdeen Proving Ground, MD, May 24, 2005.

Dr. Chris Geddes, Invited Speaker, "Microwave Accelerated Metal-Enhanced Fluorescence: A new technology for Ultra fast and ultra quick Immunoassays," Nano-Bio-photonics Conference, Orlando Florida, June 6th, 2005.

Dr. Chris Geddes, Seminar Speaker, "Metal-Enhanced Fluorescence: An emerging tool in Biotechnology" and "Analyte Sensing Contact Lens: Clinical and Military Applications", Los Alamos National Labs, New Mexico, June 30, 2005.