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A view of the Solomon's Island marina next to the retreat location.

Solomon's Island Wise Choice for Retreat

Solomon was known for making wise decisions and the location for this year's UMBI Faculty Retreat proved to be just as wise. Solomon's Island, Maryland was both picturesque and just far enough away to allow participants to focus on the retreat, making the event both scientifically stimulating and an exciting starting point for increasing cross-center interactions with the introduction of a new UMBI wide initiative emphasizing "Signature Areas."

The agenda was similar to last year's retreat, with three broad areas of research used to group the scientific talks. MBC Faculty members, Xuehong Xu, Mariusz Karbowski, Joe Kao and Chris Geddes all made presentations. However, the most interesting

part of the meeting was the presentations and discussion on the new Center based "Signature Areas."

The concept of signature areas grew out of discussions in the Research Council and at a recent Senior Strategic Management Team (SSMT) Retreat. These regularly scheduled retreats bring



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MBC's Signature Area Unveiled

As noted above, each center has developed a "Signature Area." Defined as a focal point for discussing a center's research, it includes public attention-getting phraseology while not diminishing the broad nature of faculty research interests. This is a tall order. After much discussion among the faculty, Dr. W. Jonathan Lederer unveiled MBC's signature area: Seeing the Invisible: Molecular Dynamics and Discovery in Medicine. Dr. Lederer went on to show that this phrase encompasses four areas or niches: dynamic subcellular signaling, fluorescence technology and detection, protein defects and disease, and stem cell biology and disease.

Dynamic Subcellular Signaling: This niche focuses on real-time investigations in living cells at extremely high spatial and temporal resolutions. As a recognized international leader in this area, this niche focuses on Ca²⁺ signaling, mitochondrial signaling, protein folding and real-time signaling and mathematical and biophysical characterization of the underlying processes.

Fluorescence Technology and Detection: This niche exploits MBC's strong presence in novel, rapid detection and manipulation methods that involve fluorescence technology, imaging and innovation. This includes: metal enhanced fluorescence, novel detection and diagnostics that are super-sensitive and fast, FRET/FRAP/photolysis methods,

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Presidential Meetings

Dr. Jennie Hunter-Cevera, president of UMBI, visited one-on-one with every faculty member in all four centers. She started with the MBC faculty on May 13 and finished up on May 23. It was the first time many of the faculty had had a chance to have a conversation with her outside the usual faculty or business meetings.

New UMBI VP

Dr. Candice Rettie has been recruited as a Vice-President to lead and oversee the activities of our education, outreach and internal and external workforce development. The office of Academic Affairs has been placed in her portfolio and Dr. Marian Jackson left that office the end of June. She retains an academic appointment at the MBC.

Intern Sponsors Recognized

MBC was recognized by Baltimore County's Western School of Technology and Environmental Science at a dinner on May 8, 2008. The MBC was a sponsor of Jaylin Gethers, a senior at Western Tech, who worked in Dr. Mariusz Karbowski's laboratory. Ms. Pamela Wright, MBC intern coordinator, represented the MBC at the dinner.

Jaylin was the first student from Western Tech to intern at the MBC, though others had worked in the UMBI SciTech program. Dr. Karbowski said he was very pleased with Jaylin's abilities and work ethic and that she really brought a lot of enthusiasm to his laboratory. Jaylin said her experience helped her make up her mind to have a career in science. She chose to go to Howard University and major in microbiology. Ms. Wright was pleased that the internship went well. "Interns, especially at the high school level, require a lot of attention from mentors. But it is very rewarding for everyone at the MBC involved in the internship program when we help young people realize how worthwhile a scientific career can be."



Pamela Wright with Jaylin Gethers

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Congratulations!

MBC was again successful in its quest for funding new Maryland Stem Cell initiative. **Drs. Ilia Baskakov** and **Mervyn Monteiro** received notice that their proposal was funded in this second round of grants.

Ilia Baskakov's work was selected for the June 2008 Methods in Molecular Biology.

Mora Bamgboye, a graduate student in **Dr. W. Jonathan Lederer's** laboratory, received Honorable Mention for the 2008 GPILS Ph.D. Scholar award at UMB. The award ceremony is scheduled for September.

Retreat continued

together all of the Center Directors and Vice-Presidents with President Jennie Hunter-Cevera and several other senior staff to look at long-term issues and future directions. One of the issues has been how to differentiate and market UMBI research, in such a way that it focuses public attention while emphasizing the breadth of expertise within the institution. The suggestion was to have each center come up with one area that could become a focal point for marketing. This then was to become a Center's "Signature Area."

After the SSMT Retreat, each Director in consultation with his faculty began the process of developing the signature area concept for their respective Centers. While there were other preliminary presentations and iterations, this year's faculty retreat was chosen for unveiling the concepts to all of UMBI. Each Center Director presented their Center's signature area, expanding on what real research areas underlay the marketing focus. In addition, those points of overlap or convergence with other centers were also noted. This laid the foundation for a stimulating discussion on how faculty could use these signature areas to both increase collaborative efforts and organize cross-center programs to attract increased outside funding and attention. The discussion was so lively, that, when it was interrupted by happy hour, it was decided to continue it on the next day.

While the formal discussion was to be continued, the informal discussion at the poster session/happy hour retained the same enthusiastic interactivity that had characterized the formal session. Faculty and research staff from different centers, who rarely exchanged more than nods, were seen chatting in front of posters or grouped together at the bar.

The only down side that was noted was the smaller number of participants due to the timing. The beginning of June coincides with graduations among other end of the school year events that limited participation. It was unusual to have it so late, but the ongoing External Review (see below) pushed it into June. Next year it should be back to its usual spring date. Given the enthusiasm generated this year, the participation level for next is likely to be a



External Review Visit

The External Review process reached its high point the end of May with the site visit of the committee selected to review all aspects of UMBI's operations. The review team was chaired by Michael Mobley, Associate Director of the Biodesign Institute at Arizona State University. The other members were Kenneth Berns, Director of the Genetic Institute of the University of Florida; Angela Gronenborn, Chair of the Department of Structural biology of the University of Pittsburgh; Jo-Ann Leong, Director of the Hawaii Institute of Marine Biology; Aaron Shatkin, Professor in the Department of Molecular Genetics and Microbiology, University of Medicine and Dentistry of New Jersey; MayAnn Guerra, president of TGen Accelerators, LLC; and Richard West, Executive Vice Chancellor of The California State University.

The committee of experts met with various groups and individuals, scanned reams of documents supplied by all sections within UMBI and visited each location. This was the first external review in the over 20 years since UMBI was founded, a circumstance that is highly unusual as most academic institutions are reviewed every five to ten years. Their report is expected to be done by July. There has been a significant amount of energy and time devoted to this review. It is hoped that the effort will yield insights into both UMBI's strengths and weaknesses which will guide us into the next 20 years.

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MBC Happenings

Comings and Goings

Dr. Anatoliy Dragan joined the Geddes lab as a senior research associate.

Samantha Porter and Micah Weisenberg also joined the Geddes laboratory as interns from Towson University. Matthew Peters, a medical student at UMB, is visiting Dr. W. Jonathan Lederer's laboratory; Robert Billmyre, an undergraduate at UMCP, is a summer student with Dr. Iliia Baskakov; high school student Stephanie Sarbanes is a summer intern with Dr. Mervyn Monteiro; Brian King, a high school student, is a summer intern with Dr. Joe Kao; and Rushi Talati, an undergraduate student at Stanford University, has returned for the to continue his work on stem cells with Dr. W. J. Lederer.

Grants and Contract

Dr. Chris Geddes, NIH, "Plasmonic Detection of Free Billirubin in Neonates," \$132,672, 5/1/2008, yr 2 of 2.

Dr. Iliia Baskakov, NIH, "Self-Propagating Mechanism of Prion Diseases," 6/1/08, \$300,000, yr 2 of 5.

Publications

Zhang X, **Aslan K**, Previte MJR and **Geddes CD**. Metal-Enhanced Excimer (P-Type) Fluorescence. *Chemical Physical Letters* 458, 147-151, (2008).

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Makarava N, **Baskakov IV**. The same primary structure of the prion protein yields two distinct self-propagating states. *J Biol Chem*. 2008 Jun 6;283(23):15988-96.

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Kang TJ, Basu S, Zhang L, Thomas KE, Vogel SN, **Baillie L**, Cross AS. *Bacillus anthracis* spores and lethal toxin induce IL-1beta via functionally distinct signaling pathways. *Eur J Immunol*. 2008 Jun;38(6):1574-84.

Makarava N, **Baskakov IV**. Expression and Purification of Full-Length Recombinant PrP of High Purity. *Methods Mol Biol*. 2008;459:131-43.

Breydo L, Makarava N, **Baskakov IV**. Methods for conversion of prion protein into amyloid fibrils. *Methods Mol Biol*. 2008;459:105-15.

Book published: *Who's Who in Fluorescence 2008*, edited by **Chris D. Geddes**, Springer, New York, 2008.

Talks and Travels

Dr. Iliia Baskakov, invited speaker, Annual Meeting on Prion

Bits and Pieces

• **Dr. Chris Geddes** was interviewed by WJZ-TV on June 11, 2008. The spot ran that evening.

• **Dr. Mervyn Monteiro, Dr. W. Jonathan Lederer and Tim Hughes** participated in the first annual UMBI golf tournament held at Whiskey Creek in Ijamsville, Maryland on June 5. Tim and Mervyn were on the organizing committee.

• **Dr. Steven Finkbeiner** from the University of California, San Francisco presented a seminar on June 24, 2008 entitled "Unraveling Pathogenic and Coping Mechanisms in Neurodegenerative Disease." **Dr. Mervyn Monteiro** was the host.

• **Tim Hughes**, MBC's long-time Assistant Director, underwent open heart surgery June 30th for a coronary by-pass procedure. Tim, who had noticed some minor exercise-induced chest pain, wisely went to his doctor with his concerns before any major damage was done. Tim is expected to make a complete recovery, though it will be sometime before he will be back at work full time.

Signature Area continued

fluorescence methods in protein trafficking and cellular, subcellular, organellar and molecular signaling, and other novel fluorescence and microscopy techniques.

Protein Defects and Disease: This niche examines how misfolded or otherwise defective proteins are linked to diverse diseases. Specific diseases that are being studied: cancer, neurodegenerative diseases (e.g. Alzheimer's, Huntington's, Parkinson's), prion biology and diseases, heart failure and arrhythmia, mitochondrial dysfunctions, and seizure disorders.

Stem cell biology and disease: Using the rapid nanoscopic approach to molecular signaling, MBC faculty examine how embryonic (ESC's) and mesenchymal (MSC's) stem cells function and differentiate to: replace diseased cells, signal to native cells, work in the heart and vasculature, work in brain and neurons, and their effects in cancer.

Strains, Banbury Center, Cold Spring Harbor Laboratory, NY "Generating multiple strains of amyloid fibrils from a single polypeptide chain," May 11-14, 2008.

Dr. W. Jonathan Lederer, invited speaker, Heart Rhythm Society Annual Meeting, San Francisco, CA, "Uniqueness of Ca²⁺ signaling in atrial muscle cells," May 16, 2008.

Dr. Iliia Baskakov, invited speaker, Baden Meeting 2008 on Prions, Montreal, Canada, "An intimate look at life of PrP amyloid," June 13, 2008.

Dr. Iliia Baskakov, invited speaker, Discoveries in the Thermodynamics in Biological Systems Symposium, University of Texas Medical Branch at Galveston, TX, "Protein Misfolding, Amyloids and Prions," June 27, 2008.