



Inside MBC

"...molecular medicine through biotechnology"

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July-August, 2001

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UMBI President Visits

Dr Jennie Hunter-Cevera met with the MBC faculty on August 7. This was a chance to hear what had been missed at the last "town meeting," scheduled on June 28, when the IVN system malfunctioned. Dr. Hunter-Cevera spoke about many of the initiatives the UMBI has undertaken, including a mobile computer classroom and the expansion of CARB. She also outlined future directions and discussed several problems facing UMBI. One issue was identifying UMBI on the deplomas and degrees on the permanent record of graduate students who worked with UMBI faculty. Another concern was how to optimize faculty-produced intellectual property.

Dr. Hunter-Cevera also discussed to increase UMBI's visibility within the University System of Maryland, in Baltimore City and in the state.



UMBI Fact:

It is the only institution in the University System of Maryland where the primary responsibility of the faculty is to do research.

Baskakov Joins MBC

Dr. Ilia Baskakov, an expert in prion proteins, has joined the MBC faculty, coming from Noble prize winner Stanley Prusiner's laboratory in California. Prion proteins are associated with such neurodegenerative diseases as variant Creutzfeld-Jacob disease, associated with bovine spongiform encephalitis, often called "Mad Cow Disease." He visited the MBC August 21-23, to review the administrative details of setting up his lab and moving to Baltimore. Since his official start date, September 1, he has been actively ordering equipment and supplies, seeking a place to live and has already submitted two grant application.



A summary of his work appeared in the May-June issue of *Inside MBC*. His work on protein folding and prion proteins will add an important new dimension to MBC. Welcome, Dr. Baskakov!

In Memoriam

Luis Arroyo, MBC's Information Technology Support Specialist, passed away on August 28, 2001. He had been in the hospital since August 9, when doctors at the VA operated to remove a blood clot from his brain.



He was in and of out of the ICU, but was expected to recover until his kidneys began to fail. He was 37. He is survived by his wife Marilyn and 3 children. A memorial service was held August 31, attended by many of his co-workers at MBC, IHV and UMBI Central.

MBC has established the Luis Arroyo Service Award in his memory, to be awarded annually to the MBC staff member voted the most helpful by the Faculty and Staff.

In addition, donations can be made to a bond fund for his children organized by Dr. Marian Jackson at MBC, who worked with Luis on IT issues within MBC. Please contact Tongo Best, if you wish to donate. Luis was a joy to work with, diligent and obliging. He will be greatly missed.

MBC Deluged!

The night of Wednesday, August 8, 2001 was a little more eventful than usual in the MRF building. Around 10 p.m. a sprinkler on the third floor started spraying water, setting off the fire alarms. By the time the shut-off valve was found over an hour later, there was at least 3 inches of water in the basement, the north side of the three floors above were soaked and a waterfall was flowing down the front lobby stairs. The crisis brought firemen, housekeeping personnel, Director of Environmental Health and Safety Dr. James Jaeger, Risk Manager Jeffrey Kiefer, MBC Director Jon Lederer, Assistant Director Tim Hughes, MRF Facility Manager Mike McCrea, and the Center for Fluorescence Spectroscopy administrator Mary Rosenfeld to the scene. Before midnight, Popowski Brothers Disaster Restoration Specialists had 5 trucks here to deal with the immense amount of water.

After the standing water was removed, industrial dehumidifiers were brought in, along with large blowers. The cove molding along the walls was ripped off, holes drilled in walls and dehumidified air blown in. Areas were walled off with plastic to facilitate the drying. At the same time, wet computers were removed and dried off site. All of which are now back in operation.

While not quite of Biblical proportions, the flood disrupted operations of several key components of the building including the Animal Core Facility, the IHV Clinical Laboratory and the Center for Fluorescent Spectroscopy (CFS). In addition, Dr. Mervyn Monteiro's laboratory on the third floor was greatly affected, though no major losses were sustained. Several CFS people stayed during the fire alarm to cover as much equipment as they could from the water, considerably reducing the damage to the CFS's highly specialized and costly equipment. Mary Rosenfeld spent the night at MBC overseeing the clean-up operation for CFS. Because of the nature of



Popowski trucks in the front of the MRF building.

the equipment, it could not be taken off-site for drying. Popowski Brothers rigged a special, on-site system for drying out the delicate laser equipment and representatives from several companies flew in as consultants to the process. Despite their efforts, some optics and peripherals were not recoverable, though tests are still underway.

Thursday morning arrivals were confronted with confusion as traffic through the front doors was blocked with trucks and equipment and a number of large blue blowers placed at various locations. According to Popowski Brothers workers, it is critical to dry out the building structure thoroughly or mold could develop later. Most

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Seminar Series, Part 2

The second installment of the Seminars in Molecular Medicine and Biotechnology was as follows:

August 7: Dr. Virgil Muresan, Department of Cell Biology, Harvard Medical School.

“Signaling to Kinesin and Dynein: New Roles for Cdk5 and Phospholipase D in Microtubule-based Organelle Transport”

August 9: Dr. Sahn-Ho Kim, Lawrence Berkeley National Laboratory, University of California, Berkeley.

“The Role of TIN2 in Regulating Telomere Length and Telomere Clustering”

August 10: Dr. Seema Agarwala, Department of Neurobiology, Pharmacology and Physiology, University of Chicago.

“Pattern Formation in the Vertebrate Midbrain”

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California Connection

Dr. Hoi-Ying Holman of DOE's Lawrence Berkeley National Laboratory (LBNL) visited MBC for the week of July 30. A former colleague of Dr. Jennie Hunter-Cevera, president of UMBI, Dr. Holman was here



Dr. Holman and Dr. Gerald Rosen discussing the direction of their proposed collaboration.

to do preliminary work on a research proposal with Drs. Gerry Rosen, Jon Lederer, Joe Kao, Joseph Lakowicz, and Zygmunt Gryczynski. She plans to return in the fall or early winter to begin experiments with Dr. Rosen.

Dr. Holman joined LBNL in 1989 as a staff scientist. She established and headed LBNL's Environmental Measurement Laboratory for four years before returning to full-time research, joining the Center for Environmental Biotechnology in 1997 and has since conducted experimental studies tracking the microbial transformation of environmental pollutants on surfaces of geological materials, determining *in vitro* oral absorption of pollutants in humans, and characterizing biokinetics of environmental toxins in small animals. She developed the bioanalytical technique of synchrotron radiation-based Fourier transform infrared (SR-FTIR) spectromicroscopy for determining in real-time the role of microbes in detoxifying environmental pollutants at the location of interactions, for detecting cell cycle and cell death signatures and cellular responses

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Flood continued.

of the restoration equipment was out in a week, with the last of it leaving the August 21.

Mike McCrea supervised the cleanup effort. He remained in the building overnight and well into day following the accident. It was his dedication, as well as, the dedication, support and cooperation of everyone in the building and the various campus agencies that kept this crisis under control.

While the drying out process was uncomfortably noisy and inconvenient, MBC and IHV were extremely lucky. No animals were lost, no one was injured, damage was contained and, so far, there will be only cosmetic scars to the building to repair, but it was one wet, wild night.

MBC/UMBI Perspectives

by Tim Hughes

In the beginning... February 1987 - MBC Scientific Advisory Committee established.

The original MBC Scientific Advisory Committee has long been forgotten except by those involved, however, it acted as the primary advisory group to Dr. Rita Colwell, then USM Vice Chancellor for Academic Affairs, for the development of the third research center within UMBI--MBC. UMBI, originally conceived in a University of Maryland Task Force Report on High Technology/Biotechnology, was officially established in 1985 by the Maryland General Assembly. The MBC Advisory group was very diverse and was composed of faculty from UMB (Dr. Maimon Cohen (Co-Chair), Professor of Obstetrics/Gynecology and Pediatrics and Head of the Division of Human Genetics; Dr. James Kaper (Co-Chair), Professor of Medicine and the Center for Vaccine Development; Dr. Paul Hoffman, Professor of Neurology and the Veterans Administration Hospital; Dr. Robert Knodell, Professor of Medicine and head of the Division of Gastroenterology; Dr. W. Jonathan Lederer, Professor of Physiology; Dr. George Lewis, Professor of Microbiology and Immunology), UMBC (Dr. Gregory Payne, Assistant Professor Chemical Engineering; Dr. Suzanne Rosenberg, Associate Professor of Biological Sciences), and UMCP (Dr. Daniel Stein, Assistant Professor of Microbiology). Because of MBC's early physical location within UMB, it is easy to forget that other institutions played a part in the development of the center.

This committee was instrumental in establishing the MBC scientific foci. These foci formed the basis of a written five-year faculty hiring plan, as well as detailing the justification and requirements to acquire and develop a permanent and separate facility at the former Hutzler's warehouse, then owned by the City of Baltimore, through the City's Adaptive Reuse Program. The four scientific foci included the broad areas of Bioimaging/ Biosensing/ Bioprocessing, Molecular Neurobiology, Molecular Genetics, and Vaccine Development/AIDS Research/Molecular Immunology. These foci and the five-year plan were the foundation of what would be an interesting and complicated story of institutional development.

Next...MBC appoints Acting Co-Directors and hires faculty and staff...

Faculty and Staff: Have you received your MBC mug yet? If you haven't, please see Pamela Wright.

MBC Happenings

Comings and Goings

Dr. Govind Rao, new chair of Chemical Engineering at UMBC, has moved his laboratory, but keeps his secondary appointment with MBC. His laboratory staff included **Peter Harms, Jincal Li and Canghai Lu**.

Dr. Chun Dong has joined Dr. Bruce Vogel's laboratory as a post-doctoral fellow.

Supatra Porasuphatana, graduate student, has left Dr. Gerald Rosen's laboratory.

Chung Cho, technician, has left Dr. Mervyn Monteiro's.

Grants (Yearly Awards)

Marian Jackson, NIH (subcontract) "Metabolic and Developmental Aspects of Mental Retardation" 5/1/01, \$171,278, year 4 of 5.

W. Jonathan Lederer, NHLBI, NIH, "Slip Mode Conductance in Heart" 7/1/01, \$371,250, year 2 of 5.

Jeanine Ursitti, AHA, "Cytoskeletal Networks in Normal and Systrophic Cardiac Muscles" 7/01/01, \$66,000, new award.

John Collins, Wilson H. Elkins Professorship, 7/1/01, \$80,000, new award.

Publications

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DiCesare N, **Lakowicz JR**. "Spectral properties of fluorophores combining the boronic acid group with electron donor or withdrawing groups. Implication in the development of fluorescence probes for saccharides." *J. PHYS. CHEM. A* 105 (28): 6834-6840 JUL 19 2001

Gomez AM, Guatimosim S, Dilly KW, Vassort G, **Lederer WJ**. "Heart failure after myocardial infarction - Altered excitation-contraction coupling." *CIRCULATION* 104 (6): 688-693 AUG 7 2001

Gregerson KA, Flagg TP, O'Neill TJ, Anderson M, Luring O, Horel JS, **Welling PA** "Identification of G protein-coupled, inward rectifier potassium channel gene products from the rat anterior pituitary gland" *ENDO.* 142 (7): 2820-2832 JUL 2001

Guiles RD. "Factors affecting long-range inter heme-protein electron transfer" *J. INORGAN. BIOCHEM.* 86:55-55 AUG 2001

Herman P, Maliwal BP, Lin HJ, **Lakowicz JR**. "Frequency-domain fluorescence microscopy with the LED as a light source." *J. MICROSCOPY-OXFORD* 203: 176-181, Part 2 AUG 2001

Hoesch RE, Weinreich D, **Kao JPY** "A novel Ca²⁺ influx pathway in mammalian primary sensory neurons is activated by caffeine"

Holman continued.

to dilute environmental pollutant dioxin. Her current research focuses on advancing her bioanalytical method by combining synchrotron radiation-based spectromicroscopies with other techniques.

Because of her expertise in identifying markers important in the biomedical and pharmaceutical areas, Dr. Holman will be collaborating with the several MBC faculty members. Beyond the scientific concerns, she likes the "entrepreneurial spirit" in the UMBI centers and the mixture of basic and applied research. She also finds the open and friendly atmosphere particularly attractive.

MBC Happenings Continued

J. NEUROPHYSIOL. 86 (1): 190-196 JUL 2001

Le Maout S, **Welling PA**, Brejon M, Olsen O, Merot J "Basolateral membrane expression of a K⁺ channel, Kir 2.3, is directed by a cytoplasmic COOH-terminal domain" *PNAS (USA)* 98 (18): 10475-10480 AUG 28 2001

Lin HJ, Herman P, Kang JS, **Lakowicz JR**. "Fluorescence lifetime characterization of novel low-pH probes." *ANAL. BIOCHEM.* 294 (2): 118-125 JUL 15 2001

Song JM, **Melera PW**. "Transmembrane domain (TM) 9 represents a novel site in P-glycoprotein that affects drug resistance and cooperates with TM6 to mediate [I125]-iodoarylazidoprazosin labeling." *MOL. PHARM.* 60:254-261 AUG 2001

Ufret-Vincenty CA, Baro DJ, **Lederer WJ**, Rockman HA, Quinones LE, Santana LF. "Role of sodium channel deglycosylation in the genesis of cardiac arrhythmias in heart failure." *J. BIOL. CHEM.* 276 (30): 28197-28203 JUL 27 2001

Ursitti JA, Martin L, Resneck WG, Chaney T, Zielke C, Alger BE, Bloch RJ "Spectrins in developing rat hippocampal cells" *DEV. BRAIN RES.* 129 (1): 81-93 JUL 23 2001

Zhu Q, Pongpech P, **DiGate RJ**. "Type I topoisomerase activity is required for proper chromosomal segregation in *Escherichia coli*." *PNAS, USA* 98:9766-9771 AUG 14 2001

Talks and Travels

W. Jonathan Lederer, August 21-24, IUPS Satellite Meeting, *Excitation-Contraction Coupling in Skeletal and Cardiac Muscle*, Heron Island, Great Barrier Reef, Australia. "Modeling Sparks in Cardiac Muscle"

W. Jonathan Lederer, August 26-31, Christ Church, New Zealand, XXXIV International Congress of Physiological Sciences, "Calcium Flux Through Sodium Channels."

Joseph Lakowicz with Michael Feld received the "Strong Coupling" Award at the Advances in Optics for Technology, Medicine & Surgery, A United Engineering Foundation Conference, Banff, Canada, July 22-27.

Patents and Licensing

Fluormetrix (Stow, MA) is commercializing **Dr. Govind Rao's** miniaturized, instrumented bioreactor technology. This allows small samples to be optically monitored from the outside. (*Gen. Eng. News* 21(14):81 August 2001)