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MBC Prion Expert Wins Awards

MBC Assistant Professor, Iliia V. Baskakov, won prizes for two posters at the First International Conference of the European Network of Excellence NeuroPrion held in Paris, France on May 24-28, 2004. His poster entitled “Novel cell-free conversion system: application for



Dr. Baskakov with the award presented for his poster.

assessing the risk of cross-species TSE transmission” won third place. He was also the second author on the first place poster entitled: “De Novo Generation of Mammalian Prions” by G. Legname, I.V. Baskakov, H.O.B. Nguyen, D. Reisner, E.F. Cohen, S.J. DeArmond, S.B. Prusiner.

Misfolding and aggregation of prion proteins have been linked to severe human and animal maladies such as bovine spongiform encephalitis, also known as Mad-Cow Disease, and its human counterpart, Creutzfeldt-Jakob Disease. It has been postulated that the infectious agent of prion diseases, PrP^{Sc}, is the normal prion

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Seventeen Years and Counting

The dreaded return of the periodic cicada has come and gone, but the impression—and carcasses—they left behind will be with us for some time. While they certainly were not abundant in the city, they could still be heard and were a constant reminder of what awaited many staffers at home.

The first out were to Baltimore’s west and slightly south. The rise and fall of a deep, low rumble heralded their imminent arrival. One of the hardest hit yards was Tim Hughes’, MBC’s Assistant Director. He could hear the onslaught coming before the population which was burrowed deep underground started to emerge. His neighbor, Dr. Michael Raupp, Professor of Entomology at the University of Maryland College Park and an expert on the periodic cicada, was interviewed several times by the media and asked if he could use Tim’s yard if they needed a good location! It was never needed but as seen in the photo,



Layers of cicadas in Tim Hughes’ yard.

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Directors Retreat

Dr. Jennie Hunter-Cevera, UMBI President, and all of the Center Directors met at their annual retreat on May 28, 2004. Held informally and off campus, it is a chance for them to discuss cross-center issues and develop long-term plans. It is also a chance for them to catch up on what other Centers have been doing and to strengthen inter-center bonds. While staff and faculty may not notice the difference, a united leadership can only benefit all of UMBI in the long run.

Salary Increases

The Maryland State Legislature and Governor Erlich approved both cost of living and merit raises for all state employees. The last cost of living increase was in January of 2002 and merit raises have not been allowed since 2001. This time cost of living increases were given as an across the board amount instead of a percentage, having a greater impact on those employees in the lower end of the salary scale who are most affected by changes in the cost of living. It is the merit raises, however, that are most welcomed. All state employees are looking forward to some reward for their hard work and dedication in whatever capacity they serve the state.

UMBI President Wins Award

MBC wishes to congratulate Dr. Jennie Hunter-Cevera, UMBI President, on winning the USFCC/J. Roger Porter Award. The Award, supported by the United States Federation for Culture Collections (USFCC) and The American Society for Microbiology (ASM), recognizes individuals who have "demonstrated the importance of microbial biodiversity through sustained curatorial or stewardship activities for a major resource used by the scientific community." The award was given at the annual meeting of the ASM in New Orleans, LA. Dr. Hunter-Cevera also delivered the Award Lecture, entitled "Cultural Experiences of Thinking Like a Microbe." Her work on isolating and screening microorganisms and on maintaining culture collections is well known.

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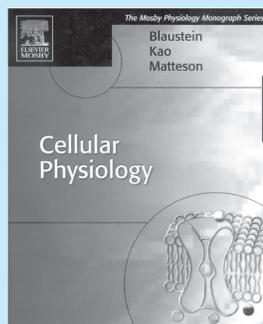
Contact us at: wrightp@umbi.umd.edu
or 1-410-706-8181

Medical Biotechnology Center
725 West Lombard Street
Baltimore, MD 21201 USA

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New Text Book Published

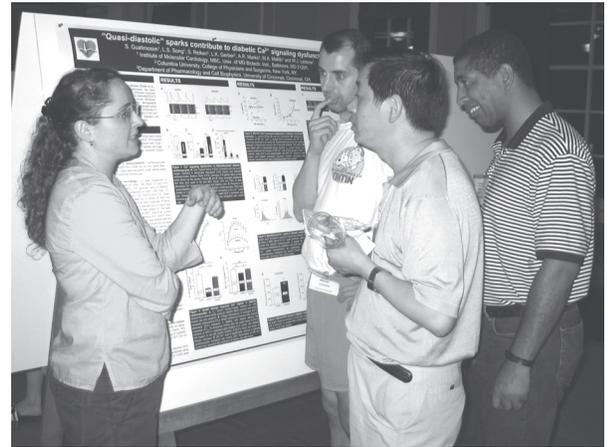


MBC Professor, Joseph Kao, along with UMBI colleagues Mordecai Blaustein and Donald R. Matteson has written a new text book entitled *Cellular Physiology*. The book is part of the Mosby Physiology Monograph Series published by Elsevier Mosby of Philadelphia, PA. It came out in June.

Heart Research in New Hampshire

Several members of the Institute for Molecular Cardiology attended one of the many Gordon Research Conferences (GRC) organized by the American Association for the Advancement of Science (AAAS). The conferences are unique in both their format and the range of scientific disciplines covered—everything from atomic interactions to neural development to rock formation. Each conference is designed to focus on one narrow area and provide a forum for discussion of differing views. They last a week, are usually held on a campus of a small college and attendee numbers are limited. The small groups and informal atmosphere make these meetings particularly intense but exhilarating. Attendees come back enthusiastic and full of ideas.

MBC Director, W. Jonathan Lederer, was a discussion leader for the conference entitled “Cardiac Regulatory Mechanisms” held at Colby-Sawyer College in New London, New Hampshire, June 6-11, 2004. He chaired the session “Excitation-Contraction Coupling in Normal and Diseased Hearts.” MBC faculty members Drs. Silvia Guatimosim and Long-Sheng Song presented a joint poster entitled “‘Quasi-diastolic’ Sparks Contribute to Diastolic Signaling Dysfunction”. This poster included co-authors S. Reiken, K. Gerber and A. Marks from Columbia University; M.A. Matlib from University of Cincinnati; and W. J. Lederer. Graduate student Andy Ziman, at his first Gordon Conference, also presented a poster, “E-C Coupling and Cell Organization in Developing Cardiac Myocytes” with co-authors Nicholas Geisse and Kevin Kit Parker at Harvard and Cecilia Frederick and W. J. Lederer from MBC. First year Research Associate, Dr. N. Leticia Gomez, also attended. All of the participants came back energized and anxious to work on the new ideas generated at this year’s GRC.



Dr. Silvia Guatimosim discussing her poster with other participants.

Cicadas Continued



Tim’s yard was an extremely good example of how bad it could get.

The periodic cicada’s life cycle is quite unusual. It spends most of its life in the larval stage, feeding underground. The infestation is quite uneven. The longer the ground has been undisturbed the heavier the emergence. Thus newer homes were not as severely impacted as older neighborhoods. After the non-feeding adults emerge, they molt once leaving empty brown shells.

The females home in on the males’ “singing” and mate. The females then lay eggs in the tips of tree branches by making a series of small slits in the bark. The adults die after they have procreated, leaving a layer of carcasses on top of the molted shells. The eggs eventually hatch and the larvae fall to the ground and burrow in to eat for seventeen years. The leaves on branch tips often die from the egg laying, leaving trees with many brown tips. While some of these branches will leaf out next year, many die and break off. This could be considered nature’s way of pruning but home owners would prefer to do it themselves.

The cicadas’ return was the main topic of conversation for most of June. MBC Administrative Assistant and unofficial morale officer, Tongo Best, has proposed celebrating the end of the cicadas with a party. It is scheduled for July, somewhat after the end of the insects’ cyclical demise but no one is likely to forget what it was like when they were here!

MBC Happenings

Comings and Goings

Mark Kohr, Dr. Joseph Kao's research assistant left in May. Dr. Bruce Vogel's Senior Research Assistant, **Sarah Ramirez**, left in June to pursue a career and studies in public health. **Dr. Vadim Salnikov** returned to The Institute of Biochemistry and Biophysics in Kazan, Russia, after a six-month collaboration in MBC's Institute of Molecular Cardiology. **Natallia Makarava**, Research Assistant, and **Dr. Vera Novitskaia**, Research Associate, have joined Dr. Iliia Baskakov's laboratory. **Dr. Hongmin Wang** is a new Assistant Professor in the Program in Neurodegenerative Diseases headed by Dr. Mervyn Monteiro. **Steven Hibbs** has returned to work with Dr. Les Baillie as a Senior Scientist and **James Wallbank** joins Dr. Baillie as a Laboratory Assistant.

Grants and Contracts

Dr. Mervyn Monteiro, NIH, "Functional Studies of Ubiquitin," 5/1/04, \$294,030, yr 2 of 4.

Dr. Iliia Baskakov, NIH, "Reconstitution of Prion Infectivity" 5/1/04, \$171,703, yr 1 of 2.

Dr. Iliia Baskakov, NIH, "Self-propagating Mechanism of Prion Disease," 6/1/04, \$309,066, yr 2 of 4.

Publications

Feng PH, Scott CW, Cho NH, Nakamura H, Chung YH, **Monteiro MJ**, Jung JU. Kaposi's sarcoma-associated herpesvirus K7 protein targets a ubiquitin-like/ubiquitin-associated domain-containing protein to promote protein degradation. *MOLECULAR AND CELLULAR BIOLOGY* 24 (9): 3938-3948 MAY 2004

Hoesch RE, Weinreich D, **Kao JPY**. Localized IP3-evoked Ca²⁺ release activates a K⁺ current in primary vagal sensory neurons. *JOURNAL OF NEUROPHYSIOLOGY* 91 (5): 2344-2352 MAY 2004

Badugu R, **Lakowicz JR**, **Geddes CD**. A wavelength-ratiometric pH sensitive probe based on the boronic acid moiety and suppressed sugar response. *DYES AND PIGMENTS* 61 (3): 227-234 JUN 2004

Malicka J, **Gryczynski I**, **Lakowicz JR**. Fluorescence spectral properties of labeled thiolated oligonucleotides bound to silver particles. *BIOPOLYMERS* 74 (3): 263-271 JUN 15 2004

Badugu R, **Lakowicz JR**, **Geddes CD**. Ophthalmic glucose sensing: a novel monosaccharide sensing disposable and colorless contact lens. *ANALYST* 129 (6): 516-521 2004

Froehlich B, Holtzapfle E, **Read TD**, Scott JR. Horizontal transfer of CSI pilin genes of enterotoxigenic *Escherichia coli*. *JOURNAL OF BACTERIOLOGY* 186 (10): 3230-3237 MAY 2004

Hoffmaster AR, Ravel J, Rasko DA, Chapman GD, Chute MD, Marston CK, De BK, Sacchi CT, Fitzgerald C, Mayer LW, Maiden MCJ, Priest FG, Barker M, Jiang LX, Cer RZ, Rilstone J, Peterson SN, Weyant RS, **Galloway DR**, **Read TD**, Popovic T, Fraser CM. Identification of anthrax toxin genes in a *Bacillus cereus* associated with an illness resembling inhalation anthrax. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA* 101 (22): 8449-8454 JUN 1 2004

O'Connell CB, Creasey EA, Knutton S, Elliott S, Crowther LJ, Luo WS, Albert MJ, **Kaper JB**, Frankel G, Donnenberg MS. SepL, a protein required for enteropathogenic *Escherichia coli* type III translocation, interacts with secretion component SepD. *MOLECULAR MICROBIOLOGY* 52 (6): 1613-1625 JUN 2004

Chen G, Bower KA, Ma CL, **Fang SY**, Thiele CJ, Luo J. Glycogen synthase kinase 3 beta (GSK3 beta) mediates 6-hydroxydopamine-induced neuronal death. *FASEB JOURNAL* 18 (7): MAY 2004

Ni JH, Powell R, **Baskakov IV**, DeVico A, Lewis GK, Wang LX.

Prion Award Continued

protein (PrP) itself converted into a β -sheet-rich conformation. Persistent failure to reconstitute infectivity *in vitro* has raised growing skepticism regarding the sufficiency of PrP alone to form an infectious agent. The studies presented at the Paris meeting dramatically increase our understanding of the biochemical nature of the prion protein as an infectious agent and provides fundamental insight into the mechanisms of infectious prion biogenesis. Dr. Baskakov's research is focused on developing an conversion system enabling the reconstitution of an infectious isoform of a prion protein *in vitro*.

Second NCBI Workshop

The second part of a NCBI Bioinformatics Workshop sponsored by the Program Project Grant, "Local Signals and Macromolecular Architecture in Heart", Terry Rogers, PI. was held May 25, 2004. This part was just as well attended as the first (*Inside MBC*, Vol. 7, No. 1) and focused on exploring 3D molecular structure using NCBI applications. These applications take a protein sequence and create possible three dimensional (tertiary) structures based on the functional elements encoded in the protein that govern the folding, twisting or looping of proteins. The course discusses the principles behind the applications, the modifiable parameters and the effect of modifications on possible candidate structures. As proteins act in three dimensional space, the tertiary structure is critical for understanding protein function. The members of the program project include Dr. W. J. Lederer and others in MBC's Institute of Molecular Cardiology.

Synthesis, conformation, and immunogenicity of monosaccharide-centered multivalent HIV-1 gp41 peptides containing the sequence of DPI78. *BIOORGANIC & MEDICINAL CHEMISTRY* 12 (12): 3141-3148 JUN 15 2004

Talks and Travels

Dr. Iliia Baskakov, meeting presentation, "In Vitro Conversion of Recombinant PrP into Disease-Causing Isoform," 17th Annual Javits Meeting, University of California San Francisco, May 20, 2004.

Dr. Iliia Baskakov, Invited speaker, "The Protein Only Hypothesis of Prion Propagation: Myth or Fact?", Institut de Genetique Humaine, CNRS, Montpellier, France, June 1, 2004 and Laboratoire de Biophysique Moléculaire et Cellulaire, Département de Recherche Fondamentale sur la Matière Condensée, CEA-Grenoble, France, June 3, 2004.

Dr. Iliia Baskakov, meeting presentation, "Novel Cell-free Autocatalytic Conversion of PrP into Pathological Self-propagating Isoform," FASEB Summer Research Conference, Snowmass Village, CA, June 21, 2004.

Dr. Bruce Vogel, Seminar Speaker, Max-Planck-Institute for Biochemistry, Martinsreid, Germany, "Tissue Morphogenesis in *C. elegans*: The role of the extracellular matrix", May 4, 2004 and Max-Planck-Institute for Molecular Genetics, Berlin, Germany "Epithelial Morphogenesis in *C. elegans*: The role of the extracellular matrix", May 6, 2004