

BIOCHEMISTRY & MOLECULAR BIOLOGY TODAY

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Chair's Message

I have noticed some more greenery around Galveston, even as more shops and restaurants open their doors these last weeks. Even the elevators at MRB may be improving now that they have become the top priority among all elevators to be worked on. However, clearly the greatest upswing in activity is that of our faculty preparing all sorts of proposals to take advantage of various NIH "stimulus" programs being unveiled from week to week. If you decide to submit to any of these, please remember that both our staff and that of OSP are not at full strength. Try to start the process as early as you can. Front pages should be prepared early on in the process.

Also, if you are planning to make changes in your time commitment to grants you hold, keep in mind that we will be preparing budgets for next year this May and June. While our budget for the rest of this fiscal year is VERY austere, there is reason to believe that next year will be a more "normal" year, based on

messages coming from Austin. If we are to make the best plans for a return to normalcy, we need information about your plans as soon as you know what they are. Let us know. I know you are all busy -- we need not meet in person; a phone call to me will suffice.

If you have been successful in augmenting your program and will be bringing new researchers on board, I know that the HR process has been slow, and that recruiting foreign nationals has not been easy. I have met with the Director of HR, and plan to have the appropriate HR management attend a faculty meeting to be announced.

While there is progress, aspects of our infrastructure remain fragile until we can use FEMA funds to remediate all damage and actually rebuild facilities that are more storm-resistant, also using FEMA funds.

One simple improvement is to



determine where all freezers are and to create "buddy" teams. You or your lab's designee may not be available during a prolonged power shortage, or after a week may need to be relieved from checking that freezers are functioning or have dry ice, etc. Arrange for a backup from a nearby colleague's lab, and be willing to do the same for them. In this way no one person would be inconvenienced during the entire emergency, and there would be opportunities for all to attend to personal needs. I will soon appoint one of our faculty and/or staff to help organize such a process. If you have suggestions or wish to volunteer, do not hesitate to let me or David Hileman know.

Enjoy our spring, and I look forward to seeing you at the graduations in May!

regino

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Special Items of Interest

- Awards

Awards and Announcements

Breanne Yingling presented a poster at the North Carolina Academy of Science in the category of Molecular Biology and Genetics and took home **first prize**:

Yingling, B.M., Prusak, D.J., Danecek, P., Mason, P.W., Wood, T.G. and Schein, C.H. Expression of West Nile Non-Structural Protein 2A in E. coli. North Carolina Academy of Science 2009 Annual Meeting, Warren Wilson College, Asheville, NC (April 4).

Breanne was a former SURF student (2008) with Dr. Catherine Schien and a senior at Lenoir-Rhyne University.



Dr. Sankar Mitra was awarded the 2009 Mark Brothers of South Bend, Indiana Lectureship Award from the Indiana University School of Medicine. Dr. and Mrs. Guey C. Mark created the endowed Mark Brothers Lectureship to recognize nationally and internationally renowned medical scientists of Asian descent. The recipient is asked to present two lectures, one clinical and one research, to the medical community, and to spend about two days on campus, during which one or two additional lectures to smaller groups are planned.



Dr. Mitra

Konrad Pazdrak, M.D., Ph.D. was awarded a Faculty Development Career Award from the Institute for Translational Sciences.



Dr. Pazdrak

Graduate Program News

We are wrapping up the spring admissions and recruitment cycle and were pleasantly surprised to see the strong quality and number of applicants. BMB accepted 6 new students for the fall term and MBET (formerly BSCB) has accepted one student with several more in review. Our Committees worked very hard and deserve a great deal of credit for maintaining the focus of our Program and goals.

You may have noticed the name change for our educational track, Biophysical Structural Computational Biology (BSCB). And you may ask why change “BSCB” to “Molecular Biophysics Educational Track”, MBET. There are several advantages to making the change, the major one being that we will be included in searches with that as the search name. The name ‘Molecular Biophysics’ is used by graduate programs at top institutions such as John Hopkins, UT Southwestern, Emory, Yale or Texas A&M University. Hence, the name ‘Molecular Biophysics’ will make us more competitive for recruiting purposes.

Several of our students received awards this spring:

Who’s Who amongst Students in American Universities and Colleges this year: Austin Elam, Bolen/Hilser laboratory, Jeff Borgeson, Watowich laboratory, Kurtis Anderson, Gorenstein laboratory, Marlene Starr, Saito laboratory, and Vincent Dimayuga, Papaconstantinou laboratory.

Christof Straub, Kurosky laboratory, submitted his abstract to the ABRF 2009: Application and Optimization of Existing and Emerging Biotechnologies has been selected for a Student/PostDoc Poster Award. He will participate in the Conference and present his poster on “High Mobility Group Box 1 (HMGB1) in Eosinophil Activation”.

Christof also, won the Thermo Scientific ABRF 2009 Outstanding Scientist/Technologist Award. As a Travel Award winner he will receive travel and lodging expenses plus complimentary registration to attend the main ABRF 2009 meeting to be held in Memphis, Tennessee, Feb. 7-10, 2009.

Several of our students also were renewed on their fellowships:

Robert Malmstrom –Keck Center's Pharmacoinformatics

Sai Gandham –Keck Center's Pharmacoinformatics

Kurtis Anderson and Jason Allison were renewed for the Computational and Structural Biology in Biodefense Predoctoral Fellowship

-Debora Botting

Publications

Xiao T, Shoeb M, Siddiqui MS, Zhang M, Ramana KV, Srivastava SK, Vasiliou V, Ansari NH. Molecular cloning and oxidative modification of human lens ALDH1A1: implication in impaired detoxification of lipid aldehydes. [J Toxicol Environ Health A](#). 2009;72(9):577-84.

Vertrees J, Wrabl JO, Hilser VJ. [Energetic profiling of protein folds](#). *Methods Enzymol*. 2009;455:299-327.

Nair DT, Johnson RE, Prakash L, Prakash S, Aggarwal AK. [DNA Synthesis across an Abasic Lesion by Human DNA Polymerase \$\iota\$](#) . *Structure*. 2009 Apr 15;17(4):530-7.

Faculty on the Road



Dr. Sankar Mitra spoke in a session on the role of reactive oxygen species in cancer cell signaling and genomic stability at the American Association for Cancer Research annual meeting in Denver on April 18-22, 2009.

Dr. Wlodek Bujalowski was invited to Newark-University of Delaware, Newark, Delaware on April 26th-28th, 2009 to present a seminar titled "Structural Dynamics of Hexameric Helicases. *E. coli* DnaB Protein"

Dr. Konrad Pazdrak went to the Annual Meeting of the American Academy of Asthma, Allergy and Clinical Immunology, held in Washington DC, March 13-17. He also, along with **Dr. Alex Kurosky** and **Dr. John Wiktorowicz** attended 13th NHLBI Proteomics Investigator Meeting in Dallas, April 14-16.

Dr. Cheryl Watson traveled to Texas A&M University in College Station on February 6, 2009 to present her research to a group of interested scientists and discuss the work.

She was in Portland, Oregon March 10-13, to present an endowed lecture on her research to faculty and students of the Willamette University E. Todd Wilson-Berg Symposium.

ONLINE Research Coordinator's Corner
www.bmb.utmb.edu/department/RCC/

Featured Abstract by BMB Faculty

DNA Synthesis Across an Abasic Lesion by Human DNA Polymerase *iota*.

[Structure](#). 2009 Apr 15;17(4):530-7.

[Nair DT](#), [Johnson RE](#), [Prakash L](#), [Prakash S](#), [Aggarwal AK](#).

Department of Structural and Chemical Biology, Mount Sinai School of Medicine, Box 1677, 1425 Madison Avenue, New York, NY 10029, USA; National Centre for Biological Sciences (NCBS-TIFR), UAS -GKVK Campus, Bellary Road, Bangalore 560065, India.

Abasic sites are among the most abundant DNA lesions formed in human cells, and they present a strong block to replication. DNA polymerase *iota* (Pol*iota*) is one of the few DNA Pols that does not follow the A-rule opposite an abasic site. We present here three structures of human Pol*iota* in complex with DNAs containing an abasic lesion and dGTP, dTTP, or dATP as the incoming nucleotide. The structures reveal a mechanism of translesion synthesis across an abasic lesion that differs from that in other Pols. Both the abasic lesion and the incoming dNTPs are intrahelical and are closely apposed across a constricted active site cleft. The dNTPs partake in distinct networks of hydrogen bonds in the "void" opposite the lesion. These different patterns of hydrogen bonds, as well as stacking interactions, may underlie Pol*iota*'s small preference for insertion of dGTP over other nucleotides opposite this common lesion.

