

BIOCHEMISTRY & MOLECULAR BIOLOGY TODAY

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Chair's Message

This month officially marks the beginning of hurricane season. While we always hope for the best, it is necessary to prepare for possibility that a storm will come our way. If you are not sure what this means in terms of your work space, please be sure to contact Lisa Pipper or Margie Wronski, who will tell you who is the "emergency preparedness" faculty member for your area. If you are new to the area and not sure what kind of preparations are recommended for your personal dwelling, either Lisa or Margie can tell you where you can get good, reliable information. Typically these involve having a plan that you and your loved ones have prepared. Some items include making sure you know where your critical papers are, what you will do with pets, how to prepare your house, how to make sure your car is operational, having medicines and some cash on hand (when the electricity goes, credit/debit cards are not accepted), and a host of other items to have on hand. Some things are intuitive, such as flashlights and candles (they do not need batteries), bug repellent, and remembering that bathtubs can be useful reservoirs of water. In any case, now is the time to make plans and

certain decisions, not at the last minute.

On a cheerier note, one of our students, Diana Ferrari, was awarded the prestigious Fischer Award, conferred on the basis of a paper published describing work done as part of her dissertation. She was informed of the award during the same week as her wedding in Peru. I guess the award will be a welcome wedding present. After her honeymoon, Diana will return to her postdoctoral position in Marseilles, in the South of France. And as aside, and while we hear about the glamour of the South of France, they also have bad storms and forest fires. Recently, they had a storm with almost 100 mph winds. We are not alone in our battle with the elements.

On June 5th, commencement for the Medical School took place, the commencement talk by the Surgeon General of the United States was inspiring. . This will be a busy summer for many, with several of our faculty moving back to renovated facilities, new spaces, or out of the way for renovations that have been planned for more than a year.

Again, if you are planning to submit a



grant, consult Margie for timely staff assignment, given that many of our staff have vacations planned during the summer months. And while on this topic, please consider taking some time off yourself. Vacations are pauses that make us more efficient, not to mention that we get to spend time with family and friends. If you want to have a chalk talk session prior to writing your grant, let me know. If you are closer to writing, please let Dr. David Konkell know – he may have vacation plans of his own, and in any case, he is usually pretty booked up in advance, at least for the "prime time" just before the major NIH grant deadlines.

I am sure you have all heard that the Medical School is on good financial grounds as are we, albeit the state-mandated 5% budget cut is making us look very closely at our expenditures. Nevertheless, I think we are doing well, and our faculty recruitment plans are going forward. Having said that, I wish all a safe, productive and fun summer.

regino

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Special Items of Interest

- ✦ Awards and Announcements
- ✦ Featured Abstract

Awards and Announcements

Dr. Kay Choi received the Sealy Center for Structural Biology and Molecular Biophysics Collaborative Project development grant. The title of the project is 'Structural Analysis of Flavivirus Evolution'.



Debashish Sahu received the "The Protein Society Finn World Travel Award" from Protein Society to attend the 24th Annual Symposium of The Protein Society between Aug 1st and Aug 5th 2010 at San Diego, CA.

Hegde, Muralidhar L. received an ASBMB postdoctoral travel award to attend Experimental Biology meeting held in Anaheim, CA 24-28 April 2010.

Shiladitya Sengupta, PhD, Post Doc in Sankar Mitra's lab, received a travel award for the best poster presentation (1st place) on Cancer Center Day, May 18 2010.

Christof Straub, a third year graduate student in Dr. Kurosky's laboratory, will attend the 4th International HMGB1 Symposium in Helsinki, Finland from June 20-23, 2010. The title of this year's symposium is "Signals of Tissue Damage". Christof's abstract, titled "HMGB1 in murine allergic airway inflammation", was selected for an oral presentation on Tuesday, June 22. The symposium will take place at Helsinki University and will focus on HMGB1 functions, receptors, and its role in inflammation.

Cecile Bussetta, Post doc in Dr. Choi's lab, attended the 9th international symposium on positive-strand RNA viruses (May 17-21, 2010) in Atlanta, Georgia where she presented a poster titled "Structural study of the interaction between the methyltransferase and the polymerase domains of Dengue virus NS5."

Keerthi Gottipati also attended 9th international symposium on positive-strand RNA viruses in Atlanta, GA, and presented a poster on "Structural and functional characterization of the N-terminal protease of classical swine fever virus"

Rakesh Mishra, Postdoctoral fellow in S.K.Srivastva's lab received a travel grant for the 28th Annual Aspen Allergy Conference. The conference dates are Tuesday, July 27 through Saturday, July 31, 2010.

Faculty on the Road



Dr. Kay Choi attended the 2010 National RCE meeting in Las Vegas, Nevada from April 11-13 where she presented a poster titled "Structural characterization of Japanese encephalitis virus subviral particles".

-She also attended the 9th international symposium on positive-strand RNA viruses in Atlanta, GA, and gave plenary lecture on "Coordination of RNA synthesis and RNA methylation reactions by flavivirus NS5"

Dr. Catherine Schein chaired two sessions at the national ACS meeting in San Francisco in March on Protein Aggregation in disease and Protein Aggregation in drug formulation.

Dr. Cheryl Watson attended the Organization for the Study of Sex Differences Conference 2010, in Ann Arbor MI, University of Michigan June 3-6, 2010 to present a talk entitled "Membrane Actions of Physiological, Environmental and Plant Estrogens"

Dr. Olivera Nesic-Taylor is presenting a poster in Athens, Greece at the 3rd International Congress of Neuropathic Pain.

Publications



NMR solution structure of poliovirus uridylyated peptide linked to the genome (VPgpU). Schein CH, Oezguen N, van der Heden van Noort GJ, Filippov DV, Paul A, Kumar E, Braun W. Peptides. 2010 May 2.

Functions of Disordered Regions in Mammalian Early Base Excision Repair Proteins. Muralidhar L. Hegde, Tapas K. Hazra and Sankar Mitra. Cellular and Molecular Life Sciences (in press).

Aortic adventitial fibroblasts mediate vascular wall inflammation. Brian C. Tieu, Xiaoxi Ju, Chang Lee, Hong Sun, Wanda Lejeune, Adrian Recinos, III, Allan R. Brasier, and Ronald G. Tilton. Submitted.

Featured Abstract by BMB Faculty**NMR SOLUTION STRUCTURE OF
POLIOVIRUS URIDYLYATED PEPTIDE
LINKED TO THE GENOME (VPGPU)**

Schein CH, Oezguen N, van der Heden van Noort GJ, Filippov DV, Paul A, Kumar E, Braun W.

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Picornaviruses have a 22-24 amino acid peptide, VPg, bound covalently at the 5' end of their RNA, that is essential for replication. VPgs are uridylylated at a conserved tyrosine to form VPgpU, the primer of RNA synthesis by the viral polymerase. This first complete structure for any uridylylated VPg, of poliovirus type 1 (PV1)-VPgpU, shows that conserved amino acids in VPg stabilize the bound UMP, with the uridine atoms involved in base pairing and chain elongation projected outward. Comparing this structure to PV1-VPg and partial structures of VPg/VPgpU from other picornaviruses suggests that enteroviral polymerases require a more stable VPg structure than does the distantly related aphthovirus, foot and mouth disease virus (FMDV). The glutamine residue at the C-terminus of PV1-VPgpU lies in back of the uridine base and may stabilize its position during chain elongation and/or contribute to base specificity. Under in vivo-like conditions with the authentic cre(2C) hairpin RNA and Mg(2+), 5-methylUTP cannot compete with UTP for VPg uridylylation in an in vitro uridylylation assay, but both nucleotides are equally incorporated by PV1-polymerase with Mn(2+) and a poly-A RNA template. This indicates the 5 position is recognized under in vivo conditions. The compact VPgpU structure docks within the active site cavity of the PV-polymerase, close to the position seen for the fragment of FMDV-VPgpU with its polymerase. This structure could aid in design of novel enterovirus inhibitors, and stabilization upon uridylylation may also be pertinent for post-translational uridylylation reactions that underlie other biological processes. Copyright © 2010. Published by Elsevier Inc.

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