

# BIOCHEMISTRY & MOLECULAR BIOLOGY TODAY

JANUARY 2009 NO. 244



## Chair's Message

Happy New Year! We start the year on an upbeat note, as the animal facility is now pretty much back to normal and the surgical suites are functioning, thus allowing a host of other medical procedures to take place given that there is surgical backup. There is a growing awareness throughout the State that UTMB serves a vital function that extends beyond the shores of Galveston Island, and that it is crucial that restoration be made as promptly and completely as possible for the health of those living in South Texas. Our sister institutions to the north are now swamped and struggling with issues that we know well: the uninsured and the prisoner patients. To my knowledge there has already been a fatality due to an ambulance being stuck in traffic while trying to drive to Houston with a serious case.

On the education side, teaching for the fall resumed and the semester ended with all goals accomplished. This was due to the diligence and leadership shown by students and faculty

alike. I am proud of the achievement, and especially want to extend my admiration to our students, who demonstrated a fortitude and level of maturity beyond their years.

On the research side, NIH dignitaries came to visit and to quote them: "UTMB is an example of how an institution can successfully cope with and recover from a natural disaster". While decisions as to supplements and extension of funded grants are on an institute by institute basis, the central administration at NIH wants to be notified of our efforts so as to be able to speed and coordinate the funding process. At home, Sponsored Research is arranging contacts with the appropriate institute directors to facilitate the process. Bottom line, if you have a federal grant, contact your Program Officer and also Tony D'Agostino, so that she may help coordinate efforts. The presentations we made to NIH showing the extent of damage and efforts towards recovery will be made available, as it may be



useful to share these with your Program Officers.

The FEMA requests for funding are being submitted, and the Provost hopes to be able to begin distributing funds to investigators in the near future.

As we go through Galveston, we now see more renovation and less clutter. Businesses are coming back and folks are coming home, even when the rebuilding and reconditioning are not finished. Even as the beach is being renovated, the whole town is beginning to heal.

I know that the next few months will be hard on all as we cope with restricted resources at every level. We must also acknowledge that we are all suffering to varying degrees from post-traumatic syndrome. The best cure is to share feelings, and most importantly, to be patient in our interactions with others.

I know it is going to be a good year for us all. Keep your spirits up.

-regino

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## Graduate Program News

### BCSO HAPPY HOUR

Friday, Jan 23rd

5:30-7pm

Stork Club

2101 Post Office

Galveston, TX 77550



## Awards and Announcements

**Dr. Werner Braun** received an extension of his NIH R01 for another year until 01/31/2010 with a total cost of \$252,819. Title of the Grant is Computational tools for T- and B-cell epitope prediction. This extension is due to a non-competing renewal application, (not related to Ike).

**Dr. Catherine H. Schein**, has received an R21 EPA-STAR. The title of the grant is "Clinically Relevant IgE-cross Reactivity of Nut Allergen"

**Dr. Muralidhar L. Hegde** was awarded the American Parkinson's Disease Association postdoctoral fellowship for year 2008-09. He was one of 14 fellowships awarded.

**Christof Straub**, GSBS student in Dr. Kurosky lab was selected as a winner of a Thermo Scientific ABRF 2009 Outstanding Scientist/Technologist Award for abstract sent to the main ABRF 2009 meeting to be held in Memphis, Tennessee, Feb. 7-10. He was also recognized by enrollment into Strategic Allergy Research (ST\*AR) Program to be held in conjunction with the American Academy of Allergy, Asthma, & Immunology's Annual Meeting in Washington (March16).



## Administrator's Notes

I would like to give thanks to all of the BMB family for welcoming me during this transition. This has been a difficult time for everyone and I truly appreciate everyone's positive outlook on our situation.

Additionally, I would like to recognize the Administrative Staff for their teamwork and willingness to take on additional tasks. Please take a moment to recognize this staff for the extraordinary efforts they are making. Without them we would be lost.

### **FEMA Update**

Some of you will be receiving correspondence indicating you are able to purchase replacement items damaged in the storm. The correspondence will provide instruction, as well as an account number from which to purchase replacement items. The Provost trusts us to purchase only the items we previously submitted on the damage forms, so please be conscious of this as you order. Additionally, the FEMA team will likely come back and ask for additional information (i.e., documentation, pictures, quotes, etc.), so please keep all of this available for future inquiries. (For example, if the exact model number is no longer available for replacement, the FEMA team may come back and ask for documentation from the vendor/manufacturer indicating the original model is no longer available and has been replaced by another model.)

### **Administrative Structure**

We have spent a lot of time studying the best way to align the administrative support for faculty. We explored several ways, including developing administrative cores (i.e., ordering). But the limiting factor for departing from our current structure continues to be the number of staff. This will be re-evaluated on an on-going basis.

### **Hiring**

Externally funded positions are now being approved at a much more expedited rate in the Provost's Office. Additionally, the Provost is reviewing commitment funded positions on a case by case basis. These are both positive signs that we are slowly returning to normal operations.

### **Employee Leave Management Office**

The Institution has developed an "Employee Leave Management Office" to facilitate FMLA and Sick Leave Pool (SLP) requests. If you or one of your employees has a need to access either FMLA or SLP, or if you have questions, you can call the Employee Leave Management Office at 747-4645.

In summary, although the next few months may be a bit difficult, we have the right team and I know it will work out.

Thank you,

David

## Publications

- Sahu, D., Debnath, P., Takayama, Y. and **Iwahara, J.**, Redox properties of the A-domain of the HMGB1 protein, *FEBS Letters*, 582(29): 3973-3978, 2008.
- Takayama Y, Sahu D, **Iwahara J** (2008) Observing in-phase single-quantum <sup>15</sup>N multiplets for NH<sub>2</sub>/NH<sub>3</sub><sup>+</sup> groups with two-dimensional heteronuclear correlation spectroscopy. *J Magn Reson* 194, 313-316.
- Garcia, T.I., Oberhauser, A.F. and **Braun, W.** Mechanical stability and differentially conserved physical-chemical properties of Titin Ig-domains. *PROTEINS: Struct. Funct. and Bioinf.*, (in press), 2009.
- Ivanciuc, O., **Schein, C.H.**, Garcia, T.I., Oezguen, N., Negi, S.S. and **Braun, W.** Structural analysis of linear and conformational epitopes of allergens. *Reg. Tox. Pharm.*, (in press), 2009.
- Ivanciuc, O., Midoro-Horiuti, T., **Schein, C.H.**, Xie, L., Hillman, G.R., Goldblum, R.M. and **Braun, W.** The property index PD predicts peptides that cross-react with IgE antibodies. *Mol. Immunol.*, (in press), 2009.
- Ivanciuc, O., Garcia, T.I., Torres, M., **Schein, C.H.** and **Braun, W.** Characteristic motifs for families of allergenic proteins. *Mol. Immunol.*, 46, 559-568, 2009.
- Danecek, P. and **Schein, C.H.** Flavitrack analysis of the structure and function of West Nile non-structural proteins. *Int. J. Bioinformatics Res. Appl.*, (in press), 2009.
- Zhang, P., Mueller, S., **Morais, M.C.**, Bator, C.M., Bowman, V.D., Hafenstein, S., Wimmer, E., and Rossmann, M.G. (2008). "Crystal structure of CD155 and electron microscopic studies of its complexes with poliovirus". *PNAS* 105(47) 18284-9.
- Zhao W, **Morais MC**, Anderson DL, Jardine PJ, Grimes S. (2008) "Role of the CCA bulge of prohead RNA of bacteriophage ø29 in DNA packaging" *J Mol Biol.* 14;383(3) 520-8. PMID: 18778713
- Freiberg, A.N., Sherman, M.B., Morais, M.C., Holbrook, M.H., and Watowich, S.J. (2008) "Three-dimensional organization of Rift Valley fever virus revealed by cryo-electron tomography" *J. Virol.* 82(21) 10341-8. PMID: 18715915
- Morais, M.C.**, Koti, J.S., Bowman, V.D., Reyes-Aldrete, E., Anderson, D.L., Rossmann, M.G. (2008) "Defining molecular and domain boundaries in the bacteriophage f29 DNA packaging motor" *Structure* 16(8) 1267-74 (manuscript featured in journal's cover). PMID: 18682228.
- Koti, J.S., **Morais, M.C.**, Rajagopal, R., Owen, B.A.L., McMurray, C.T. and Anderson, D.L. (2008) "DNA packaging motor assembly intermediate of bacteriophage f29" *J Mol Biol.* 381(5) 1114-32. PMID: 18674782
- Xiang, Y., **Morais, M.C.**, Cohen, D.N., Bowman, V.D., Anderson, D.L., Rossmann, M.G. (2008) "Crystal and cryoEM structural studies of a cell wall degrading enzyme in the bacteriophage f29 tail" *Proc Natl Acad Sci U S A.* 105(28) 9552-7.
- Vitaliy Starosta, **Konrad Pazdrak**, Istvan Boldogh, Tetyana Svider and Alexander Kurosky. Lipoxin A4 counterregulates GM-CSF signaling in eosinophilic granulocytes. *Journal of Immunology*, 2008 Dec 15; 181(12):8688-99.
- Lieberman, S. A., Frye, A. W., Thomas, L., **Rabek, J. P.**, and Anderson, G. 2008. Comprehensive changes in the learning environment: subsequent step 1 scores of academically at-risk students. *Acad. Med.* 83:S49-S52.
- Starosta, V., **Pazdrak, K.**, Boldogh, I., Svider, T., and **Kurosky, A.** Lipoxin A4. Counterregulates GM-CSF Signaling in Eosinophilic Granulocytes. *J. Immunology* 181:8688- 8699, 2008.
- Ruggli N, Summerfield A, Fiebach AR, Guzylack L, Bauhofer O, Lamm CG, Waltersperger S, Matsuno K, Liu L, Gerber M, **Choi KH**, Hofmann MA, Sakoda Y, Tratschin JD. (2009) Classical swine fever virus can remain virulent after specific elimination of the interferon regulatory factor 3 degrading function of Npro. *J. Virol.* 83(2):817-29.
- Tammali R, Reddy AB, **Ramana KV**, Petrash JM, **Srivastava SK**. Aldose Reductase Deficiency in Mice Prevents Azoxymethane-Induced Colonic Preneoplastic Aberrant Crypt Foci Formation. *Carcinogenesis.* (2008).
- Yadav UC, Ighani-Hosseinabad F, van Kuijk FJ, **Srivastava SK**, **Ramana KV**. Aldose Reductase Inhibition Prevents Posterior Capsular Opacification in Porcine Eye Capsular Bag Model. *Invest Ophthalmol Vis Sci.* (2008).
- Yadav UC, Subramanyam S, **Ramana KV**. Lipophilic Vitamin-B1 Analogue Benfotiamine Prevents Endotoxin-Induced Uveitis in Rats. *Invest Ophthalmol Vis Sci.* (2009)



Forty-seven equally invited from U.S. and Europe leaders in various aspects of endogenous genome damage, its etiologic linkage to cancer and other pathophysiologies and aging will be giving lectures during this 4 day event.

Registration is still open for anyone wanting to participate in this conference. Registration information can be found on the website at <http://www.bmb.utmb.edu/us-eu08/>.

A complete listing of speakers can be found [here](#).

**ONLINE Research Coordinator's Corner**  
[www.bmb.utmb.edu/department/RCC/](http://www.bmb.utmb.edu/department/RCC/)

**14<sup>th</sup> Sealy Center for Structural Biology and Molecular  
Biophysics Symposium**

**The University of Texas Medical Branch**

**March 27, 2009**

Please visit our website at: [www.scsb.utmb.edu/symposium](http://www.scsb.utmb.edu/symposium)

## Featured Abstract by BMB Faculty

### Crystal structure of CD155 and electron microscopic studies of its complexes with polioviruses.

[Proc Natl Acad Sci U S A.](#) 2008 Nov 25;105(47):18284-9.

Zhang P, Mueller S, Morais MC, Bator CM, Bowman VD, Hafenstein S, Wimmer E, Rossmann MG.

Department of Biological Sciences, Purdue University, 915 West State Street, West Lafayette, IN 47907-2054, USA.

When poliovirus (PV) recognizes its receptor, CD155, the virus changes from a 160S to a 135S particle before releasing its genome into the cytoplasm. CD155 is a transmembrane protein with 3 Ig-like extracellular domains, D1-D3, where D1 is recognized by the virus. The crystal structure of D1D2 has been determined to 3.5-Å resolution and fitted into approximately 8.5-Å resolution cryoelectron microscopy reconstructions of the virus-receptor complexes for the 3 PV serotypes. These structures show that, compared with human rhinoviruses, the virus-receptor interactions for PVs have a greater dependence on hydrophobic interactions, as might be required for a virus that can inhabit environments of different pH. The pocket factor was shown to remain in the virus during the first recognition stage. The present structures, when combined with earlier mutational investigations, show that in the subsequent entry stage the receptor moves further into the canyon when at a physiological temperature, thereby expelling the pocket factor and separating the viral subunits to form 135S particles. These results provide a detailed analysis of how a nonenveloped virus can enter its host cell.

**Happy New Year**