

# BIOCHEMISTRY & MOLECULAR BIOLOGY TODAY

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**BMB**  
Biochemistry & Molecular Biology



## Chair's Message

I trust that you all had a wonderful holiday season with friends and family. We begin 2011 with well wishes for all.

As all know by now, Debora Botting is leaving BMB to take a position in the Office of the President of UTMB. It's a real loss for us as, I know that she played a big role in the smooth running of the BMB Graduate Program. While we plan to fill the position soon, it will not be easy. Deb's ability to help students and faculty alike carry out their mission made her everyone's favorite. We wish her well in her new position with the Prez.

A barrage of emails has made us all aware of some changes in the electronic submission process for NIH grants. As a result, OSP is now requiring us to have finished grants on hand at least 5 business days prior to the official deadline. Given that funding scores are lower across the board at NIH and elsewhere, I would suggest that at least a couple of weeks before deadline we submit "front pages" to OSP, so that part of the grant will be ready for submission as soon as the science content part is ready. Again, I would remind all of our junior tenure-track faculty that we

now require that you make a chalk talk presentation before you begin writing the grant. We will also be happy to make similar arrangements for any faculty member, regardless of rank.

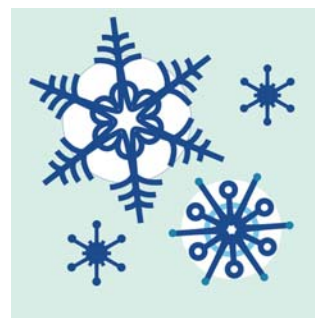
The initial pass at a budget for the next biennium by the Texas Legislature speaks of what would be a 22% cut for the Medical School budget. Now before anyone decides to take job in a medical school in Wyoming (there are none) or move to North Dakota (jobs but no housing), let us not forget the Texas "two step" political process. Yes, there will be a budget cut, but we will not have any idea of what it will be until the summer, maybe late summer.

Given the looming federal and state cutbacks, we decided last fall to gather together (on March 2, 2011) and develop strategies for the future. Our retreat will focus on this topic, and we are making plans to make it as useful an exercise as possible. Over the next few weeks final details will be shared, but basically it will be a one-day event open to all faculty with a primary appointment in BMB. We will have as guests individuals who are important to our faculty research

efforts. A coordinator of talent and experience will help us accomplish our goals. We have listened to faculty suggestions both in terms of topics and process. In general, each participant will be able to take part in two different brain-storming breakout sessions. After the retreat we will follow up with implementation plans. Stay tuned for details.

I know that there are challenges ahead for all. I also believe we are part of a dedicated group of people committed to doing what we do best: we teach, we search for knowledge, we serve others. I have no doubt we will continue to do these things well in the future.

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### Special Items of Interest

- ✦ Awards and Announcements

## Awards and Announcements

BMB student **Emilio Reyes-Aldrete** (Morais lab) received a HAMBFP (Houston Area Molecular Biophysics Program) pre-doctoral fellowship.

Dr **D. Wayne Bolen** is being awarded the prestigious Christian B. Anfinsen Award by the Protein Society.

This award, sponsored by the Aviv Family Foundation, recognizes significant technical achievements in the field of protein science. He will be acknowledged at the 25th Annual Symposium of The Protein Society in Boston, Massachusetts, July 23-27, 2011 with a session in his honor on a topic as it relates to his/her field of study.



## Graduate Program News

Keeping up with what has been a BMB tradition for the last eight years, the [Biological Chemistry Student Organization \(BCSO\)](#) is proud to welcome three scientists of international repute to our campus this Spring as part of the **Pioneering Biological Discovery Seminar Series**. Since 2003, the BCSO has played host to eight exceptional scientists who have come to UTMB and shared their scientific achievements with us. These scientists, along with the three invitees for this year are being honored by having their names engraved on a plaque which is currently displayed outside the BSB auditorium. The scientists who will share their highly exciting work with BMB students and faculty this year are:

**Sankar Ghosh, PhD, Columbia University – March 10.**

**Klaus M Hahn, PhD, University of North Carolina, Chapel Hill – April 21.**

**Dorothee Kern, PhD, Brandeis University – May 19.**

Please join us on the above dates to welcome these speakers to UTMB and our Department. If you have any questions, please do not hesitate to contact Hung Doan ([hqdoan@utmb.edu](mailto:hqdoan@utmb.edu)) or Abhijan Chattopadhyay ([abchatto@utmb.edu](mailto:abchatto@utmb.edu)).



## BMB Investigators in the news

[Discovery could lead to new therapies for asthma, COPD](#)

e!Science News, Jan. 28, 2011

Researchers have proved that a single “master switch” enzyme, known as aldose reductase, is key in producing excess mucous that clogs the airways of people with asthma and chronic obstructive pulmonary disease. According to **Satish Srivastava**, senior author of the paper, aldose reductase inhibitors have a number of potential advantages over current therapies for asthma and COPD. The findings are from a UTMB Health study published in the online journal PLoS One. The news also appears in [Science Daily](#), [PhysOrg.com](#) and on the [European Lung Foundation](#) website.

## Publications



Ferrari DC, **Nesic O**, **Perez-Polo JR**. Perspectives on neonatal hypoxia/ischemia-induced edema formation. *Neurochem Res*. 2010 Dec;35(12):1957-65. Epub 2010 Dec 7. PubMed PMID: 21136160.

Navaratnarajah CK, Oezguen N, Rupp L, Kay L, Leonard VH, **Braun W**, Cattaneo R. The heads of the measles virus attachment protein move to transmit the fusion-triggering signal. *Nat Struct Mol Biol*. 2011 Jan 9. [Epub ahead of print] PubMed PMID: 21217701.

Yadav UC, Kalariya NM, **Ramana KV**. Emerging Role of Antioxidants in the Protection of Uveitis Complications. *Curr Med Chem*. 2010 Dec 24. [Epub ahead of print]

Yadav UC, Aguilera-Aguirre L, **Ramana KV**, Boldogh I, Srivastava SK. Aldose reductase inhibition prevents metaplasia of airway epithelial cells. *PLoS One*. 2010 Dec 28;5(12):e14440.

Nefedov A, Gilski M, **Sadygov R**. An SVM Model for Quality Assessment of Medium Resolution Mass Spectra from 18O-water Labeling Experiments. *J Proteome Res*. 2011. Jan 19. [Epub ahead of print] PubMed PMID: 21247216.

Lieberman SA, Ainsworth MA, Asimakis GK, Thomas L, Cain LD, Mancuso MG, **Rabek JP**, Zhang N, Frye AW. Effects of comprehensive educational reforms on academic success in a diverse student body. *Med Educ*. 2010 Dec;44(12):1232-40. doi: 10.1111/j.1365-2923.2010.03770.x. Epub 2010 Nov 11. PubMed PMID: 21070343.

Esadze, A, Li, DW, Wang, T, Brüsweiler, R, **Iwahara, J** (2011) Dynamics of lysine side-chain amino groups in a protein studied by heteronuclear 1H-15N NMR spectroscopy. *J Am Chem Soc* 133, 909-919.

**Bujalowski W**, Jezewska MJ. Macromolecular competition titration method. Accessing thermodynamics of the unmodified macromolecule-ligand interactions through spectroscopic titrations of fluorescent analogs. *Methods Enzymol*. 2011;488:17-57.

Dr. Wayne Bolen's paper has been listed as one of the 50 most cited papers in Biochemistry.

[Unfolding free energy changes determined by the linear extrapolation method. 1. Unfolding of phenylmethanesulfonyl .alpha.-chymotrypsin using different denaturants](#)

Marcelo M. Santoro, D. W. Bolen *Biochemistry*, **1988**, 27 (21), pp 8063–8068. DOI: 10.1021/bi00421a014.

## Featured Abstract by BMB Faculty

# The heads of the measles virus attachment protein move to transmit the fusion-triggering signal

Chanakha K Navaratnarajah<sup>1,2</sup>, Numan Oezguen<sup>3</sup>, Levi Rupp<sup>1,2</sup>, Leah Kay, Vincent H J Leonard<sup>1,2</sup>, **Werner Braun**<sup>3</sup> & Roberto Cattaneo<sup>1,2</sup>

[Nat Struct Mol Biol. 2011 Jan 9. \[Epub ahead of print\]](#)

The measles virus entry system, consisting of attachment (hemagglutinin, H) and fusion proteins, operates by means of a variety of natural and targeted receptors; however, the mechanism that triggers fusion of the viral envelope with the plasma membrane is not understood. Here, we tested a model proposing that the two heads of an H dimer, which are covalently linked at their base, after binding two receptor molecules, move relative to each other to transmit the fusion-triggering signal. Indeed, stabilizing the H-dimer interface with additional intermolecular disulfide bonds prevented membrane fusion, an effect that was reversed by a reducing agent. Moreover, a membrane-anchored designated receptor efficiently triggered fusion, provided that it engaged the H dimer at locations proximal to where the natural receptors bind and distal to the H-dimer interface. We discuss how receptors may force H-protein heads to switch partners and transmit the fusion-triggering signal.

