

BIOCHEMISTRY & MOLECULAR BIOLOGY TODAY

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BMB
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Chair's Message

Returning from Study Section, not an encouraging experience I admit, I decided that I should share one experience. Given the low success rate, the admonition to provide a biomedical perspective or rationale to the proposed project has grown in importance. In more than one instance, it affected the score given to a grant in a significant fashion. My suggestion to colleagues who may lack the "biomedically relevant expertise" is to seek the counsel, perhaps even a letter offering endorsement, from an appropriate colleague. If at a loss as to whom to ask, ask David Konkel; he has read more grants by more faculty, and may have some idea as to who may be of help. Ask your mentoring committee if you are an assistant professor. Consult the UTMB site listing research interests of faculty

([the USES search site](#)). Heck, if worse comes to worst, ask me and I will try to find a suitable suggestion. This may mean the difference between being funded or not at a time that cannot be called auspicious.

We have begun a round of chalk talks for all assistant professors as an aide in research project preparation. However, this process is not meant to be limited to those seeking their first R01. If you would like to benefit from this kind of feedback, contact me and I will set up what I hope is a helpful experience.

As research funding wanes, the Department will have to cope with a smaller proportion of faculty salary recovery. I would suggest that one venue to improve our numbers is to increase teaching. I have often talked at faculty meetings about the fourth year medical student

opportunity listed as "selectives," designed to expose fourth year medical students to research. I can personally assure one and all that this is a great experience. It provides a flexible and informal way to interact with medical students considering an academic medical profession. For details you may ask Louise Prakash or Darrell Carney, who have experience with this kind of teaching.

I hope you are all enjoying our prolonged "Indian summer".

regino



Inside this issue:

Awards and Announcements	2
Faculty Travels	5
Graduate Program News	2 -3
Featured Abstract	6
Publications	4

Special Items of Interest

- ✦ Awards and Announcements
- ✦ UTMB Receives Major NIH Award for Asthma Research—page 4

Awards and Announcements

Kay Choi was awarded a John Sealy Memorial Endowment Fund for Biomedical Research Pilot grant titled "Mechanism of RNA synthesis and RNA capping by dengue virus NS5 polymerase".

Abhijnan Chattopadhyay, a graduate student in the Fujise laboratory, has been awarded the Jane Welsh Cardiovascular Research Scholarship Award for 2010 by the Graduate School of Biomedical Sciences. The award consists of a \$500 check and a plaque.

Junji Iwahara is the recipient of the 2010 Graduate School Excellence in Teaching Award in the Biochemistry and Molecular Biology graduate program.

Wei Han, first year Medical Student, received a first place poster award in the NIAID Infectious Diseases & Inflammatory Disorders program of the 2010 Medical Student Summer Research Program for his summer research project "Large-scale 3D modeling of allergens". Wei is in the laboratory of Dr. W. Braun.



Graduate Program News

It is my distinct pleasure to inform you that Dr Junji Iwahara is the 2010 recipient of the Graduate School Excellence in Teaching Award in the BMB Graduate Program. This is a new award initiated by the graduate school which recognizes outstanding teaching in each of the graduate programs. Dr. Iwahara was selected by the students in the BMB/MBET Graduate Program for this honor.

Congratulations to Dr. Iwahara for his outstanding teaching and dedication to the education of our students!!

We are extremely proud to announce the numerous awards our BMB & MBET students received this year.

BMB Students:

Abhijnan Chattopadhyay, Fujise laboratory, won the Jane Welsh Cardiovascular Research Scholarship award

Hung Doan, Fujise laboratory, won the Shirley Patricia Parker Scholarship and the Barbara Bowman award

Marlene Starr, Saito laboratory, won the James E. Beall II Memorial Scholarship and the Sealy Center on Aging Scholarship awards

Christof Straub, Kurosky laboratory, won the Barbara Bowman award and the Dean's Service award

Graduate Program News (cont)

MBET Students:

Andrea Garces, Watowich laboratory, won the Stephen C. Silverthorne Memorial Scholarship award

Rodrigo Diaz Espinoza, Soto laboratory, won the Robert A. Welch Scholarship award

Michal Szymanski, Bujalowski laboratory, won the Biological Chemistry Student Organization, Irma Mendoza and the Marianne Blum Scholarship awards

We would like to thank our students for their assistance in creating another fantastic year with our booth at the BBSC Orientation Fair held earlier in October. We were fortunate to meet many of the incoming first year students and hope to see them again throughout the year.

Dr. Kay Choi, Hung Doan and Matthew Leitch attended the Graduate School & Internship Fair at The University of Houston-Downtown the middle of October and had a very strong turnout of upper classmen who were very interested in our Graduate Program and UTMB. Thank you for your support!



Breast Cancer Awareness Month (BCAM) is an annual international health campaign organized by major breast cancer charities every October to increase awareness of the disease and to raise funds for research into its cause, prevention and cure. The campaign also offers information and support to those affected by breast cancer.

As well as providing a platform for breast cancer charities to raise awareness of their work and of the disease, BCAM is also a prime opportunity to remind women to be breast aware for earlier detection.

UTMB RECEIVES MAJOR NIH AWARD FOR ASTHMA RESEARCH

The National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) has recently announced the awarding of \$11,034 million dollars for five years to support a UTMB Proteomics Center to conduct research largely focused on inflammatory diseases of the lung especially, asthma, allergy, and chronic obstructive pulmonary disease (COPD). Dr. Alexander Kurosky is the Principal Investigator and Director of the Center. Other key members of the Center include: Dr. Allan Brasier (Center Associate Director), Drs. J. Wiktorowicz, D. Gorenstein, M. Motamedi, Y. Zhao, K. Pazdrak, B. Luxon, S. Sur, I. Boldogh, W. Calhoun, R. Garofalo, A. Casola, and K. Rosenblatt. Drs. Gorenstein and Rosenblatt, formerly from UTMB, are currently at the University of Texas Health Science Center at Houston. Proteomic Centers at other medical Institutions that also received funding from this NHLBI Proteomic Centers initiatives include: Stanford, Harvard Mass General, Johns Hopkins, University of California, Los Angeles, Boston University and the University of Texas at San Antonio. This NHLBI funding follows a previous awarding of some \$150 million dollars in 2002 to support 10 Proteomics Centers nationally for seven years which included UTMB under the direction of Dr. Kurosky. Thus, the extension of NHLBI support for another five years underscores their strong commitment to proteomic studies, a research area emphasized in the National Institutes of Health "Roadmap for Medical Research". The UTMB NHLBI Center will conduct proteomic studies to define molecular processes involved with inflammation related diseases of the airways. Proteomics is a biomedical research area that involves characterizing differences in protein expression in diseased tissues and body fluids using sophisticated mass spectrometry methods. The UTMB Proteomics Center is composed of seven research teams and three core laboratories that have specialized analytical capabilities. The thirteen member multidisciplinary team of the Center is a balanced group of basic scientists and physician scientists each with complimentary research capabilities. The Center has a strong commitment in applying proteomic technologies to clinical and translational research areas to obtain new insights into molecular pathways and signaling that will be amenable to therapeutic interventions as well as diagnostic and prognostic biomarkers for the benefit of patients.

Publications



Schein, C.H., Ivanciuc, O., Midoro-Horiuti, T., Goldblum, R.M. and Braun, W. An allergen portrait gallery: representative structures and an overview of IgE binding surfaces. *Bioinform. Biol. Insights*, 4, 113-125, 2010.

Iwahara, J, Clore, GM (2010) Structure-independent analysis of the breadth of the positional distribution of disordered groups in macromolecules from order parameters for long variable-length vectors using NMR paramagnetic relaxation enhancement. *J Am Chem Soc*, 132, 13346-13356.

Takayama, Y, Sahu, D, Iwahara, J (2010) NMR studies of translocation of the Zif268 protein between its target DNA sites. *Biochemistry* 49, 7998-8005.

Yumei Ye, Jose R. Perez-Polo, and Yochai Birnbaum. Protecting against ischemia-reperfusion injury: antiplatelet drugs, statins, and their potential interactions. *Ann. N.Y. Acad. Sci.* 1207 (2010) 76–82

HAPPY HALLOWEEN

Faculty on the Road

Krishna Rajarathnam travelled to Alexandria, VA on October 14-15 to review grants for the NIH 'Innate Immunity and Inflammation' Study Section.

Catherine Schein was part of a DTRA phase II review panel in Alexandria, VA October 12 and also the Keck Computational Biology meeting in Houston Oct.. 15th.

Dr. Alex Kurosky recently attended the 2010 US HUPO in Australia.

Kizhake V. Soman attended the "Signaling at Different Scales – the 20th Anniversary Keck Center Research Conference", October 15, 2010, in Houston.

Werner Braun was an invited speaker at the Oesper Symposium 2010, honoring Kurt Wuethrich (Nobel Prize in Chemistry 2002), University of Cincinnati, Oct. 8., 2010.



Featured Abstract by BMB Faculty

NMR studies of translocation of the Zif268 protein between its target DNA Sites.

Biochemistry. 2010 Sep 21;49(37):7998-8005.

[Takayama Y](#), [Sahu D](#), [Iwahara J](#).

Department of Biochemistry and Molecular Biology, Sealy Center for Structural Biology and Molecular Biophysics, University of Texas Medical Branch, Galveston, Texas 77555-1068, USA.

Zif268 is a zinc-finger protein containing three Cys(2)-His(2)-type zinc-finger domains that bind the target DNA sequence GCGTGGGCG in a cooperative manner. In this work, we characterized translocation of the Zif268 protein between its target DNA sites using NMR spectroscopy. The residual dipolar coupling data and NMR chemical shift data suggested that the structure of the sequence-specific complex between Zif268 and its target DNA in solution is the same as the crystal structure. Using two-dimensional heteronuclear (1)H-(15)N correlation spectra recorded with the fast acquisition method, we analyzed the kinetics of the process in which the Zif268 protein transfers from a target site to another on a different DNA molecule on a minute to hour time scale. By globally fitting the time-course data collected at some different DNA concentrations, we determined the dissociation rate constant for the specific complex and the second-order rate constant for direct transfer of Zif268 from one target site to another. Interestingly, direct transfer of the Zif268 protein between its target sites is >30000-fold slower than corresponding direct transfers of the HoxD9 and the Oct-1 proteins, although the affinities of the three proteins to their target DNA sites are comparable. We also analyzed translocation of the Zif268 protein between two target sites on the same DNA molecules. The populations of the proteins bound to the target sites were found to depend on locations and orientations of the target sites.