Chair’s Message

This month will be very important to our faculty recruitment effort, as we have two candidates visiting in quick succession. Please make an effort to participate by attending their research seminars. Douglas Benson, Ph.D. will present on July 16th and Wensheng Lin, M.D., Ph.D. on July 23rd.

At our next faculty meeting we will begin a dialogue on the roles of the scientist position and the research faculty track. This is an important issue for all faculty and, before we make any policy decisions, we want to be sure we understand the ramifications of the different interpretations. Above all, we would like any policy decisions made to be in the best interest of the career development plans of all concerned and be transparent and understood by all.

You will soon hear that in the future the Department will be responsible for all IT costs as the ATOS contract is phased out. The financial impact on our department is significant at a time when we want to invest further in software that will make our work easier. I will be appointing a Task Force to help us cope with the change and minimize the financial impact. If you are interested and have expertise or interest in this area, please let me know.

Hate to nag, but… compliance must be finished by end of August. Again, my personal advice is to skip to the actual test and barrel through using common sense. It takes little time, and if nothing else you may learn a thing or two about which fire extinguisher to use – the red ones always work on everything. Uhmm did I get that right?

There is a need to identify funds for tuition for our graduate students who work with our faculty whose research grants will not cover this expense. Working in collaboration with Ann Anderson, Director for Development & Alumni Affairs at the GSBS, and the family of my late student Marianne Blum, we are creating a Presidential Scholarship Endowment to benefit graduate students in the BMB Graduate Program. At this time, I am offering to match with proceeds of my Professorship any contribution from any BMB member or alumni up to a total of $1,000, and to further match that contribution personally. That means that if you contribute $100 to the endowment, my professorship will contribute $100 and I will personally contribute $100. This should allow us to create a fund that over time will grow and provide scholarships to our students. To those of us who worked with and cherished Marianne’s incredible spirit and respected her academic accomplishments, there is no doubt that this is a wonderful way to honor her memory. I do not think I ever met a more positive and dedicated colleague.

So hope for no more rain, send a check to Ann Anderson, Mail Route 1041, and see you at the seminars.

-regino
Graduate Program News

BCSO News—Officers of the BCSO

We are pleased to announce that nominations / applications for the BCSO Student Award are currently being accepted. Please check our website in the coming weeks for more details on the application process and the deadline (www.bmb.utmb.edu/graduate_program/BCSO/bcso_award.html).

The BCSO is organizing two student-faculty social events this summer: first, we will plan a trip to the Main Event Family Entertainment Center in Webster, TX on Saturday July 28 and second, we will have a BBQ party on August 18. The BCSO is also accepting nominations for all Officer positions in 2007-08. If you are interested in serving as a BCSO officer, please send an email to any of the current BCSO officers.

Graduate Program—Lillian Chan, Ph.D.

We would like to welcome our newest Graduate Program faculty members, Drs. Choi, Morais and Iwahara. We look forward to working together with these talented individuals.

It is time for nominations for the various GSBS Awards and Scholarships and we wish our students the best of luck. Details on the Barbara Bowman Award will be forthcoming very soon and will be emailed directly to BMB mentors and students.

On July 5th, a memo from Dr. Cary Cooper was sent to all GSBS faculty discussing the upcoming increase in student stipends as well as supporting tuition and fees. All graduate student mentors should read these letters.

Awards and Announcements

Dr. Olivera Nesic, Assistant Professor, Biochemistry & Molecular Biology, was awarded the 2007 Erica Nader Award by the American Spinal Injury Association (ASIA). The award is sponsored by the Viscogliosi Brothers and is the Association's most prestigious award. Nesic was presented the award in June at the ASIA annual meeting in Tampa for her outstanding work in the area of proteins that contribute to edema and syringomyelia after spinal cord injury.

Dr. Kishor Bhakat has been selected for a young investigator award from American Federation for Aging Research. The award will support Dr. Bhakat's presentation at the FASEB summer research conference to be held on June 2-6 at Snowmass Village, Co.

Darshana Choksi, a cell biology graduate student in Dr. Papa’s lab and Kash Choksi, a Post Doc in Dr. Papa’s lab are proud parents a new baby girl named Diya.

Veronica Tovar and her husband, Jesus Garcia-Gallegos have a new baby boy, Pablo. Veronica is also a Post Doc in Dr. Papa’s Lab.
Dr. Sastry received her PhD from the University of Illinois (Urbana-Champaign) in 1997 under the direction of Dr. Alan (Rick) Horwitz. Her doctoral dissertation focused on the role of integrin adhesion receptors in myogenic differentiation. Dr. Sastry’s research showed that different integrins cross talk with growth factor receptors to produce unique effects on myogenic proliferation versus differentiation. For her post-doctoral training, Dr. Sastry continued her studies on signal transduction downstream of integrin receptors in the laboratory of Dr. Keith Burridge at the University of North Carolina-Chapel Hill. Dr. Sastry’s post-doctoral work centered on the role of the protein tyrosine phosphatase, PTP-PEST, in regulating cell motility. A key aspect of this work is that PTP-PEST regulates fibroblast motility by controlling the activity of Rho family GTPases.

Dr. Sastry joined the BMB faculty in 2004 through a joint recruitment with the Sealy Center for Cancer Cell Biology.

Dr. Sastry’s research interests concentrate on the role of protein tyrosine phosphatases in human cancer. As potential tumor suppressors, tyrosine phosphatases counteract the activity of oncogenic tyrosine kinases. However, relatively little is known about the function and regulation of this class of enzymes in cancer.

The focus of Dr. Sastry’s research, recently funded by the NCI, is to understand the tumor suppressor functions of PTP-PEST in colon cancer progression. Dr. Sastry’s work has uncovered a novel role for PTP-PEST as a potential suppressor of colon carcinoma invasion. Dr. Sastry’s studies suggest that PTP-PEST expression is decreased in colon cancer. In cultured colon carcinoma cells, enforced knockdown of PTP-PEST using RNAi results in enhanced motility and chemotaxis. These findings raise the intriguing possibility that loss of PTP-PEST expression contributes to colon cancer progression. Future studies will focus on the mechanism and timing of PTP-PEST downregulation during colon cancer progression as well as the role of PTP-PEST in tumorigenesis and tumor metastasis using cell based assays and xenograft models in nude mice. Dr. Sastry’s lab is also utilizing “substrate-trapping”, a biochemical approach, to isolate targets of PTP-PEST that are dysregulated and thus may serve as potential drug targets in the treatment of invasive colon cancer.

Selected Publications:


RESEARCH SPOTLIGHT: Proteomics Technology Research
Overview: The Proteomics Section of the UTMB Biomolecular
Resource Facility

The Biomolecular Resource Facility (BRF), directed by Dr. Alexander Kurosky since its inception in 1975, is a UTMB designated core facility providing research support targeted to the analysis of biomolecules, especially proteins and peptides (a more thorough description of the BRF and its mission, organization, personnel, and analytical capabilities was provided in the May issue of the BMB Newsletter and can also be found on the BRF web-site).

This Spotlight issue introduces the research activities of the Proteomics Section of the BRF, directed by Dr. John E. Wiktorowicz.

The Proteomics Section consists of three of the six BRF cores: Separation Technology, Mass Spectrometry, and Proteomics Bioinformatics Cores. Consistent with its NHLBI mandate for new and innovative proteomics technology development, our overarching goal is the development of tools to permit accurate quantification, isolation, and identification of low-abundance proteins that underlie disease through differential analysis. This has required a range of technologies and strategies — from high sensitivity and accurate protein quantification by saturation covalent fluorescence labeling, to new, microfluidics approaches to achieve high resolution, rapid, liquid-based two dimensional electrophoresis embodied in the device called the Protein ProFiler™. The drive to minimize protein loss prior to quantification is fundamental to our approach, and this is reflected in our focus on liquid-based (non-chromatographic) pre-separation fractionation and 2D electrophoresis separation technologies. Our short-term goal is to apply these principles to conventional proteomics and peptidomics applications and is the subject of this Spotlight. Our long-term goal is the replacement of 2DGE with the all-liquid Protein ProFiler 2D electrophoresis technology for protein and peptide separations.

Discovery proteomics and peptidomics, the global comparison of protein and peptide abundance from two or more sources, require different strategies for separation and quantification. For proteomics discovery, we combine saturation covalent fluorescence labeling, to achieve accurate and reproducible quantification, with separation by 2DGE and detection by fluorescence imaging. For peptidomics discovery, we use stable isotope (18O/16O) labeling with separation and detection by LC-MS/MS. In general we rely on MALDI TOF/TOF for protein identification from 2DGE, and the second MS stage of LC-MS/MS for peptide identification.

Saturation covalent labeling is based on the principle that pre-separation covalent fluorescence labeling of proteins confers the highest degree of quantitative accuracy and reproducibility. In addition, fluorescence labeling uniquely contributes sensitivity, with the largest linear dynamic range for proteomics applications. Critical to the subsequent quantification of proteins, saturation pre-labeling can also allow monitoring of recovery to minimize false negatives, real-time monitoring of electrophoretic separation (in appropriately designed systems such as the Protein ProFiler™), multiplexing of extracts from multiple sources (figure at right), and the inclusion of internal standards for reproducibility and absolute quantification. Caveats that impact its success, however, include the requirements for chemical specificity of the labeling reactive group (no non-specific reactions), that residues selected for modification be abundant in the proteome, that

Cont. on next page
labeling conditions be used that ensure reproducible saturation of those residues, and that saturation labeling only marginally impacts the chemical properties of proteins (e.g., pIs). These challenges can be met via fluorescence labeling strategy that targets cysteine sulfhydryls with a 50-75 excess of a maleimide-derivatized uncharged fluorescent dye. Most (92%) human proteins contain at least one cysteine residue, and we and others have demonstrated the efficacy of saturation pre-separation labeling (1-3), and are poised to routinely incorporate it into our differential proteomics efforts.

The differential analysis of naturally occurring peptides poses a challenge of its own. Separation of peptides by electrophoresis in gels is not practical, and thus requires chromatography. Losses from solid phase adsorption are unavoidable, making accurate quantification of peptides difficult. Availability of stable isotope-containing labeling reagents (e.g., $^2$H, $^{13}$C, $^{15}$N, $^{18}$O) however, have changed the landscape, permitting ratiometric quantification of differentially abundant peptides by mass spectrometry (MS). Mixing two extracts, previously covalently labeled with reagents carrying different stable isotopes, permits normalization of the peptide losses by chromatography and measurement of relative abundance upon MS quantification. We are focusing our development efforts on one such strategy: trypsin-catalyzed $^{16}$O/$^{18}$O exchange of the carboxy-oxygens of C-terminal lysine and arginine-containing peptides.

Discovery proteomics/peptidomics by differential analysis can lead to novel insights into the fundamental biochemical pathology of disease, the pathway of cellular differentiation, the mechanisms by which cells communicate with each other and interact with their environment, or even perhaps the biochemical basis of human thought and behavior. By focusing our efforts on developing quantitative tools and facile approaches to the many challenges of discovery science, we can contribute in a small way to the realization of its potential, and provide our UTMB collaborators the absolute “state-of-the-art” proteomics capabilities.

IS Testing Windows Vista: Still Not Recommended for Campus PCs
UTMB Information Services still does not recommend Windows Vista for campus computers; however they are making strides to validate applications as soon as possible. They have developed an initial list of applications that need to be validated on Windows Vista prior to its endorsement, with the student applications garnering first priority (Students use their own personal computers, and vendors now sell them with Vista installed). Their goal is to have the student applications validated by September, with the rest of the applications soon thereafter.

The following link shows the status of applications and whether they have been tested. You can contact Brian Grimm at 78847 with any questions you may have.

http://www.utmb.edu/is/services/SoftwareStandardsVistaGrid.aspx

Laptop Encryption
For those of you who read the daily announcement and the article from the UTMB IT security director about encrypting laptops and are scratching your heads wondering how you are going to get your encryption keys for laptops you are currently using, do not worry, the process is painless.

To comply with University of Texas System approved and adopted Security Practice Bulletin #1 (SPB-1), UTMB will use Microsoft’s Encrypted File System (EFS) with Verisign’s EFS encryption certificates to meet the SPB-1’s requirement for laptops running Windows XP.

If you are storing sensitive data (defined as any data which is required by law or policy to be protected from unauthorized disclosure (credit card information, Protected Health Information (PHI)), AND any data which can be used to uniquely identify an individual such as Social Security Number, Patient IDs, and other personal data), those files will need to be stored in the encrypted folder setup on the laptop.

The rationale behind this policy comes from the statistic that the personal information of 30.2 million individuals was put at risk of disclosure because of the loss or theft of laptop computers from government agencies and public/private companies in the first half of 2006. As a result of new legislative requirements, UTMB has adopted the Practice Standard 1.2.8 Encryption (read more about it here). If any of you do indeed have sensitive data on a laptop, please contact me and I will assist you in acquiring the encryption keys necessary to comply with security standards. If you wish to accept the risk of never having to work or store sensitive data, you do not have to use EFS and certificates at this time.

The process is quick and easy; once identified, members of the implementation team will begin contacting you and other laptop users in our area to request permission and assistance to configure (via remote control) EFS on your laptops. If you would prefer that the configuration be completed “in person”, this can be accommodated.

Please let me know if you want to initiate this process before the CIRT team contacts you.
Administrator’s Notes

Important Considerations for International Students and Staff Members Holding Visas

Certain changes have taken place in the processing by US Citizenship and Immigration Services (USCIS) of applications for visa extensions or new visa status designations such as H-1B. Processing fees have been raised, and processing times by USCIS seem to have increased. Anyone needing to submit an application for visa extension or change of status is encouraged to contact Mary Boyle well in advance of the expiration date of the currently effective visa to determine the requirements for preparation of the application. Petitions for H-1B status, for example, can take up to six months to be approved. It’s also important to consider that processing of some applications by the UTMB International Office can take four weeks or more. The key is to get detailed information about the application process very, very early. Information about the new application fees is available at: http://intranet.utmb.edu/international/USCISFeeIncrease73007.htm.

Compliance Training

Just to echo Dr. Perez-Polo’s message – it’s very important for everyone to have completed all required compliance training by August 31. If you have questions about the training modules assigned, please contact Margie Wronski as soon as possible.

Welcome to TK Kirtley

TK Kirtley joined BMB at the beginning of June as a Financial Analyst II. She’s had a busy month getting to know who’s who in the Department and becoming familiar with the hundreds of accounts that fund all our activity. TK worked for the Department of Internal Medicine for a number of years on many different aspects of financial planning, reporting, and investigation, and she has probably seen it all at one time or another. We’re very glad she was interested in getting experience on the basic science side of things, and she’s already proven to be a significant asset to our administrative team. TK will be getting married later this month, and we wish her all the best. (Even though she may have a new last name, she assures us she’ll still be known as TK.)

Faculty on the Road

Dr. Werner Braun was a member of the NIH study section, Biodata Management and Analysis, in Washington DC on June 4, 2007.


Dr. Sankar Mitra was at Fox Chase Cancer Center, Philadelphia on June 28-29 to give a seminar entitled “Repair Interactomes for Oxidative damage in Mammalian Genomes” in their Distinguished Lecture Series.

To have your travels included in the monthly newsletter, please send the information directly to Lisa Pipper (lpipper@utmb.edu) by the 1st of each month.
The University of Texas System has contracted with International SOS to provide worldwide travel emergency assistance and evacuation services to UT System components. The program is available to all University of Texas Medical Branch (UTMB) employees and students traveling to International destinations on University business. International destinations include Canada, Mexico, and Puerto Rico. The program is available at no cost to the traveler or the traveler's department.

International SOS is a comprehensive, 24-hour medical response organization that provides international assistance services. It is not medical insurance coverage, but they will coordinate with care providers abroad and your insurance in the United States to help you find the right providers and make sure you have proper proof of payment. To learn more about International SOS, look up emergency contact numbers, answers to frequently asked questions (FAQ), program benefits, general travel information, and to print a membership card, please click on www.internationalsos.com. Instructions for current employees can be found at the UTMB Finance Website. The membership card is located on the bottom of the page. Click on “print card”.

Click on Foreign Coverage Quick Reference to obtain a summary overview of International SOS and UT Select coverage.

If you have questions about the International Travel Emergency Assistance program, or would like to obtain a plastic International SOS membership card, please contact Britt Madden, Manager, Travel Processing, by email at brmadden@utmb.edu, or by phone at: (409) 747-7952.

A printable document giving this information can be found in the BMB Public Folder in Outlook. We hope this will provide a handy way to access the information should you have a sudden need to access this information while abroad, as it is available via UTMB webmail.
Publications & Grant Awards


Accepted: Merla, R., Ye, Y., Lin, Y., Manickavasagam, S., Huang, M-H., Perez-Polo, R. J., Uretsky, B. F., Birnbaum, Y.. The Central Role of Adenosine in Statin-Induced ERK 1/2, Akt and eNOS phosphorylation. American Journal of Physiology: Heart and Circulatory Physiology


To have your publication or award included in the monthly newsletter, please send the information directly to Lisa Pipper (lpipper@utmb.edu) by the 1st of each month.

Featured Abstract by BMB Faculty

The human werner syndrome protein stimulates repair of oxidative DNA base damage by the DNA glycosylase Neil1.


Full Text Article

The mammalian DNA glycosylase, NEIL1, specific for repair of oxidatively damaged bases in the genome via the base excision repair (BER) pathway, is activated by reactive oxygen species and prevents toxicity due to radiation. We show here that the Werner syndrome protein (WRN), a member of the RecQ family of DNA helicases, associates with NEIL1 in the early damage sensing step of BER. WRN stimulates NEIL1 in excision of oxidative lesions from bubble DNA substrates. The binary interaction between NEIL1 and WRN (KD = 60 nM) involves C-terminal residues (288 - 349) of NEIL1 and the RecQ C-terminal (RQC) region of WRN, and is independent of WRN's helicase activity. Exposure to oxidative stress enhances the NEIL-WRN association concomitant with their strong nuclear co-localization. WRN-depleted cells accumulate some prototypical oxidized bases (e.g., 8-oxoG, Fapy-G and Fapy-A) indicating a physiological function of WRN in oxidative damage repair in mammalian genomes. Interestingly, WRN deficiency does not have an additive effect on in vivo damage accumulation in NEIL1 knockdown cells suggesting that WRN participates in the same repair pathway as NEIL1.