

BIOCHEMISTRY & MOLECULAR BIOLOGY TODAY

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Chair's Message

Happy New Year! After an extended holiday, it is nice to return refreshed to the fray. The actual holiday started very nicely with news that for 2006 BMB was 10th nationally in terms of NIH grants. Even better, on the last business day of 2007, the Dean approved the start of the renovation planning for the 5th floor of the Basic Science Bldg. The first phase will involve remodeling a quarter of the floor, as was done for the 6th floor. As not all space is presently occupied, it is a good time to do this with minimal impact. Initial meetings with the architect will be scheduled soon to review the needs of current occupants, as well as the requirements of our expected new faculty and any other needs, such as additional cold rooms and space for shared equipment. When this information has been compiled, the architect will prepare a proposed plan for phasing the renovation work while minimizing disruption of on-going research. There will be opportunities for review and comment on this plan before more specific designs are begun.

I hope you have a chance to visit our re-configured suite of Departmental offices. We had a very

tight budget, but wanted to change the arrangement to allow an efficient fit with our administrative reorganization plans.

Recruitment of new faculty in the areas of DNA damage and repair, bioinformatics and microRNA is well under way. As likely recruits come to visit, please make an effort to attend the seminars and provide the recruitment committees with input. You can address all comments to Werner Braun who leads the effort in DNA damage and repair and microRNA and is a member of the Bioinformatics recruitment effort. We have had a very large number of applicants, and selection of invitees for a first visit is almost complete.

I appreciate the contributions of the faculty members who took the time to fill out the rather lengthy questionnaires for the Departmental and Graduate Program review. An accurate assessment of our faculty's perceptions is critical in making the review process a useful instrument to develop new strategies for both the Department and the Graduate Program. Wayne Bolen and his committee are working hard on this project. Having chaired the two



previous reviews, I know the importance of detailed input from the faculty. Having this information will help make the retreat on January 17th maximally efficient and useful. Although I will attend the retreat, I will do so only as a faculty member; the Committee will run the event. Staff will be present to provide a record for the document to be given to the external reviewers.

This is also the most critical season for graduate student recruitment; if you are asked to interview or visit with likely candidates, please help our graduate admissions and recruitment committees. Attracting the best possible graduate students is important for the continued success of the Graduate Program and Department and is also likely to help your own research program.

It certainly looks like it's going to be a busy and productive year for BMB. I look forward to working with all of you to also make it personally fulfilling for every member of the Department.

-regino

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Special Items of Interest

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Awards and Announcements

Dr. Sankar Mitra, was invited to serve as a Co-Editor (along with Guo-Min Li , Professor of Toxicology, University of Kentucky, David Chen, Division Chief and Professor of Radiation Oncology, Southwestern Medical School, Dallas, and Professor John Turchi, Associate Director of Cancer Center, Indiana University Medical School) of a special issue of Cell Research, a Nature Publishing Group journal published from Shanghai, China. The title of this issue published on January 1, 2008, is "DNA Damage Responses and Genome Maintenance". About two dozen review articles written by world's leading experts including one by the Mitra lab have been included in this special volume.

Dr. Kevin Rosenblatt received a Clinical Research Award from the American Diabetes Association. He is Co-PI on the grant entitled "Novel biomarkers for predicting response to treatment in diabetic nephropathy."

He and his wife Robyn also just welcomed their new baby girl, Ellie Alyse, born January 14, 2008.

Krishna Rajarathnam and his wife Lavanya Rajagopalan recently welcomed their new baby boy, Akhil, on October 24, 2007.

Kathleen Randolph, a post doc in Dr. Pajor's lab, and her husband welcomed her new baby girl, Amanda, into the world on Dec. 17, 2007.

Dr. Yochai Birnbaum accepted the position of a Section Editor for Cardiology in the Open Cardiovascular Medicine Journal.

Yumei Ye from Dr. Yochai Birnbaum's group was awarded an American Heart Association grant 4 years. The title of the grant is "PTEN has a central role in the cross-talk between the prosurvival and proapoptotic pathways in reperfusion injury."

Graduate Program News

We are honored to announce the BMB Graduate Program 2007-2008 winners of the National Who's Who Among Students in American Universities and Colleges.

They are Ms. Suzanne M. Tomlinson, of Dr. Stanley Watowich's laboratory; Mr. Raghavendran Kulasegaran Shylini of Dr. David Gorenstein's laboratory and Mr. Paul M. Evans, of Dr. Chunming Liu's laboratory. Please join us in congratulating these fine students and their mentors!

- Debora Botting

BCSO News

BCSO would like to thank everyone in BMB for their phenomenal contribution to the 2007 Christmas Toy Drive. Due to your generous donations we were able to buy Christmas gifts for four kids in the Galveston County Child Protective Services. (CPS). We collected a whopping \$653 and were able to spend a generous \$80 on each of the four kids. The leftover money will be used in next year's BCSO Toy Drive. Once again thank you all for pitching in for a worthy cause!



Our first meeting this year will be held on the **17th of January 2008** in Room 2.240 of the Basic Science Building at noon. We hope to kick off this year's activities with the annual **BMB-student group picture** soon after the meeting. So come in your favorite outfit and a bright smile! We will be ordering sandwiches and drinks from SUNFLOWER BAKERY. Your participation and feedback is crucial to the functioning of the organization. Hence we would like to encourage all BMB students (including BSCB and SCCB stream students) to attend this meeting.

If you will be attended the meeting, please review the attached menu and email Vincent Dimayuga (vldimayu@utmb.edu) with your choice of salad or sandwich and drink. **Deadline for ordering food is 5pm Tuesday, Jan 15th.**

We look forward to seeing you there!

-BCSO Officers

Calling All Students

We would like to provide all BSCB and BMB graduate students with the opportunity to enter the T-shirt logo competition. **The deadline for submissions is Monday, January 21, 2008.**

The organization the next Structural Biology Symposium, held on **May 16-17, 2008**, is in progress, and we will make the announcements of this event soon. At this stage we would like to invite you to provide us with a suggestion for a graphics which will be used for the announcement on the Symposium web site and the Symposium poster, as well as for the logo on T-shirts.

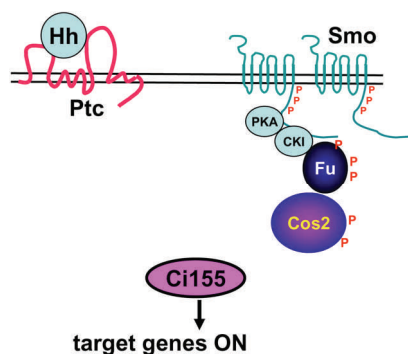
As every year, we will have a competition for the best art work with a **first prize award of \$200**. Please send us your artwork as a jpeg file per email to fox@bloch.utmb.edu with "Logo Design Contest for the 2008 SCSB Annual Symposium" in the subject line. For the judgment of the graphics, a medium resolution picture (e.g. 1000x1000 pixels) is sufficient.

Faculty Focus: Jianhang Jia, Ph.D., Assistant Professor, BMB

Dr. Jianhang Jia received his Ph.D. from the Institute of Genetics, Chinese Academy of Sciences in 2000. He joined Dr. Jin Jiang's laboratory at UT Southwestern Medical Center at Dallas for a postdoctoral position in 2001. He applied combined tools in genetics, molecular biology, cell biology, immunohistochemistry, and biochemistry to study how tissues and organs are developed during embryonic development. In particular, he studied cell-cell communication (or induction), a fundamental and prevalent mechanism that controls cell growth and organ development. His research mainly focused on how the inductive Hedgehog (Hh) signal is generated and interpreted by cells to control organ formation. Dr. Jia was appointed Assistant Professor, Biochemistry & Molecular Biology in August 2005. He is a member of the Sealy Center for Cancer Cell Biology.



The Hh family members control many aspects of development in both vertebrates and invertebrates. Hh signaling is associated with important biological phenomena such as patterning, cell growth, and morphogenesis. Abnormal activation of this pathway has been observed in several types of human cancers. The 7-pass transmembrane protein Smoothened (Smo) is required in both insects and mammals for transduction of the Hh signal in cells exposed to the Hh ligand. Dr. Jia's strategy is to use *Drosophila* as a simple and genetically tractable model system to explore the mechanisms of Hh signal transduction.



Dr. Jia's laboratory is now working on how Smo regulates downstream signaling events and how Smo phosphorylation and activation are controlled. Abnormal Smo activation results in basal cell carcinoma (BCC) and medulloblastoma, so it has been a major therapeutic target. Understanding the mechanism of Smo regulation will not only provide insights into fundamental developmental processes, but may also lead to new diagnostic tools and therapeutic treatments for cancers caused by dysregulation of Hh signaling.

Selected publications:

Jianhang Jia, Kazuhito Amanai, Gelin Wang, Jiong Tang, Bing Wang and Jin Jiang. Shaggy/GSK3 antagonizes Hedgehog signaling by regulating Cubitus interruptus. *Nature* 416: 548-552; 2002.

Jianhang Jia, Chao Tong, and Jin Jiang. Smoothened transduces Hedgehog signal by physically interacting with Costal2/Fused complex through its carboxyl-terminal tail. *Genes and Development* 17:2709-2720; 2003.

Jianhang Jia, Wensheng Zhang, Bing Wang, Richard Trinko and Jin Jiang. The *Drosophila* Ste20 family kinase dMST functions as a tumor suppressor by restricting cell proliferation and promoting apoptosis. *Genes and Development* 17: 2514-2519; 2003.

Jianhang Jia, Chao Tong, Bing Wang, Liping Luo and Jin Jiang. Hedgehog signaling activity of Smoothened requires phosphorylation by protein kinase A and casein kinase I. *Nature* 432: 1045-1050; 2004.

Jianhang Jia, Lei Zhang, Qing Zhang, Chao Tong, Bing Wang, Fajian Hou, Kazuhito Amanai, and Jin Jiang. Phosphorylation by Double-time/CKIa and CKIe targets Cubitus interruptus For Slimb/b-TRCP mediated proteolytic processing. *Developmental Cell* 9: 819-830; 2005.

Yajuan Liu, Xuesong Cao, Jin Jiang, and Jianhang Jia. Fused-Costal2 protein complex regulates Hedgehog induced Smo

Research Spotlight:**New Effort Reporting System is Coming in February and March**

UTMB is about to implement a new system called ECRT (pronounced *ee-sert*) for tracking and reporting researchers' effort on sponsored projects. There will be a special demonstration of the system for interested researchers in February. Training in use of the system (which will, of course, be mandatory) will begin in early March. Both lecture-style and online training will be available, and we will attempt to arrange special lecture sessions for BMB faculty and staff, as we did for PureEdge training.

ECRT will be used for the entry of effort confirmation for the period of September 2007 through February 2008. All faculty and staff working on sponsored projects will now be reporting their effort twice a year.

In the new system, the screens that researchers use will be easier to navigate and the data to be confirmed will be presented in a format that is much easier to comprehend quickly. It will also be easy to access additional detail if needed for making the appropriate entries.

ECRT will also be used for confirming that effort expended on a project is not lower than the effort commitment made in the project proposal. UT System now requires all component institutions to provide systematic confirmation that effort commitments are being met. Information about the effort commitment data will also be provided in the ECRT training sessions.

I have been serving as a member of the ECRT Steering Committee and have been bringing issues of concern to researchers and administrators to the Implementation Team. Please contact me if there are questions about the implementation of the new system or about the upcoming training sessions.

Marianne Miller

A Reminder about MEDICAL EMERGENCIES on Campus

For emergency medical assistance on campus,

CALL the UTMB POLICE EMERGENCY LINE – 2-1111

(DO NOT CALL 911)

The UTMB Police will dispatch the emergency call *and* direct the responders - ambulance or first-responder fire engine - to the appropriate location.

BMB Researcher member of NIDA Funding to UTMB

\$3.4 million boosts addiction recovery research New therapies also may benefit compulsive eaters

By *Kristen Hensley*

OCT. 25, 2007--Men and women addicted to alcohol or drugs who want to recover but struggle with relapses may have help on the way following this month's \$3.4 million boost to support recovery-focused studies at the UTMB [Center for Addiction Research](#).

Funding from the [National Institute on Drug Abuse](#) will advance ongoing research into brain serotonin systems and new therapies that may improve the long-term prospects of patient recovery.

The new research focuses on how brain serotonin systems contribute to the development of addiction and relapse. The results will provide the foundation for "personalized" therapies in addictive disorders.

There may also be benefits for compulsive overeaters.

"We believe that neuronal recovery in serotonin systems will lead to behavioral recovery in addiction, and jump start a new generation of discovery for anti-addiction and potentially, anti-obesity therapeutics," said **Kathryn A. Cunningham** who directs the center and is the principal investigator.

"Drug addiction shares many of the behavioral features and similar brain and biological consequences with compulsive overeating and obesity, although the initial causes may differ," Cunningham said.

Obesity and addiction are two of the most significant public health problems facing the United States, she said.

"Researchers will first analyze genes and markers of serotonin function, along with several psychological traits and individual responses to medical and behavioral therapy in men and women suffering from addiction," she said. Another group of scientists will test newly designed medications to enhance abstinence through clinical and laboratory methods.

The clinical research is led by F. Gerard Moeller, a professor at the University of Texas Health Science Center at Houston, while **Scott R. Gilbertson**, director of the UTMB program in chemical biology, is guiding medication development. Cunningham and **Cheryl S. Watson**, a professor of biochemistry and molecular biology, will establish the preclinical effectiveness of the medications before they are used in clinical research.

"With this compilation of knowledge, the group plans to utilize a patient's unique serotonin function, genetics and psychological profile to design an optimal treatment strategy for the individual," Cunningham said.

About 8.5 percent of the men and women who needed treatment for alcohol or drug abuse received care in 2005 largely due to the inaccessibility and cost of treatment programs.

"Substance abuse and addiction are medical conditions like high blood pressure and diabetes," Cunningham said. "And, like these chronic diseases, they can be effectively treated."

Treating addiction reduces the odds that addicts will develop more than 70 other medical conditions, ultimately saving lives and lowering the cost of long-term health care, she said.

The National Institute on Drug Abuse, a component of the National Institutes of Health, U.S. Department of Health and Human Services, supports 85 percent of the world's research on the health aspects of drug abuse and addiction.

-Article appeared in UTMB IMPACT magazine

Administrators Notes

State Fire Inspectors are Coming in February

The previously announced visit by State Fire Inspectors will take place in February. Many labs have already reviewed current conditions to be sure all fire safety requirements are being met. It's important that everyone consult the [Fire Safety Checklist](#) and address any problems that might need to be corrected. A member of the UTMB Safety staff is walking through each lab, accompanied by Lisa Pipper, to help identify any issues of concern. For questions about the inspection or about safety issues in general, please contact Lisa (lpipper@utmb.edu) or Stephen Stokes (sastokes@utmb.edu) in Environmental Health and Safety.

Implementation of New InfoEd Proposal Development System Delayed

InfoEd is the system being developed for use as UTMB's "front-end" for all types of electronic grant submissions. The Office of Sponsored Programs has announced that the system is now expected to be fully implemented beginning with all R03 and R21 proposals to be submitted in October and November 2008. (Use of the system will be voluntary for researchers preparing R03 and R21 proposals to be submitted in June and July.) Until the new system is available, electronic proposals to NIH will continue to be submitted through the PureEdge system.

As planning of the official InfoEd implementation continues, OSP is interested in working with researchers who would be interested in "piloting" the system for R03 and R21 proposals to be submitted in February and March. The OSP contact for InfoEd information is Helen Cook (69408.)

NIH plans to replace PureEdge with an Adobe system, probably in calendar 2008, but no date for transition to the new system has been given. OSP will continue to provide updates about system changes on the Daily Announcements and the Research Listserv.

New Keys for Specific Areas in MRB; New Signs for Department Spaces

The department has begun a process to change the key cores of the spaces formerly identified as "SCMS" so they will be standardized to the key sequence used by BMB. This mostly affects areas on the 5th and 6th floors of MRB, and all staff members who will be affected are being contacted in advance by Lisa Pipper. For each area, FOAM will cut new keys, and the affected employees will be notified by Security that their new keys are ready to be picked up. When Security has confirmed that all keys for that area have been distributed, the cores will be changed. The changes will begin in the week of January 14 and should be finished by the end of February. Please contact Lisa Pipper with any questions or concerns.

During the next few months, signs for Department spaces will be revised to reflect the change in the Department's name. Then new graduate students and post-docs won't spend their first few weeks wondering what in the world HBC&G stands for, and in May we can be certain that members of the External Review Committee won't think they're visiting the wrong department.

-Marianne



Faculty on the Road



Dr. Catherine Schein traveled to the National Science Foundation in Washington D.C. Dec. 9-11 for a DMS/NIGMS review panel.

Dr. Werner Braun traveled to Washington D. C. Dec. 5-6 for a meeting of researchers receiving grants from the US-EPA

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.

New - ONLINE Version
Research Coordinator's Corner
www.bmb.utmb.edu/department/RCC/

BMB Faculty Publications

Adams, EL, Rice, PJ, Graves, B, Ensley, HE, Yu, H., Brown, GD, Gordon, S, Monteiro, MA, Papp-Szabo, E, Lowman, DW, Power, TD, Wempe, MF, Williams, DL *J. Pharmacol. Exp. Ther.*, **2007**, (*in press*), Differential High Affinity Interaction of Dectin-1 with Natural or Synthetic Glucans is Dependent upon Primary Structure and is Influenced by Polymer Chain Length and Side Chain Branching.

Acharya, N., L. Haracska, S. Prakash, and L. Prakash (2007) Complex formation of yeast Rev1 with DNA polymerase h. *Mol. Cell. Biol.* 27: 8401-8408.

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.

Featured Abstract by BMB Faculty

Requirement of Nse1, a subunit of the Smc5-Smc6 complex, for Rad52-dependent postreplication repair of UV-damaged DNA in *Saccharomyces cerevisiae*.

[Mol Cell Biol. 2007 Dec;27\(23\):8409-18](#)

Santa Maria SR, Gangavarapu V, Johnson RE, Prakash L, Prakash S.

Department of Biochemistry and Molecular Biology, University of Texas Medical Branch at Galveston, 301 University Blvd., Galveston, TX 77555-1061, USA.

In *Saccharomyces cerevisiae*, postreplication repair (PRR) of UV-damaged DNA occurs by a Rad6-Rad18- and an Mms2-Ubc13-Rad5-dependent pathway or by a Rad52-dependent pathway. The Rad5 DNA helicase activity is specialized for promoting replication fork regression and template switching; previously, we suggested a role for the Rad5-dependent PRR pathway when the lesion is located on the leading strand and a role for the Rad52 pathway when the lesion is located on the lagging strand. In this study, we present evidence for the requirement of Nse1, a subunit of the Smc5-Smc6 complex, in Rad52-dependent PRR, and our genetic analyses suggest a role for the Nse1 and Mms21 E3 ligase activities associated with this complex in this repair mode. We discuss the possible ways by which the Smc5-Smc6 complex, including its associated ubiquitin ligase and SUMO ligase activities, might contribute to the Rad52-dependent nonrecombinational and recombinational modes of PRR.

