

## Bioengineering Receives An Additional \$2.5 Million To Research Optical Medical Imaging



U.S. Rep. Joe Barton (left center) presents a "check" for \$2.5M to UTA President Jim Spaniolo (right center) as Arlington Mayor Dr. Robert Cluck (right of President Spaniolo) and other city officials look over.

Congressman Joe Barton presented the congressional funding of \$2.5 million for the Bioengineering Department to UTA President Mr. Jim Spaniolo UTA on December second, 2005. The new funding, combined with \$600,000 that the Bioengineering received last fall, brings the total congressional funding to \$3.1 million. This will provide UTA with the necessary funds to acquire the latest optical imaging equipment and participate in the medical imaging research at the Advance Imaging Research Center (AIRC), previously called Metorplex Comprehensive Medical Imaging Center. AIRC is built on the University of Texas Southwestern Medical Center at Dallas (UTSW) campus to conduct cutting edge medical imaging research. The congressional funding is aimed at intensifying collaboration between UTA, UTSW and the University of Texas at Dallas (UTD). With AIRC construction almost complete, the center will soon be equipped with latest medical imaging equipment. UTA will contribute by deploying the latest optical imaging equipment. Top-ranked researchers from the three institutions will work together to develop new medical imaging means and methods to diagnose and assess treatment of major diseases such as cancer, diabetes, and cardiopulmonary disorders.

## New Faculty Member At BE: DR. KYTAI NGUYEN

The new faculty member of the Bioengineering (BE) Department is Dr. Kytai Nguyen. Dr. Nguyen earned her Ph.D. in Chemical Engineering from Rice University in 2000. Prior to joining this program Dr. Nguyen was a faculty member of the Biological Engineering Department at Utah State University.



Dr. Nguyen is involved with both basic research and applied sciences. Her basic research projects focus on investigating vascular cell responses to environmental factors such as biomechanical (e.g. shear stress and cyclic strain), biochemical factors (e.g. growth factors and glucose), and biomaterials (e.g. biodegradable polymers). According to Dr. Nguyen these studies enhance our knowledge of the roles of environmental factors in vascular biology and the fundamental processes involved in the pathogenesis of vascular disorders, including hypertension and diabetics, and will provide a basis for therapeutic intervention on vascular diseases.

Dr. Nguyen also seeks to utilize the basic findings of her research to medical applications in order to develop new strategies and novel biomaterials specifically for controlled drug delivery systems such as tissue engineered biodegradable stents, drug eluting stents, and nanoparticles for treatments of various diseases, focusing on cardiovascular diseases.

Dr. Nguyen's primary research goal is to mimic nature so that the man-made devices possess characteristics of the living systems in order to have better therapeutic benefits and reduce adverse reactions or side effects.

Her primary educational goal is to train students who will be experts in the advanced scientific skills, specifically in cardiovascular research which are necessary for a career in academia or industry.

## DEPARTMENT ACTIVITIES

**New Academic Advisor Assistant :  
Ms. LaRonda Starling**

Ms. LaRonda Starling recently joined the BE Department as the new academic advisor assistant.

Her responsibilities include advising BE students curriculum requirements, preparing plan of study, graduation requirements, and receiving scholarships. She works closely

with the BE faculty advisors to provide the students with advising support they need during their studies at UTA. Ms. Starling is also responsible for new student admission processing and communication. She has developed and maintains student databases. She also assists with recruitment and program publicity.

Ms. Starling will receive her Masters Degree in Counseling from the University at North Texas in December 2005. She has experience working as a recruiter and a student advisor at the Community College in Dallas for two years. The experience of working with students and being a student herself, according to Ms Starling, enables her to better understand and help students here at the Bioengineering Department at UTA.

**New Administrative Assistant:  
Ms. Cynthia Bradfield**

Another new member of the BE department is Cynthia Bradfield. She joined recently as an Administrative Assistant for the BE faculty.

Mrs. Bradfield holds an Associate Degree in Applied Business from Cincinnati Tech College, Ohio. Her previous work experience was at Glenn Harmon Elementary School where she was a substitute part time teacher.

On a personal note, Ms. Bradfield has been married to her husband Don for 22 years and they have three children.

## RECENT FACULTY ACTIVITIES

**Dr. Khosrow Behbehani**

The following papers were presented at the IEEE 27th International Conference in Shanghai China from August 31st to September 5th, 2005.

- ◆ E. Estrada, H. Nazeran, P. Nava, **K. Behbehani**, J.R. Burk, and E. A. Lucas, "Itakura Distance: A Useful Similarity Measure Between EEG and EOG Signals in Computer-aided Classification of Sleep Stages", Published in Conference Proceedings CD.
- ◆ P. Gehalot, **K. Behbehani**, R. Zhang, and A. Mathew, "Efficacy of Using Mean Arterial Blood Pressure Sequence for Linear Modeling of Cerebral Autoregulation", Published in the Conference Proceedings CD.
- ◆ G. Balakrishnan, **K. Behbehani**, D. Bruli, J.R. Burk, and E. A. Lucas, "Comparison of a Sleep Quality Index between Normal and Obstructive Sleep Apnea Patients", Published in the Conference Proceedings CD.
- ◆ S. R. Suhas, **K. Behbehani**, S. Vijendra, J.R. Burk, and E. A. Lucas, "Spectral Analysis of R Wave Attenuation and Heart Rate Variability for Detection of Cheyne Stokes Breathing", Published in the Conference Proceedings CD.

**Dr. Charles Chuong***Publications*

- ◆ **Chuong CJ**, Borotikar B, Schwartz-Dabney C, Sinn DP (2005): Mechanical characteristics of the mandible after Bilateral Sagittal Split Ramus Osteotomy: Comparing two different fixation technique, *J Oral Maxillofac Surg*, 63:68-76.

**Dr. Hanli Liu***Publications*

- ◆ Maureen Johns, Cole A. Giller, Dwight C. German, and **Hanli Liu**, "Determination of reduced scattering coefficient of biological tissue from a needle-like probe," *Optics Express* 13(13), 4828-4842 (2005).
- ◆ Yulin Song, Jae G. Kim, Ralph P. Mason, and **Hanli Liu**, "Investigation of breast tumor oxygen consumption by near infrared spectroscopy," *J. of Physics D: Applied Physics* 38, 2682-2690 (2005).
- ◆ Jae G. Kim and **Hanli Liu**, "Investigation of bi-phasic tumor oxygen dynamics induced by hyperoxic gas intervention: A numerical study," *Optics Express* 13 (12), 4465-4475 (2005).
- ◆ Yueqing Gu, Wei R. Chen, Mengna Xia, Sang W. Jeong, and **Hanli Liu**, "Effect of Photothermal therapy on breast tumor vascular contents: non-invasive monitoring by near infrared spectroscopy," *Photochemistry and Photobiology* 81(4), 1002-

## Student Activities

### *BMESS Activities*



The Biomedical Engineering Student Society had a dynamic schedule this fall, as they participated and hosted a variety of events. The society had its first general body meeting in October which was attended by many student and faculty members. The event was commenced by the Chairman of BE Department Dr. Behbehani and continued with Dr. Kytai Nguyen talk on the importance of taking part in a society such as the BMESS. After, Dr. Nguyen talk, the society officers described the goals and objectives of the society. The event was concluded with Ph.D. student Dheerendra Kashyap speaking about his research work at UTA.

In addition to this event BMESS took part in the Activities Fair held in August. The society was also represented at the New Students Welcome Bash in September and also at the First and Second Preview Day in October and November, respectively.

A new society called Pre Bioengineering Association (PBA) has also been formed which aims to help the undergraduate students who are interested in Bioengineering. The society has initiated making UTA BE a chapter of National BMES.

### *Recent Invited Talks at the BE Seminar*

- ◆ "Environmental physiology and Biomedical engineering: expanding human capability undersea and in space", by Donald E. Watenpaugh, Ph.D. Associate Director, Sleep Consultants, Inc., Fort Worth, Texas, Nov. 18th, 2005.
- ◆ "Micelle Nanoplatform for Cancer Imaging and Therapy" by Dr. Jinming Gao, Associate Professor of Oncology and Pharmacology, Simmons Comprehensive Cancer Center at UT Southwestern Medical Center and Associate Professor of Chemistry at UT Dallas, Dec. 2nd, 2005.

## Faculty Activities (*continued from page 2*)

*Dr. Liu's activities (continued)*

- ◆ Harsha Radhakrishnan, Yuan Bo Peng, Arun Kumar Senapati, Dheerendra Kashyap, and **Hanli Liu**, "Light scattering from rat spinal cord and sciatic nerves measured *in vivo* by near infrared reflectance spectroscopy," *J. of Biomed. Opt.* 10(5) 1-8 (2005).

*The following paper was accepted for oral presentation in the International SLAM (Society of Industrial and Applied Mathematics) Conference on Optimization, May 15-19, 2005 at Norra Latin, City Conference Centre in Stockholm, Sweden.*

- ◆ Bo P. Wang, Aditya Apte, and **Hanli Liu**, "Effective Algorithms for Optical Tomography,"

*Invited talks*

- ◆ **Hanli Liu**, "Near Infrared Spectroscopy for Cancer Prognosis and Monitoring Drug Delivery," Institute of Biological and Life Sciences, China Pharmaceutical University, Nanjing, China, July 1, 2005.
- ◆ **Hanli Liu**, "Applications of Near Infrared Spectroscopy and Imaging in Medicine," Biomedical Engineering Department, Nanjing University of Aeronautics and Astronautics, Nanjing, China, July 4, 2005.

*Honors:*

- ◆ Recipient of the Faculty Development Award from UT Arlington for Sabbatical in Functional Neuro-imaging, Sept. 2005.
- ◆ Recipient of the Research Excellence Award in the College of Engineering, UTA (\$10,000 cash award), April 2005

*Patent Application*

- ◆ **Hanli Liu** and Thomas Tulsan, "Transrectal optical probes for prostate cancer detection and prognosis," filed for provisional application in June 2005.

*Grant*

- ◆ NIH grant of 342K on August 30th, 2005

### Dr. Liping Tang

*Publication*

- ◆ Tang L, Hu WJ, "Molecular determinants of biocompatibility". *Expert Review of Medical Devices* 2(4), 493-500, 2005, .

*Presentation:*

- ◆ "The current status and future promise of adult stem cell therapies", Convention for Chinese Institute of Engineers (CIE), Dallas, TX. August 20, 2005.

*(continued on Page 4)*

## UTA/UTSW Alumni Information

### MR. FRANCISCO J. LOPEZ



Mr. Francisco J. Lopez received his M.S. in Biomedical Engineering with an emphasis in the Bio-instrumentation track from UTA in 1994. His research while at UTA resulted in a U.S. patent on a neural-network-based sleep apnea therapy device. After graduating from the BE department and while working full time, he went on to acquire a Master of Business Administration from the University of San Diego in 2002. Currently he is a Sr. Project Manager at Puritan Bennett/Tyco Healthcare, Carlsbad, California managing a \$16 million project developing new critical care respirators. He manages a team of 60 engineers, technicians and specialists on a variety of tasks including design and quality assurance.

## Faculty Activities *(continued)*

### Dr. Karel J. Zuzak

#### *Invited Talks and Presentations*

- ◆ "Clinical Applications of Visible Reflectance Hyperspectral Imaging", presented to the Department of Surgery Gastrointestinal Endocrine Division Research Meeting, University of Texas at Southwestern Medical Center, September 14, 2005. Homero Rivas, MD, Edward Livingston, MD and Fiemu Nwariaku, MD.
- ◆ "Hyperspectral Imaging of Sickle Cell Disease: A Clinical Study". Presented at the Sickle cell disease center, University of Texas at Dallas, UTD, October 4, 2005, Betty Pace, MD.
- ◆ Service Research and Teaching Lab Demonstration to UTD President David Daniel; UTA UTD President Swap Day; Fall 2005. President Daniel, President of UTD.

## Faculty Activities *(continued from page 3)*

- ◆ "Development of drug delivery nanoparticles", Department of Cell Biology and Genetics, University of North Texas Health Science Center at Fort Worth, Fort Worth, TX. October 6, 2005.

#### *Grants*

- ◆ National American Heart Association, Established Investigator Award, \$300,000, 7/1/2002-6/30/2006, Principal Investigator, Molecular mechanism of biomaterial-mediated fibrotic responses.

*(continued in the next column)*



Joint Biomedical Engineering  
Program



THE UNIVERSITY OF TEXAS  
ARLINGTON

THE UNIVERSITY OF TEXAS AT  
SOUTHWESTERN MEDICAL  
CENTER

#### BIOENGINEERING DEPT.

Post Office Box 19138  
Arlington, Texas - 76019  
Phone - 817 272 2249  
Fax - 817 272 2251  
Email - [bme@uta.edu](mailto:bme@uta.edu)  
[www.uta.edu/biomed\\_eng](http://www.uta.edu/biomed_eng)

5323, Harry Hines Blvd.  
Dallas, Texas - 75390 - 9130  
Phone - 214 648 2503  
Fax - 214 648 2991  
Email - [bme@utsouthwestern.edu](mailto:bme@utsouthwestern.edu)  
[www.utsouthwestern.edu](http://www.utsouthwestern.edu)

We welcome your suggestions and comments.

Alumni are requested to forward their accomplishments for publication in the future issues. Please inform us of your address change.

DEPARTMENT OF BIOENGINEERING  
THE UNIVERSITY OF TEXAS AT ARLINGTON  
Post Office Box 19138  
Arlington, Texas 76019-0138

Address Correction Requested