Department of Bioengi-

BULLETIN

THE UNIVERSITY OF TEXAS AT ARLINGTON

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Joint Biomedical Engineering Program

THE UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER AT DALLAS

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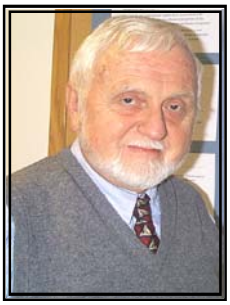
BIOENGINEERING BULLETIN

MESSAGE FROM THE DIRECTOR OF BME AT UTSW



The UT Southwestern arm of the Joint Program continues to make progress. The strong association between campuses and our joint focus on molecular and optical imaging has brought positive results and enhanced visibility. Our joint projects are expected to open new frontiers particularly in cancer and neuro-imaging. The main emphasis in the BME program at UTSW continues to be on *research*. However, students from both campuses participated during the spring semester in Dr. Michael Devous' course, *Fundamentals in Functional Brain Imaging*. Students have experienced measurable success, and many have received an invitation to continue in the summer session in Dr. Devous' lab where they will use their newly gained knowledge in practical application.

Recently, several UTSW BME students were invited by our Dean to participate in the UT Systems *Molecular Medicine Symposium* in Houston, TX. Our students presented posters based on their research. These were well received by the community and students gained invaluable experience in presentation. My congratulations to our participants and my wishes for continued success.

BME Faculty membership continues to grow at Southwestern, opening new avenues in research for the students. I am pleased to say that our students are experiencing greater acceptance by our faculty, producing student involvement with increasingly strong publications and dissertations of significant merit.

Our faculty continues to demand a high level of participation and excellent performance in laboratories. Students considering taking research projects at UTSW have to cope with the time pressures of long hours spent in the lab. A consequence of this is that our students become extremely desirable to employers upon their graduation. My goal is to start graduating students whose

METROPLEX COMPREHENSIVE MEDICAL IMAGING CENTER

The future home of Metroplex Comprehensive Medical Imaging Center. (MCMIC) is under construction on UT Southwestern Campus at Dallas

In the Fall 2004 issue of Bulletin we reported on the Congressional Earmark funding for the establishment of the Metroplex Comprehensive Medical Imaging Center (MCMIC), which will be housed on the campus of the University of Texas Southwestern Medical Center at Dallas. The construction for the building is well underway and is estimated to be completed in early 2006. Construction of the MCMIC is being funded from a non-Congressional source.

The MCMIC will be a collaborative research center involving UTA, UTSW and the University of Texas at Dallas (UTD). Congressional funding received by UTA's Department of Bioengineering will be used to acquire the latest optical imaging equipment for use by researchers. Leading-edge medical imaging equipment such as near infrared, visible light and coherent light optical imaging instruments, functional magnetic resonance imaging (fMRI) machines and a cyclotron for PET scanning, will be under one roof to enhance the diagnosis of diseases.

The MCMIC will provide a unique environment for top-ranked researchers from UTA, UTSW and UTD to work together to de-

BME PROGRAM AT UTA ELEVATED TO THE DEPARTMENTAL STATUS, NOW CALLED: DEPARTMENT OF BIOENGINEEING

The Biomedical Engineering Program (BME) at UTA has recently been elevated to the departmental status during the spring 2005 semester. While the Joint Biomedical Engineering Program with UT Southwestern remains as the core and focus of the Bioengineering Department, the new structure allows the addition of more bioengineering programs. For instance, dual degree programs such as the existing five-year bachelor of science in Biology and master of science in Biomedical Engineering may now be replicated with other science and engineering departments.

The new name and structure of the department will also reflect the diversity of the curricula and research within the department. From its inception and until several years ago, the BME program at UTA, like most other programs around the country, was focused on the design and analysis of means and materials that had direct clinical applications. However, in the past decade the program has grown to include other emphases such as tissue engineering and cellular imaging. The term bioengineering has emerged to reflect both the traditional practice of developing devices for improved health care as well as new technologies that deal with cell and tissue engineering. The name change will more accurately reflect the current nature of the program and the new structure will allow future

IMAGING CENTER *(continued from page 1)*

health care through early detection. A total of $18 million have been requested to start the MCMIC at the forefront of medical imaging research. Almost $11 million dollars have been awarded during 2004. Additional funding has been requested for the 2005 funding cycle to complete this project.

Upon completion, researchers from the three institutions will be invited to participate in conducting research in the area of medical imaging. Offices and laboratory space will be provided for the faculty members who conduct UT collaborative research in the center. The close proximity of researchers from diverse fields and access to a clinical environment will be major strengths for the proposed center.

RECENT FACULTY ACTIVITIES

Dr. Khosrow Behbehani

- Attended the invitational Biomedical Engineering Educational Summit on March 3-5 2005, sponsored by the Whitaker Foundation. The goal of the summit was to help biomedical engineering programs address future Biomedical Engineering educational needs

Dr . Robert Eberhart

Grants

- UTA CBC Collaborative Research Grant, "Microchannel Biodegradable Devices for Customized Drug Delivery", $24,000, 1/2005-12/2005.

Dr . Hanli Liu

Publications

- Gu Y, Mason R, **Liu H**, "Estimated Fraction of Tumor Vascular Blood Contents Sampled by Near-Infrared Spectroscopy and ^{19}F Magnetic Resonance Spectroscopy", *Optics Express* ,13(5) 1724-1733, 2005.
- Kim JG, Xia M, **Liu H**, "Hemoglobin Extinction Coefficients: Importance of Correct Value for Near-Infrared Spectroscopy," *IEEE --Engineering in Medicine and Biology Magazine*, 24(2) 118-121, 2005.
- Senapati AK, Radhakrishnan H, **Liu H**, Peng YB, "Detection of Degeneration in Rat Sciatic Nerve by In Vivo Near Infrared Spectroscopy," *Brain Research Protocols*, 14(2) 119-125, 2005.

Grants

- UTA CBC Collaborative Research Grant, "Joint Electrophysiological and Optical Studies of the Neural Mechanisms in Experimental Allergic Encephalomyelitis", $23,411.60, 1/2005-12/2005.

Honors

- Recipient of $500,000 for equipment from the STARS program of the University of Texas System, January 2005.
- Invited to attend "The Academy of Medicine, Engineering, and Science of Texas", Las Colinas, Texas, January 2005.

Dr . Kevin D. Nelson

Publications

- Crow BB, Borneman A, **Nelson KD**, "Evaluation of In Vitro Drug Release, pH Change, and Molecular Weight Degradation of PLLA and PLGA fibers", *In Press-Tissue Engineering,* 11(7-8), 2005.

Invited Presentations

- **Nelson KD**, Crow BB, Panchal D,

STUDENT ACTIVITIES

Annual Celebration of Excellence by Students (ACES) in Graduate and Undergraduate Research

ACES, the annual student research conference at UTA took place on April 1, 2005. The event recognizes students and faculty who exemplify exceptional achievement in teaching, research and service. Two of the BME masters and two Ph.D. students participated in the event and presented the following:

- "Can NIRS Detect the Early Effects of Cancer Therapy?" by Jae Gwan Kim (Ph.D. student). Faculty Mentor: Dr. Hanli Liu.
- "A Novel Method to Detect Demyelination in Rat Sciatic Nerve In-vivo" by Harsha Radhakrishnan (Ph.D. student). Faculty Mentor: Dr. Hanli Liu.
- "A Study of Cerebral Hemodynamics During Breath Holding Using Near Infrared Spectroscopy" by Vikrant Sharma (masters student). Faculty Mentor: Dr. Hanli Liu.
- "Detection of Sleep Disordered Breathing Using Electrocardiogram" by Sanjee R Suhas (masters student). Faculty Mentor: Dr. Khosrow Behbehani.

Vikrant Sharma, graduate student presenter, won the "Dean of the College of Engineering" award for Graduate Research Competition. In addition, BME graduate students Raghavender Ranga and Dheerendra Kashyap were recognized as "University Scholars" during the ACES.

Dr. Hanli Liu with ACES Award Recipients. From left, Raghavender Ranga, Dheerendra Kashyap and Vikrant Sharma.

Engineering Week Activities

Engineering Week was celebrated at UTA during February 21-25. The "Alfred and Janet Potvin" Excellence in Biomedical Engineering Awards were presented to the outstanding BME students for their scholarly and service record. Ph.D. students Pedram Bohluli and Mengna Xia,

FACULTY ACTIVITIES *(continued from page 2)*

Dr . Liping Tang

Grants

- Collaborative UNTHSC-UTA Joint Institutional Seed Research Program Award, "Prostate Cancer Therapy with Annexin II Nanoparticles", $10,500, 1/2005-12/2005. Principal investigator: Vishwanatha, JK.
- Alcon Research Inc., Research Contract, "In Vivo Evaluation of Drug Delivery Formulation", $166,396, 12/1/2004-11/30/2006.
- UTA CBC Collaborative Research Grant, "Target Drug Delivery Magnetic Nanospheres for Cancer Therapy", $25,000, 1/2005-12/2005.
- National Institute of Health, "Biocompatibility: Surface Initiated Biochemistry", $865,800, 4/2005-3/2008.

Patent Applications

- **Tang L.**, "Novel Approach for Inactivating Protein and Micro-Organisms", sponsored by

DR. EBERHART IS NAMED FELLOW OF BIOMEDICAL ENGINEERING SOCIETY

UTA/UTSW BME Professor Dr. Robert C. Eberhart has been recognized as a Fellow of the Biomedical Engineering Society (BMES). The title is awarded to society members who demonstrate exceptional achievements and experience in the field of biomedical engineering. Dr. Eberhart is also a Fellow of the American Society of Mechanical Engineers and a Founding Fellow of the American Institute for Medical and Biological Engineering. He received a Career Achievement Award from the Houston Society for Engineering in Medicine and Biology in 1997 and was president of the American Society for Artificial Internal Organs during 1995. Dr. Eberhart's research interests include artificial organs, biomaterials and fluid mechanics. He is the co-inventor of an expandable, bioresorbable coronary artery stent. A stent-covered balloon is inserted into the aorta and expanded and contracted to repair damaged or blocked arteries; the bioresorbable stent remains in place to keep the vessel open. The stent dissolves away with time, so a second surgery is not neces-

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UTA/UTSW ALUMNI INFORMATION

DR. PARTHA ROY

Dr. Partha Roy is an Assistant Professor in the Department of Bioengineering and Pathology at University of Pittsburgh. He received his Ph.D. from the Joint BME Program of UTA and UT Southwestern (UTSW) in 1997. Prior to joining our BME program, Dr. Roy received his B.S. degree from Jadavpur University, India in 1989 and M.S. degree from Indian Institute of Technology, India in 1991, both in Biomedical Engineering. During his doctoral studies at UTA and UTSW he was mentored by Dr. Mathew Petroll and was the recipient of Sigma-Xi Award for excellence in research from UTSW Chapter and Alfred and Potvin Outstanding Biomedical Engineering Student Award from the BME at UTA.

Dr. Roy's research interests include studying the molecular mechanisms of cell migration using breast cancer and endothelial cells as model

BMESS ELECTIONS

Like the famous Texas wild flowers the Biomedical Engineering Student Society (BMESS) was in full bloom this spring. After a long time, the hall near the main office of the Bioengineering Department (BE) was filled with students and boiling with activity. Dr. Zuzak, the BMESS faculty advisor, was overjoyed to see the incredible interest and voter turnout, and has high hopes for an active year. After counting votes Mr. Asif Rizwan was confirmed to be the newly elected

BMESS ELECTIONS *(continued)*

The newly elected BMESS governing body. From left, Rutesh Desai, Asha Chakrabarty, Aasif Riz-

Ms. Asha Chakrabarty as the Vice President, Mr. Amit Chouhan as the Treasurer, and Mr. Rutesh Desai as the Secretary. In an interesting turn of events, Collins Watson was unable to overwhelm Asif for the Presidental position. However, it was later announced that Mr. Watson was successful in securing the Presidential position in the Graduate Student Council which represents all of the UTA graduate students. The society plans to meet weekly and hopes to arrange travel to local museums, organize a scientific poster session, and become involved with the Engineering World Health Organization and the National Biomedical Engi-

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