The University at Buffalo has obtained New York State Department of Education approval to offer its bachelor of science degree in biomedical engineering. The new academic program is a joint effort between the School of Engineering and Applied Sciences and the School of Medicine and Biomedical Sciences.

AUNCHED IN 2008 with a $2 million grant from the John R. Oishei Foundation, UB’s new Department of Biomedical Engineering was created to support Western New York’s robust medical device industry.

UB currently is raising an additional $1 million to support initiatives within the new department and will receive an additional $1 million from the Oishei Foundation upon doing so.

Interested students can apply now for full enrollment in UB’s undergradu- ate program in biomedical engineering. Proposals to establish new master’s and doctoral programs in biomedical engineering are expected to be sub- mitted for State Education Department review and approval in the near future.

The department complements three strategic strengths of UB 2020, the university’s long-term strat- egic plan: Molecular Recognition and Bioinformatics, Health and Wellness Across the Life Span, and Integrated Nanostructured Systems.

The program is being offered at a time when the field of biomedical engineering is experiencing tremendous growth, notes Harvey G. Stenger Jr., dean of the engineering school.

“The biomedical engineering field is growing so fast that UB soon will be enrolling many new students and our faculty will be producing research that can be used immediately by local medical device companies,” he says.

“Enrollment in this field is way up, nationally. There are four times as many biomedical engineering students in the nation today as there were just a decade ago, and demand for students possess- ing these skills is growing rapidly, locally and nationally.”

Michael E. Cain, MD, dean of the School of Medicine and Biomedical Sciences, says “The marriage between engineering and medicine is essential to translating basic discovery in engineering to improving human health and wellness. Our new department allows us to formalize and expand our expertise in biomedical engineering and positions UB to lead in this key area of health-related research.

“It is a vibrant and growing field,” Cain continues. “In fact, one of our best medical students was just awarded a nationally competitive fellowship in biomedical engineering to conduct research in improving vascular stents and vascular grafts.”

Alexander N. Cartwright, PhD, chair of the Department of Electrical Engineering and the new chair of the Department of Biomedical Engineering, says there already has been tremendous interest from UB’s student body.

The new department’s 14 full-time faculty members were selected based on their current research funding in bio- medical engineering. The initial faculty have dual appointments in biomedical engineering and their home depart- ments, which range from medicine to electrical engineering.

“We are slated for growth,” says Cartwright, who explains that four new full-time hires will be made in the next two years.

The first class is expected to graduate by 2012. Biomedical engineering students enroll in the general engineering curricu- lum for the first two years, and then take specialized courses in the department during their junior and senior years.

The department will work with local companies to develop opportunities to conduct joint research and senior design projects, which will be required of all biomedical engineering students, either working with faculty in a lab or in an industrial setting.

“We want to collaborate with local industry and ask for input from com- panies,” says Cartwright. “It will be a win-win for the companies, our faculty and our students.”

Current research projects in the department are focused on development of “smart” band-aids, which sense the wound microenvironment and release wound-healing compounds when need- ed; artificial skin that regenerates after severe burns; next-generation X-ray imaging systems; stem cells for treating diabetes and cardiovascular disease and batteries to power implantable biomi- dical devices.

For more information about biomedical engineering at UB, go to http://www. bme.buffalo.edu/ or contact Cheryl Michalenko at (716) 645-8500.

"The marriage between engineering and medicine is essential to translating basic discovery in engineer- ing to improving human health and wellness.”

—MICHAEL E. CAIN, MD, Dean

New locally developed “Flight Simulator” for Robotic Surgery

New locally developed “Flight Simulator” for Robotic Surgery

ONE OF THE WORLD’S FIRST SIMULATORS to closely approximate the “touch and feel” of the da Vinci® robotic surgical system has been developed through a collaboration between the Center for Robotic Surgery at Roswell Park Cancer Institute and the UB School of Engineering and Applied Sciences. The most widely used system of its kind in the world, the da Vinci surgical system affords all the features that an experi- enced surgeon needs to ensure equivalent or superior outcomes to conventional surgery. But such a surgical system, like an aircraft, “is only as good as the pilot, and the current training required for proficiency in robot-assist- ed surgery is unfortunately less than ideal,” says Khushbhir A. Guru, MD, director of the Center for Robotic Surgery and attending sur- geon in RPCI’s Department of Urology. “While surgical practice does make perfect, we believe that through better training tools, the early learning curve of robot-assisted surgery can be shortened without jeopardizing the safety and welfare of patient.”

The Robotic Surgical Simulator, or RSS, addresses the quickly growing need for a realistic training environment for robot-assisted surgery, a field that is rapidly expanding and is expected to constitute a significant number of all surger- ies within the next five to seven years. The RSS will play a critical educational role for RPCI and other similar institutions involved in robot-assisted surgical systems.

“Think of the RSS as a flight simulator for surgeons,” explains Thennkurussi (“Kesh”) Kesavadas, PhD, professor of mechanical and aerospace engineering at UB and head of its Virtual Reality Lab, who, with Guru, invented the RSS and founded the Western New York-based spin-off company Simulated Surgical Systems LLC, to commercialize the simulators.

Creation of the RSS is an example of how UB and RPCI research can be commercialized and brought to the marketplace to benefit society.

“Until now, surgeons have had no adequate opportunities outside of the operating room to gain extensive training in robotic techniques,” says Guru, whose own surgical expertise has made RPCI’s robotics program a Center of Excellence and a world leader in physician train- ing in robotics. Instead, he explains, surgeons usually start by “shadowing” a colleague who is more experienced with robotics in the operating room; once they are seen as having developed some proficiency, they start doing robotic surger- ies on their own patients.

“Our experience using computers to transmit accurately the real-time feel and touch of surgery has enabled us to work with Roswell Park to create a training system that provides a highly realistic simulation of robotic surgery.”

Thennkurussi (“Kesh”) Kesavadas, PhD, professor of mechanical and aerospace engineering

Continued on Page 22

"“Our experience using computers to transmit accurately the real-time feel and touch of surgery has enabled us to work with Roswell Park to create a training system that provides a highly realistic simulation of robotic surgery.”"
behavioral treatments led to the current round of studies.

“We started developing a behavioral self-management program, a self-administered version of CBT that was more efficient but didn’t lose the efficacy of the office-based treatment,” he says. A pilot study involving 75 IBS patients found that patients in a “minimal-contact” CBT group, featuring four office visits for counseling and instruction plus home-based CBT, fared as well as or better than the standard 10-session, therapist-administered group. Patients in both groups reported clinically significant relief of symptoms: 72 percent for the minimal-contact group and 80.9 percent for the office-based group, compared to 7.4 percent for the control group.

“The value of the study is that it shows that patients can use very simple self-care skills to take control of symptoms that are resistant to existing medical treatments,” says Lackner.

The new study is designed to see if the results hold up for a larger, more diverse population over a longer period of time. The seven-year clinical trial will include 440 patients between the ages of 18 and 70 with moderate to severe IBS, at two clinical sites: UB and Northwestern University. Participants will be assessed at five points during the 12 months following intervention to determine the long-term effectiveness of the home-based treatment.

Susan Kranser, PhD, clinical assistant professor of anesthesiology, is a co-investigator on the grant and senior psychologist. She has been treating and studying functional disorders for more than a decade, and sees great promise for this new approach to IBS.

“This particular research project is especially important because we hope to see and demonstrate that a more portable and easily accessible treatment option is as good as the gold standard of one-on-one therapy,” she says. “As a community, we could then provide this service to far more IBS sufferers.”

IBS is a shadow now. It is in the back of my mind rather than dominating my life. I function very well day to day. Sometimes I am surprised to realize I haven’t thought about IBS for a while, or find myself in a situation that used to put me in a panic. I think about the ‘what if’s’ once in a while, which was a huge problem before, but now I am able to get rid of the thought as soon as I recognize it. I still get a flare-up on occasion, but I can usually figure out why — consuming alcohol and allergies will always trigger an attack. I can shrug it off easily with ‘It’s just my allergies. It’s not the IBS returning’,” IBS Chat participant and IBS Chat: Real Life Stories and Solutions co-author Barbara Bradley Bolen said.

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This year’s Match Day festivities took place on March 18 at the Pearl Street Brewery in downtown Buffalo, where students, their families and faculty gathered to celebrate.

To view the Match Day results for our school, go to medicine.buffalo.edu/matchday.html.

Nicole Huen, left, will train in family medicine at Travis Air Force Base Medical Center in California, and James Chelnis, right, will complete preliminary training in medicine at Morton Gurney Hospital in Dorchester, MA, and then enter residency in ophthalmology at UB.

Michael Freitas, left, will train in internal medicine at UB, and Tanya Azarani will train in psychiatry at Einstein/Montefiore Medical Center in Bronx, NY.

Roommates and best friends Pamela Wendel, left, and Lesley Small, right, share the good news of their matches to New York Presbyterian Hospital/Weill Cornell Medical Center, where Wendel will train in anesthesiology and Small in pediatrics.

Vanessa Lewis celebrates with her boyfriend, Justin Reed. Lewis matched to Johns Hopkins University School of Medicine, where she will train in emergency medicine.

Jenny Shen celebrates with Christopher DeSimone (foreground) and Daniel DeSimone. Shen will train in internal medicine at the University of Rochester Strong Memorial Hospital. The DeSimone brothers matched to the Mayo Clinic College of Medicine to train in internal medicine.

James Martin Pattarini, center, with his sister, Rita, left, and Harita Nyalakonda, right. Pattarini will train in the Aerospace Medicine Program at the University of Texas Medical Branch in Galveston, TX, in the hopes of becoming an astronaut, and Nyalakonda, will train at Baylor College of Medicine in Houston, TX.
The 164th commencement for the School of Medicine and Biomedical Sciences was held on April 30, 2010, at the Center for the Arts on the North Campus.

This year, the school conferred 129 MD degrees; 2 MD/PhD dual degrees; 4 MD/MBA dual degrees; and 2 MD/oral and maxillofacial surgery degrees.

The honored speaker was Regina M. Benjamin, MD, MBA, surgeon general of the United States Public Health Service.

Photos by Nancy J. Parisi
The Undergraduate and Graduate Biomedical Sciences Commencement for the School of Medicine and Biomedical Sciences took place on May 6, 2010, at the Center for the Arts on the North Campus.

This year, 19 PhD, 28 master’s and 242 baccalaureate candidates were eligible for degrees.

The commencement address was delivered by Susan Amara, PhD, Thomas P. Dette Professor and Chair of Neurobiology in the University of Pittsburgh’s School of Medicine. Degrees were conferred by UB President John B. Simpson, PhD.

Candidates completed work in the following School of Medicine and Biomedical Science departments or programs: biochemistry, biochemical pharmacology, biotechnical and clinical laboratory sciences, microbiology and immunology, neurosciences, nuclear medicine technology, medical technology, pathology and anatomical sciences, pharmacology and toxicology, physiology and biophysics, and biomedical sciences. Also included were the Roswell Park Cancer Institute Graduate Division programs in biochemistry, cancer pathology and prevention, molecular pharmacology and cancer therapeutics, immunology, cellular and molecular biology, molecular and cellular biophysics and biochemistry, and natural sciences.

PHOTOS BY NANCY J. PARISI