Welcome

Welcome to the inaugural issue of Research Connections at NEU, a quarterly newsletter designed specifically for the research community at Northeastern. Since joining in July, I have learned much about the high quality of ongoing research being carried out by faculty, staff and students.

I am confident that there is great potential for significant expansion of our research portfolio, particularly focusing on the complex and pressing issues facing the nation and the world. Addressing such challenges will necessitate a greater focus on larger, multidisciplinary programs in high impact areas such as personalized medicine and health informatics, network assurance, national security and energy and the environment. The Division of Research will work closely with Colleges, Departments and individuals to provide needed resources, infrastructure and strategies to increase the competitiveness of such initiatives and proposals from Northeastern researchers and partners. We also will use this newsletter to provide information on upcoming events and opportunities, to track the Federal, State and Corporate sectors, to celebrate the accomplishments of our colleagues, to describe the growing services provided by the offices of Research Development, Research Administration and Finance and Technology Transfer and to alert the community of regulatory and rule changes. This is a time of great challenges and great opportunities for research institutions and it is a real privilege for me to work with all of you to increase Northeastern’s prominence, by applying use-inspired research in addressing critical national needs.

Mel Bernstein
Vice Provost for Research

Photo Courtesy of Rhoda Baur

FACULTY NEWS

- Hortensia Amaro, Associate Dean of Bouvé College of Health Sciences and Director of the Institute on Urban Health Research, was elected a member of the Institute of Medicine (IOM)
- Y. Barry Chung, Professor and Chair of Counseling and Applied Educational Psychology, was elected President of the Society of Counseling Psychology (American Psychological Association Division 17)
- Elizabeth Dillon, Associate Professor of English, received a National Endowment for the Humanities Fellowship. She will spend the year at the American Antiquarian Society in Worcester, working on her current book project, “Gender, Sex, and Modernity: Geographies of Reproduction in the Eighteenth-Century Atlantic World”
- Charles Fountain, Associate Professor of Journalism, published “Under the March Sun: The Story of Spring Training,” which The San Francisco Chronicle called, “that rare baseball book that also serves as cultural history”
- Jerome F. Hajjar, Professor and Chair of Civil and Environmental Engineering, was awarded the 2010 Breakthrough Award from Popular Mechanics magazine
- David Kaeli, Associate Dean for Undergraduate Education and Professor of Electrical and Computer Engineering, was named a Fellow of IEEE for his contributions to profile-guided optimization algorithms and dynamic branch prediction designs
- Harlow Robinson, Professor of History, was selected by the Academy of Motion Picture Arts and Sciences as an Academy Film Scholar
- Albert Sacco Jr, Professor of Chemical Engineering, received the 2010 Distinguished Chemist Award from the New England Institute of Chemists
- Milica Stojanovic, Associate Professor of Electrical and Computer Engineering, was named a Fellow of IEEE for her contributions to underwater acoustic communications

2010 NSF CAREER AWARDS

Yingzi Lin, Assistant Professor of Mechanical and Industrial Engineering, for “Bridging Cognitive Science and Sensor Technology: Non-intrusive and Multi-modality Sensing in Human-Machine Interactions”

April Gu, Assistant Professor of Civil and Environmental Engineering, for “Mechanistic Toxicity Assessment of Emerging Pollutants via Prokaryotic Real-time Gene Expression Profiling for Water Quality Monitoring”
Northeastern University has been designated as a Center of Cancer Nanotechnology Excellence funded by a highly competitive, five-year, $13.5 million grant from the National Institutes of Health’s National Cancer Institute (NCI) awarded to Vladimir Torchilin, distinguished professor of pharmaceutical science and director of the Center for Pharmaceutical Biotechnology and Nanomedicine, an international leader in drug delivery. The award will establish the Center for Translational Cancer Nanomedicine under his leadership.

In discussing the need for the center, Vladimir notes that there are many outstanding discoveries and publications in the area of cancer nanotechnology, but very few real clinical outcomes.

“The most difficult part is the next step – if you have good results, how do you turn those results into products?”

To narrow the gap between discovery and early development of cancer therapeutics and diagnostics, we need to develop a continuous path from basic research to industrial production of cancer nanomedicines.

Building upon Northeastern’s strong base of interdisciplinary nanotechnology research, the center will create new drugs that target cancer cells, advance technology on how nanocarriers deliver these drugs, and utilize imaging tools that track how they travel through the body. To enable the translation of these nanomedicines from bench to bedside, test batches of the nanopreparations will be developed for preclinical use to meet FDA standards for further clinical testing. The team will also develop semi-industrial and industrial processes to scale up their production.

To accomplish the research objectives, a tightly integrated team has been assembled, comprised of medical researchers, pharmaceutical scientists, chemists, chemical engineers, specialists in medical/diagnostic imaging, and industry representatives. Each will bring their unique expertise to bear on the central problems addressed by the center. Research and development partners include Beth Israel Deaconess Medical Center/Harvard Medical School, Auburn University, Tufts University, and Nemucore Medical Innovations Inc, all longtime collaborators with Torchilin. The new center will collaborate with other Northeastern centers of nanotechnology research. The University’s Center for High-Rate Nanomanufacturing, the Center for Translational Neuroimaging and the IGERT Nanomedicine Science and Technology program will all work in partnership with the new center.

The Centers for Cancer Nanotechnology Excellence are part of the NCI’s Alliance for Nanotechnology in Cancer. The alliance is engaged in efforts to leverage the specific advantages of nanotechnology to improve the way we diagnose, treat and prevent cancer.

In addition to the Center of Excellence designation, the alliance has awarded Northeastern distinguished professor Mansoor Amiji with a five-year, $2.32 million grant as part of the Cancer Nanotechnology Platform Partnership program. Amiji, chair of the Department of Pharmaceutical Sciences in Bouvé’s School of Pharmacy, will collaborate with researchers at Massachusetts General Hospital to develop treatments for multidrug resistant forms of lung and ovarian cancer.

The work involves using nanoparticles and gene silencing techniques to more efficiently target tumors and reverse their resistance to anti-cancer therapies. The researchers will also create a library of nanoparticles they can screen and select from when treating various forms of cancer.

Dr. Vladimir Torchilin is a multi-grant recipient for his work at Northeastern University. He will lead the integrated and diverse team of experts participating in the Center’s research and operations.

Northeastern University
The Division of Research has launched a university-wide Research Seminar Series to feature faculty research initiatives and provide new perspectives on important federal agency programs and emerging funding opportunities.

The first seminar of the bimonthly series was held on October 28. Guest speaker, Dr. Leo Christodoulou, director of the DARPA Defense Sciences Office (DSO), highlighted the DSO’s focus on multidisciplinary research that enhances warfighter capabilities. Saying that DSO is guided by a rigorous grounding in the fundamental sciences, Dr. Christodoulou spoke about DSO investments in mathematics, exploitation of quantum effects, new material systems, medical countermeasures to emerging pathogens, battlefield trauma management, cognition, and neural correlates to learning and decision-making under physical and mental stress. A Q&A followed the seminar.

The second seminar, “Life in the network: The coming age of computational social science,” was presented on November 29 by David Lazer, associate professor of political science and computer science. Lazer explained, “An increasing fraction of human interactions are digitally captured. Our purchases are captured by credit card companies, our phone calls by phone companies, and our e-mails by internet service providers and our employers. These digital bread crumbs, combined with substantial computational power, create enormous opportunities for ground breaking science – as well as potential intrusions on our privacy.”

This spring we anticipate two or three additional seminars featuring speakers from the Northeastern community and external guests from a wide spectrum of expertise and backgrounds. Please contact Lori Campbell (l.campbell@neu.edu) if you would like to be notified of future seminars.
Government Relations at Northeastern University

Tim Leshan is the new vice president for the Office of Government Relations. Government Relations at Northeastern is going through an exciting evolution, mirroring the University’s expansion. As Northeastern rises in the ranks of research universities, the office is charged with driving activity at the federal and state level, in terms of expanding both research funding and our participation in matters of public policy.

One of our primary focuses in Government Relations is working to promote research at Northeastern with Congress and federal agencies to increase funding opportunities. We plan to conduct promotional events both in Washington D.C. and on campus with faculty and members of the congressional delegation. In addition, we want to assist faculty in engaging and connecting with funding agencies.

Washington Update
With the 2010 mid-term elections behind us, we now know that we will see a change in House leadership to the Republicans when the new Congress begins after the New Year. While the Senate will remain in Democratic control by a slim majority, the Republicans’ focus on reducing federal spending is likely to see a tightening of the budgets for federal research agencies such as the NIH, NSF, DOE and the NEH. The DoD may fare a bit better.

In the meantime, Congress will return for a lame-duck session where they will attempt to pass the Appropriations bills that fund federal agencies for the coming year, none of which have passed yet. Failure to pass the bills this session will delay any new funding for research agencies. It is likely that the bills will be wrapped into one omnibus appropriation bill.

While the Democrats will still be in control during this process, the Republicans will push to cut funding in the omnibus. It is not at all clear if the omnibus will be passed before the break, which would delay FY’11 funding well into next year. We will advocate for swift passage of the Appropriations bill with our congressional delegation. – Tim Leshan

CIMIT Strategic Initiatives
- Integrated Clinical Environments
- Neurohealth
- Accelerator

CIMIT Programs
- Biodetection & Sepsis Control
- Biomaterials & Tissue Engineering
- Cardiovascular Disease
- Clinical Systems Innovation
- Global Health Initiative
- Image Guided Therapy
- Inhalation Technology
- Minimally Invasive Surgery
- Neurotechnology
- Optical Diagnostics
- Simulation
- Trauma and Casualty Care
- Traumatic Brain Injury (TBI) & Neurotrauma
- Traumatic Stress Disorders (PTSD)