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## Research connections at NU: vol. 1, no. 3, Spring 2011

Office of the Vice Provost for Research, Northeastern University

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## TIER 1 INTERNAL GRANTS AWARDED

Please join the Office of the Vice Provost for Research in congratulating recipients of the first Tier 1 Interdisciplinary Research Seed Grant Program awards. Developed in collaboration with the Office of the Provost and College Deans, the new internal grant program supports multidisciplinary faculty teams in developing new and innovative research directions and in securing proof of concept that leads to external funding opportunities. Information on grants in support of interdisciplinary research can be found at [northeastern.edu/research/interdisciplinary\\_grants](http://northeastern.edu/research/interdisciplinary_grants).

### Exploiting Innate Mucosal Immunity for Acute, Safe and Facile Response to Biowarfare

- › Rebecca Carrier (CE)
- › Jeff Ruberti (MIE)
- › Dave Budil (Chem)

### Graphene and Carbon Nanotube Heterostructures for Advanced Photodetection and Photovoltaics

- › Swastik Kar (Phys)
- › Yung J. Jung (MIE)

### Assessment of Effects of Central Fatigue on Cognitive, Motor and Sensory Function

- › Dagmar Sternad (Bio & ECE)
- › Therese O'Neil-Pirozzi (Speech)
- › Ying-Yee Kong (Speech)
- › Deniz Erdogan (ECE)

### Self-assembly of a Biological Clock

- › Fred Davis (Bio)
- › Ferdi Hellweger (CEE)

### Visualizing Speech Melody to Improve Second Language Expressive Fluency in Adolescents

- › Rupal Patel (Speech)
- › Isabel Meirelles (Communication Design)
- › Sheelah Sweeny (Educ)

### Fluorescent Sensors for Visualizing Dynamics in Dendritic Spines

- › Heather Clark (Pharm Sci)

### Shortfall: A Computer Game to Teach Sustainability in Engineering and Business

- › Jackie Isaacs (MIE)
- › Tom Cullinane (STE)
- › Brian Sullivan (Art)

### Probing the Intersection of Pleasure and Pain: An Electrophysiology and fMRI Analysis of the Prefrontal Cortex Circuitry

- › Marcelo Febo (Psych)
- › Robert Sikes (PT/SUNY Med)
- › Barbara Waszczak (Pharm Sci)

### Interdisciplinary Studies to Explore the Viability of Pulmonary Surfactant as a Drug Delivery System for the Lung

- › Andrew Gouldstone (MIE)
- › Rebecca Carrier (CE)

### Solid-Mechanics Approach to Micro-organism Adhesion-Aggregation-Transportation

- › Kai-tak Wan (MIE)
- › April Gu (CEE)
- › Sinan Muftu (MIE)

### Water Quality Improvement: Self-powered Hydrogen Production, Donor Delivery and Monitoring System for Bio-remediation

- › April Gu (CEE)
- › Sanjeev Mukerjee (Chem)
- › Akram Alshwabkeh (CEE)
- › Edgar Goluch (CE)
- › Kim Lewis (Bio)

### Theoretical Study of the Vibration of Inclined Stays in Cable Stayed Bridges

- › Luca Caracoglia (CEE)
- › Bernardo Barbiellini (Phys)

### Exploiting Regenerative Capacity of Amphibian Matrix for Retinal Regeneration

- › Rebecca Carrier (CE)
- › Marina Hincapie (BARN)

### Forming an Interdisciplinary Team to Investigate Science of Cold Spray

- › Sinan Muftu (MIE)
- › Andrew Gouldstone (MIE)
- › Moneesh Upmanyu (MIE)
- › Dave Kaeli (ECE)

### Next Generation Capture and Release Coatings for Microfluidic Separation of Stem Cell

- › Shashi Murthy (CE)
- › Sunny Zhou (Chem & BARN)

### Proposal for Proof of Concept for Interdisciplinary Research in Music Industry

- › Anthony De Ritis (Mus)
- › Gloria Barczak (CBA)
- › Fleura Bardhi (CBA)
- › Fareena Sultan (CBA)
- › David Wesley (CBA)
- › David Herlihy (Mus)
- › Richard Strasser (Mus)

### Molecular Mechanisms of DNA Polymerase Management

- › Mark Williams (Phys)
- › Penny Beuning (Chem)

### Brain Drain, Gain or Flow: Elite Education and Contemporary African Migration to the U.S.

- › Mindelyn Buford (Soc & AAS)
- › Holly Carter (Educ)

### Neglected Tropical Diseases in Kenya: A Study into the Causes of, Diagnosis and Control of Schistosomiasis, Leishmaniasis and Echinococcosis

- › Richard Wamai (AAS)
- › Michael Pollastri (Chem)
- › Javier Ogumbo (CPS)
- › Allison Yoos (NUR)

### Using Computer Games to Diffuse Suitable Innovations

- › Ann McDonald (Art)
- › Rosanna Garcia (CBA)
- › Mark Sivak (MIE)

### Pilot Study and Grant Preparation to Test an Integrated Sexual Health and HIV Prevention Intervention in Substance Abuse Treatment Programs

- › Hortensia Amaro (IUHR)
- › Carole Kenner (NUR)
- › Gia Barboza (AAS)

### Improving Risk Prediction for Sudden Cardiac Death through Multiscale Computational Modeling of Microvolt T-Wave Alternans

- › Dana Brooks (ECE)
- › Alain Karma (Phys)

### Consequences of Local Adaption and Genetic Diversity for Marine Community Dynamics and Ecosystem Functioning

- › Matthew Bracken (Bio)
- › Steven Vollmer (Bio)

## WASHINGTON UPDATE

By Tim Leshan, VP for Government Relations



Following the passage of the FY11 spending bill, which cut \$39 billion in federal research funding and other federal programs, Congress has begun work on its FY12 budget. In April, the U.S. House passed its budget blueprint on a party line vote, which calls for cutting \$6.2 trillion over 10 years from the budget submitted by President Barack Obama. While this budget resolution is non-binding it does determine the allocations for the Appropriations subcommittees that provide funding for domestic nondiscretionary programs like research funding agencies. The funding allocations the House has proposed would result in a total funding cut of \$30 billion below the FY11 enacted level. However, this would include an increase to the Department of Defense of \$17 billion. Therefore, \$47 billion in domestic discretionary reductions are necessary to achieve the net \$30 billion in savings.

Below are the funding reductions for some of the House subcommittees that include research-funding agencies:

### Labor-HHS-Education (includes NIH)

\$18.2 billion below FY11 (and \$41.5 billion below the President's request). This would follow an FY11 enacted level that represented a cut of \$5.5 billion (3.36%) from FY10, for a possible 2-year cut of \$23.7 billion (14.5%).

### Commerce, Justice, Science and Related Agencies (includes NSF)

\$8.5 billion below FY11 (and \$11 billion below the President's FY12 request). This is on the heels of an FY11 enacted level that was \$11 billion (17%) below FY10, for a possible 2-year cut of \$19.5 billion.

### Homeland Security

\$1.1 billion below FY11 and \$3 billion below the President's request. This would follow an FY10 cut of \$784 million (2%).

Each Appropriations subcommittee will now produce and pass its funding bill, which must then go to the full Appropriations Committee and the House floor.

### What's Next?

The U.S. Senate has not passed its FY12 budget and its Appropriations subcommittees have not received their funding allocations. Once the Senate begins work on its budget it is not expected to propose anywhere near the same level of funding cuts as the House. The two chambers will then have to reconcile the differences between their appropriations bills, which will take months and prove difficult. In the end, research funding agencies are likely to see cuts, but it is not clear by how much.

For more information please visit: [northeastern.edu/governmentrelations](http://northeastern.edu/governmentrelations)



## FACULTY AND STUDENT RECOGNITION

The 10th Annual Research & Scholarship Expo was held April 6th, featuring 311 poster presentations (280 from students) on a wide range of topics in disciplines across the university, along with oral presentations and faculty works (books, music and artwork). Fourteen presentations were recognized with Outstanding Student Research Awards.

### INAUGURAL ACADEMIC HONORS CONVOCATION AWARDS

#### University Professor

- › William Dickens, Professor of Economics
- › Judith Hall, Professor of Psychology
- › Sheila Puffer, Professor and Cherry Family Senior Fellow of International Business

#### Distinguished Professor

- › Vincent Harris, William Lincoln Smith Chair Professor in Electrical & Computer Engineering
- › Kim Lewis, Professor of Biology

#### Excellence in Research and Creativity

- › Stephen Nathanson, Professor of Philosophy
- › Vladimir Torchilin, Distinguished Professor of Pharmaceutical Sciences

#### Excellence in Teaching

- › Lori Gardinier, Associate Academic Specialist in Human Services
- › Gregory Goodale, Assistant Professor of Communication Studies

#### Klein University Lecturer

- › Vincent Harris, William Lincoln Smith Chair Professor in Electrical & Computer Engineering

## ROLLOUT OF ELECTRONIC GRANTS MANAGEMENT SYSTEM



Research Administration and Finance, in partnership with Information Services, is pleased to announce that efforts are now underway to deploy a new university-wide grant management routing system called COEUS. The system, developed by MIT and used by countless research institutions, is a web-based framework to streamline and standardize the grant submission and management process. It centralizes stored information about proposals, awards, sub-awards, sponsors and much more.

Investigators and administrators can look forward to greater ease in preparing proposals, with more time to write the content and less time spent filling out forms and hand-carrying documents through the various levels of approval.

COEUS will enable investigators to create new proposals more efficiently through the use of templates. The templates ensure a more complete grant submission, capturing all of the compliance and funding requirements. COEUS also supports the submission of proposals directly to grants.gov, performing validation checks to reduce the number of errors and rejections in the system.

Budget preparation is simplified and supported by the ability of COEUS to store and apply current Employee Fringe Benefit and F&A (Indirect Costs) rates, inflation factors and conversions from effort to person hours.

At the core of the system, COEUS has a sophisticated proposal tracking system. Investigators and administrators can easily monitor the proposal approval process as it moves through the routing pathway for a faster overall approval process. The tracking system also provides grant administrators more efficient ways to assist and monitor the process, mitigating risk and unnecessary delays.

COEUS is currently being beta tested by RAF grant officers with plans for widespread deployment to investigators in the fall. A web site is being developed that will contain information about COEUS, include training materials (both video and print) and other important support documentation. Classroom-based training will be also be available.

In addition to the Proposal Development module, planning is underway to implement the COEUS Award module with a connection to Banner Finance, followed by rollout of the IRB and IACUC modules. Once complete COEUS will provide a comprehensive grant management system for more accurate tracking, budgeting and reporting from proposals to awards.



## UPCOMING RESEARCH EVENTS

### JUNE 2-4 Curry Student Center Engineering Mechanics Institute 2011 Conference

The Engineering Mechanics Institute (EMI) is an institute of the American Society of Civil Engineers. This conference provides a major forum for the exchange of ideas and discussion of recent developments in all mechanics and materials research fields. The technical sessions and symposia on fundamentals, tools and applications serve to highlight and promote educational needs, emerging thrusts, novel techniques and innovative applications in areas that span across many engineering disciplines. Researchers, engineers, industry representatives, public officials and all others who have an interest are invited to attend and participate. Major activities include a new faculty short course, pre-conference short course, student paper competition, poster competitions, industrial exhibitions, committee meetings, receptions and award banquet.

For more information, please visit [northeastern.edu/emi2011](http://northeastern.edu/emi2011)  
Sponsored by the Department of Civil and Environmental Engineering

### JULY 27-30 Northeastern University 9th World Congress on Neurohypophysial Hormones

The World Congress on Neurohypophysial Hormones is a multi-day conference that draws speakers from around the world to discuss the recent advances in physiology, molecular biology and neurobiology of vasopressin and oxytocin. Topics include "The Role of Oxytocin in the Control of Social Recognition," "Oxytocin as a Putative Therapeutic Agent for Schizophrenia" and "Hospital-Associated Hyponatremia: Implications for Clinical Outcomes."

For more information about the conference and to register please visit [northeastern.edu/wcnh](http://northeastern.edu/wcnh)

Submit fall research events to Christine Lafontant: [c.lafontant@neu.edu](mailto:c.lafontant@neu.edu)

## FY 2011 RESEARCH RETROSPECTIVE

As of the end of April, with two months remaining in Fiscal Year 2011, external research funding was on track to exceed FY 2010 levels. Total dollar awards were 23% ahead of April 2010 totals. This upward trend continues to be driven by growth in the number of multi-year, multi-million dollar center and program project awards. **FY 2011 awards of note include:**

Center for Translational Cancer Nanomedicine (NIH-NCI)  
› **Vladimir Torchilin, PI: \$13,781,778**



Boston Puerto Rican Health Study (NIH-NHLBI)  
› **Katherine Tucker, PI: \$10,378,480**

GnoSys: Raising the Level of Discourse in Programming Systems (DARPA)  
› **Olin Shivers, PI: \$4,384,487**



Development of Novel Non-PGM Electrocatalysts for PEM Fuel Cell Applications (DOE)  
› **Sanjeev Mukerjee, PI: \$4,942,301**

National Interpreter Education Center (U.S. Dept. of Ed.)  
› **Cathy Cogen, Director: \$2,997,900**



Emotions are Emergent Events Constrained by Affective and Conceptual Processes Pioneer Award (NIH)  
› **Lisa Feldman Barrett, PI: \$2,163,327**

Combinatorial-Designed Nano-Platforms to Overcome Tumor Drug Resistance (NIH-NCI)  
› **Mansoor Amiji, PI: \$2,317,577**



Northeastern University

RESEARCH CONNECTIONS *at* NU  
Informing, Inspiring and Engaging our Community

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