Nanodiamond Technology, Interdisciplinary Collaboration Key to Research in Ho Lab

Researchers at Northwestern University are rapidly advancing the use of nanotechnology to combat even the most chemoresistant cancers. By way of nanodiamonds — diamond particles 2-8 nanometers in diameter — Dean Ho, PhD, a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University and resident faculty in the Institute for BioNanotechnology in Medicine, focuses on the modified delivery of drugs like doxorubicin (dox) to fight off breast and liver cancers.

"Nanodiamond properties enable drugs to bind tightly to their surface so they can avoid damaging healthy cells," Ho says. "By eliminating the threat of reduced white blood count, the delivery of these toxic but combative drugs could be the answer for eliminating these cancers and improving the lives of our patients."

Ho, also an associate professor in the Robert R. McCormick School of Engineering and Applied Science Departments of Biomedical Engineering and Mechanical Engineering, started his work with nanodiamonds more than three years ago, and recently tested its efficacy using a mouse model.

His research found that when the dosage of unmodified dox was doubled, no mice survived; however, when the same lethal dosage was administered through nanodiamonds, all mice survived.

"This suggests our modified drugs could target and neutralize cells throughout the body without the usual side effects," Ho says. "While the drug can still do its job, it remains protected until it can do its work."

Nanodiamonds (shown here) can make anti-cancer drugs more effective. (Image courtesy Science/AAAS)

Continued on pg. 2
nanodiamonds, all mice survived and tumor sizes were the smallest observed in the study.

“The findings from this breast cancer model were striking and really showcased the power of the nanodiamond platform,” says Ho.

His group, the Nanoscale Biotic-Abiotic Systems Engineering Laboratory (N-BASE), brings together students and postdoctoral fellows from a variety of backgrounds, including mechanical engineering, chemistry, materials sciences, physics, and biology. The team published their breakthrough findings in the cover story of the March 2011 issue of Science Translational Medicine. Through the study, Ho’s lab also assessed the use of nanodiamond technology to increase the duration of drug circulation in the bloodstream, which allows the therapeutic to stay in the tumor longer.

Ho plans to spend the next few years validating the proposed treatment idea in larger, non-rodent animal models in order to move to clinical application. In the meantime, Ho and his team are continuing collaborations with investigators from Northwestern and across the world to consider the use of nanodiamond technology in gene therapies for inflammation, infection, and cancers.

“Cancer is a global problem, so the success of these nanomaterials in improving drug delivery to combat disease is relevant to researchers everywhere,” says Ho, who was recently awarded Phase II of the Wallace H. Coulter Foundation Translational Research Award.

Funding from the Coulter Foundation supports biomedical research that is translational in nature and encourages and assists eligible biomedical engineering investigators to establish themselves in academic careers involving translational research. Ho first earned the prize in 2008 and used it to develop the proof-of-concept for nanodiamond-based drug delivery.

“The Coulter Award has been instrumental in accelerating the research in my lab, as it comes with an expected urgency to progress technologies toward commercial development and entering clinical practice,” Ho says.

The award also requires that Ho work with physicians in order to further the clinical applications of the technology. Accordingly, he collaborates with Northwestern cardiologist Patrick McCarthy, MD, Heller-Sacks Professor of Cardiothoracic Surgery and chief of the Feinberg Division of Cardiac Surgery, as well as Sunjay Kaushal, MD, PhD, attending physician at Children’s Memorial Hospital and assistant professor of surgery at Feinberg, to consider the use of the technology in improving patient recovery after open heart surgery. He also works with investigators from the University of California-San Francisco to imagine its broader use in cancers.

“Having the opportunity to work with a range of clinicians who are open to collaborating with engineers is exciting,” Ho says. “Their sustained enthusiasm, as well as a continued seamless interaction between the medical and engineering schools, will certainly allow for pivotal advances in the future.”

For more information about his research, contact Dean Ho: d-ho@northwestern.edu or (847) 467-0548.

NUPOC Renovation Receives Merit Award

Feinberg’s recent renovation of the Northwestern University Prosthetics-Orthotics Center (NUPOC), featured on the cover of the October 2010 FSM Researcher, has received a juried Merit Award at the annual Chicago Building Congress meeting for distinctiveness of design, quality of construction, impact on the community, and safety record.

NUPOC won in the Interior Buildouts category, beating three major commercial projects. This puts NUPOC in select company, along with places such as the Prudential Building, McCormick Place, the Alder Planetarium Sky Pavilion, Lookinglass Theatre, the Art Institute of Chicago’s Modern Wing, and more.
Brain Awareness Week Brings Science to Chicago Public Schools Students

This spring, Northwestern University Interdepartmental Neuroscience (NUIN) students participated in Brain Awareness Week, a global effort to increase public awareness about the progress and benefits of brain research. This year, NUIN students hosted a variety of activities at Northwestern and in the Chicago community, including a demonstration at the Museum of Science and Industry in partnership with the museum’s Science Achievers program and a Brain Fair at Chicago’s Nettelhorst Elementary School in the East Lakeview neighborhood (pictured above).

The Brain Fair at Nettelhorst was attended by more than 200 elementary students, and more than 40 Northwestern graduate students participated. The fair featured 12 science “stations” designed to pique children’s interest in biology and neuroscience. According to Nettelhorst leadership, the event was a rousing success — numerous students reported that Northwestern events such as the Brain Fair have been “the best days they ever had in school.”
Faculty Profile: Alex Minella, MD
Assistant Professor of Medicine

Alex Minella, MD, assistant professor in medicine, is a Midwest native, but lived on each coast before settling down in Chicago.

Minella received his Doctor of Medicine degree at Vanderbilt before moving to Seattle for clinical and postdoctoral training. He came to Feinberg in 2007 and in addition to running a research laboratory, is a practicing oncologist. His clinical activities currently focus exclusively on the care of inpatients at Northwestern Memorial Hospital.

What brought you to Feinberg?

Northwestern is one of a few institutions that vigorously supports physician-scientists as laboratory investigators. This career model seems to be increasingly under threat. Being able to focus on basic research while also having the privilege to care for patients, I am engaged in what I always thought was the most compelling career. So it was critical to me that I work at an institution that valued the path my life’s work has taken.

Also, at the time that I was finishing my postdoctoral work, which was focused initially on studying the regulation of one member of a class of cell cycle proteins called cyclins, I was becoming more interested in cell cycle control within hematopoietic stem cells and during hematopoietic cell maturation. In 2006 and 2007, before I moved here, Jonathan Licht, MD, chief of the Division of Hematology-Oncology, was recruiting a number of laboratory investigators to build on existing strengths here at Northwestern in the study of hematologic malignancies. I thought there was a real opportunity for me to develop both an independent research program during a time of exciting, departmental growth, and to learn new skills in the study of hematopoiesis from my colleagues-to-be in the division.

What are your research interests?
The molecular circuitry that regulates cell proliferation is at the center of all the work we do in my lab. Ultimately, cancer is a disease of inappropriate cell division. My research has increasingly focused on understanding precisely how cell cycle regulatory networks are integrated with the broader biology of the cell. For example, we are submitting a paper shortly describing how inappropriate expression of a key regulator of entry into S-phase entry (when the cell replicates its DNA) causes activation of hypoxia signaling within breast epithelial cells. This work, which is led by Tanushri Sengupta, a postdoctoral fellow in my lab, has led us to hypothesize that hypoxia signaling, which is thought to promote the survival and spread of cancer cells, can be co-opted by these cell cycle regulators when they are aberrantly expressed.

In other work led by Yanfei Xu, another postdoctoral fellow in my lab, and Ka Tat Siu, a graduate student, we have focused on DNA damage signals that are generated in response to defective cell cycle controls in hematopoietic cells. We believe these signals are at the heart of abnormalities we have identified in blood cell maturation and stem cell function of mice we have engineered to model several of the defects in cell cycle control that occur in human cancers. We hypothesize that defective cell cycle controls and the cellular responses to these may contribute to the pathogenesis of blood diseases in humans, such as myelodysplastic syndromes and leukemia.

What is the ultimate goal of your research?
As a result of my training, the research that we perform focuses on solving and studying particular molecular mechanisms in physiologically relevant systems rather than a specific disease-centered approach. However, as an oncologist, I am obviously interested in having a measurable impact upon the diagnosis and treatment of cancer. It is my hope that our work will ultimately illuminate steps in the development of cancer that lend themselves to new therapies or diagnostic approaches. Whether it is us or other groups that develop these practical applications is less important to me than that our work makes substantive contributions to understanding the molecular bases of cancer development and progression.

How does your research advance medical science and knowledge?
Most cancer researchers believe that the great challenges that remain in improving diagnostics and treatments will take both advances in fundamental science as well as high-quality...
translational research and well-designed clinical trials. In my lab, our efforts focus largely on fundamental cancer biology.

How did you become interested in this area of research?
I started in the cell cycle field working as a summer student in the lab of Tom Kelly, MD, PhD, at Johns Hopkins. There, I was working on yeast cell cycle proteins. This included one protein with an unknown function at the time, which was later found to be critically important for the initiation of DNA replication and discovered to interact with the proteins I have been working on during my career.

The striking evolutionary conservation of cell cycle regulatory proteins from single cell organisms to humans as well as their fundamental role in tumor biology is what originally drew me to the field. The cell cycle is at the nexus of fundamental biology and the molecular basis of cancer.

There are many questions remaining, including whether specific cell cycle regulatory mechanisms are molecular linchpins for tumor cell proliferation and survival, and, if so, in which cancers?

What types of collaborations are you engaged in across campus (and beyond)?
We have just started a project with Jane Winter, MD, a lymphoma specialist in our division, in which we are studying the role of a particular cell cycle inhibitory protein in potentially regulating the response of diffuse large B-cell lymphomas to a commonly used therapy, rituximab. I have been collaborating with Ming Zhang, PhD, in the study of this same cell cycle inhibitor, p21, and its role in regulating breast tumor progression. Also, for about two years, we have been collaborating with Marsha Rosner, PhD, at the University of Chicago in the use of computational modeling and live cell imaging to develop an integrative approach to studying key steps involved in the early stages of cell cycle progression, leading to DNA replication.

How is your research funded?
The National Institutes of Health provides our chief source of funding – currently in the form of a K-grant awarded in 2007 to support my transition from mentored to independent research and a 2010 R01 award that supports our work in studying cell cycle regulation in hematopoiesis. The collaborative projects I described are supported by the Chicago Biomedical Consortium (Searle Funds) and a Schwartz Family Lymphoma Research award. I am especially grateful for a number of new investigator awards I have received from several organizations and foundations, including an American Society of Hematology Scholar Award, American Cancer Society institutional research grant, Leukemia Research Foundation New Investigator Award, Schweppe Foundation New Investigator Award, and Translational Scholar Award from the Sidney Kimmel Foundation for Cancer Research.

Welcome New Faculty

Brian Mustanski, PhD, joins as associate professor, Department of Medical Social Sciences. He is also Northwestern University director of the IMPACT Program. A central focus of his research is on the clustering of psychological, behavioral, and physical health, particularly as they relate to HIV in vulnerable populations.

Mustanski received his doctorate in psychology from Indiana University, where he trained extensively at the Kinsey Institute. He has been the principal investigator for multiple National Institutes of Health, National Science Foundation, and other foundation research and training awards, including being named a William T. Grant Foundation Scholar.

The majority of his research focuses on the health and development of gay, lesbian, bisexual, and transgender (LGBT) youth. Mustanski also conducts research in the area of psychiatric and behavioral genetics. In 2005 he co-authored the first genome scan of male sexual orientation and he is currently the PI of a NIDA funded natural experiment to study gene-environment interaction. The Gene, Environment, and Neighborhood Initiative (GENI) seeks to understand the development of a cluster of health issues facing urban youth living in poverty.
New Clinical Trial: “Study of the Effect of Vitamin D as an Add-on Therapy to Corticosteroids in Asthma (VIDA)”

Investigators: Pedro Avila, MD, and Lewis Smith, MD, Department of Medicine

Sponsor: National Heart, Lung, and Blood Institute (NHLBI)

Collaborator: AsthmaNet Study Centers

This is a randomized, double-blind parallel group trial that will enroll individuals who have eligible blood levels of vitamin D and asthma with persistent symptoms despite low-dose inhaled corticosteroid.

Participants will be randomized to add-on therapy with either placebo or vitamin D supplementation for 28 weeks. During the inhaled corticosteroid-stable phase, participants will remain on the same dose of inhaled corticosteroid. Then, during the inhaled corticosteroid-taper phase, participants will taper their inhaled corticosteroid by 50 percent at two time points post-randomization.

The investigators will determine whether the addition of vitamin D reduces the likelihood of treatment failure when compared to placebo during both the inhaled corticosteroid-stable and inhaled corticosteroid-taper phases of the study. Given the high prevalence of both vitamin D insufficiency and asthma, this trial has high potential to impact daily asthma management.

Men and women age 18 or older are eligible for the study and must have had physician-diagnosed asthma for at least 12 months. For additional requirements and exclusion criteria, visit clinicaltrials.gov. About 400 people across the nation will be randomized in this study; 50 people will be randomized at Northwestern.

To learn more about the study, e-mail the Allergy, Asthma, & Immunology Clinical Research Unit at asthma@northwestern.edu or call 312-695-6518.

50GB of Storage Available for Researchers at No Cost

Finding an economical and secure means to store and share research information at Northwestern has just gotten easier. Northwestern University Information Technology (NUIT) recently announced that University researchers and research faculty can request 50GB of free storage through a Web-based storage platform called Vault Collaborative Research Data Storage. The University’s central storage platform for research information, Vault provides alternative storage platforms for storing computational data.

The service is ideal for collaborating on grant proposals, storing back-up of desktops, large data sets, and files that are too large to send via e-mail. Plus, accountholders can give permission to share their research information with anyone – colleagues both within and outside of the University research community via link or URL.

Interested researchers and research faculty with a valid NetID can complete an account request form and get started using the service within one business day.

Additional storage can be purchased on a cost per 100GB increment basis. A letter of intent must be submitted by the eligible researcher to request this additional storage.

Visit NUIIT online to learn more about this centrally-provided data management storage service.
Sponsored Research

Eric Hungness, MD
Assistant Professor of Surgery-Gastrointestinal and Endocrine

Project title: “Prospective Multicenter Human Case Controlled Evaluation of Natural Orifice Translumenal Endoscopic Surgery® (NOTES®) Cholecystectomy”

Sponsors: American Society for Gastrointestinal Endoscopy and the Society of American Gastrointestinal and Endoscopic Surgeons

The growing capabilities of therapeutic flexible endoscopy have ushered in a new era in treatment of gastrointestinal conditions. Refinements in laparoscopic surgery have progressed to the point that complex surgical procedures, such as gastric bypass, can now be performed in a minimally invasive fashion. These trends have set the stage for the development of even less invasive methods to treat conditions in both the gut lumen and in the peritoneal cavity. It seems feasible that major intraperitoneal surgery may one day be performed without skin incisions. The natural orifices may provide the entry point for surgical interventions in the peritoneal cavity, thereby avoiding abdominal wall incisions.

Cholecystectomy, or gallbladder removal, is one of the most common surgeries in the U.S.—approximately 750,000 are performed annually. The Natural Orifice Surgery Consortium for Assessment and Research® (NOSCAR) study uses the mouth or vagina as routes to the gallbladder. Rather than making up to five incisions in the abdominal wall, tools are passed down the mouth and through a hole created in the stomach (transoral/transgastric) or through the vagina (transvaginal).

This multicenter trial compares NOTES cholecystectomy versus conventional laparoscopic cholecystectomy. NOSCAR has granted funds to selected institutions, including Northwestern, to conduct these trials. Institutions participating in the trial have demonstrated a strong commitment to developing the basic science that forms the foundation of NOTES and have already performed human NOTES cases under an Institutional Review Board protocol; approximately two hundred patients will be enrolled in the clinical trial.

NIH News

The NIH’s National Center for Research Resources (NCRR) has announced that it will not accept new applications for the CTSA program this year. It has withdrawn the previously announced new application receipt date of October 3. The receipt date of June 11 for renewal applications remains. NIH also announced that toward the end of 2011 a new funding opportunity announcement soliciting both new and renewal applications will be issued with a June 2012 submission date.

NIH recently issued a “clarification” of its FY 2011 fiscal plan. The clarifications concern the treatment of modular grants inflationary adjustments and make it clear that the adjusted FY 2011 levels will be the basis of future year commitments.

On May 16, agencies of the Department of Health and Human Services released their FY 2011 operating plans.

Dr. Sally Rockey, NIH deputy director for Extramural Research, has posted additional data about the top 20 percent of principal investigators. This is part of NIH’s effort to better understand patterns of NIH support and the pool of investigators they support.

The National Research Council has formed a panel to review “The Use of Chimpanzees in Biomedical and Behavioral Research.” The ad-hoc expert committee “will conduct a study and issue a letter report on the use of chimpanzees in NIH-funded research that is needed for the advancement of the public’s health. The primary focus will be NIH-owned animals, but will also include consideration of privately owned animals that are currently financially supported by NIH.” John D. Stobo, MD, senior vice president for health sciences and services for the University of California, will chair the panel.

More information is available online.

NIH has posted a new podcast on sharing research resources, JP Kim, director of the Division of Extramural Inventions & Technology Resources, describes the types of research resources that must be shared under the NIH sharing policies and provides advice for including sharing policies in your application.
Student Q&A: Kirthana Ganeshan
Integrated Graduate Program in Life Sciences

Where is your hometown?
I am originally from Sri Lanka, but grew up in Brunei Darussalam, a small country on the island of Borneo in Southeast Asia.

What is your educational background?
I received my undergraduate degree at Marquette University in Milwaukee, where I majored in molecular biology.

What are your research interests?
I am interested in how the inflammatory immune response is regulated. In response to any pathogenic insult, either innate or adaptive, the resulting immune response is typically very complex and involves structural and immune cells as well as a variety of soluble factors. It is fascinating how the immune system orchestrates these responses to resolve inflammation and avoid unnecessary self-tissue destruction. I am specifically interested in how cellular immune responses are regulated.

I was fortunate to be able to pursue this interest as a graduate student in the laboratory of Paul Bryce, PhD, in the Division of Allergy-Immunology. My thesis project focuses on investigating how regulatory T cells regulate mast cell responses in both innate and adaptive immunity.

What exciting projects are you working on?
While mast cells are classically identified as highly pro-inflammatory cells, these cells are capable of being “tuned” to function in an anti-inflammatory fashion. My research focuses on investigating the mechanisms by which regulatory T cells, well-characterized suppressive T cells, interact with mast cells to modulate their inflammatory potential.

Recently, much of my project has focused on examining regulatory T cell regulation of mast cell cytokine production. My work has uncovered a novel mechanism by which regulatory T cells, through the presentation of TGF on their cell surface, promote mast cells to produce interleukin-6. This phenomenon appears to be critical to resolve innate inflammation in a mouse model of acute lung injury. As both mast cells and regulatory T cells have been extensively studied in adaptive immune responses, I was very excited to demonstrate a function for this cell-cell interaction in a model of innate inflammation.

What has been your best experience at Feinberg?
A highlight for me was receiving a pre-doctoral fellowship through the American Heart Association last year. I have also attended a number of national conferences in my time here, and these have been great opportunities to show my work to a wide audience.

What do you like to do in your free time?
Whenever possible, I like to travel. I have a lot of family and friends who live all over the United States and abroad and I enjoy visiting them.

What are your plans for after graduation?
I would like to continue my training in immunology with a post-doctoral position at an academic institution.

IGP News
Margaret Caulfield is a PhD student in the laboratory of Melissa Brown, PhD, where she studies the role of mast cells in the pathogenesis of experimental autoimmune encephalomyelitis (EAE). Recently she was awarded a Ruth L. Kirschstein individual National Research Service Award (NRSA F31) by the NIH in support of her thesis research. Caulfield was also awarded a Howard Hughes Medical Institute (HHMI) biological teaching fellowship to support undergraduate biology curriculum development and implementation in association with the biological sciences curriculum on the Evanston campus. In addition to her outstanding progress toward the doctorate degree, including two recently published first-authored papers, Caulfield has undertaken an external leadership role in the McCormack Boys and Girls Club of Chicago and participated in the summer enrichment course at Glenbard East High School.
Research in the News

*Time Magazine* May 26
Study: Baked, broiled — but not fried — fish is good for the heart
Dr. Donald Lloyd-Jones’ research was featured.

*Study also featured in:*
*CNN International* May 24
*WebMD* May 24
*Washington Post* May 24
*Health.com* May 24
*WABC-TV (New York)* May 24
*WCAU-TV (Philadelphia)* May 25
*Bloomberg News* May 25
Brian barrier breached in Roche push to deliver potential Alzheimer’s drug
Dr. Robert Vassar was quoted.

*National Public Radio* May 23
Doctors fret over rise in biopsy infections
Dr. Anthony Schaeffer was interviewed.

*Associated Press* May 19
Lawmakers roast feds over potato guidelines
Dr. Linda Van Horn was quoted.

*Dr. Van Horn also quoted in:*
*Associated Press* May 18

*FOX Chicago* May 18
Chronic stress can affect pregnancy
Dr. Ann Borders was interviewed.

*WBBM-TV (CBS) Chicago* May 17
Tired teens
Dr. Phyllis Zee was interviewed.

*The Globe and Mail* May 12
No silver bullet for Alzheimer’s
Dr. Martha Daviglus was quoted.

*Dr. Daviglus also quoted in:*
*USA Today* May 10
*FOX News (National)* May 10

*Los Angeles Times* May 10
Northwestern patient 2nd in Geron stem cell trial
Dr. Richard Fessler’s work was featured.

Core Fact

The Behavioral Phenotyping Core has moved! We are now located on the 15th floor of the Ward building.

We’re pleased to announce that the new facility and adjacent holding rooms will accommodate non-barrier rodents, which were excluded from our former location.

For more information, contact Craig Weiss at cweiss@northwestern.edu.

Honors

Three faculty members from the Department of Physical Therapy and Human Movement Sciences have received awards from the American Physical Therapy Association. [David A. Brown, PT, PhD](mailto:), received the Marian Williams Award for Physical Therapy Research, which is given to someone who demonstrates outstanding basic clinical and/or educational research that pertains to physical therapy, is sustained for at least 10 years, and makes a meaningful contribution to the scientific basis of physical therapy. [James Elliott, PT, PhD](mailto:), received the Eugene Michels New Investigator Award, which recognizes an individual within five years of completing their highest degree who has developed an independent line of research that has had or is expected to have a significant impact upon the profession. [Babette S. Sanders, PT, DPT, MS](mailto:), received the Marilyn Moffat Leadership Award, which recognizes an individual who has sustained positive leadership contributions over a period of 15 years or more and has demonstrated significant leadership that has had a lasting impact on the development and progression of the physical therapy profession.

[Linda Emanuel, MD, PhD](mailto:), Buehler Professor of Geriatric Medicine and director of the Buehler Center on Aging, Health & Society, received the inaugural Pioneer Medal for Outstanding Leadership in Health Care from HealthCare Chaplaincy, an organization devoted to palliative care research and education.

The Department of Health and Human Services has named [Karen Ridge, PhD](mailto:), associate professor in medicine-pulmonary and cell and molecular biology, a member of its Lung Injury, Repair, and Remodeling Study Section, Center for Scientific Review. The term begins July 1, 2011, and runs through June 30, 2017. Members are selected on the basis of their demonstrated competence and achievement in their scientific discipline as evidenced by the quality of research accomplishments, publications in scientific journals, and other significant scientific activities, achievements, and honors.

[John Pandolfino, MD](mailto:), associate professor in medicine-gastroenterology, received the prestigious Master designation from the American Gastroenterological Association in recognition of his clinical research.
Funding Opportunities

Translational Scholar Career Awards in Pharmacogenomics and Personalized Medicine (K23) - PA-11-009
More information

Sponsor: Department of Health and Human Services, National Institutes of Health, National Cancer Institute
Submission Deadline: July 12, 2011
Upper Amount: $1 million

Synopsis: The goal of the NIH Research Career Development (K) program is to help ensure a diverse pool of highly trained scientists is available in appropriate scientific disciplines to address the nation’s biomedical, behavioral, and clinical research needs. The purpose of this award is to provide salary and “protected time” to support the career development of investigators who have made a commitment to focus their research endeavors on patient-oriented research. The Translational Scholar Awards in Pharmacogenomics and Personalized Medicine Program is intended to address the scarcity of investigators cross-trained in both clinical research core competencies and modern methods required to address pharmacogenomics research problems in patient populations. Dual mentors from the Clinical and Translational Science Awards consortium and the Pharmacogenomics Research Network are required.

Biomedical Research on the International Space Station (BioMed-ISS) (UH2/UH3)
More information

Sponsor: United States Department of Health and Human Services, National Institutes of Health
Submission Deadline: August 31, 2011
Upper Amount: $1.2 million

Synopsis: The NIH and the National Aeronautics and Space Administration (NASA) are cooperating to facilitate biomedical research in space for better understanding of human physiology and health on Earth. NIH uses this opportunity to publicize the availability of the International Space Station (ISS) as a National Laboratory, and to announce the NIH BioMed-ISS program encouraging investigator-initiated applications for biomedical research that will use the unique microgravity and radiation environment and resources of the ISS to test innovative hypotheses for the potential benefit of human health on Earth. Applications should propose innovative biomedical research on the molecular or cellular level that is directly relevant to the NIH mission and can be carried out on the ISS.

View more funding opportunities

Featured Events

6/17 “Deconstructing and Reconstructing a Synapse”
Department of Physiology seminars. Presented by Roger Nicholl, PhD, University of California—San Francisco
Date: Friday, June 17, 2 to 3 p.m.
Location: Daniel Hale Williams Auditorium
240 E. Huron St. (Chicago campus)
Contact: kirsten-byers@northwestern.edu
More information

Presented by Kendall N. Houk, PhD, Winstein Chair in Organic Chemistry, University of California—Los Angeles
Date: Tuesday, June 21, 4 to 5 p.m.
Location: Technological Institute, LR3
2145 Sheridan Road (Evanston campus)
Contact: gretchen-burnett@northwestern.edu
More information

6/22 3rd Annual Lurie Cancer Center Symposium & 22nd Annual Scientific Poster Session
Featuring presentations from graduate students and post-doctoral fellows from various labs.
Date: Wednesday, June 22, 2 to 7 p.m.
Location: Prentice Women’s Hospital Third Floor, Conference Room L-South
333 E. Superior St. (Chicago campus)
Contact: n-frierson@northwestern.edu
More information

6/24 Northwestern Annual Vision Research Day Meeting
Hosted by the Department of Ophthalmology. Northwestern Vision Research Day Meeting will focus on research activities throughout the Northwestern community.
Date: Friday, June 24 (all day)
Location: Prentice Women’s Hospital Third Floor, Conference Room L-South
333 E. Superior St. (Chicago campus)
Contact: n-frierson@northwestern.edu
More information

More events
Event organizers are encouraged to submit calendar items on Plan-It Purple for consideration. Please contact the Research Office with further questions.