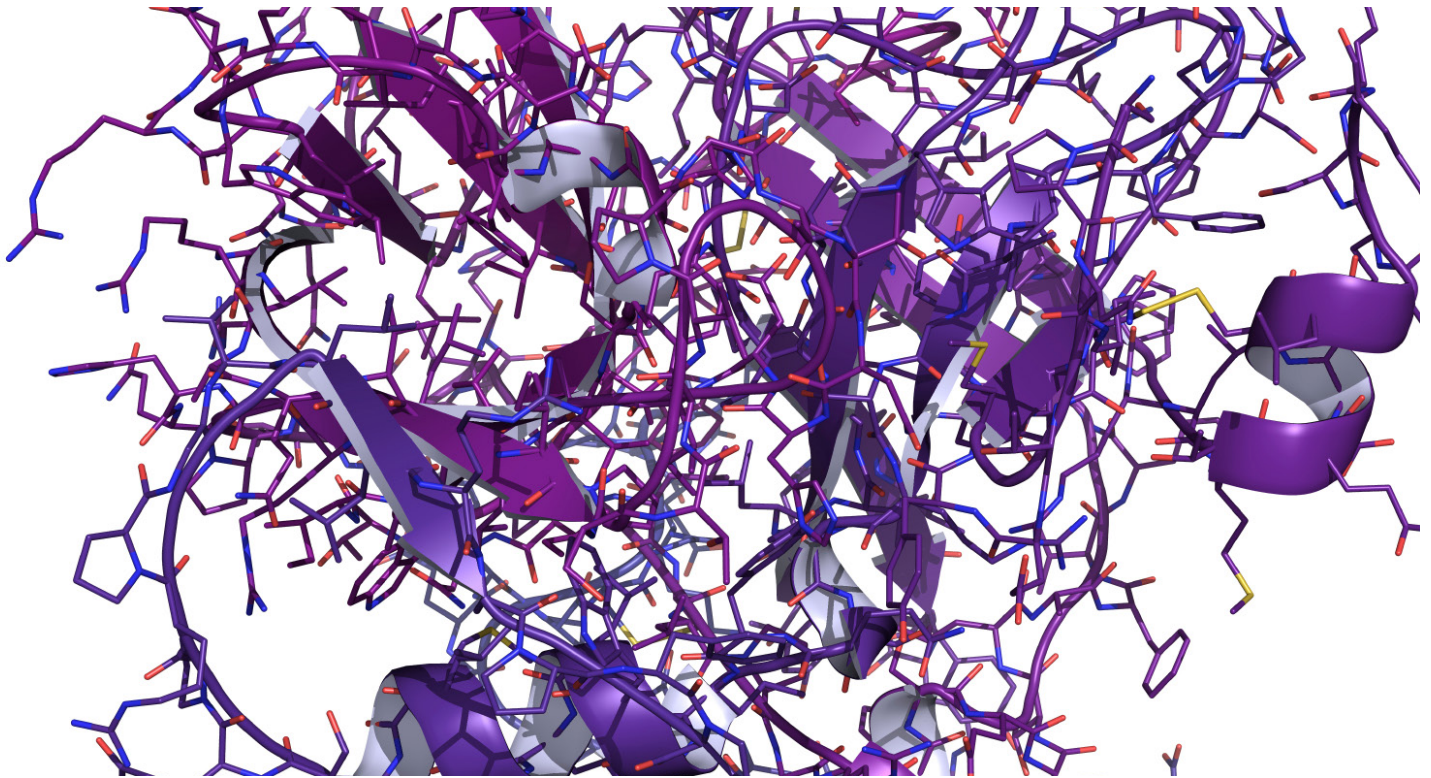


Breakthroughs

Feinberg School of Medicine Research Office

December 2015



Northwestern Proteomics offers multiple types of experiments from simple protein identification to protein quantitation. They perform both top-down proteomics analyses and traditional bottom-up proteomics, where proteins are digested with an enzyme prior to analysis and intact.

Proteomics to Expand on Chicago Campus

Proteomics, the large-scale study of proteins, is critical to many research projects taking place at Northwestern University Feinberg School of Medicine.

Plans are in place to expand this area of study on the Chicago campus in 2016 to help scientists use proteins to make breakthroughs in many fields of study, from cancer and neurodegenerative research to organ transplantation and reproductive sciences.

[Northwestern Proteomics](#), a research center and core, will add more staff and instruments for translational proteomics research in early 2016.

The core facility offers services ranging from bottom-up to top-down proteomics as well as protein identification and quantification.

“Proteomics is similar to genomics in that it can be applied to many different fields,” said Paul Thomas, PhD, associate director of Northwestern Proteomics.

“Where proteomics gains a handle is that while the genome of a liver, heart or skin cell are all pretty much the same, the proteins within each act as the primary regulators of both the fate and function of cells. We hope to bring our expertise to Feinberg to help advance research at the medical school and the Lurie Cancer Center.”

Proteomics to Expand on Chicago Campus

(continued from cover page)

[Neil Kelleher, PhD](#), faculty director of Northwestern Proteomics and a professor of Medicine and [Biochemistry and Molecular Genetics](#), was a graduate student under the guidance of Fred McLafferty, PhD, professor emeritus at Cornell University, who developed the field of top-down proteomics.

Top-down proteomics allows scientists to access the complete protein sequence and gives them the ability to locate and characterize post-translational modifications.

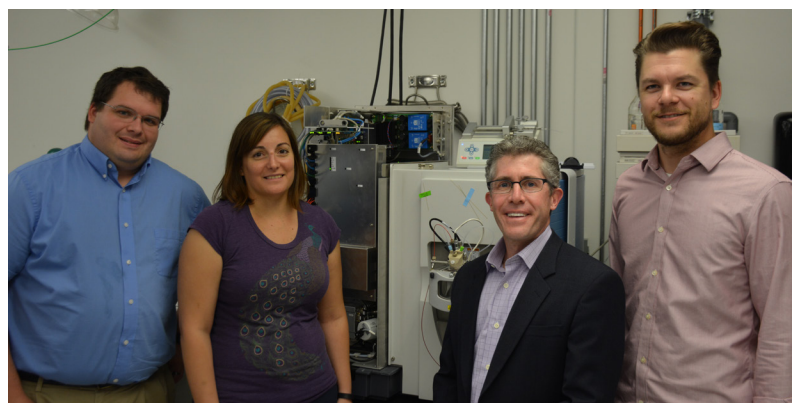
Before this technique was available, scientists needed to break down proteins into small parts and analyze them with mass spectrometry before piecing the information together to learn the protein’s function.

At Northwestern, Kelleher has established one of the leading groups in the world studying intact proteins through top-down proteomics. Successes in proteomics research at Northwestern has led to a recently awarded \$5.6 million grant from the National Institute of General Medical Sciences (NIGMS), to house the National Resource for Translational and Developmental Proteomics.

This national resource will establish a hub for biomedical projects taking place across the nation and will include a formal program where investigators from other institutions can visit Northwestern to learn top-down proteomics.

Kelleher expects about two-dozen visitors per year to learn top-down techniques so they can to apply them to their own laboratories.

“Now with federal support, we can really try and accelerate the rate top-down proteomics becomes accepted and widespread,” said Kelleher, also a member of the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#). “The next step is to train others and continue to develop the technology – we want to be on the forefront.”



Proteomics Center of Excellence members Paul Thomas, Ioanna Ntai, Neil Kelleher and Phil Compton.

The NIGMS grant includes eight core biomedical projects, four of which involve Feinberg principal investigators: [Michael Abecassis, MD](#), chief of [Organ Transplantation](#) in the Department of [Surgery](#), [Shuo Ma, MD, PhD](#), associate professor of [Medicine](#) in the Division of [Hematology/Oncology](#), [John Wilkins, MD](#), assistant professor of Medicine in the Division of [Cardiology](#) and of [Preventive Medicine](#), and Teresa Woodruff, PhD, chief of [Reproductive Science and Medicine](#) in the Department of [Obstetrics and Gynecology](#).

Their investigations range from trying to identify proteins that could be early markers of rejection before a transplant organ fails, to markers that could predict cardiovascular incidents or stages of cardiovascular degeneration.

Thomas and Kelleher have also been working with [Hande Ozdinler, PhD](#), assistant professor of [Neurology](#), to apply top-down proteomics techniques to isolate populations of healthy and diseased upper motor neurons at different ALS disease stages and to determine the protein content within neuron populations.

“With an ALS Association grant, we were able to look at proteins involved in the progression and formation of ALS in mouse models,” Thomas said. “This information could be used to identify early detection makers for diseases in which upper motor neurons are affected.”

“Previously, it was impossible to investigate the protein content of distinct neuron populations because proteomic approaches were not sensitive enough to detect low levels of proteins,” Ozdinler said. “Thanks to the expertise brought by Northwestern Proteomics, we can study very detailed aspects of protein biology in diseased neurons.”

Northwestern’s Proteomics is supported by the University, Office for Research, Feinberg School of Medicine and Chemistry of Life Processes Institute.

If you are interested in submitting samples to the Northwestern Proteomics core facility, find out more [here](#). If you would like to learn more about deeper collaboration with the center or the new national resource, contact Northwestern Proteomics [here](#).

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Molecular Mechanisms that Control Metabolism

Grant Barish, MD, assistant professor of Medicine, Division of Endocrinology



[Grant Barish, MD](#), assistant professor of [Medicine](#) in the Division of [Endocrinology](#), leads a lab devoted to identifying new gene pathways that regulate metabolism. His basic science research could have applications for treating comorbidities of obesity, including type 2 diabetes and cardiovascular disease.

In previous work, his group has helped to reveal the genomic architecture for transcriptional regulation – the fundamental control mechanism for inflammation – in macrophages and discovered a powerful role for the BCL6 repressor in the prevention of atherosclerosis.

Dr. Barish earned his medical degree at the University of Michigan and completed residency and a fellowship at the University of California, San Francisco Medical Center. He completed a post-doctoral fellowship at the Salk Institute for Biological Studies before joining Feinberg in 2012.

Q&A

What are your research interests?

Broadly speaking, I am interested in the molecular mechanisms that control metabolism under normal conditions and in the setting of disease. I am particularly focused on the regulation of gene expression, by further understanding proteins that directly bind to DNA and control transcription. To this end, I like to combine approaches that range from physiological analysis in mouse models to cutting-edge methods in genomics.

What is the ultimate goal of your research?

I hope to advance the understanding of obesity-related disorders including type 2 diabetes mellitus and atherosclerosis. Ideally, some of our basic investigations may identify new therapeutic targets for these conditions.

How did you become interested in this area of research?

My interest in transcriptional regulation dates back to my research as a medical student, when I studied signal transduction. As I progressed through my clinical training and decided to become an endocrinologist, I pursued work in nuclear hormone receptor biology as a postdoctoral fellow. This superfamily of transcription factors is key in the transcriptional regulation of endocrine and metabolic pathways. I continue some work on nuclear hormone receptors but have also branched out into work on other transcriptional regulators of metabolism.

Who makes up your research team?

I have a small lab that consists of three graduate students and a technician. Each student has an independent project and focuses on a different cell or tissue type. Madhavi Senagolage is a fourth-year student in the Driskill Graduate Program in Life Sciences ([DPG](#)) studying adipose tissue and macrophages, Meredith Sommars is a third-year DGP student studying the liver and Krithika Ramachandran is a third year DGP student studying muscle. Amanda Allred, our technician, is a recent college graduate and helps to support each of the graduate students in their various projects.

Which honors are you most proud of and why?

As a medical student, I applied and was selected as a Howard Hughes Medical Institute – NIH Research Scholar. This experience was the most important one of my career, as I developed a passion for basic biomedical research during that time, and this shaped my course through medicine thereafter. At that time, I was exposed to some of the most preeminent scientists of the late twentieth century in small group meetings and lectures, which was incredibly inspiring. I also interacted with a number of like-minded contemporaries from all over the country, many of whom are now faculty members at various academic institutions.

What do you enjoy about teaching and mentoring young scientists in the lab?

I enjoy giving my trainees the tools that they need not only to carry out original experiments but also to take the intellectual reigns for their project. It is incredibly gratifying to see young people in their twenties making significant discoveries. I have been in research long enough to know how tough it can be to make advances. There is no cookbook or roadmap for this undertaking, unfortunately. So I try to stay positive and keep trainees feeling positive, because what they are doing is hard. As my trainees continue along, I am learning a lot from them in terms of both techniques and subject matter, which is also quite gratifying to me.

Save the Date

12th Annual Lewis Landsberg Research Day Thursday, April 7, 2016

Research Day is a campus-wide event to promote faculty and trainee development through the sharing of exciting research and conversation with colleagues. The day features a number of speakers, awards and the largest poster session at Northwestern.

The 2016 event will take place on Northwestern University's Chicago campus on Thursday, April 7, 2016.



2016 Research Day Keynote Speaker

Eric Olson, PhD, is professor and chair of the Department of Molecular Biology and Director of the Hamon Center for Regenerative Science and Medicine at UT Southwestern Medical Center.

He also holds the Robert A. Welch Distinguished Chair and the Annie and Willie Nelson Professorship in Stem Cell Research.

Olson and his trainees discovered many of the key transcription factors and mechanisms responsible for development of the heart and other muscles. His laboratory also unveiled the signaling pathways responsible for pathological cardiac hypertrophy and heart failure.

Olson's discoveries at the interface of developmental biology and medicine have illuminated the fundamental principles of organ formation and have provided new concepts in the quest for cardiovascular therapeutics.

Olson is a member of the U.S. National Academy of Sciences, the Institute of Medicine and the American Academy of Arts and Sciences.

His work has been recognized by numerous awards, including the Basic Research Prize and Research Achievement Award from the American Heart Association, the Pasarow Medical Research Award, the Pollin Prize, the Passano Award, and the March of Dimes Prize in Developmental Biology. In 2009, the French Academy of Science awarded Dr. Olson the Fondation Lefoulon-Delalande Grand Prize for Science.

Olson has co-founded multiple biotechnology companies to design new therapies for heart muscle disease based on his research. In his spare time, he plays guitar and harmonica with The Transactivators, a rock band inspired by the Texas troubadour Willie Nelson, who created the professorship that supports his research.

[Read more about Olson's research.](#)

Helping Feinberg Scientists Focus on Research

Joe Boyle, Program Assistant, Office for Research



Where are you originally from?

I grew up in a southwest suburb of Chicago, Alsip, Illinois. I moved to the “city” in 2013.

What is your educational background?

I have my bachelor’s degree from Lewis University in human resources. I am currently pursuing a master’s degree from Northwestern School of Professional Studies in information systems, with

a specialization in project management. I anticipate graduating spring 2017.

Please tell us about your professional background.

In college I worked as a general manager of a Jimmy John’s. When I graduated from college I started working at Northwestern School of Law as the Payroll Coordinator. In February of 2015 I started in the Feinberg Research Office. I love it here.

Why did you choose to work at Northwestern?

Northwestern has great benefits and innovative research. The prestige alone is reason enough to work here. We have a wonderful and inclusive culture.

My supervisor, Eric Boberg, continually makes it a great place

to work. All of these reasons, and many more, keep me coming back!

How do you help scientists and/ or research students at the medical school?

I support Eric Boberg in the Feinberg Research Office. Eric is in charge of non-public space assignments. He helps to shape the big picture and I help him with day-to-day operations.

Along with many other people, I help Eric “keep the trains running.” I am also very involved in the planning of Research Day. Research Day is a campus-wide, annual event to promote faculty and trainee development through the sharing of exciting research.

What is your favorite part of the job?

I like that I get to meet new people every day and am constantly walking around campus from one building to another learning about different departments in the medical school.

What exciting projects are you working on?

I just finished assisting with preparing Dr. Matt Lesniak’s lab for his arrival to Northwestern. My next big project will be working on Research Day 2016. I am looking forward to learning more about what research people are focusing on this year.

What do you like to do in your spare time?

Currently, graduate school is consuming a lot of my free time. In the free time I do have, I enjoy traveling, eating out and going to concerts.

Connect with Joe on [LinkedIn](#)

The Future of Medicine is Here



Click to watch a video that showcases what it is like to be a student at Northwestern University Feinberg School of Medicine.

A new video from the Office of Communications shows how Feinberg is redefining the traditional approach to medicine and research to train students to be leaders in their field.

“You get to see how different populations, different ethnicities, different genders think about medicine and what their cultures and backgrounds bring to the table,” Alex Jones, M4 student said.

From curriculum and student activities to research and patient interaction, Feinberg is preparing students to help take on the challenges of 21st century medicine.

Click the play box to watch the [full video](#).

Therapeutic Interventions for Cognitive Decline

Amanda Cook, Clinical Psychology PhD Program



Amanda Cook, a fourth-year PhD student in Northwestern University's [Clinical Psychology Program](#), studies "SuperAgers," elderly adults with extraordinary memory abilities for their age, in order to understand the factors that drive successful cognitive aging in advanced age.

Cook earned a bachelor's degree in neuroscience from Middlebury College

in Vermont and a Master of Science in medical sciences from Boston University. Through her masters program and research work she found the field of neuropsychology and a perfect working environment in the [Northwestern's Cognitive Neurology and Alzheimer's Disease Center \(CNADC\)](#).

Q&A

Where is your hometown?

New York City.

What are your research interests?

As the aging population continues to increase in the U.S., age-related cognitive decline and dementia caused by neurodegenerative brain disease have come to the forefront of public health. Both create a financial burden and affect quality of life for afflicted individuals and those who care for them. My main research interest is the prevention of cognitive decline and dementia through the study of individuals who appear to retain cognitive power as they age without the notable reductions that impact the majority of the population.

What exciting projects are you working on?

Under the guidance of [Emily Rogalski, PhD](#), research associate professor at the CNADC and [Sandra Weintraub, PhD](#), professor of [Psychiatry and Behavioral Sciences](#), I am involved in the fascinating study of cognitive "SuperAgers," individuals over the age of 80 whose retentive memory is indistinguishable from individuals at least 20 to 30 years their junior. The goal of the overall project is to investigate what contributes to such successful cognitive aging and thus provide possible targets for therapeutic interventions for individuals experiencing

age-related or neurodegenerative cognitive decline. Early exciting results from my recent work demonstrate greater cortical integrity and reduced rates of cortical atrophy in cognitive SuperAgers compared to their cognitively-average-for-age peers. This is highly unusual as most studies of cognitively normal individuals show a high level of age-related cortical atrophy on MRI scans.

A second exciting project has brought together Rogalski and Weintraub with [Hans Breiter](#), MD, professor of Psychiatry and Behavioral Sciences and [James Reilly, PhD](#), associate professor of Psychiatry and Behavioral Sciences to investigate working memory in SuperAgers using a multimodal approach that spans the domains of clinical and experimental neuropsychology, mathematical modeling of behavior and structural neuroimaging. Working memory is a very short-term memory store that is active when new information is received, before it gets stored in longer-term memory. This multidisciplinary work will lay the foundation for understanding if a high level of working memory contributes to the extraordinary retentive memory of cognitive SuperAgers and if it is related to their preserved cortical brain integrity.

What attracted you to the PhD program?

I was drawn to Feinberg's Clinical Psychology Doctoral Program's neuropsychology and behavioral neuroscience emphasis as it takes a multidisciplinary approach to the study of neurodegenerative disease through coursework at Feinberg, research at the CNADC and clinical experience at Northwestern Memorial Hospital.

How would you describe the faculty at Feinberg?

The Feinberg faculty are extremely engaged in teaching and consistently make time for students. They have been extraordinarily willing to collaborate and co-mentor students who are then able take advantage of a comprehensive approach to the research of human disease.

What do you do in your free time?

I love running and belong to a local running club. At the end of the day it is nice to take a break from work, enjoy the outdoors with friends and let go of graduate school stress.

What are your plans for after graduation?

After graduation and a post-doctoral fellowship, I would like to work as a clinical neuropsychologist at an academic medical center. The idea of continuing to work as a both a clinician and researcher would be ideal.

Connect with Amanda on [LinkedIn](#)

Research in the News

The New York Times Nov. 3

[For Statins, Cholesterol Care May Be Just the Start](#)
Philip Greenland is quoted.

U.S. News & World Report Nov. 3

[Managing Cancer as a Chronic Condition](#)
William Gradishar is quoted.

U.S. News & World Report Nov. 5

[Don't Assume Siblings Will Have Food Allergies, Too](#)
Ruchi Gupta is quoted.

The New York Times Nov. 9

[Lower cholesterol with diet instead of drugs](#)
Philip Greenland is quoted.

U.S. News & World Report Nov. 9

[Just one energy drink sends young adults' stress hormone levels soaring](#)
Linda Van Horn is quoted.

Reuters Nov.9

[Novo Nordisk diabetes drug fails to help heart failure: study](#)
Clyde Yancy is quoted.

Huffington Post Nov. 9

[Does the Nose Know?](#)
Wen Li, Isabel Moallem, Ken Paller and Jay A. Gottfried's research featured.

Associated Press Nov. 10

[Study: Even the normal-weight should watch that apple shape](#)
Lisa Neff was quoted.

NBC News Today (National) Nov. 10

[Lowering blood pressure to 120 really does save lives](#)
Donald Lloyd-Jones is quoted.

U.S. News & World Report Nov. 20

[New Clues to Easing Side Effects From Parkinson's Drug](#)
James Surmeier's research is featured.

Crain's Chicago Business Nov. 24

[A doctor's breakthrough on a rare form of muscular dystrophy](#)
Elizabeth McNally's research is featured.

[More media coverage](#) available online.

Northwestern University

NUCATS

Clinical and Translational Sciences Institute

NUCATS Corner

i2b2 Includes Laboratory and Medication Data

The NUCATS Institute has a tradition of developing high-quality, web-based software to support biomedical researchers.

NUCATS has enhanced the capabilities of its i2b2 (Informatics for Integrating Biology & the Bedside) self-service tool to keep up with the evolving needs of clinical and translational research.

i2b2 allows researchers, students and staff to develop and run simple queries against a subset of data in the Northwestern Medicine Enterprise Data Warehouse (NMEDW).

It gives users the ability to quickly determine the feasibility of conducting a study and is an important tool to leverage when writing a grant.

In addition to providing counts of Northwestern Medicine patients with different diseases and procedures, the tool now allows you to determine how many patients have received a medication and/or laboratory result.

With this new feature, it is now possible to search for all patients who have had a type of lab result at once by navigating the categorized fields within the list of terms.

A full listing of the software tools NUCATS offers to help in the planning, development, and conduct of research can be found [here](#). To learn more about i2b2, click [here](#).

Sponsored Research



PI: Marc Slutzky, MD/PhD
Associate Professor of Neurology
and Physiology

Sponsor: National Institute of
Neurological Disorders and Stroke

Title: “Designing brain machine inter-
faces to drive plasticity and enhance
recovery after brain injury”

More than nine million Americans are disabled by brain injury and half of them will have persistent impairment of hand function despite receiving conventional treatment. Thus, new therapies are needed to restore hand function to brain-injured patients. Functional improvement after brain injury correlates with an enlarged area of cerebral cortex corresponding to the improved movement, but it is unclear if the enlarged map causes improved function.

Slutzky’s team and others have shown that brain machine interfaces (BMIs), which enable subjects to use their brain signals to directly control external devices, can induce plastic changes in the brain’s activity. Their collaborators have shown that noninvasive BMIs using brain signals recorded from the scalp can improve walking in stroke survivors. Slutzky and his team propose to develop a novel therapeutic approach to improving movement after brain injury by using a BMI to direct the brain’s inherent mechanisms of reorganization to restore connections to the damaged areas of the brain.

This project will test the hypothesis that optimally driving plasticity and cortical motor map changes is critically dependent on simultaneously activating motor intent and haptic feedback. It will also test the effects of motor map changes on hand motor function. In particular, it will investigate the types and features of neural signals used to control the BMI, the temporal precision with which somatosensory feedback must be synchronized with motor intent and the spatial precision of movement intent used to control the BMI.

Slutzky proposes that high-frequency signals will enable much greater spatiotemporal precision than the low frequencies used in noninvasive BMIs for rehabilitation to date. His team has shown previously that such signals, using electrodes implanted on the surface of the brain or the dura mater, can be used to “decode” hand movements and grip force with high accuracy. In the long term, such electrodes could be implanted temporarily with relatively small risk to the patient. In the short term they wish to test this hypothesis in brain-injured subjects without incurring significant risk. This project will use scalp-based

BMIs in subjects with traumatic brain injuries who have undergone hemispherectomies as part of their clinical care. Slutzky’s team has found that high frequency signals from the scalp in these patients comes close to that of signals recorded outside the dura. This project will first test the extent to which BMI training using high-frequency signals vs. low-frequency signals drives motor map enlargement and improves hand function.



PI: Sanjay Mehrotra, PhD,
Director, Institute for Public
Health and Medicine

Sponsor: National Institute of Biomed-
ical Imaging and Bioengineering

Title: “Unassisted Blood Pressure Mon-
itoring Using Arterial Tonometry and
Photoplethysmography”

Unmanaged hypertension is a major problem, and its management based on occasional measurement is known to be suboptimal. The ability to measure blood pressure using non-invasive techniques in an ambulatory setting has many significant benefits. This research will develop a large device based off of two-dimensional array pressure sensors, together with robust signal processing algorithms and feedback controlled to measure blood pressure at the wrist. The device will be tested based on the European Society of Hypertension International Protocol.

Mehrotra and his team propose that the pressure sensor array together with a photoplethysmogram sensor will be embedded in a band and will provide signals through a multiplexed circuit design. Signal conditioning techniques will be used to get the large amount of data in a form that can be efficiently processed on a microcontroller. The proposed two-dimensional array of pressure sensors will be built using flexible plastic and micro-fabrication techniques. The increased size of the sensor array will ensure proper contact and pressure application with arteries in the wrist for tonometric measurement of blood pressure. The signals generated from the sensor array will be processed through advanced signal processing and optimization techniques to handle the huge amount of data and to mitigate noise.

The PPG signals will be used at the wrist to improve the efficiency and accuracy of the system. The sensor array system will be embodied in the form of a band, which will be integrated in a wearable device such as smartwatch. The capabilities of the smartwatch will be used for data processing and analytics.

Welcome New Faculty



Yuan Luo, PhD, joins as assistant professor of Preventive Medicine in the division of Health and Biomedical Informatics and assistant professor at the McCormick School of Engineering.

Luo earned his PhD in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology. His research interests

include machine learning, natural language processing, time series analysis, integrative genomic analysis and big data analytics, with a focus on medical and clinical applications.

First Place Scientific Images Contest



The image centers on a mouse ovarian follicle (in purple).

A scientific image of a mouse ovarian follicle won first place in the 2015 Northwestern Scientific Images Contest.

The image was submitted by Monica Laronda, a postdoctoral fellow in the Department of Obstetrics and Gynecology at Feinberg and Adam Jakus, a postdoctoral fellow in the Department of Materials Science and Engineering at the McCormick School of Engineering. They used a scanning electron microscope to capture the image and colored it in Photoshop.

Laronda and Jakus have created a new paper-like biomaterial made of ovarian proteins (in green). It is designed to support removed follicles as they develop into mature eggs. This image shows a healthy follicle flourishing in the new environment. Someday supportive biomaterials like these could help cancer survivors grow families of their own.

Funding

Stem Cell-Derived Blood Products for Therapeutic Use: Technology Improvement

[More information](#)

Sponsor: United States Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute

Submission deadline: Feb. 20

Upper Amount: \$1.5 million

Synopsis: The primary objective of this funding opportunity announcement is to support the development of improved techniques and tools to enhance the production of clinically-relevant, functional stem cell-derived red blood cells or platelets in a more efficient and cost-effective manner.

Pediatric Diagnostic Biomarkers for Active Pulmonary TB Disease

[More information](#)

Sponsor: National Institutes of Health and National Institute of Allergy and Infectious Diseases

Submission deadline: March 11

Upper Amount: \$2 million

Synopsis: The purpose of this funding opportunity announcement (FOA) is to support projects to identify and/or validate biomarkers or biomarker combinations leading to improved diagnosis of active pulmonary tuberculosis (TB) in children, including HIV infected children.

For the purposes of the FOA, a biomarker is a biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease. A biomarker may be used to diagnose, evaluate risk, or evaluate treatment response for a disease or condition. Development of biomarkers entails a number of phases, from identification of promising molecular targets to validation studies in association with clinical diagnosis.

A biomarker validation study is designed to validate candidate biomarker(s) for diagnostic purposes for their specificity, sensitivity, robustness and utility in cohorts and biomarker validation studies are an integral part of the biomarker and diagnostics development pathway.

[View more funding opportunities](#)

Galter Library Connection

Sharing, Publishing and Archiving Your Work

As a researcher, you spend time and energy completing important projects, but have you considered all the possible ways to share those findings with the scientific community?

There are many tools available for sharing, publishing and archiving your work depending on the type of research output. Be sure to consider all your options when it comes to disseminating your work, and be aware of the strengths and limitations of each tool before you dive in.

White Papers, Technical Reports, or early research results

What are your options for those research findings you want to share, but that are still too early for the formal publishing process, or for when your article doesn't fit the formal publishing mold? Keep in mind that these tools support many research outputs including, but also beyond, the classic journal article.

- [DigitalHub](#) is Northwestern Medicine's institutional repository, created to increase the discovery and recognition of our research and scholarship. With an easy-to-use interface and a variety of sharing options, DigitalHub is an excellent place to upload all types of documents. Also, it is indexed by Google, so your results will be highly visible online.
- [The Winnower](#) operates on the principle that the scholarly process should "winnow out" the truth through open discussion and debate. The Winnower combines an open access online publishing platform with an open post-publication peer-review process. They publish a wide variety of document types beyond the journal article, including grants, letters, and blogs.
- [bioRxiv](#) is a free online archive for unpublished preprints operated by the Cold Spring Harbor Laboratory. bioRxiv allows researchers to make their findings immediately available and open for comments by the scientific community. Other options for pre-prints include the [SSRN](#) and [arXiv](#) repositories.

Conference Papers, Posters and Presentations

You've spent hours preparing for a conference presentation, or putting the finishing touches on an informative poster. Take some time to consider how to share those outputs with an audience beyond those attending the conference.

- [Speaker Deck](#), supported by GitHub (known for its collaborative platform for computer code management), makes it easy for presenters to upload a PDF file of their

slides, turning those slides into a seamless presentation.

Another option for sharing slides is [SlideShare](#).

- [Vimeo](#) is a video sharing website where you could upload a conference presentation (if allowed by the conference) or related videos. The basic membership is free and videos are generally free of distracting advertisements. Another option for videos is [YouTube](#).
- [F1000 Posters](#) (now merged with F1000 Research) is an open access poster repository for the life sciences and medicine, making your conference poster immediately available and visible online. Approved posters or slides are given a Digital Object Identifier (DOI), and are indexed by Sparrho and the Neuroscience Information Framework (NIF).
- [ScienceOpen Posters](#) is supported by the open access publisher ScienceOpen. Submitted posters receive a Digital Object Identifier (DOI), and are easy for viewers to download, share, comment or bookmark from ScienceOpen Posters journal.

Datasets

Big data is a trending topic that seems to affect almost everyone in research. Data management plans are an important part of research. Beyond submitting your data to an appropriate repository, consider publishing it in data-specific journals.

[Dryad](#) is a curated repository of data files associated with any published article in the sciences or medicine, and it ensures researchers get credit for their data by promoting data citation and tracking of data-reuse.

[Zenodo](#) is an open access repository funded by CERN and OpenAire as a home for research results (data and publications) that are not part of existing institutional or subject-based repositories.

[Giga Science](#) is an online, open-access, open-data journal that publishes big-data studies in the life and biomedical sciences, and includes an extensive database that hosts all associated data.

[Scientific Data](#) by Nature Publishing Group, is an open access, peer-reviewed publication for descriptions of scientific datasets. Publications are indexed by PubMed and Google Scholar.

Need more help? Contact your [liaison librarian](#).

High Impact Factor Research

October 2015

Berger ER, Greenberg CC, **Bilimoria KY**. [Challenges in Reducing Surgical "Never Events"](#). *JAMA*. 2015 Oct 6;314(13):1386-1387.

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Fleshman J, Branda M, Sargent DJ, **Boller AM**, et al. [Effect of Laparoscopic-Assisted Resection vs Open Resection of Stage II or III Rectal Cancer on Pathologic Outcomes: The ACOSOG Z6051 Randomized Clinical Trial](#). *JAMA*. 2015 Oct 6;314(13):1346-1355.

Gracies JM, Brashear A, Jech R, McAllister P, Banach M, Valkovic P, Walker H, **Marciniak C**, Deltombe T, Skoromets A, Khatkova S, Edgley S, Gul F, Catus F, De Fer BB, Vilain C, Picaut P, Int Abobotulinumtoxin AAU. [Safety and efficacy of abobotulinumtoxinA for hemiparesis in adults with upper limb spasticity after stroke or traumatic brain injury: a double-blind randomised controlled trial](#). *Lancet Neurology*. 2015 Oct;14(10):992-1001.

Grijalva CG, Zhu Y, Williams DJ, Self WH, Ampofo K, Pavia AT, Stockmann CR, McCullers J, Arnold SR, **Wunderink RG**, et al. [Association Between Hospitalization With Community-Acquired Laboratory-Confirmed Influenza Pneumonia and Prior Receipt of Influenza Vaccination](#). *JAMA*. 2015 Oct 13;314(14):1488-1497.

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Calendar

Wednesday, January 6

R3 Data Club: Monica Laronda: Engineering an Ovarian Prosthesis

Monica Laronda, postdoctoral fellow in the Woodruff Lab, will present her research on “Engineering an Ovarian Prosthesis Utilizing Natural and 3D Printed Scaffolds.”

Time: Noon to 1:00 p.m.

Location: Robert H Lurie Medical Research Center
10-123
303 E. Superior

Contact: crs@northwestern.edu
[More information](#)

Thursday, January 14

BME Seminar Series: Mahnaz Shahidi, PhD

Mahnaz Shahidi, PhD, Professor of Ophthalmology and Professor of Physics and Bioengineering at the University of Illinois at Chicago will give a lecture titled: “Imaging of Retinal Oxygen Delivery and Metabolism.”

Time: 4:00 p.m. to 5:00 p.m.

Location: Robert H Lurie Medical Research Center
Baldwin Auditorium
303 E. Superior

Contact: [Stephanie Hellenga Waninger](mailto:Stephanie.Hellenga.Waninger)
[More information](#)

Thursday, January 21

Center for Community Health Writing Manuscript Retreat

This retreat focuses on manuscripts related to community-engaged research. This includes community, patient and stakeholder engagement.

Time: 9 a.m. to 5 p.m.

Location: Arthur Rubloff Building, 11th Floor
Lakeview Conference Room
750 N. Lake Shore Drive

Contact: cch@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.

NIH News

NIH Will No Longer Support Biomedical Research on Chimpanzees

Citing many recent developments related to using captive chimpanzees in biomedical research, Francis Collins, NIH Director, announced on Nov. 18 that effective immediately, the NIH will no longer maintain its colony of chimpanzees for future research.

All NIH-owned chimpanzees that reside outside of the Federal Sanctuary System operated by Chimp Haven, Keithville, Louisiana, are now eligible for retirement. This decision is specific to chimpanzees. Research with other non-human primates will continue to be valued, supported and conducted by the NIH. [Read more.](#)

Addressing Diversity in the Physician-Scientist Workforce

There is a new NIH-issued a request for information with the goal of gathering community input on questions related to how to increase diversity among our nation’s physician-scientists.

Some questions include:

- What are the career trajectories unique to underrepresented groups among physician scientists?
- What are potential barriers to a diverse physician-scientist workforce?
- And what strategies could successfully enhance the diversity in this subset of researchers?

[Read the request and submit formal comments.](#)

All About Grants Podcast

The latest NIH “All About Grants” podcast focuses on certificates of confidentiality (CoCs).

Dr. Ann Hardy, NIH’s human subjects research protection officer, talks about how CoCs can enhance your human subjects research, as well as protect and benefit research participants. She also explains who can apply for CoCs, and how to do so.

[Listen to the podcast.](#)

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