New Pathfinder Award Tests Mentoring to Diversify the Biomedical Research Community

Despite the National Institutes of Health (NIH)’s longstanding desire to improve the diversity of research faculty by encouraging more women and underrepresented minorities already in PhD training to pursue academic careers, little progress has been made. According to the Association of American Medical Colleges, individuals from underrepresented groups make up about 10 percent of students in PhD training programs, and about three to four percent of faculty members.

In an effort to increase these statistics, NIH developed the Pathfinder Award to Promote Diversity in the Scientific Workforce in the U.S. This year, Richard McGee, PhD, was one of only six researchers to receive the prestigious grant.

Skilled in faculty advancement and the training of scientists, McGee, associate dean for faculty recruitment and professional development in the Faculty Affairs Office, will test a hybrid model of mentoring that combines coaching — a tactic used in athletics — with more typical approaches to encouraging PhD students in the pursuit of academic careers. While growing the minority presence is a central focus of the research, the principles could be more broadly applicable.

McGee acts as the principal investigator of the three-year, up to $2 million study. The study’s subjects — U.S. PhD students who hope to hold faculty positions in the

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future — will be expressly guided for success. Using formalized coaching, mixed with mentoring that happens organically in graduate training programs, researchers hope to offset potential barriers to progression toward this goal.

“We’re thinking of the development of young scientists as a science, as opposed to something that simply happens,” says McGee. “We are bridging the divide between historical approaches to research training and interventions and the social sciences that can help inform training designs.”

The approach seeks to mitigate the unconscious processes that can limit or impair professional development — processes explained by the well-established Communities of Practice (CoP) and Social Cognitive Career theories. CoP describes how individuals with common goals engage to achieve those goals. The theory evaluates the process by which new individuals enter a group, gradually acquire (or fail to acquire) the informal knowledge and group practices, and become full participants. Social Cognitive Career Theory’s variables of self-efficacy, outcome expectations, personal goals, and contextual supports and barriers, offer insight into forces guiding an individual’s development and career choices.

“These theories and others we are incorporating into our research explain why some individuals may not succeed simply because they are not seen by their lab’s director as a future faculty member,” says McGee.

Equally balanced male-to-female and representing all ethnic groups, the study’s first cohort will include 100 students beginning their PhD programs in August 2011. In August of 2012, a second cohort of 60 students in the final year of their PhD training will be added. Importantly, the research includes a comparison group — a randomized control group of students who applied but are not receiving coaching.

Ten coaches — senior faculty chosen for their recognized interest and skill in developing scientific talent — will offer trainees the tools to help them achieve their goals. The coaches will be central to the annual in-depth group experience in Chicago. Topics covered will demystify the process for achieving an academic career and help students acquire the skills needed to excel in school and subsequent professional steps. One focus will be how students can take control of their lab rotations and early PhD training in order to become an accepted member of the group. The sessions will also address any negative influences that may have taken shape over the past year.

McGee says that the opportunity for students to have these types of conversations with mentors in the current system remains highly variable. Accordingly, researchers are exploring the probability that more students will move on to faculty positions and achieve success as a result of this sophisticated coaching.

“We also want to determine whether students need coaching early in their careers, or whether it’s more successful later in the game,” says McGee. “We have been very fortunate to assemble a group of seven skilled qualitative researchers for this new study and our other longitudinal study of career choices. Together, these studies should establish if the reason for lack of diversity in faculty ranks can be attributed to the academic system or primarily student choice.”

The qualitative study — analyzed through surveys and interviews with the students and coaches — will involve regular electronic conferences. Additionally, the research will employ a mediated social network, which serves to build a positive community of individuals with the same purpose. McGee and his team are exploring whether the social network will be self-sustaining and whether students will engage in peer mentoring.

“Ideally, our study would receive additional funding, so we could continue to follow our young scientists and bring in others,” says McGee. “By taking established theories and applying them to an intervention, our basic research is immediately and positively translating to these students and potentially many more in the future.”

For more information, contact Rick McGee: r-mcgee@northwestern.edu or (312) 503-1737.
Wyndham Lathem, PhD, assistant professor in the Department of Microbiology-Immunology, is the Feinberg School of Medicine’s resident expert in biodefense and emerging infectious disease research.

Born in London, England, Lathem majored in biology at Vassar College in Poughkeepsie, N.Y., and earned his PhD in microbiology from the University of Wisconsin-Madison. As a postdoctoral research scholar at Washington University School of Medicine in St. Louis, Mo., Lathem landed a fellowship in infectious disease.

A Feinberg faculty member since 2008, Lathem trains postdoctoral fellows and teaches graduate students in the Integrated Graduate Program in the Life Sciences (IGP). He is also the principal investigator on several National Institutes of Health-funded grants.

FSM Researcher recently caught up with Dr. Lathem to learn about his research and current projects.

What are your research interests?

I am interested in understanding the mechanisms by which pathogenic bacteria cause disease in humans.

My group is primarily focused on the interactions between the host and the highly virulent bacterium Yersinia pestis, the causative agent of the disease plague that has been responsible for more than 200 million deaths over the last 1,500 years.

Y. pestis is transmitted by the bite from an infected flea, contact with infected animal tissue, or the inhalation of respiratory droplets containing the bacteria. What we find fascinating about Y. pestis is its ability to adapt to a rapidly changing host environment, to prevent an effective host immune response, and to cause a lethal infection in a very short period of time (100 percent mortality rate in three to four days if inhaled).

We have found two bacterial factors that are absolutely essential for Y. pestis to cause pneumonic plague, the respiratory form of disease. One is the plasminogen activator protease, or Pla, that allows the bacteria to multiply in the lungs and stimulate a pro-inflammatory host response to cause severe purulent multifocal broncho-alveolar pneumonia. The second is a protein called Hfq, which serves as a chaperone for small regulatory RNA molecules (sRNAs) and is required for the post-transcriptional regulation of gene expression.

This indicates that sRNAs regulate factors required for virulence, much like microRNAs control protein translation in eukaryotic cells.

What research project are you currently pursuing?

While we know that Pla is required to cause pneumonic plague, the mechanisms by which it does so are unknown. As Pla is a protease that has been shown in vitro to convert host plasminogen to the active plasmin form, we are pursuing the hypothesis that Pla induces a highly fibrinolytic state in the lungs, which breaks down fibrin clots that would otherwise immobilize the bacteria and prevent their outgrowth.

We are exploring the link between pulmonary coagulation and inflammation, as we believe that by altering the thrombotic state, Pla shifts the immune status of the lungs in a manner that leads to leukocyte recruitment and the induction of inflammation. Finally, we have found that Pla cleaves other physiologically relevant substrates found in the lungs, and we are exploring the consequences of these interactions on the progression of disease.

We are also looking at the mechanisms by which Y. pestis uses sRNAs to regulate virulence gene expression. In collaboration with Trevis Alleyne and Dr. Nadereh Jafari in the Center for Genetic Medicine, we have recently completed the first global identification of sRNAs in pathogenic Yersinia species. We have found that Y. pestis and the closely related enteropathogen Y. pseudotuberculosis express multiple sRNAs that are unique to Yersinia, and that several of these sRNAs are required for full virulence in animal models of infection.

We are currently determining the targets of these sRNAs and the mechanisms by which they regulate those targets. We believe that post-transcriptional control of protein synthesis may provide an additional regulatory layer that allows the bacteria to fine-tune virulence gene expression.

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INVO: Providing Northwestern Investigators a Path Toward Commercialization

Northwestern University Office for Research formed the Innovation and New Ventures Office (INVO) six months ago to promote a culture of innovation across campus. INVO meets the Northwestern community’s increased need for a robust process to move research to the marketplace. Since inception, the office has prepared numerous commercialization plans for faculty and advised researchers on how to enhance the market appeal of their inventions.

As dictated by Northwestern policy, INVO is the central point for all Northwestern investigators (faculty, clinicians, students, post-docs, and researchers) with inventions that have potential commercial value. INVO partners with NUCATS Center for Translational Innovation, Kellogg School of Management Larry and Carol Levy Institute for Entrepreneurial Practice, and the McCormick School of Engineering Farley Center for Entrepreneurship and Innovation to develop inventions into business ventures. Three sub-groups within the organization work directly with investigators. The translational group is the initial point of contact for researchers and determines if an idea has marketable potential. Composed of seven licensing associates, the intellectual property and licensing group protects inventions by working with legal counsel to manage the process from inception to license. Lastly, the business development and start-up group provides strategic counsel toward commercialization. Students, alumni, and community members help with commercial plans, provide mentorship, and develop business cases for start-ups and inventions. INVO provides advice, resources, and an extensive network to investigators at every stage of the process from idea to market.

“We want to listen, we want to help, and we want to make Northwestern researchers ridiculously successful,” says Alicia Loffler, PhD, associate vice president and executive director of INVO. Along with the Kellogg School of Management and NUCATS, INVO hosts series of events throughout the year that all Northwestern investigators are welcome to attend.

Upcoming Events

• December 17, Commercialization Clinic, Ford Center (Evanston campus): Forum for Northwestern inventors to ask questions about technology and path toward the marketplace

If you are interested in more information about INVO, please contact the office via e-mail invo@northwestern.edu, phone (847) 467-2097, or visit the INVO website.

Staff Profile: Donna Hurley, PT, DPT, Cerebral Palsy Research Registry Coordinator, Department of Physical Therapy and Human Movement Sciences

A pediatric physical therapist by training, Donna Hurley, PT, DPT, has always wanted to learn more about how research studies are developed and executed. In her primary role at Northwestern University Department of Physical Therapy and Human Movement Sciences (NUPTHMS), she has the opportunity to experience research firsthand, serving as coordinator of the Cerebral Palsy Research Registry (CPRR). The CPRR is a multi-institution effort among NUPTHMS, the Rehabilitation Institute of Chicago, and University of Chicago to promote research in cerebral palsy across the lifespan. Hurley is responsible for Institutional Review Board (IRB) renewals and revisions, as well as recruitment efforts; web site, database, and newsletter content and production; participant questions and concerns; and most recently, working with outside institutions and professional organizations that want to join the CPRR.

In addition to her primary role as coordinator, she also assists teaching in various department courses for the NUPTHMS students.

To learn more about Hurley, read her full profile online.
Welcome New Faculty

Michael F. Fleming, MD, MPH, joins as professor in Family and Community Medicine and Psychiatry and Behavioral Sciences.

Fleming was most recently professor of Family Medicine at the University of Wisconsin-Madison and director of the Pain and Inpatient Addiction Medicine consult services at the UW Hospital and Clinics. He also held a leadership role in the UW Institute for Clinical and Translational Research as the director of research, education, and career development programs.

Fleming has been PI on over a dozen NIH grants related to phospholipids, alcohol biomarkers, chronic pain, fetal alcohol spectrum disorders, pharmacotherapy trials, and educational interventions. He has over 135 peer-reviewed research publications based on data collected from his research initiatives, including 40 publications since 2005. He is published with 250 different students, fellows, and faculty since his first publication in 1986.

John M. Costello, MD, MPH, joins as associate professor in Pediatrics at Feinberg and director of the Cardiac Intensive Care Unit at Children’s Memorial Hospital.

Costello, a graduate of Feinberg and the Harvard School of Public Health, completed his residency and fellowships in both pediatric cardiology and pediatric critical care medicine at Children’s Memorial. He returns to Chicago after seven years practicing cardiology at Children’s Hospital Boston. His research interests are focused on observational studies and clinical trials in children undergoing surgical repair of complex congenital heart defects. His primary research interest involves the investigation of hormonal disturbances in children undergoing cardiac surgery.

Lathem, continued from pg. 3

during infection, and we are currently examining how several virulence factors, including Pla and the type III secretion system, are regulated in this manner.

What is the ultimate goal of your research?

Ultimately, we are interested in defining the nature of the interaction of Y. pestis with the mammalian host so that we can find ways to disrupt that interaction. While naturally acquired cases of plague still occur in the U.S. and around the world, there is increased concern that Y. pestis may be used as a biological weapon. Therefore, if we can develop therapeutics to extend the window in which antibiotic treatment is effective by disabling Pla or countering its effects in the host, for instance, then we can be better prepared in the event of a bioterrorist attack with plague.

What are some of the challenges you face?

As Y. pestis is highly pathogenic and is considered a category A Select Agent by the U.S. government, our work requires a secure BSL-3 laboratory and specific approval from the CDC.

The additional regulatory requirements associated with select agent research are challenging, but fortunately members of the Office for Research Safety, including Todd Leasia and Andrea Hall, help us navigate these issues.

Due to these regulations and the confined space of the BSL-3, we are also constrained in the kinds of research we can do. That means we have to be creative in designing experiments to answer our questions and be mindful of the types of material we can remove from the facility.

What brought you to Feinberg?

I came to Northwestern in 2008 due to the combination of resources, the level of scientific intellectualism within Feinberg and the microbiology-immunology department, and the freedom to pursue my research interests. These essentials were unmatched among the institutions I was considering for a faculty position. I was particularly impressed by the quality of the graduate students in IGP, as well as the commitment by the university to embrace biodefense research and provide me with the facility I needed to accomplish my goals.

In addition, the Chicago area is a center for biodefense; having access to colleagues at the University of Chicago, UIC, and Argonne National Laboratories was a big plus for me.
NIH News

While NIH is working under a continuing resolution and until a final appropriations bill is enacted, the agency “will issue non-competing research grant awards at a level below that indicated on the most recent Notice of Award (generally up to 90 percent of the previously committed level). This is consistent with our practice during the CRs of FY 2006 to 2010. NIH will consider upward adjustments to these levels after the final appropriation is enacted, but expects institutions to monitor their expenditures carefully during this period.” The current continuing resolution expires on December 3.

NIH announced that proposal preparation costs will now be allowable as a direct charge for Mentored Career Development Awards.

NIH has published the revised NIH Grants Policy Statement (NIHGPS). This revision is applicable to all NIH grants and cooperative agreements with budget periods beginning on or after October 1, 2010. This revision supersedes, in its entirety, the NIH Grants Policy Statement (12/03) as a standard term and condition of award. However, the December 2003 NIHGPS continues to be the standard term and condition for all NIH grants and cooperative agreements with budget periods that began between December 1, 2003 and September 30, 2010. This revision incorporates NIH policy changes since the December 2003 version, policy clarifications, public policy changes, terminology changes, new chapters, chapter revisions, reorganization of the document, as well as other document enhancements such as a new chapter numbering schema. A document summarizing significant changes is also being made available.

Sponsored Research

David Liebovitz, MD
Assistant Professor in Medicine-General Internal Medicine

Project title: “Strategic Health IT Advance Research Projects on Security (SHARPS)”

Sponsor: Office of the National Coordinator For Health Information Technology

SHARPS is a multi-institutional and multidisciplinary research project supported by a four-year grant from the Health and Human Services Office of the National Coordinator for Health Information Technology. Nationally, the SHARPS project will advance the sophistication, development, and deployment of security and privacy for health information technology (HIT) through long-term research that is strategically managed for fundamental impact and incremental short-term benefits.

SHARPS is organized around three major environments: electronic health records, health information exchanges, and telemedicine, with personal health records included as a major subtopic. SHARPS research projects in these strategic areas are interconnected through three cross-cutting themes: conceptual and policy foundations, service models, and open validation. Research directed at each environment will develop security foundations, policies, and technology tools, and concrete approaches that support electronic use and exchange of health information while assuring and enhancing individuals’ safety and privacy.

Our focus at Northwestern seeks to advance the security and privacy of health records as they are exchanged among enterprises through automated retrospective and prospective analysis of access logs, and patient/provider characteristics converging on the principle of least privilege.

Core Fact

Did you know that DNA and associated clinical information on more than 10,000 Northwestern patients is available to investigators for research? By mid-2011, 5,000 of these samples will have genotype information available through the NUgene Project.

The director of the NUgene Project, Maureen Smith, can help you determine whether NUgene samples and data can provide the cases and/or control samples for your study.

For more information, contact Maureen Smith at m-smith6@northwestern.edu or (312) 695-0703.
New Clinical Trial: Antenatal Late Preterm Steroids (ALPS): A Randomized Placebo-Controlled Trial

**Investigator:** Alan Peaceman, Chief, Division of Obstetrics and Gynecology-Maternal Fetal Medicine  
**Sponsor:** National Heart, Lung, and Blood Institute  
**Collaborator:** Eunice Kennedy Shriver National Institute of Child Health and Human Development

Infants born between 34 and 36 weeks of gestation — known as ‘late preterm’ — are more likely to be admitted to a special care nursery and more likely to suffer respiratory complications than infants born at term. The use of antenatal corticosteroids has been shown to improve lung function in very premature infants, but has not been evaluated in those likely to deliver in the late preterm period.

This research study will attempt to answer the following primary research question: Do steroids, compared to no steroids, decrease babies’ need for oxygen support when given to pregnant women at least 12 to 24 hours before they deliver at 34 weeks to 36 weeks gestation? The research study will also collect information on whether steroids improve the chances that the baby will not get sick from other causes.

To be considered for inclusion in the study, women must be between 34 and 36 weeks pregnant and demonstrate a high probability for one of the following during delivery: membrane rupture, preterm labor with intact membranes, or planned delivery by induction of labor or cesarean section in no less than 24 hours and no more than seven days, as deemed necessary by the provider. A complete list of exclusions and additional details can be found at [ClinicalTrials.gov](https://clinicaltrials.gov).

The research team plans to begin enrolling patients in the study at Northwestern in mid-November. For more information about the trial, contact the Alan Peaceman at (312) 472-4685.

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Animal Corner

The Institutional Animal Care and Use Committee (IACUC) and the Center for Comparative Medicine (CCM) are proud to welcome **Susan Kallay**, who has been named director of the IACUC. She assumed the position on October 1 after having served as interim director since September. As director of the IACUC, Kallay is responsible for the office that reviews both the program and protocols to ensure that researchers and the University stay in compliance with local, state and federal regulations governing the use of animals in research. The office also investigates compliance issues and performs post approval monitoring of animal study protocols.

Kallay received her bachelor’s degree in biology from the University of Eastern Michigan. From there, she worked in a toxicology department at a pharmaceutical company. Now she is working toward a master’s degree in Quality Assurance and Regulatory Science through Northwestern’s School of Continuing Studies. She holds several certifications including laboratory animal technologist from the American Association for Laboratory Animal Science and certified professional IACUC administrator from Public Responsibility in Medicine and Research. Kallay has been with Northwestern since 2007 and has previously served as the post approval monitoring program administrator.
Research in the News

CNN October 12
Six doctor-recommended sleep aids
Dr. Phyllis Zee was quoted.

TIME Magazine October 11
Oncofertility: Saving for a family
Dr. Teresa Woodruff and Lisa Campo-Engelstein’s work was featured.

Web MD October 8
Advances in HIV treatment: How AIDS cocktails work
Dr. Babafemi Taiwo was quoted.

Reuters October 6
Prostate drug finasteride helps urinary problems
Dr. Kevin McVary was quoted.

WFLD-TV (FOX) Chicago October 6
Dr. Virginia Kaklamani was interviewed.

Chicago Tribune October 5
1 prep football season, 1,800 hits to the head
Dr. Hunt Batjer was quoted.

CBS Evening News October 3
Man gives life-saving gift to wife
Dr. Juan Carlos Caicedo was interviewed.

Washington Post October 2
Public health advocates worry that dietary advice will get lost in translation
Linda Van Horn was quoted.

Chicago Sun-Times September 30
Arthritis drug found to work — maybe too well
Dr. Thomas Schnitzer was quoted about a clinical trial.

WFLD-TV (FOX) Chicago September 29
Controlling eating habits in cooler weather
Dr. Robert Kushner was interviewed.

More headlines

High-Impact Factor Research September 2010


HHMI Seeks Student Applicants for Research Programs

The Howard Hughes Medical Institute (HHMI) is seeking talented medical student applicants for biomedical research programs.

The [HHMI Medical Research Fellows Program](#) enables students to spend a year conducting basic, translational, or applied biomedical research at any school or non-profit research institute in the United States. For the 2011-2012 program year, fellows will receive an annual stipend of $28,000, an allowance of $5,500 for health care and expenses, and a $5,500 research allowance. Applications are due January 11, 2011.

The [HHMI-NIH Research Scholars Program](#) enables students to spend year conducting basic, translational, or applied biomedical research in one of the many laboratories on NIH campus in Bethesda, Md. For the 2011-2012 program year, scholars will receive annual compensation of $28,000 health insurance, and other benefits. The application deadline is January 10, 2011.

Students may apply to both programs in the same year. Both programs are open to students in all years of study prior to graduation.
Funding Opportunities

Countermeasures Against Chemical Threats (CounterACT) Exploratory/Developmental Projects in Translational Research (R21)

More information

Submission Deadline: February 1, 2011
Upper Amount: $500,000

Synopsis: This Funding Opportunity Announcement (FOA) requests applications for exploratory/developmental translational research on therapeutics for reducing mortality and morbidity caused by acute exposures to chemical threat agents. Chemical threats include traditional chemical warfare nerve agents such as sarin and VX, toxic industrial chemicals such as cyanide and chlorine, and toxic agricultural chemicals such as parathion and sodium fluoroacetate. Projects supported by this FOA are expected to generate preliminary data that would enable the development of competitive applications for more extensive support from the NIH CounterACT program (see www.ninds.nih.gov/counteract for a description) and other related research and development programs.

Targeted Clinical Research to Address Select Viral Infections - NIAID-DMID-NIHAI2010101

More information

Submission Deadline: January 14, 2011
Upper Amount: $5,500,000

Synopsis: The primary objective of this solicitation is to support clinical trials and clinical studies to further the development of therapies for select rare and emerging viral diseases. This solicitation targets the evaluation of new or existing therapies (alone or in combination) in a variety of underserved or special patient populations (e.g., immuno-suppressed patients (non-HIV); pediatric patients, elderly patients). Because many of the targeted diseases may not be clinically well characterized, appropriate natural history studies may be necessary. When appropriate, the use of innovative or adaptive clinical trial designs, particularly in cases where the disease incidence is rare or the patient population presents unique challenges, is encouraged.

View more funding opportunities

Featured Events

9 “Gene Control Systems in Neisseria Gonorrhoeae that Impact Antibiotic Resistance and Fitness”
Presented by Dr. William Schafer, PhD, Emory University (M-I Fall Seminar Series)
Date: November 9 Noon to 1 p.m.
Location: Robert H. Lurie Medical Research Center, Baldwin Auditorium 303 E. Superior St. (Chicago campus)
Contact: c-naugles@northwestern.edu
More information

16 “Legionella Effectors: Where They Came From, Where They're Going, How They Got There”
Presented by Howard Shuman, PhD, University of Chicago
Date: November 16 Noon to 1 p.m.
Location: Lurie Medical Research Center Baldwin Auditorium 303 E. Superior St. (Chicago campus)
Contact: n-cianciotto@northwestern.edu
More information

18 “Stereochemistry, Synthetic Methodology, Peptidomimetics”
Presented by Jeffrey Aube, PhD, professor of Mechanical Chemistry, University of Kansas (CIMDD Seminar)
Date: November 18 11 a.m. to Noon
Location: Ryan Hall, 4003 2190 Campus Drive (Evanston campus)
Contact: t-fraterrigo@northwestern.edu
More information

18 “Molecular Genetics of Severe Human Obesity”
Presented by Christian Vaisse, MD, PhD, associate professor, University of California-San Francisco (NCCO-Endocrinology Seminars)
Date: November 18 4 to 5 p.m.
Location: Lurie Medical Research Center Baldwin Auditorium 303 E. Superior St. (Chicago campus)
Contact: p-yim@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.