

# Northwestern Research Newsletter

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## Mary Hendrix Testifies Before Congressional Subcommittee

The unpredictable nature of science makes it nearly impossible to know which new discoveries gained through basic research will lead to the next important medical advancement.

Mary J.C. Hendrix, professor of cancer biology, says this is the reason there is a need to invest broadly in biomedical research. These investments will help as large fluctuations in funding are disruptive to training, long-range projects, and, ultimately, progress.

Hendrix, who serves as president and scientific director for Children's Memorial Research Center, made a strong case for increased funding for the National Institutes of Health (NIH) during her testimony at a U.S. House of Representatives Labor, Health, and Human Services Appropriations Subcommittee hearing on the fiscal year 2010 budget.

During the March 18 meeting, Hendrix urged the subcommittee to increase NIH funding by 7 percent, arguing the need for stability after the spending of stimulus funds to ensure that researchers would not have to terminate their on-going projects. She said that advances in science would contribute to the economy by creating jobs, new products and industries, and improved technologies.

Hendrix stated that as a result of the subcommittee's prior investment in NIH, critical advances have been made in the areas of stem cell research, prevention of infectious diseases, and research into the genetic basis for various cancers.

A dozen members of the Labor, Health, and Human Services Subcommittee attended the hearing, including Illinois Representative Jesse Jackson, Jr. and subcommittee chairman David Obey (D-Wis.)

Hendrix was one of a select group invited to testify at the hearing. A complete list of witnesses can be accessed [here](#). The full text of Hendrix's testimony can be read [here](#).

The National Institutes of Health supports a mission for the scientific pursuit of fundamental knowledge about the nature and behavior of living systems and the applications of that knowledge to extend healthy life and reduce burdens of illness and disability.



Mary J.C. Hendrix stands in her laboratory at Children's Memorial Research Center. *Photograph courtesy of Peggy M. Jones*

### In this issue:

Mary Hendrix Testifies Before Congress	1
New Model Proposed for Stem Cell Memory	2
NU and Argonne Explore Collaboration	2
NUANCE: From Stem Cells to Fuel Cells	3
OR Represented at Art Exhibition	4
Kessler Story Wins Peabody	4
Honors Corner	4
McCormick Students Win \$10,000 for Research	5
Campus to Celebrate Earth Day	5
Northwestern Among Top Ten Greenest	5
Center and Faculty Notes	6
Northwestern Research in the News	6
Motherhood, Success Event in May	7
Grantsmanship Course Offered Through SCS	7
OSR Hosts Bi-Weekly Brownbag Lunches	7
Training Calendar	7
Summer Quarter Salary Policy Announced	8
Proposal and Award Reports	8

## New Model Proposed for Stem Cell Memory and Plasticity



William T. Tse, assistant professor of pediatrics at Feinberg. Photograph courtesy of Peggy M. Jones

How does a human cell remember its past and decide its future? This is a six-million dollar question that biomedical researchers have long sought to answer in their attempts to control cell fate and develop better cellular therapy.

Working with human bone marrow stem cells that can turn into bone or muscle, researchers at Children's Memorial Research Center led by William T. Tse, pediatrics, have recently demonstrated how these cells juggle decision-making processes that determine their fate. The group found that stem cells respond to environmental stimulation by producing bone- or muscle-forming factors.

Similar to an on/off light switch, the cells control their fate with a "bistable switch" mechanism that reveals important concepts in stem cell memory and plasticity. Further understanding these concepts may help researchers discover critical developmental genes that can be applied to cell fate control and cellular therapies.

Funded by the Illinois Regenerative Medicine Institute, the Dr. Ralph and Marian C. Falk Medical Research Trust, and the North Suburban Medical Research Junior Board, the research was published in the April 6, 2009 online issue of the *Proceedings of the National Academy of Sciences of the United States of America*.

## NU and Argonne Explore Collaboration to Offer Energy Solutions



Participants in the Workshop in Energy Demand watch as Mark Petri of Argonne (standing, far left) presents findings from the roundtable discussions to the rest of the panel of moderators. Photograph courtesy of Jane Wuellner

The threat of the international energy crisis is ominous. But the tone of the Workshop in Energy Demand, which focused on collaborative solutions, was optimistic and upbeat.

"Energy is the problem of our generation," said Jay Walsh, vice president for research, in his opening remarks at the March event. "In its kindest form, we call this a robust problem."

Walsh went on to add that when humanity is faced with dire problems, it is historically the scientists and engineers who have solved them by working together.

The [Initiative for Sustainability and Energy at Northwestern](#) (ISEN), Office for Research, and McCormick School of Engineering and Applied Science sponsored the event to help foster research collaborations between the University and Argonne National Laboratory. The daylong workshop featured presentations from researchers at both institutions, focusing on the production and use of energy and offering solutions through alternative fuels.

Following the presentations, researchers participated in energy-themed roundtable discussions and then offered ideas for how Argonne and Northwestern can work together to turn the discussion topics into new or teamed areas of study.

Adam Cohen, deputy associate laboratory director for energy sciences and engineering at Argonne, was instrumental in organizing the workshop to renew interest in collaboration with Northwestern.

"There's always been some collaboration between the two institutions, but I feel that there is much more potential than is being leveraged," he said. "We want researchers to be talking to each other, developing proposals for eventual research, and grow into sharing graduate students and building programs."

The Workshop in Energy Demand hosted a total of 95 researchers and graduate students from both institutions. Held in Northwestern's Allen Center, it was the first in a proposed series of similar workshops. The follow-up event is scheduled for April 29 at Argonne and will focus on energy supply.

"If we're successful in these energy workshops, then we might consider having workshops that focus on other topics," said Mark Petri, Argonne's technology development director, who is organizing the next event. "What I mean by 'successful' is whether we're able to find areas of collaboration between researchers at both institutions that actually lead to funded proposals."

For more information about ISEN or the Northwestern-Argonne workshop series, please contact Bridget Calendo at [bridget@northwestern.edu](mailto:bridget@northwestern.edu).

## NUANCE: From Stem Cells to Fuel Cells

When French artist Henri Matisse completed his famous painting *Bathers By a River* in 1916, he never envisioned samples of his masterpiece being examined nearly 100 years later through the backscattering electron mode of a high-powered microscope.

But using known techniques for new purposes is exactly what Vinayak P. Dravid, materials science and engineering, pictured when he began collecting instruments for NUANCE (Northwestern University Atomic and Nanoscale Characterization Experimental Center) in the mid-1990s.

"We do specific research using instruments and techniques, but then we experiment and find that those techniques can be implemented to do other things," says Dravid, who is director of the center.

"Maybe when a knife was first invented, it was meant to cut vegetables and meats, but then we find that it can be used for other creative purposes, like making wooden sculptures. Instruments can be used in all different ways."

NUANCE, which serves as an umbrella over the complementary instrumentation facilities of EPIC, NIFTI, and Keck-II, houses electron microscopes, scanning probes, lithography instrumentation, and surface analysis techniques for materials science research. But the center, located on the first floor of Cook Hall, has since evolved from a focus on materials science into a place with nearly 500 users and more than 120 faculty affiliates from virtually every scientific discipline.

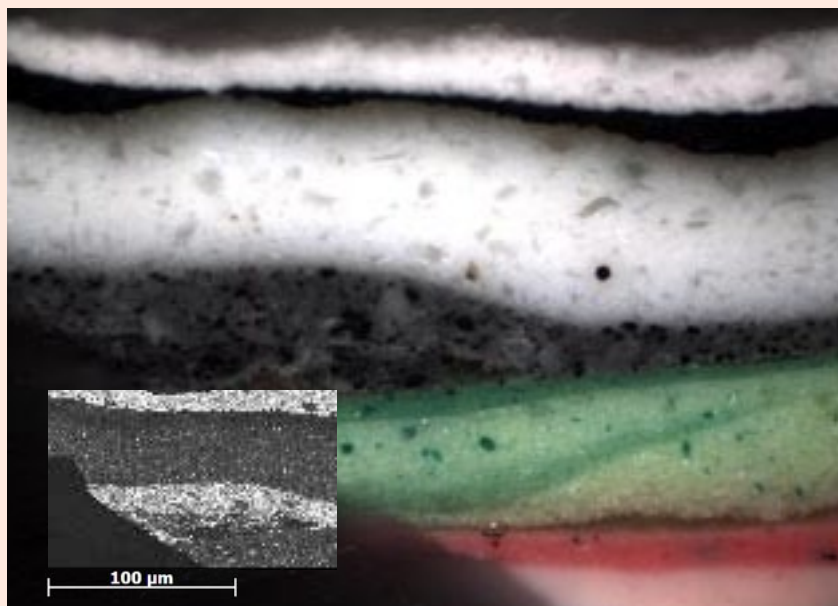
"Research from every college at Northwestern and several other Midwestern institutions is represented here," says Dravid. "What started with just McCormick is now a wide-ranging interactive facility."

And this diversity applies to more than subject areas. In one of the only facilities that allows hands-on training for undergraduates, it's not out of the ordinary to see a freshman running an experiment on a state-of-the-art piece of equipment.

"It is unique to allow freshmen and undergraduates access to these research capabilities," Dravid says. "But it's a win-win situation. The students are excited by what they can do, and the faculty is excited to have well-trained students in their research groups."

With a technical staff of seven and a focus on collaboration and service, NUANCE first provides researchers with training before they access the equipment. Researchers then can reserve instruments and pay modest usage fees through the Facility Online Manager (FOM®), a computer software portal developed at NUANCE by its chief architect Shuyou Li, senior research associate, that is now used by multiple core facilities on campus as well as other institutions across the nation.

Researchers then can use the instruments to examine nanostructures for Alzheimer's research, oxidants for fuel cells, or varnish and paints from artistic masterpieces. The diversity of work that can be completed at NUANCE is limited only by imagination and never ceases to amaze Dravid.



By analyzing a paint sample from an artist's canvas with an electron microscope, researchers are able to determine the elemental composition of the paints in order to compare the composition of formulations. The image above shows a paint sample from Henri Matisse's *Bathers By a River*, which has been magnified 200 times by an optical microscope. The inset on the lower left shows the same sample magnified 900 times through the Hitachi S3400-N-II microscope at NUANCE. Art Institute of Chicago conservation microscopist Inge Fiedler has been analyzing the piece with the assistance of Katherine Venmar, NUANCE's microscopy and imaging specialist. By using the backscattering electron mode (inset), artists and scientists can see how many layers of paint and varnish are present, which is important for varnish removal during the restoration process. *Images used courtesy of Inge Fiedler*



Professor Dravid speaks at Science Saturday, a free program in January that included talks, hands-on activities, laboratory tours, and instrument demonstrations. A part of Science Chicago, the event is just one example of how NUANCE offers outreach by creating excitement about science in the community. Instrument demonstrations were held in both EPIC and NIFTI facilities. *Photograph courtesy of the International Institute of Nanotechnology, co-sponsor of the event.*

**NUANCE continued on next page >>**

## >> *NUANCE continued from previous page*

"Not many people can tell their kids that they saw atoms today or can call their parents to say they saw the carbon nanotube structure for the first time," he says. "We are able to do things on an unexplored scale. It's always exciting."

Moving forward, Dravid envisions NUANCE capabilities expanding and diversifying from the study of harder materials to include soft/biological and "hybrid" structures with upcoming bio-cryo compatible instrumentation. Also, given the rapid availability of broadband and computational infrastructure, he plans to accelerate remote access and distance collaboration with regional and global partners.

For more information about the instruments available or research being completed at NUANCE, please visit [www.nuance.northwestern.edu](http://www.nuance.northwestern.edu).

## Office for Research Represented in Art Exhibition

A poster-sized version of the Office for Research holiday card (pictured on the right), designed by Kathy Mandell who is senior editor and designer for ORPFC, was displayed in the One Book One Northwestern "Art of Evolution" Charles Darwin-inspired art exhibition in February.

The holiday card was mailed to research staff and senior administration from Jay Walsh, vice president for research, last December and featured a photograph of a microscope from the Deering Library's exhibit "The Multifarious Mr. Darwin."

The exhibition showcased a dozen pieces — from music to poetry to visual art and photography — across multiple disciplines, all honoring Darwin's 200th birthday. Forrest Stonedahl, a graduate student in electrical engineering and computer science, took first prize for his song "Happy Birthday Dear Darwin," written with a computer science technique known as "genetic algorithm."

To see all the exhibited pieces and learn more about the artists, please visit the "Art of Evolution" [web site](#).



## Kessler Story Wins Peabody

The documentary film focusing on the stem cell research and personal story of John Kessler, neurology, and his daughter Allison has won the prestigious Peabody Award.

The feature-length film, titled *Mapping Stem Cell Research: Terra Incognita*, aired nationally on PBS' Independent Lens series in 2008.

Produced and directed by Chicago's Maria Finitzo, the film puts a human face on stem cell research through the story of Dr. Kessler who turned his research focus from peripheral nerve disorders to stem cell treatment of spinal cord injuries after his daughter Allison became paralyzed from injuries sustained during a skiing accident.

Allison, who was an undergraduate student at Harvard University at the time of filming, is now a medical student at Feinberg.

The Peabody Awards recognize the most outstanding achievements in electronic media, including radio, television, and cable.

For the entire story about the film and the award, please visit the [website](#) for the Feinberg School of Medicine.

## Honors Corner

**Luis Amaral**, chemical and biological engineering, was one of 50 selected for a position as an **Early Career Scientist** of the Howard Hughes Medical Institute.

**Frank Calegari**, mathematics; **Jason Hartline**, electrical engineering and computer science; and **Dean Ho**, biomedical engineering and mechanical engineering, received **Faculty Early Career Development awards** from the National Science Foundation.

**Philip Greenland**, preventive medicine, joined the **editorial board** of the new *Science* journal, *Science Translational Medicine*.

**Tobin J. Marks**, chemistry, and **Samuel I. Stupp**, materials science and engineering, were named fellows of the **Materials Research Society**. **Marks** also received the **2009 Herman Pines Award** in recognition of his outstanding contributions in the areas of homogenous and heterogeneous catalysis.

**David Seidman**, materials science and engineering, has been selected as the **Materials Research Society's 2008 Turnbull Lecturer**.

## McCormick Students Win \$10,000 for Sustainability Research

Two individuals and one team, all Northwestern students, have each received \$10,000 for their research contributing to global sustainability through the Sustainability Innovation Student Challenge sponsored by the Dow Chemical Company.

The honor recognizes the McCormick School of Engineering and Applied Science students for their exceptional work in ongoing scientific, technical or social research to develop innovative approaches to meet human needs. Their projects, part of the “green chemistry movement,” must also protect the environment while promoting economic growth and social welfare now and into the future.

The individual award recipients were Can Bayram, a doctoral student in electrical engineering and computer science, and Cynthia Pierre, a graduate student in materials science and engineering. The winning team was comprised of undergraduates Yann Manibog, Eric West, Suelyn Yu, and Zachary Lindemann.

The Dow Chemical Company invited six universities to participate in the challenge. In addition to Northwestern, the participating universities included Cambridge University, Peking University, Tufts University, the University of Michigan and the University of Sao Paulo in Brazil.

The Dow Chemical Company Foundation initiated the Sustainability Innovation Student Challenge this year. Eligible areas of research included sustainable chemistry, energy efficiency and conservation, reducing climate change impact, life-cycle product safety, and sustainable freshwater supply and distribution.

*-- Adapted from a NewsCenter article*

## Campus to Celebrate Earth Day



2008 Mt. Trashmore represents the amount of garbage generated on campus. Photograph provided by Julie Cahillane

Facilities Management and the Initiative for Sustainable Energy at Northwestern (ISEN) encourage the Northwestern community to celebrate Earth Day by attending green events on campus.

ISEN will provide support to Facilities Management to offer waste reduction-themed giveaways at the Mount Trashmore demonstration located along Sheridan Road in front of Lunt Hall. The event will take place 11 a.m. to 3 p.m. on April 22.

ISEN is also sponsoring the e-waste component of [Community Day](#) — called “TV Take-Back” — on April 26. Northwestern will be collecting electronic waste from noon to 5 p.m. in parking lot 108 located on the east side of the Henry Crown Sports Pavilion on the Evanston campus. ISEN’s Advisory Board student representative Emily Wright has secured a dozen members of SEED (Students for Ecological and Environmental Development) who will serve as volunteers to help Evanston residents maneuver through the recycling site.

For more events, tips on how to be green, and campus recycling guidelines, please visit the NU Recycling [website](#).



Melissa Riepe, Robbie Pickering (Green Man), and Laura Christian participate in the Green Cup compact fluorescent bulb giveaway.

## Northwestern Among the Top 10 Greenest Universities

Northwestern is among the top 10 colleges and universities in the country for the most renewable energy purchased. The Green Power Partnership ranks the University second in the Big Ten Conference and ninth nationally among college and university green power purchases.

Through the purchase of Renewable Energy Certificates, Northwestern offsets 20 percent of the electricity used to power the Evanston and Chicago campuses. This purchase has a carbon reduction impact similar to planting 6,469 acres of forest or removing 5,213 average passenger vehicles from U.S. roadways for a year.

Energy audits of campus buildings, updates to information technology, and changes to the recycling policy are among efforts to keep Northwestern greener and daily operations more sustainable.

*-- Adapted from a NewsCenter article. Photograph used courtesy of Julie Cahillane, manager of recycling and refuse.*

## Center and Faculty Notes...

**Joseph Bass**, medicine, and team discovered that the nicotinamide adenine dinucleotide (NAD) compound is a key coordinator of the circadian clock and metabolism.

[Full Story](#)

**Lincoln Lauhon**, materials science and engineering, has provided an atomic-level view of the composition of a nanowire using a technique called atom probe tomography. [Full Story](#)

**Douglas Losordo**, medicine, conducted a study finding that delivering a potent form of autologous adult stem cells into the heart muscle of patients with severe angina may result in less pain and improved exercise tolerance.

[Full Story](#)

**Mansour Mohamadzadeh**, gastroenterology, developed a new oral vaccine using probiotics and has successfully used the approach in a preclinical study to create immunity to anthrax exposure. [Full Story](#)

**James Rosenbaum**, education, co-authored a study finding that government programs that move low-income families to different housing can improve their education and employment if the moves are to advantaged neighborhoods. [Full Story](#)

**Lewis Smith**, medicine and associate vice president for research, led a new national study finding that prescribing heartburn medication is ineffective and unnecessarily expensive for asthma patients who do not have symptoms of acid reflux. [Full Story](#)

A research team including **Seth Stein**, Earth and planetary sciences, found that the New Madrid fault system may be in the process of shutting down. [Full Story](#)

**Samuel I. Stupp**, materials science and engineering, and researchers have designed a high-performing photoconducting material that uses the environmentally friendly compound zinc oxide rather than lead sulfide. [Full Story](#)

A national study co-authored by **Mark Williams**, medicine, found that one of out five Medicare patients return to the hospital within one month of being discharged. [Full Story](#)

## Northwestern Research In the News, March 18 - April 15

**Joseph Bass**, medicine, conducted a study about the body's internal clock and metabolism that was mentioned in *U.S. News and World Report* and *Scientific American*.

**Robert Bonow**, cardiology, talked about the once-a-day polypill in *USA Today* and *Google News*.

**Charles Brendler**, urology, discussed screening for prostate cancer in the *Chicago Tribune*.

**Robert Gordon**, economics, and his study about distribution of wealth was mentioned in *The Economist* and *The New York Times*.

**Jane Holl**, pediatrics, and her National Children's Health Study were subject of an article in the *Chicago Tribune*.

**John Kessler**, neurology, talked about stem cell research and ethics on *Fox News*.

**William Klein**, neurology and physiology, talked about the growing number of Alzheimer's cases in the *Chicago Sun-Times*.

**Nina Kraus**, neurology and physiology, discussed music and emotions in *U.S. News and World Report*.

**Peter Lio**, dermatology, discussed the risks of prescribing antibiotics to acne patients on *MSNBC*.

**Douglas Losordo**, medicine, and his study about using stem cells to treat heart disease were mentioned in *Chicago Breaking News*, *Reuters*, and *HealthDay*.

**Thomas Meade**, chemistry, discussed raising money for research in the *Chicago Sun-Times*.

**Mansour Mohamadzadeh**, gastroenterology, developed an oral vaccine using probiotics that was the subject of articles in *United Press International*, *U.S. News and World Report*, *Boston Globe*, and *Chicago Sun-Times*.

Northwestern's involvement in the Dow Sustainability Innovation Student Challenge was mentioned in *The New York Times*.

**Joseph Schofer**, civil and environmental engineering, discussed the future of Metra Rail in the *Chicago Tribune*.

**Leah Smethurst**, The Family Institute, discussed the problem of parents completing their children's homework in the *Chicago Tribune*.

**J. Fraser Stoddart**, chemistry, discussed the contributions of M. Frederick Hawthorne in *Chemical and Engineering News*.

**Suzan van der Lee**, geophysics, discussed the seismology project USArray in *New Scientist*.

**Sandy Westerheide**, biochemistry, molecular biology, and cell biology, discussed how a little stress can keep cells youthful in *Science News*.

**Mark Williams**, medicine, and his study that Medicare patients return to the hospital after being dismissed were subjects in an article in the *Chicago Tribune* and *Chicago Sun-Times*.

**Phyllis Zee**, neurology, discussed the link between obesity and restless leg syndrome in *USA Today*.

## Motherhood, Success Event in May

Co-sponsored by Northwestern and the University of Chicago, "Motherhood and Success in Science and Engineering" will be a set of panel discussions about balancing a career in science and motherhood.

Panelists will include contributors from the book *Motherhood: The Elephant in the Laboratory* and a researcher studying the impact of motherhood on women's scientific careers.

The program's primary audience will be early career scientists and engineers, specifically graduate students, postdoctoral fellows, and early-career faculty.

Both women and men are welcome to attend.

For more information or to register, please visit the Office of Research Development [events page](#).

## Grantsmanship Course Offered Through SCS

Appropriate for researchers and research administrators, Grantsmanship for the Research Professional is a course that targets professionals engaged in research and/or responsible for pursuing grant opportunities to support hypothesis-driven and need-based research activities.

Participants will master the fundamental principles of grant proposal writing, develop proposals, use electronic tools to identify funding opportunities, and master electronic proposal submission.

Offered by the School of Continuing Studies, the course is taught by Holly Falk-Krzesinski, director, Office of Research Development.

Class is scheduled for May 14 and 15, 9 a.m. to 5 p.m. in Wieboldt Hall on the Chicago campus.

[Click here to register.](#)

## OSR Hosts Bi-Weekly Brown Bag Lunches

The Office for Sponsored Research began a bi-weekly brownbag lunch series on April 1.

Below is a schedule of upcoming dates and topics:

April 29 – Open forum. Participants are encouraged to bring along a proposal or award document for discussion.

May 13 – Industry Contract Negotiations for Engineering and the Physical and Biomedical Sciences.

May 27 – Export Controls for the Administrator

June 10 – Dept. of Energy Overview

June 24 – Dept. of Defense Overview

The lunches will take place at the Norris University Center from noon to 1 p.m.

[Click here for more information.](#)

## Training Calendar, April 15 - May 19

### Chicago

Radiological Emergency Management  
Wednesday, April 15, 1 – 2 p.m.

Safe Shipping of Biological Materials  
Thursday, April 23, 2 – 4:30 p.m.

Bloodborne Pathogens Training  
Thursday, April 23, 10 – 11:30 a.m.

Laboratory Safety and PPE Training  
Thursday, May 7, 10 – 11:30 a.m.

Hazardous Waste Management  
Thursday, May 7, 2 – 3 p.m.

Advanced Laser Operator Training  
Wednesday, May 13, 1 – 2 p.m.

### Evanston

Radiological Emergency Management  
Thursday, April 16, 1 – 2 p.m.

Hazardous Waste Management  
Tuesday, May 5, 2 – 3 p.m.

Radiological Surveys by Laboratory Personnel  
Wednesday, May 6, 1 – 2 p.m.  
Thursday, May 7, 1 – 2 p.m.

Bloodborne Pathogens Training  
Tuesday, May 12, 10 – 11:30 a.m.

Safe Shipping of Biological Materials  
Tuesday, May 12, 2 – 4:30 p.m.

Advanced Laser Operator Training  
Thursday, May 14, 1 – 2 p.m.

Laboratory Safety and PPE Training  
Thursday, May 14, 2 – 3:30 p.m.

*Unless otherwise noted, the events listed in Chicago will take place in the Montgomery Ward Building. Those listed in Evanston will be held in the Technological Institute.*

*For a complete schedule of events and details, please visit [www.research.northwestern.edu/events](http://www.research.northwestern.edu/events)*

## Summer/Research Quarter Salary Policy Announced

Yale University settled a federal lawsuit for \$7.6 million that was partially related to policies and procedures for charging summer salaries in December 2008. This is only the most recent example in a series of multi-million dollar settlements between the U.S. Department of Justice (DOJ) and colleges and universities over issues related to research effort reporting.

Northwestern settled such a case in 2003 with the DOJ for \$5.5 million. "Each subsequent case has raised the bar for what constitutes responsible research grant management and each case has expanded the number of red flag issues that must be addressed," said Provost Daniel Linzer in an announcement of the new summer/research quarter salary policy.

The new summer/research quarter salary policy, effective April 30, 2009, limits the charging of summer salaries to grants to 2.5 months. Proposal preparation, student advisement, service responsibilities, time off, and other University duties, for example, make it difficult to justify charging 100 percent of a faculty member's time to a grant during the summer/research quarter. Certain exceptions will be allowed, but the bar for approval of these exceptions will be set high, according to the provost.

The policy was drafted by a group led by Provost Linzer and Vice President for Research Jay Walsh and included a group of associate deans from Northwestern's research-intensive schools and staff members from the Office for Research, the Office of General Counsel, Cost Accounting, Effort Reporting, ASRSP, the Office for Research Integrity, the Office of Budget and Planning, and the Office of Change Management. An initial draft of this policy was forwarded to deans for review and addressed at the April 10 Council of Deans meeting. For a copy of the policy, see the Office for Research [web site](#), policy page.

## Proposal and Award Reports through Feb. 2009

The total amount of award funding received this fiscal year through Feb. 2009 is \$146.7 million, a decrease of 10 percent (\$16.4 million) over Feb. 2008, according to the Office for Sponsored Research (OSR).

The dollar volume of awards to the Office of the Provost increased almost 400-fold (\$5.3 million), while awards to Weinberg grew by 9 percent (\$1.5 million). Research Centers and Institutes and School of Law awards also rose by 13 percent (\$1.5 million) and 387 percent (\$1.4 million) respectively. The dollar volume of awards to Feinberg decreased by 19 percent (\$19.9 million), while those to McCormick were down by 22 percent (\$4.5 million).

For more details and a complete breakdown of numbers, please visit the [OSR web site](#) to find the monthly reports. All visitors are required to log-in with a valid user NetID and password.

### Now Available Online:

\* The Office for Research prepares its *Strategic Plan* yearly to guide its future in responding to and implementing the goals set by *The Highest Order of Excellence*. To access the complete *Strategic Plan*, users need a valid NetID and password to log-in. However, the PowerPoint *Strategic Plan* presentation is available to the public.

\* Also now available is the [Research Wall of Fame](#), which showcases journal covers featuring the work of Northwestern researchers. ORPFC is busily collecting images of journal covers to keep the virtual "wall" up-to-date and can use your help. Please e-mail [Amanda Morris](#) if you have a recent cover that has not yet been displayed.

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