Partnership with MSI Takes Close Look at What Matters

The curved edge of a glass vial once represented the pinnacle of manmade innovation. In the lab of Mark Hersam, materials science and engineering, the now ubiquitous vessels contain a graphene-based ink that epitomizes the frontiers of materials research today.

Laced with flakes of ultra-thin carbon that maintain exceptional strength and conductivity, the ink holds the potential to create bendable transistors that could make widespread wearable electronics a reality. On a flat-screen TV inside Chicago's Museum of Science and Industry (MSI), the nanoparticles are magnified 100 million times for visitors to see. The display is part of a new exhibit resulting from three years of planning by the museum and Northwestern's Materials Research Science and Engineering Center (MRSEC). It marks the biggest project in the decades-long collaboration between the two institutions and is one example of the University's commitment to bringing its scholarship to the public in ways that are engaging and accessible.

“It’s amazing to walk through the exhibit on a Saturday afternoon and hear the public engaging in conversations about materials science,” says Hersam, MRSEC director. “The fact that a fifth-grader or 50-year-old can interact with and learn from the information presented is a testament to the quality of MSI and the hard work that faculty, students, and staff at Northwestern contributed to the finished product.”

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Northwestern Research Newsletter

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Photos by Kathleen Stair
Inhabiting a gateway space on the museum's lower level, the Materials Science exhibit has the potential of being viewed by more than 1 million visitors before closing January 31. The immersive gallery is bisected by the museum’s main staircase with each side focused on how materials research impacts society.

One portion of the show offers a new perspective on the ubiquity of materials science in everyday life, revealing how metals, ceramics, and plastics have evolved to be integral to consumer products. An adjacent gallery focuses on the field’s frontiers and highlights how emerging materials, such as silicon, carbon, and magnetic products, are shaping the future of electronic technologies like computers, tablets, and smartphones.

An interactive component allows visitors to design their own magnets from the elements of the periodic table.

The displays feature research findings from numerous Northwestern faculty: In addition to contributions from Hersam, the work of Danna Freedman, chemistry, and Lincoln Lauhon, Greg Olson, and David Seidman, all materials science and engineering, figure prominently in the exhibit.

Past contributions from Northwestern at MSI include annual programming efforts by members of the International Institute for Nanotechnology as well as components of a previous exhibit on sickle cell disease.

“Institutions like Northwestern provide a valuable asset in helping verify the information we display while also providing updates on the cutting-edge work taking place within its labs,” says Patricia Ward, director of science exhibitions and partnerships at MSI. “From an outreach perspective, having members of the Northwestern community interact with the public helps show that research isn’t just something that’s already happened; it’s truly ongoing and represents a possible career path.”

The exhibit also provides a look at scientific instruments never before displayed at MSI, among them an atomic probe field ion microscope, the tool that first allowed researchers to see materials at an atomic level.

The microscope dates back to the 1950s, a decade before MRSEC received initial federal funding. Today, the center is one of the oldest and longest continually funded materials research units in the nation.

“MRSEC’s longevity speaks to our ability to constantly ask new research questions and thus advance the field of materials science and engineering,” says Hersam. “Funded by the National Science Foundation, it’s integral that the center also combine research and education in a way that is accessible to the public. The exhibit at MSI is a terrific example of how successful that process can be.”

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**Partners in Discovery**

A pillar of Northwestern’s strategic plan is to “Discover creative solutions” through research and innovation that improves lives, communities, and the world. Our partnerships with Chicago’s cultural institutions are alliances that increase understanding and strengthen society by creating new collaborative arenas. Throughout the year, the Research Newsletter will continue to highlight the unique opportunities that Northwestern faculty, students, and staff have to participate in and learn from these affiliations.
Research Note

Great universities attract exceptional talent. Certainly that’s true at Northwestern where our scholarship is bridging disciplinary gaps to design fresh ways to engage complex, diverse challenges.

Like many of you, when I joined Northwestern I knew that I was becoming part of a community whose privilege and responsibility is to transform the world through the discovery of new knowledge. This responsibility exists whether you are faculty, staff, or student. Everywhere we look on our campuses we see abundant proof of this mission’s enduring success. Just yesterday, for example, The Garage opened in Evanston, providing a vibrant collaborative space for students and alumni to share ideas and develop entrepreneurial ventures.

There is obviously no shortage of innovation and ambition within Northwestern.

Impressively, our scholarship doesn’t stop at the doors of our classrooms, laboratories, theaters, or studios. Northwestern’s partnerships with other institutions extend the impact of our research. Our relationships with Argonne National Laboratory, the Art Institute of Chicago, the Chicago Botanic Garden, Adler Planetarium, Fermilab, and the Museum of Science and Industry — among others — are examples of external engagement that contributes to rich, new knowledge with the potential to shape our world for generations.

Even aside from these relationships, Evanston and Chicago are remarkably conducive environments for scholars and scholarship. We are fortunate to have a wealth of cultural institutions, organizations, and events that encourage discovery and stimulate creativity and invention. From the Lyric Opera and the Chicago Symphony Orchestra to world-class museums and business incubators like 1871, Northwestern’s geographic home is well aligned with our mission as a premier global research university.

Each of us brings a talent to this mission. The prospect of what we, together and in collaboration with colleagues at partner institutions, will accomplish next is as exciting to me today as it was when I arrived at Northwestern in 1988.

Vice President for Research

ISEN Booster Funding Spurs Innovation

The Institute for Sustainability and Energy at Northwestern (ISEN) has announced the recipients of its spring 2015 Faculty Booster Awards. The research projects awarded funding are expected to addresses significant unmet needs with the potential for transformative impact. This cycle’s award winners are:

Dick Co, chemistry and managing director of the Solar Fuels Institute. Co will conduct early research and development for a device designed to convert carbon dioxide into ethanol. The “Artificial Tree Project” strives to mimic photosynthesis, capturing sunlight and turning it into a clean fuel.

Omar Farha, chemistry. Farha will work to maximize the energy potential of light hydrocarbons, an underused byproduct of the oil and gas industry. His team will test “super-acidic” sulfated metal-organic frameworks as catalysts for the transformation of light hydrocarbons to “heavier” fuel-range hydrocarbons.

Derk Joester, materials science and engineering. Joester will conduct initial research into sustainable cement. The cement industry is responsible for about 7 percent of global CO2 emissions.

Aaron Packman, civil and environmental engineering. Packman will collaborate with Bill Miller, chemical and biological engineering, to create a partnership among Northwestern, Argonne National Laboratory, and The Nature Conservancy (TNC) to develop modeling tools that predict stormwater storage and water quality dynamics at TNC’s Indian Boundary Prairies and Big Marsh sites.

Jinsong Wu, materials science and engineering. Wu will pursue innovations that enable a way to view microstructural evolutions of miniature lithium-ion batteries operated inside transmission electron microscopes. The research will produce new understanding of battery life and stability and provide critical guidance in developing advanced batteries.

ISEN’s faculty seed grants — worth up to $45,000 — are awarded twice a year. Learn more.
Origins: Exploring the Journey of Discovery

This new feature highlights the research life of Northwestern scholars, situating their ideas against the backdrop of foundational experiences that helped shape their achievements. These conversations combine personal reminiscences with reflections on science and innovation.

Our inaugural column presents William Deering Chair in Biological Sciences Catherine Woolley, neurobiology. A celebrated scholar, Woolley researches how steroids regulate synaptic structure and function in the brain — particularly in the hippocampus, a region important for learning and memory, epilepsy, and anxiety and depression. The following is an edited transcript of Newsletter’s interview with her.

Why Science?
I always admired scientists. As a child growing up in a college town in Athens, Ohio, where my parents were humanities professors, I thought scientists were the smartest, most important people. My parents had nothing against science, but they had little to say about it either. I asked my mother once: “Mom, what is physics?” Her reply: “Oh, that’s just a bunch of wavy lines on machines.” I suspect she was thinking of an oscilloscope!

It Took a Village
The kids in Athens were raised by their own parents and by their friend’s parents. We had the sense that many adults were paying attention. We were taught, very early, that our job was to grow up and do something worthwhile. I never got the message that there were limits on my options, but I did get the message that I might not be good enough at some things. It was very important, then, to demonstrate that I was good enough — as determined by people with knowledge and experience. Encouragement did not come in the form of congratulations or awards. It came in the form of teaching me how to explain the value of what I was doing.

On the Value of Failure
If you are afraid of failure, you will be unlikely to try to solve hard problems. You’ll be more attracted to easy problems that won’t make much of a difference when solved.

The Process of Inquiry
As a kid, I had a chemistry set, a microscope, and an electronics set. I had a fantastic “rock identification computer,” which was entirely mechanical. I was meticulous in building an elaborate model train set. Now I understand that I was trying out ways of thinking and figuring out how things work. I was most attracted by the process of doing science, by the idea that things work a certain way and you can figure it out. When the lawn mower breaks, it breaks for a reason. You can open it up, tinker with it, and fix it. There’s a system there.

Transdisciplinary Collaboration in Neuroscience
Neuroscience has taken a major leap in the past decade, largely through work at the interface between the biology of the brain and disciplines like chemistry, physics, engineering, and mathematics. Previously, neuroscience was constrained by the brain’s “geography” and so tended to focus on structures with neurons laid out in a fairly crystalline form: You could put an electrode into the brain and record activity or stimulate neurons in that place. But in other parts of the brain, the organization of neurons is much more complicated. Those locations contain a diverse mixture of cell types that send and receive signals far afield.

Now molecular genetics lets us identify and manipulate genetically targeted cells, opening a much greater degree of specificity in terms of visualizing, activating, and recording different classes of neurons. We can target neurons involved in learning and memory — even in specific learning events. This has tremendous implications.
International Societies Honor Chemistry Thought Leader

Praising his 40-member research team, Tobin J. Marks, chemistry and materials science and engineering, recently accepted the first of two international awards honoring the expert in organometallic chemistry, chemical catalysis, materials science, organic electronics, photocatalysts, and nanotechnology.

Marks earned the Materials for Industry — Derek Birchall Award, bestowed by the Royal Society of Chemistry, for his “creativity and excellence in the application of materials chemistry in industry.” Based in the UK, The Royal Society of Chemistry is a 170-year-old community with 53,000 members.

In September, Marks will accept the Luigi Sacconi Medal during a conference in Camerino, Italy.

The Italian Chemical Society and the Luigi Sacconi Foundation awards the Sacconi Medal to a scientist who has obtained outstanding results in inorganic chemistry, a field in which Marks has made contributions of extraordinary relevance.

“We’re using catalysis to turn biofeed stocks into useful chemicals by taking waste from wood pulp and paper and turning them into diesel fuel,” Marks says of his ongoing research. “We’re also turning methane into natural gas and creating more efficient solar cells.”

Learn more.

Garage Opens Door to Innovation

Northwestern's newest "garage" opened with a gala event on June 16, but you'll be hard-pressed to find a parking spot. The Garage will bring together grassroots efforts throughout the University and will be accessible to students 24 hours a day. The open floor plan includes several offices, flex space for workshops, a kitchen, conference room, and 3D printers.

“We are incredibly excited about opening this new space,” says Provost Daniel Linzer. “The Garage will promote student interactions across Northwestern’s schools, helping those students learn how to turn ideas into realities.”

More than 150 students, staff, faculty, trustees, alumni, and supporters gathered in the new space for its formal opening. The Garage is located at 2311 Campus Drive in Evanston.

“The Garage symbolizes Northwestern’s innovative, progressive culture,” says Alicia Löfler, associate provost, associate vice president for research, and executive director for the Innovation and New Ventures Office. “Its formal opening is a great milestone, but the occasion also marks the beginning of our most important, long-term goal: creating a dynamic hub for our students and alumni whose entrepreneurial passion inspires them to develop world-changing ventures.”

Learn more.
New Center Expands Precision Medicine Beyond Genome

Scientists have long known that the forces driving the transformation of healthy cells to cancer cells require more than just mutations in the DNA sequence of our genes. Now, a new center led by two Northwestern researchers and funded by a nearly $10 million grant aims to advance our understanding of the genetic underpinnings.

The Chicago Region Physical Science–Oncology Center (CR-PSOC) is being led by renowned physical scientist Thomas V. O’Halloran, chemistry, molecular biosciences, and director of Northwestern's Chemistry of Life Processes Institute; and internationally recognized cancer researcher Jonathan D. Licht, medicine: hematology-oncology.

CR-PSOC was recently awarded a five year, $9.6 million grant by the National Cancer Institute to examine the role of the “epigenome,” the forces that influence the folding and condensation of DNA within the nucleus. The center also received a $1.5 million Lever grant from the Chicago Biomedical Consortium that provides additional support for key shared resource facilities.

“What we've described and set up at Northwestern is kind of the bull's-eye of what the National Cancer Institute and its advisors were hoping to accomplish,” says O’Halloran. “We're accelerating. We're going to surprise even people who designed the PSOC program. We're going to surprise them with the speed with which we can move these ideas to change clinical practice and speed up relief for those suffering from cancer.”

Learn more.

HIV’s Sweet Tooth May Prove Its Downfall

HIV has a voracious sweet tooth, which turns out to be its Achilles’ heel, reports a new study from Northwestern Medicine and Vanderbilt University.

After the virus invades an activated immune cell, it craves sugar and nutrients from the cell to replicate and fuel its wild growth throughout the body.

Scientists discovered the switch that turns on the immune cell’s abundant sugar and nutrient pipeline. Then they blocked the switch with an experimental compound, shutting down the pipeline and effectively “starving” HIV to death. The virus was unable to replicate in human cells in vitro.

The discovery may also have applications in treating cancer, which similarly has an immense appetite for sugar and other cell nutrients that it needs to grow and spread.

“This compound can be the precursor for potential future HIV treatments, as part of a ‘cocktail’ that improves on the effective medicines we have today,” says corresponding study author Harry Taylor, medicine. “It’s essential to find new ways to block HIV growth, because the virus is constantly mutating. A drug targeting HIV that works today may be less effective in a few years, because HIV can mutate to evade the drug.”

LED Microscopy Initiative

Making White Light ‘Green’

Northwestern is moving forward on an initiative to replace hazardous mercury arc lamps on fluorescence microscopes following a call to action put forth by the University’s Office for Research, Office of Sustainability, and Purchasing Resource Services.

Northwestern expects to replace more than 100 lamps in the coming months, 32 of which are located within five core facilities and 75 within the laboratories of individual principal investigators. Researchers are encouraged to convert their mercury, xenon, and metal halide lamps to more eco-friendly light-emitting diode (LED) light sources.

In recent years, LED lamps have increased significantly in brightness. They also maintain several other important advantages over older technology, such as longer operating life, lower energy consumption, less heat and ozone production, and more uniform spectral properties.

“Mercury arc lamps are delicate and only last a few hundred hours before they have to be properly disposed of through the Office for Research Safety,” says Phil Hockberger, executive director of research facilities. “This University-wide effort is an important first step in the creation of mercury-free microscopy at Northwestern.”

Across the country, LED conversion has garnered notable press. The subject even earned the 2015 Outstanding Manuscript of the Year Award from the Association of Biomolecular Resource Facilities.

Faculty members who would like more information about the benefits of LED sources and the LED Microscopy Initiative can contact Hockberger.
Northwestern Hosting Young African Leaders

For the second consecutive year, Northwestern will host 25 of Africa’s brightest emerging business leaders during a six-week academic and leadership institute this summer.

The Mandela Washington Fellows represent the flagship program of President Barack Obama’s Young African Leaders Initiative (YALI). The program aims to empower a group of professionals through academic coursework, leadership training, mentoring, networking, professional opportunities, and support for activities in their communities.

“We are excited to host this talented and diverse group of young entrepreneurs from Africa, strengthening our connection with the continent’s future leaders,” says Kate Klein, associate director of the Program of African Studies. “We look forward to engaging with Northwestern faculty and students as well as business and civic leaders in Chicagoland to create a transformative experience for these fellows.”

Northwestern also hosted members of the inaugural class of Mandela Washington Fellows in 2014.

Those people visiting Northwestern are part of a larger group of 500 fellows being hosted across the United States. At the end of their six-week experience, members of the group will meet with President Obama during a summit in Washington, D.C.

Highlights of the Northwestern program include: academic courses focusing on new venture formation taught by faculty in the Farley Center for Entrepreneurship and Innovation; site visits to Evanston and Chicago businesses, including Google, McDonald’s, World Bicycle Relief, Africa Global Chamber of Commerce, and Oracle; community service mentoring high school students through the Youth Organization Umbrella Evanston’s Young Entrepreneurship Summer Camp; and cultural activities such as an architectural boat tour of Chicago, museum visits, concerts, and networking opportunities.

Radway, Carroll to Pursue Book Projects as National Humanities Fellows

Janice Radway, communication studies, and Peter Carroll, history, have been named 2015-16 fellows at the National Humanities Center (NHC).

Radway, director of the Gender and Sexuality Studies Program, will focus on American print culture as well as underground publications, known as “zines”, produced in the 1990s. While at NHC, Radway plans to continue interviewing former zine authors and will work on a manuscript titled, Girls and Their Zines in Motion.

Carroll, director of the Asian studies program, specializes in social and cultural history of 19th and 20th Century China. During his NHC fellowship, he will develop his book, This Time of Suicide: Modernity, Society, and Self in China, 1900-1957.

Since 1978 the NHC has awarded fellowships to more than 1,300 scholars in the humanities, whose work at the center has resulted in the publication of more than 1,500 books in all fields of humanistic study. Radway and Carroll are among 37 fellows in this year’s class.

Learn more.

IIN Receives $8.5M Grant to Develop Nano Printing

Northwestern’s International Institute for Nanotechnology (IIN) has received a five-year, $8.5 million grant from the US Department of Defense’s competitive Multidisciplinary University Research Initiative program to develop a 4D printer.

The 4D technique relies on nanometer-size features “printed” onto a 3D object, allowing the object to change shape when exposed to a specific stimulus.

“This research promises to bring transformative advancement to the development of biosensors, adaptive optics, artificially engineered tissues, and more by utilizing nanotechnology,” says IIN Director Chad A. Mirkin, chemistry, who is leading the multi-institution project.

The award, issued by the Air Force Office of Scientific Research, supports a team of experts from Northwestern; the University of Miami; the University of California, San Diego; and the University of Maryland.

Progress in fields ranging from biology to chemical sensing to computing currently are limited by the lack of low-cost equipment that can perform high-resolution printing and 3D patterning on hard and soft materials at nanometer resolution, which is approximately 1,000 times smaller than the width of a human hair.

Learn more.
Nature Inspires First Artificial Molecular Pump

A team of Northwestern scientists led by Sir Fraser Stoddart, chemistry, is the first to develop an entirely artificial mechanism, in which molecules pump other molecules. The new design mimics the action of life-sustaining proteins that move small molecules around living cells to metabolize and store energy from food.

For its food, the artificial pump draws power from chemical reactions, driving the collection of atoms step-by-step from a low-energy state to a high-energy state — far away from equilibrium.

While nature has had billions of years to perfect the process, modern science is only beginning to understand what might be possible. The pump could one day be used to power artificial muscles.

“Our pump is radical chemistry — an ingenious way of transferring energy from molecule to molecule, the way nature does,” says Stoddart.

Learn more

Stipends Raised for PhD, MFA Students

Northwestern University President Morton Schapiro and Provost Daniel Linzer have announced that, beginning this fall, the base stipend paid to PhD and MFA students in The Graduate School (TGS) will increase to $29,000.

The University is investing $6.25 million in additional funds annually for this raise in the level of the stipend. The move is expected to enhance the quality of student life, promote enrollment of top applicants, and improve faculty recruitment and retention while furthering research.

In a letter to community members, the president and provost note that the increase, which becomes effective Sept. 1, marks another major investment in graduate education under the leadership of TGS Dean Dwight A. McBride.

Learn more
Deadline Approaching for Beauty of Science Contest

This year’s Science in Society image competition is accepting submissions until June 30.

Everyday lab images — such as photos of cells, carbon nanotubes, or crystals — can represent both novel research and extraordinary art. Sharing these images, and the advances they represent, with the public provides a special opportunity to illustrate the important scientific advances occurring at Northwestern.

In past years, winning pieces have been displayed at Evanston Public Library, WBEZ’s studio at Navy Pier, Harrington College of Design, and The Museum of Science and Industry. The contest is open to faculty, students, and staff. All images must originate from a Northwestern research project.

Learn more.

ACCR Clinical Research Symposium June 19

The Advisory Council for Clinical Research at Northwestern University (ACCR) presents its 6th annual symposium on Friday, June 19. “Beyond the Bricks and Mortar: Optimizing Research Across Institutions” will take place from 8 a.m. to noon at the McGaw Daniel Hale Williams Auditorium on the Chicago campus.

The symposium is free and features three keynote presentations.

ACCR promotes compliant and responsible clinical research conduct by facilitating new ideas, promoting changes in organizational policies, and creating educational programming and relevant activities for Northwestern’s clinical research community.

Learn more.

‘Einstein Evenings’ Bring Astronomy Down to Earth

One hundred years ago, a young scientist revolutionized physics with his explanation of how gravity really works.

On the last Friday of every month this year, astronomers from Northwestern’s Center for Interdisciplinary Exploration and Research in Astrophysics are celebrating that icon of science — Albert Einstein — and his century-old theory of general relativity.

The talk series, “Einstein Evenings,” takes place during Dearborn observatory’s regular public observation hours, 9-11 p.m. (first hour is reservation only). Visitors will learn about Einstein during 10-minute presentations and also have an opportunity to look through the Dearborn telescope. The next Einstein Evenings event occurs June 26.

Learn more.

HELP PREVENT LABORATORY ZOMBIES!

One last chance to dispose of old, unwanted, and unused hazardous chemicals.

The Great Hazardous Waste Clean-up at Northwestern Ends August 1.

Turn over all your unused, unwanted, expired or unusable hazardous chemicals to ORS before the deadline.

Labs and departments that miss this deadline will pay the cost for future disposal.

ORS will continue to pick up — at no charge — routinely generated wastes.
Honors

The American Society of International Law has awarded Karen Alter, political science, with a Certificate of Merit for preeminent contribution to creative scholarship for her text The New Terrain of International Law: Courts, Politics, Rights. Alter's book provides a framework for comparing and understanding the influence of the 25 existing international courts and for considering how these courts transform domestic and global politics.

Daniel Immerwahr, history, has been named a National Endowment for the Humanities Fellow at The Huntington Library. Immerwahr will embark on the prestigious yearlong fellowship in San Marino, California, where he will conduct research for his book, How to Hide an Empire, whose subject explores US territory overseas in the 20th century.

Mercuri Kanatzidis, chemistry, has received the 2015 Renewable Energy Prize, one of the prestigious Eni Awards, for his scholarship aimed at capturing potential energy released by wasted heat. Considered by some the “Nobel Prizes for energy,” the Eni Awards promote better use of energy sources and inspire new generations of researchers. Kanatzidis’ efforts focus on the development of new solid-state semiconductors able to recover waste heat and convert it directly into electricity.

Yong-Chao Ma, pediatrics, has received a 2014 Hartwell Individual Biomedical Research Award for his proposal, “Rescuing Motor Neuron Degeneration in Spinal Muscular Atrophy.” The award provides $300,000 of research support over three years. Ma studies the regulation of motor neuron and dopaminergic neuron functions in health and disease, specifically spinal motor neurons in spinal muscular atrophy and dopaminergic neurons in Parkinson’s disease.

June M. McKoy, medicine-general internal medicine and geriatrics and a member of the Robert H. Lurie Comprehensive Cancer Center, has been named a board member of the National Cancer Institute’s (NCI) Council of Research Advocates (NCRA).

Susan Phillips, English and neurobiology; Indira Raman, neurobiology; Francesca Tataranni, classics and director of Latin instruction; and Eric Zaslow, mathematics, have received Northwestern University’s Award for Curriculum Development. Each will spend the summer honing new undergraduates courses.

Jennifer Richeson, psychology, has been named a 2015 Guggenheim Fellow. Awarded by the John Simon Guggenheim Memorial Foundation, the 175 fellowships are appointed to scholars in the United States and Canada on the basis of career achievement and exceptional future promise. Richeson also has been elected to the National Academy of Sciences.

James S.T. Yao, surgery: vascular surgery, will receive the René Leriche-Prize from the International Society of Surgery/Société Internationale de Chirurgie at a ceremony in Bangkok on August 23. The annual prize is awarded to a scientist who has made significant contributions to surgery of the arteries, veins, or heart.

Discoveries: Northwestern Research Advances

Melissa A. Brown, microbiology-immunology, authored a study that could generate new insights into why women are more susceptible than men to autoimmune diseases such as multiple sclerosis. The findings may lead to better therapies for both sexes. Read more...

Dedre Gentner and Susan Hespos, both psychology and co-authors of a Northwestern study, helped discover that infants are capable of learning the abstract relations of “same” and “different” after only a few examples. The results offer proof that babies can think before they can speak. Read more...

Claudia M. Haase, School of Education and Social Policy, helped lead a new study that linked a gene to positive emotional expressions. The researchers demonstrated that people with a certain genetic variant — those with short alleles of the gene 5-HTTLPR — smiled or laughed more while watching amusing cartoons or film clips than did people with long alleles. Read more...

Led by Tobin J. Marks, chemistry and materials science and engineering, scientists are experimenting with ways to eliminate the cancer-causing agent benzene from gasoline. An estimated 137 billion gallons of gas were consumed in the United States last year, a daily average of about 375 million gallons. Benzene is added to each gallon as part of a mixture to improve octane numbers and fuel efficiency. Marks designed a catalyst that could provide an inexpensive way to remove the carcinogenic. Read more...

A research team led by Teri W. Odom, chemistry, has developed the first liquid nanoscale laser. Tunable in real time, the lasers can quickly and simply produce different colors. Only found in research labs today, the technology eventually could lead to practical applications in medical diagnostics and advancements in military technology. Read more...

Despite previous findings suggesting a link between soy intake and decreased asthma severity, a new placebo-controlled study led by Lewis Smith, medicine: pulmonary and associate vice president for research, shows soy supplements do not improve lung function for asthma patients. Read more...

When managing health concerns, the overwhelming majority of teens — 84 percent — consult the Internet, according to the first national study in more than a decade to examine how adolescents use digital tools for health information. The study, led by Ellen Wartella, communication studies and director of Northwestern’s Center on Media and Human Development, yields important insights for public health organizations trying to reach adolescents. Read more...
Spotlight: Research in the News

Michael Bailey, psychology, wrote an op-ed for Los Angeles Times in which he discussed gender dysphoria research and President Barack Obama’s recent remarks on sexual orientation conversion therapy.

Sally Blount, dean of the Kellogg School, recently wrote an article for Fortune stating that markets are arguably the most successful social structure for lifting people out of poverty in human history.

Research by Crystal Clark, psychiatry and behavioral sciences, was featured in numerous national and international publications, including the BBC, New York Magazine, and Washington Post. Clark revealed that a review of 10 current published studies on placentaphagy did not turn up any human or animal data to support the common claims that eating the placenta — either raw, cooked, or encapsulated — offers protection against postpartum depression, reduces post-delivery pain, boosts energy, helps with lactation, promotes skin elasticity, enhances maternal bonding or replenishes iron in the body.

Dick Co, chemistry and managing director at the Solar Fuels Institute at Northwestern, was quoted in a Guardian article about his research using photosynthesis, the process plants use to feed themselves, to convert carbon dioxide into automotive fuel.

Matthias Doepke, economics, was featured in numerous global publications, including Al Jazeera America and New York Times, for his research showing that when the Federal Reserve aims for higher inflation, middle-aged, middle-class households, who tend to have big mortgages, benefit at the expense of wealthy retirees, who have a lot of their savings in bank accounts and bonds.

A Wall Street Journal article referenced Robert Gordon, economics, for his research that discovered that wages and inflation were subject to inertia. His findings suggest that unemployment could drop well below 5.5 percent for years before wages go up significantly.

Crain’s Chicago Business featured Abel Kho, medicine; general internal medicine and geriatrics and director of the Center for Health Information Partnerships, regarding a $15 million project he is leading to help independent clinics improve patients’ heart health and stroke prevention.

A New York Post article featured Nina Kraus, communication sciences and disorders, for her research on beat deafness, a rare brain disorder that prevents people from synchronizing their body movement with sound.

Kate Masur, history and African-American studies, co-wrote a New York Times editorial about how national parks could be used to start a discussion about Reconstruction Era America.

Elizabeth McNally, medicine and director of the Northwestern Center for Genomic Medicine, testified before the House Science Committee, Subcommittee on Research and Technology on June 16. The hearing was titled “The Science and Ethics of Genetically Engineered Human DNA.” McNally shared her insights on issues related to bioethics and possible future medical applications of genetic editing.

Brian Mustanski, medical social sciences, was featured in a Newsweek article about his research that shows unprotected sex was less likely to occur among gay men who met online than with partners who met elsewhere.

Julio Ottino, dean of the McCormick School, was featured in Forbes, where he discussed Northwestern’s nonlinear approach to innovation.

It may be possible to reduce biases regarding race and gender while a person sleeps, according to a new study by Ken Paller, psychology, and colleagues. His research was featured in numerous publications, including New York Times, Los Angeles Times, and Popular Science.

Lauren A. Rivera, management and organizations, wrote a New York Times opinion piece about fitting in at work. Rivera is the author of Pedigree: How Elite Students Get Elite Jobs.

Northwestern President Morton Schapiro and Gary Saul Morson, Slavic languages and literatures, were featured in the Chronicle of Higher Education for their new book The Fabulous Future? America and the World in 2040.

The Chicago Sun-Times featured Alexander Stegh, neurology, about his research to successfully identify a molecule that one day might help fight glioblastoma multiforme, an incurable brain cancer that typically kills in 14 to 16 months.

Backman Awarded Ver Steeg Fellowship

Vadim Backman, biomedical engineering, has been named the 10th recipient of the Dorothy Ann and Clarence L. Ver Steeg Distinguished Research Fellowship Award.

The Ver Steeg Fellowship supports research and scholarship by a tenured professor whose work enhances Northwestern’s global reputation. The fellowship was established and endowed by the late Clarence Ver Steeg and his wife, Dorothy. Clarence was a faculty member in the Department of History from 1950-92 and served as dean of The Graduate School from 1975-86.

Backman’s many contributions have helped advance the world of cancer research. He has discovered new approaches to examining cell nanoarchitecture and molecular events in carcinogenesis.

Learn more.
Proposal and Award Report: Through April 2015

The total amount of award funding that Northwestern received this fiscal year, through April, is $266.2 million, a 12 percent decrease ($37 million) compared with April 2014. The number of awards to date (1,542) is 2 percent higher than last year.

The dollar volume of awards from federal agencies declined 13 percent ($25.8 million). Awards from industrial sponsors are down by 17 percent ($10.7 million).

Foundation funding has decreased 28 percent ($5.6 million), while voluntary health organization funding is up 13 percent ($0.9 million).

The dollar volume of proposals submitted through April is $1.749 billion, an increase of 13 percent compared to last year. The number of proposals submitted (2,341) is up 6 percent.

The dollar volume of proposals submitted to federal agencies is up 15 percent ($198.6 million), while proposals to industrial sponsors is down 8 percent ($5 million). Proposal activity to voluntary health organizations is up 25 percent ($10.9 million).

Click here to access the full report using your University Net ID and password.