

NDWorks

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News for Notre Dame faculty and staff and their families

Mendoza College of Business ranks No. 1 for third consecutive year

BY CAROL ELLIOTT, MENDOZA COLLEGE OF BUSINESS

The Mendoza College of Business ranked No. 1 in the country for the third consecutive year in Bloomberg Businessweek's seventh annual survey of "The Best Undergraduate Business Schools."

"We consider this a tremendous achievement," said **Roger Huang**, Kenneth R. Meyer Professor of Global Investment Management and interim dean of the Mendoza College. "To us, it speaks to the collective effort and spirit of our faculty, staff and students. We also are deeply appreciative of our alumni, the Notre Dame Career Center, the University and friends of the College for their constant, enthusiastic support."

In comments accompanying the ranking, the editors wrote, "Notre Dame once again is firing on all cylinders ... very strong academic numbers."

Mendoza was rated No. 1 in student satisfaction and No. 2 in the recruiter ranking for 2012. The survey also gave the College marks of "A+" in teaching quality, facilities and

services, and job placement.

Bloomberg Businessweek noted that students at Mendoza are quick to laud the school's focus on ethics and its assistance when it comes to job hunting, as well as its strong alumni support.

The Mendoza College of Business currently enrolls 1,888 undergraduate students in six majors: accountancy, finance, marketing, management consulting, management entrepreneurship and IT management. After completing the University's innovative First Year of Studies program, Notre Dame business majors enter the Mendoza College in their sophomore year.

The Mendoza College also offers graduate degree programs—including a Master of Business Administration, Executive Master of Business Administration, Master of Science in Accountancy, and Master of Nonprofit Administration—as well as nondegree executive education and nonprofit professional development programs.



Building 'green' pays



In 2002, PNC became the first major U.S. bank to apply green building standards to all newly constructed or renovated retail branch offices.

Study shows LEED buildings increase revenue

BY SHANNON CHAPLA, PUBLIC RELATIONS

Using LEED-certified (Leadership in Energy and Environmental Design) buildings increases revenue generated by bank branches even when they offer the same products and services, according to a new

study co-authored by management professors **Edward Conlon** and **Ante Glavas**.

In their study of 562 PNC branches (93 LEED, 469 non-LEED), "The Relationship Between Corporate Sustainability and Firm Financial Performance," Conlon and Glavas found that PNC employees who work in LEED-certified branches are more productive and engaged in their work.

Although they're not yet certain if it's because LEED buildings are more attractive to visit or because their employees are more satisfied, and consequently providing better service, Conlon and Glavas find that sustainability equals a big difference to the bottom line at LEED bank branches—\$461,300 per employee after controlling for other variables that influence performance (e.g., consumer net worth, employee

demographics, market demographics, size and age of branch, marketing spend).

The findings support a growing body of research that shows social responsibility and sustainability don't have to be sacrificed for the sake of profitability. In fact, companies increasingly are finding just the opposite: They can achieve revenue or job growth while maintaining a high environmental and social impact.

"It's a significant finding, and it surprised me," says Conlon, associate dean and Sorin Society Professor of Management. "We compared the amount of money deposited at LEED and non-LEED branches, and we found more money has been deposited in the LEED branches. We divided the amount by the branches' total number of employees to come up with a per-employee dollar amount."

Most other studies on the business impact of sustainability have been conducted by companies whose products have ties to environmental concerns or that have become more sustainable as a reaction to stakeholder pressure and regulation, the researchers point out.

Banks have no such ties, so whether considering a checking account, savings account or loan, the bank's sustainable strategy—or lack

thereof—doesn't directly affect the product.

Furthermore, PNC's sustainability strategy was not reactionary, but rather a voluntary and visionary move to enhance its reputation, physical banking and working environment, as well as build pride among employees.

Also, says Conlon, the study uses firm accounting data to determine financial effects, while most others examine changes in market valuation. He says PNC was the ideal subject for their research for several reasons. "PNC has built more than 100 LEED-certified buildings, which is more than any other U.S. company," Conlon says. "So, PNC is perfect for a LEED study because they have a lot of them and the branches all do the same thing—same products, same systems—the only thing that's different is the LEED strategy."

The researchers say the strategy is working, whether it's because the buildings look better or the people inside are more fulfilled.

"We think it's a mix of the two," Glavas says. "People are certainly proud to be working in LEED buildings."

"Suffice it to say, I think PNC is getting a payback on its LEED investment," Conlon says.

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Trozzolo receives 2012 University of Chicago Professional Achievement Award

Anthony M. Trozzolo, the Charles L. Huisling Professor Emeritus of Chemistry, has received a 2012 University of Chicago Professional Achievement Award from the Alumni Board of Governors. Trozzolo earned a master's degree in chemistry in 1957 and a Ph.D. in chemistry in 1960, both from the University of Chicago. He worked at Bell Laboratories before he came to Notre Dame in 1975.

Trozzolo, a pioneer in photochemistry, has delivered more than 300 invited lectures, published more than 90 articles and received 31 U.S. and foreign patents. He was elected a fellow of the American Association for the Advancement of Science and the American Institute of Chemists in 1963, and he organized and chaired the first Gordon Research Conference on Organic Photochemistry in 1964.

Trozzolo received the Gregory and Freda Halpern Award in Photochemistry of the New York Academy of Sciences in 1980, and was elected a fellow of the Inter-American Photochemical Society in 2000. He has been associate editor



Trozzolo

of the Journal of the American Chemical Society, editor of Chemical Reviews, a member of the editorial advisory board of Accounts of Chemical Research and a trustee of the Gordon Research Conferences.

Shahriar Mobashery, Navari Family Professor in Life Sciences, who earned his Ph.D. in chemistry at the University of Chicago in 1985, nominated Trozzolo for the honor, which was established in 1967. Trozzolo will be honored at a ceremony June 2 at the Rockefeller Memorial Chapel on the University of Chicago campus.

Relay for Life honors Prentkowski

BY GENE STOWE, FOR NDWORKS

For years, Notre Dame Food Services has supported Relay for Life's fight against cancer. This year, it's personal.

Dave Prentkowski, director of Food Services since 1990, was diagnosed with pancreatic cancer last fall and is undergoing chemotherapy treatments. He is the 2012 Relay for Life honoree.

"If I can do some good for the cause, when they asked me, I thought, 'No question, I'll do it!'" he says. "What people have got to realize is cancer is not discriminatory. It'll pick out anybody. Somebody like me who's very active and busy with different things—if it can affect me, it can affect them, too."

The interest in cancer research intensifies, Prentkowski says, as a cure could be just around the corner.

"Even if it doesn't help me personally, down the road it will help somebody else," he says. "The whole reason I'm going through all this stuff is so they can hopefully extend my life, and during that time the scientists create something else that can be more beneficial to me. Helping to fund that kind of stuff, I think, is worthwhile. A cause like this, which has really picked up at Notre Dame the last 10 years or so, is really a good cause. There's a lot going on right here in the community, plus what they're doing at the big cancer clinics."

His personal experience has given Prentkowski, who has made trips to specialists in Chicago and Houston in addition to his local doctors, an insight into accelerated research as modern technology helps scientists and clinicians collaborate effectively.

"What I was impressed with the most is how the doctors are willing to work together," he says. "Their whole attitude is more of sharing as opposed to 'I know better than anybody else, I don't need your input.' The sharing of ideas and experiences has been very impressive. It kind of makes you feel like they really care about you, not their own egos. They're not trying to be the savior all by themselves. They're utilizing the research and the work that others are doing."

In addition to his Relay for Life participation, Prentkowski works to help his colleagues at Notre Dame and in the college food service industry around the country become more informed about cancer.

"I've always tried to be the positive person and get them to talk," he says. "You can ask me questions. I try to get people to see it as the way it is—nothing you want to hide. It's OK to talk about it. The more people learn about it, the more people hopefully

PHOTO PROVIDED



Prentkowski

will contribute to cancer research or research on any disease that's out there."

Support from Notre Dame colleagues has been gratifying, he says, including a 45-minute visit with Father Ted Hesburgh in his library office and a Mass for healing at the Basilica where Hesburgh joined a dozen other priests.

"The outpouring of support has been unbelievable here on campus, both from people I don't know and people I do know and certainly from the religious men and women," he says. "It's been unbelievably supportive. I couldn't ask for a better place to be."

2012 Relay For Life



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Submit story ideas, questions and comments to ndworks@nd.edu or contact Carol C. Bradley, 631-0445 or bradley.7@nd.edu.

Eighth annual event honors Food Services' Prentkowski

BY GENE STOWE, FOR NDWORKS

"Fightin' Irish—Fightin' Cancer," the eighth Notre Dame Relay for Life to benefit the American Cancer Society, begins at 6 p.m. Friday, April 27, with the closing ceremony at 8:30 a.m. Saturday, April 28. **Dave Prentkowski**, the director of Notre Dame Food Services who is battling pancreatic cancer, is honorary chair for the event.

"The Relay is unique as it brings together all of campus—faculty, staff and students—all for one cause: to eliminate cancer," says organizer **Jessica Brookshire**, associate director for public affairs.

Notre Dame's Relay has raised some \$676,000

total, including more than \$160,000 last year, when the University was ranked nationally for the first time—fourth among

universities measured by dollars per capita. Much more money flows back to the University from the American Cancer Society: 11 research grants totaling \$3.6 million over the years so far, she says.

Online registration is available at relay.org/ndin. Cost is \$10, including a T-shirt

and commemorative cup, with free soft drinks from Centerplate until 11 p.m. Check-in is at the media entrance of the Stadium with the event on the upper concourse.

The Opening Ceremony, which begins at 6:30 p.m. April 27, includes the Notre Dame Band and Pom Squad; Prentkowski; ESPN analyst **Digger Phelps**; and **Dr. Rudy Navari** and **Dr. Sharon Stack** from the Harper Cancer Research Institute. Lighting of luminaria starts at 9:30 p.m. with a performance by the Celebration Choir and others. Totals will be announced at the closing ceremony at 8:30 a.m. April 28.

Events during the family-friendly Relay include face painting, cookie

CAROL C. BRADLEY



Staff and students at the Harper Cancer Research Institute turned out to support Provost Tom Burish and Relay for Life's "Purple Week." From left: Andy Bullock, managing director; graduate student Yuliya Klymenko; Sharon Stack, science director; graduate student Lana Bruney; Burish; graduate student Rebecca Burkhalter.

decorating, balloon twisters, a bounce house, live and DJ music, piñatas, Zumba, energy pong and chair massages. Food for sale includes CJ's Pub burgers with chips and drink for \$5 from 6-11 p.m. and Hot Box Pizza from 11 p.m.-1 a.m. Notre Dame Food Services will have breakfast burritos, fruit cups and bagels from 6-8 a.m.

Relay teams during the event will sell glow-in-the-dark necklaces, elephant ears and a 2012 cookbook to raise money. A silent auction from 6-11 p.m. includes a dinner for eight prepared by **Chef Don Miller**, football parking passes from Eddy Street Commons, golf passes,

Notre Dame memorabilia, DeBartolo Performing Arts Center tickets and gift baskets.

Before the event, from 9 a.m. to 6:30 p.m. April 27, Team Book 'Em is raising money by selling "arrests" of bosses, professors, co-workers and others at \$25.

The convict gets a commemorative T-shirt and can buy a Get Out of Jail Free Card for \$5 or more. Also, Ben's Pretzels will sell pretzels April 27 at the Stadium and Field House Mall with money benefiting the Relay.

For more information, visit relayforlife.org.



TOWN HALL MEETINGS offer updates on strategic plan, Improve ND

Attitude of faculty and staff makes this a nice place to work, says Affleck-Graves

BY CAROL C. BRADLEY, NDWORKS

At the spring Town Hall meetings in late March, **John Affleck-Graves**, executive vice president, began by acknowledging the contributions of all staff members for the opportunities they make possible for students, and “the way you touch the lives of the young men and women who study here.”

The Town Hall meetings offered an opportunity to inform the campus community of various projects and initiatives coming up this spring and summer. Affleck-Graves also discussed the results of the biennial Improve ND survey of campus services.

The University Strategic Plan

All units of the University have been working for the past 18 months on developing individual strategic plans, Affleck-Graves noted.

President **Rev. John I. Jenkins, C.S.C.**, he said, is in the process of synthesizing the plans of various units to develop a comprehensive University strategic plan. A preliminary version of the plan will be shared with the Board of Trustees in May, and Father Jenkins will present the plan to faculty and staff in Town Hall meetings this fall.

Improve ND survey evaluates services on campus

The University conducts two surveys in alternate years: **ND Voice**, which assesses how employees feel about working at the University, and **Improve ND**, which evaluates how we feel about the services we receive.

In fall 2011, the Improve ND survey was sent to more than 5,300 faculty and staff, with a response rate of 3,357, or 63 percent. “A great response for any type of survey,” Affleck-Graves said.

The most important result, he noted, is that 81 percent feel favorably toward the statement that Notre Dame is a friendly place. Also receiving high-percentage favorable responses: that Notre Dame has high standards of quality (75 percent) and that it’s easy to get help (73 percent).

“If you come to work and people are friendly, it impacts everything you do,” Affleck-Graves said. “Deep thanks to you for your attitude. When you’re friendly, you make life better. When you smile, it makes this a nice place to work.”

Campus Safety: Affleck-Graves emphasized safety as a critical campus function.

“The No. 1 thing we must do is keep students, faculty, staff and visitors safe.” Ninety-three percent of those surveyed felt they work in a safe environment.

Some additional education may be needed to reach the 21 percent of staffers who don’t know where to go in the event of a workplace injury—currently that’s University

Health Services in St. Liam Hall, but in July those with injuries will report to the new Wellness Center on the northeast side of campus.

The survey also revealed that 12 percent don’t know how to contact the Notre Dame Security Police in the event of an emergency. Those in offices should call 911 from their office phones. But all should be aware that when using a cell phone, the fastest way to reach NDSP dispatch is by calling **574-631-5555**.

On cell phones, 911 calls go to South Bend or Mishawaka police rather than Notre Dame, and to make things even more complicated, calls placed through some cell phone providers won’t go through without the area code. It’s recommended that everyone on campus program their cell phones with the correct number to save time in the event of an emergency.

Other strengths and areas of potential improvement

The survey revealed other areas of strength—our beautifully landscaped and maintained grounds, classroom technology, the new VoIP phone technology and the wireless network, as well as the OIT Help Desk, library services, payroll services, St. Michael’s Laundry services, and the staff at the Morris Inn, Sorin’s and bookstore.

Areas for improvement include concerns about the temperature of workspaces, problems with cell phone service, parking availability and performance evaluations.

Concerns regarding performance evaluations fell into three areas: a lack of meaningful feedback for performance improvement; rewarding and recognizing top performers and addressing the issue of poor performers; and the difficulties of using the Endeavor performance management system.

Another area of concern was value for price of some services. “People are very satisfied with the quality of service and the treatment they get,” Affleck-Graves said, “but they think it’s expensive.”

What are the next steps?

Units will discuss their individual reports and will provide action plans by April 13. Plans will be reported to the campus community in NDWorks and on the Today@ND website (today.nd.edu) in late May.

Other updates

Sustainability strategy: A long-term sustainability plan has been developed for the University, Affleck-Graves announced. The plan is flexible, connected to our Catholic mission, comprehensive, achievable and affordable. “I must balance all of those needs,” he said. “We are very pleased with the plan. Strategic goals are to reduce emissions and conserve resources, reducing our carbon output by 50 percent per gross square foot by 2030.”

Ideas for saving energy and conserving resources can be submitted by clicking the “Press for Change” button on green.nd.edu. And with

NEW PLANS FOR THE MORRIS INN



At top, an aerial view of campus in 1953 shows the Morris Inn, Notre Dame Stadium, Cushing Hall of Engineering and (at top left) O'Shaughnessy Hall under construction.

Below, architect's renderings show renovations planned for the Morris Inn in 2012-13.

Top image (looking from north to south): A new 300-seat ballroom and three private dining rooms will be constructed, with a vaulted separate entrance and atrium.

Center image (looking south to north): The old south wing of the building will be demolished, to be replaced with a new wing containing about 90 rooms and the Inn's administrative offices.

Bottom image (from the east): A new portico will replace the canvas awning at the entrance to the hotel. Inside, Leahy's will be relocated to a more prominent spot off the lobby. Sorin's will stay in the same location, although the entrance will be altered. Outside, a courtyard/gathering area will replace the outdoor tent.

some 17,000 people on campus every day, he added, significant savings can be achieved simply by turning off computers at night.

Social Security number remediation: In order to reduce the chance of identity theft, the IT group is scanning computers and shared drives and removing Social Security numbers.

Construction updates: The **Stayer Center for Executive Education** will be finished in early 2013; the new campus **Wellness Center**—which will include a drive-through pharmacy—is scheduled to open in July. The **Morris Inn** will close for renovations in late October, after the fourth home football game. The renovations will

include demolition of one wing and the addition of a new wing of rooms, a 300-seat ballroom and the relocation and expansion of **Leahy's**.

Mathematician develops diagnostic test for breast cancer

Will help patients avoid unnecessary chemotherapy

BY GENE STOWE, FOR NDWORKS

Steven Buechler, chair of the Department of Applied and Computational Mathematics and Statistics, has developed a diagnostic test to help breast cancer patients decide whether to undergo chemotherapy treatment after surgery. Formation of a company to conduct large-scale trials and seek FDA approval could come later this year.

The test, conducted on part of the same tumor sample collected from a patient diagnosed with breast cancer, evaluates the expression levels of certain genes to gauge the likelihood that the cancer would metastasize without chemotherapy treatments. Avoiding unnecessary chemotherapy is desirable because the treatment has dangerous side effects, including



Math professor Steven Buechler, top right, in the laboratory with Courtney Rauch, a Notre Dame student diagnosed with breast cancer at 19. Buechler's research will help women such as Courtney receive individualized, targeted therapy.

heart disease and loss of hearing, as well as high costs and reduced quality of life. Unnecessary breast cancer treatments in the United States costs as much as \$500 million per year.

The mathematician's expertise

is vital because of the complexity of the issue. "When you're looking at these tumors and the molecular characteristics of them, the starting point for the analysis is measurements of the expression of every gene in

the tumor sample," Buechler says. "For each tumor you've got 50,000 measurements. When you look at populations of patients you've got 1,000 patients, 50,000 measurements for each one. It's a massively complex collection of numbers. You overlay that with everything you know about the patients."

Numbers generated by a chemical evaluation of the tissue are put into a software program that Buechler has written to produce a molecular profile and prognostic report. Data collected on breast cancer patients for more than a decade provides a baseline for predicting the chance that the patient will relapse based on the profile. Certain laboratories would be approved to conduct the analysis. "That report is sent back to the oncologist like all other reports," he says. "The oncologist uses that information in discussion with the patient to decide a treatment."

Buechler is working in

collaboration with Dr. Sunil Badve, a pathologist at the Indiana University School of Medicine, with a grant from the Indiana Clinical and Translational Science Institute. Preliminary trials of the clinical version last year proved promising, and another round of tests on 100 samples will be conducted this spring.

"At that point, we'll have a version where we can describe the protocol precisely as to how this will work," Buechler says. "We're very comfortable that the protocol that we've developed is going to work. What we're doing now is working on a version of the test that uses technology that enables it to be offered in a way that minimizes possibilities of error. It's very standardized and could be easily implemented in a pathology lab."

Researchers use novel method to combat malaria drug resistance

Resistance confirmed in Cambodia, Thailand

BY WILLIAM G. GILROY, PUBLIC RELATIONS

Researchers from the University's Eck Institute for Global Health have developed a "gene chip" to contribute to the identification of malaria drug resistance, an effort that will allow for real-time response in modified treatment strategies for this devastating disease.

The discovery is described in a paper appearing in the latest early online edition of the journal *Science*. The team of researchers includes Notre Dame's **Michael Ferdig**, associate professor of biological sciences; doctoral student **Becky Miller**; and **John Tan**, managing director of the Genomics Core Facility, in collaboration with Tim Anderson of Texas Biomedical Research Institute and Francois Nosten, M.D., of the Shoklo Malaria Research Unit in Thailand.

"Malaria has tormented humans forever and continues to thwart comprehensive control efforts," Ferdig said. "Resistance eventually emerges to every drug tried and vaccines are always 'on the horizon' but have not yet materialized."

Artemisinin, a natural product from a plant used in China for centuries, is the latest candidate drug to combat multidrug-resistant malaria. However, this last line of defense against malaria worldwide is increasingly falling victim to the problem of malaria drug resistance. The loss of the drug would be devastating to malaria control efforts.

"For past drugs, most notably chloroquine, discovery of mutations causing resistance and an understanding of how resistance arose and spread has been 'retrospective': too late to do any good, after the drug has already failed," Ferdig said. "We can use our novel method to see resistance as it is emerging, respond in real time and modify strategies to save a drug, such as protecting it with



Biology professor Michael Ferdig is researching a unique way to identify malaria drug resistance.

new formulations and combinations tailored to the specific location of emergence."

The Notre Dame team, working with the project leaders at Texas Biomedical, used the new genomics and bioinformatics approaches to investigate malaria drug-resistance. Tan of Notre Dame's Genomics and Bioinformatics Core Facility, working with Miller and other members of the Ferdig team, was instrumental in developing the gene chip to perform detailed genetic analysis of malaria patient samples. This chip can analyze 7,000 informative "SNPs" (single nucleotide polymorphisms) spaced evenly throughout the parasite genome.

"This gives researchers the ability to 'see' how the genome is changing under drug selection," Tan said. "This is especially valuable in Southeast Asia because it is a hot spot for antimalarial drug resistance."

Resistance has been confirmed in Cambodia and is emerging in Thailand. There has been no concerted use of artemisinin in Laos. These conditions enabled researchers to identify genome regions showing signatures of emerging drug resistance. The Texas group then zeroes in on these regions and more than 700 patients to find candidate

genes that could be the cause of resistance.

"We now have markers for emerging resistance and new hypotheses that we will use to track down the resistance mechanism," Ferdig said. "Together these will indicate new ways to adjust the use of artemisinin (most notably to modify the combinations of partner drugs) and to regulate the pace of resistance."

Notre Dame's Eck Institute for Global Health is a world-renowned collaborative research program focused on infectious diseases that impact the poor around the world.

"Notre Dame's Strategic Research Initiatives, which led to the establishment of the Eck Institute and the Genomics and Bioinformatics Core Facility, has positioned the University to be a world leader in global health," **Bob Bernhard**, Notre Dame's vice president for research, said. "The Ferdig Lab's partnership with the Texas Biomedical Research Institute is an illustration of the contributions our talented faculty and students can make in collaboration with other top research programs in the world toward solving the most difficult global challenges."

Predicting the distribution of mosquito-borne disease



Edwin Michael, at left, visits an insectary for rearing mosquitoes in the Amani Research Centre at the National Institute for Medical Research in Tanzania.

Climate change will have a powerful effect

BY SARAH CRAIG, ECK INSTITUTE FOR GLOBAL HEALTH

Mosquitoes can carry diseases such as lymphatic filariasis, West Nile virus, dengue fever, malaria and yellow fever. Over the course of our coexistence on earth, we have tried to control the spread of disease by controlling the mosquito.

But are disease-carrying mosquitoes a random happenstance, or can disease transmission be predicted? What does climate change mean for the future geographic distribution of mosquitoes—and the diseases they carry?

Edwin Michael, professor of biological sciences and member of the Eck Institute for Global Health, recently published "Predicting the Current and Future Potential Distributions of Lymphatic Filariasis in Africa Using Maximum Entropy Ecology Niche Modeling."

What does a paper on lymphatic filariasis—a disease no longer found in the U.S.—based on research done in Africa have to do with us?

Plenty.

"This paper highlights the current and future burdens of the mosquito-borne disease lymphatic filariasis that could be expected as a result of climate change in the absence of interventions in Africa," says Michael.

Michael's primary focus is on the development and implementation of novel analytical approaches for

providing a deeper understanding of the dynamics of disease transmission.

"Understanding and determining the disease burden and geographic distributions of parasitic infections is of utmost importance in guiding current global initiatives aiming to control these infections, which largely afflict the poorer regions of the world," he says.

Predicting distribution of disease-carrying mosquitoes also has larger implications for economic development of these regions.

"Better predictions will allow better estimations of the health and economic impact of these infections, which will in turn facilitate better resource allocation and health programming decisions."

By studying the distribution of species, the demographics of human populations and changes in climate, and by applying system dynamics (an approach to understanding the behavior of complex systems), we will be able to develop a global plan to fight the mosquito—the only animal that could potentially wipe out mankind.

"What is becoming clear," says Michael, "is the significant impact population growth in Africa will have on the future spread of filariasis. There is a need for both health intervention and achievement of broader development goals if we are to reduce or control this and other parasitic diseases, in Africa and elsewhere."

Research shows invasive species cost Great Lakes millions in damage

New paper assigns dollar figures to effects of shipborne invaders

BY WILLIAM G. GILROY, PUBLIC RELATIONS

Although there has been growing recognition among researchers and policymakers that shipborne invasive species cause a considerable economic toll, this environmental problem often goes unaddressed because of the difficulty in quantifying annual impacts on ecosystem services.

However, a new paper by researchers from Notre Dame, the University of Wyoming and the Technical University of Delft in the Netherlands assigns a dollar figure on the cost to the Great Lakes from invasive species that originate in the ballast water of ocean-going vessels.

David M. Lodge and **John D. Rothlisberger** of Notre Dame, David C. Finnoff of Wyoming and Roger M. Cooke of Delft determined that the median estimate of damage is \$138 million annually but could be more than \$800 million annually.

The researchers used structured expert judgment and economic analysis to determine the figure. They note that the economic analyses employed in their estimate of damage are far more accurate than previous attempts at calculating the damage caused by invasions, yet are probably underestimates for the U.S. side of the Great Lakes basin. Canadian costs were not included.

Using the group's median value of \$138 million, replacing shipping with other modes of transportation might bring net benefits to society in about 30 to 50 years. Using the



Lodge

higher values of damages in the same calculations would suggest that net benefits would occur much sooner.

By converting the impacts into dollar values, the researchers have provided benchmarks that could be used to evaluate the benefits of policy and management choices to reduce the probability of future invasions (for example, stringent requirements for ballast water treatment and inspection on ships).

The researchers' approach to assessing ecosystem-scale effects of invasive species also provides a template for evaluating policy and management alternatives to prevent, or mitigate, many kinds of environmental damage.

The research paper appears in the journal *Ecosystems*.

Solar paint could generate electricity on roof or home siding

BY GENE STOWE, FOR NDWORKS

Prashant Kamat's fundamental research, focused on how semiconductor nanostructures interact with light, has sparked exploration aimed at a potentially game-changing solar paint that could generate electricity on any rooftop or home siding.

Development of the paint, using metal chalcogenide-coated titanium dioxide particles, is in the early stages, but researchers have achieved efficiency of 1 percent to 2 percent. Given the vastly larger area for painting, Kamat says the material should be at least 5 percent to 10 percent as efficient. Researchers also must find ways to collect and transport electrons to counter electrodes in an efficient way.

"Right now it is not a marketable product," he says. "It is only a proof of concept. We are looking for more partners. It will take another two to five years to develop a product out of this concept." The paint would be a transformative technology, Kamat says, eclipsing silicon solar cells in the way thumb drives buried floppy disks and smartphones replaced landlines.

The development is an example of potentially beneficial and commercial applications flowing from his laboratory's leading research on nanostructures and energy conversion, with support from the Department of Energy, the Center for Sustainable Energy at Notre Dame and the Strategic Research Initiative.

"This came as an offshoot of the main project," Kamat says. "The main project is still fundamental understanding of how to make nanostructures useful for next-generation solar cells. That is going very well. We publish very high-impact papers. They have been

very well received by the scientific community. We are the leaders in this area, generating new ideas and showing how we can make better solar cells. Better understanding of how things work in these new light-harvesting assemblies is very important for further development of solar cells."

The laboratory includes about 15 graduate students, undergraduates, postdoctoral associates and visiting international scientists working on projects in four areas—artificial photosynthesis, quantum dot solar cells, carbon nanostructure architectures and solar fuels such as producing hydrogen and reducing carbon dioxide.

"When it comes to energy, we need to consider three aspects—capture, convert and store," Kamat says. "Quantum dots are semiconductor nanocrystals with size-dependent

electronic and optical properties. We try to capitalize on these properties in improving the performance of quantum dot solar cells. We study both fundamental aspects to establish what happens when the light strikes the nanomaterial and how it transfers electrons."

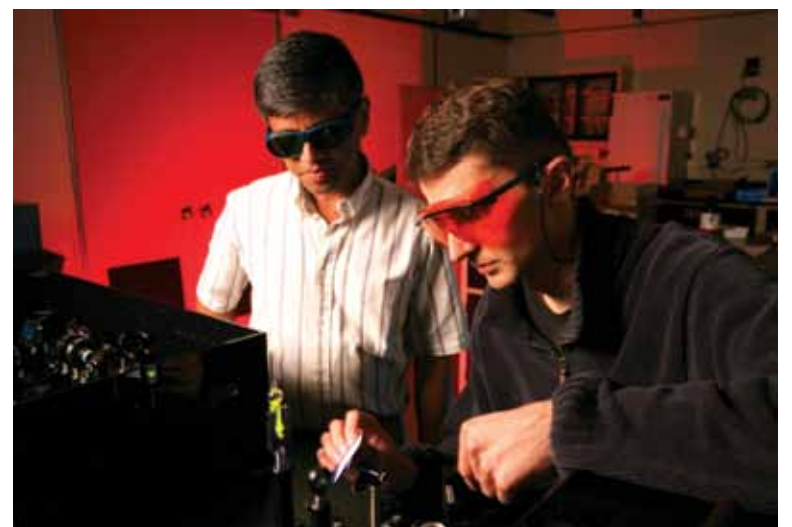
US Nano, started last year in Innovation Park, aims to help move such ideas into products, including writing large grant proposals for development.

The potential sources of energy are limited to earth's heat, water tides, fission fuels and solar energy, both stored (in fossil fuels, for example) and currently coming from the sun—enough in an

hour, if we could capture it, to meet humanity's needs for a year, he says: "It's 'Sun-Believable.' You have to have that can-do approach rather than trying to find an excuse not to do these things."



Kamat



Kamat works with a graduate student in the Radiation Research Lab.

Accentuate the positive—or downplay the negative

Study emphasizes difficulty of regaining reputation once it's lost

BY SHANNON CHAPLA, PUBLIC RELATIONS

When facing a scandal, an organization must first consider what's under attack. Is it the firm's character or the quality of its product?

A new study by Notre Dame management professors **Emily Block** and **Michael Mannor** is the first to explicitly compare and contrast character and quality (capability) reputation, and shows the best approach to impression management is completely different for each.

In sociology and social psychology, impression management is a goal-directed process in which people attempt to influence perceptions about a person or organization by regulating and controlling information in social interaction.

In their study, "The Path Dependence of Organizational Reputation: How Social Judgment Influences Assessments of Capability and Character," published in

the May issue of the *Strategic Management Journal*, Block and Mannor emphasize how difficult organizational reputation is to win back once it's lost, and which impression management approach is best.

"If you're trying to protect your reputation of capability, you want to play up the positive," says Block, who specializes in organizational change and industry self-regulation. "Underscore your history of success."

A good example is Toyota. The automaker has recalled millions of vehicles in the last few years due to problems with accelerator pedals.

"This is a case of the durability of a quality reputation," says Mannor, an expert on powerful CEOs, organizational learning and radical innovation. "No one believed that Toyota was no longer capable of making high-quality cars. They kept the public conversation focused on its long history of quality, which is hard to lose. If the conversation had devolved more into a character discussion it would have been very difficult for Toyota to have recovered as well as it has."

On the flip side, if a person or organization's character has taken a



Mannor

hit, the researchers say the best thing to do is downplay or discredit the negative.

"Popular belief used to be that strong positive displays of reputation were really effective at protecting against a bad reputation," Block says. "Our research shows that, when your character is under the microscope, you don't want to divert attention by pointing out the positive things you're doing. People just don't believe it. Any attempts at self-aggrandizing are viewed through the lens of the negative issue, and it appears manipulative."

The researchers point to Benedict



Block

Arnold as an example of what can happen if you don't discredit a character attack.

"He was a war hero," Mannor says. "And his whole history was revised from being a war hero to this treasonous person who was trying to trick America all along, when there's a good case to be made that he didn't become treasonous until the very end. Now his name is used as a verb."

The research also examines Wal-Mart, which Block says is actually a leader in sustainability efforts. Something you probably don't recall hearing about the company.

"Nobody talks about that," she

says. "People still view Wal-Mart in terms of employment lawsuits. All of the good things they're doing are being viewed through the lens of all the negative press."

Before this study, says Block, there has been no breakdown of the target of scrutiny, in terms of whether it's about capability or character.

"With capability, your record is your record and nobody can revise it," Block says. "It's more durable. With character, all bets are off. A good reputation takes time to build, and one thing can ruin it. All of your prior good deeds can be forgotten when your character is on the line."

In perhaps the clearest link to the research, Internet search giant Google has been criticized over privacy issues, including possible misuse and manipulation of search results.

"It's really important for Google executives to construe the privacy issue as 'not evil,'" Mannor says. "They could choose to say, 'We're Google and we've been great forever,' or they could say the issue is 'not evil.' And that's what they're doing—diffusing the negative."

SERVICE ANNIVERSARIES

The University congratulates those employees who celebrate significant anniversaries in April, including 30-year employee **Douglas J. Leyes**, development.

20 years

Gloria D. Budney, Student Accounts
Kevin K. Knight, security

15 years

Irvin L. Layman, facilities, design, and operation
Kenneth J. Makielski, Food Services
Kimberly C. Umbaugh, Academic and Administrative Services

10 years

Elizabeth A. Karnes, theology
Donald Keen, Cedar Grove Cemetery
Carolyn A. Lax, development
Marguerite Percella, Morris Inn
Benita Ramirez, Food Services
Marie E. Revak, English
Roumena Roumenova, Huddle

NEW EMPLOYEES

The University welcomes the following employees who began work in March:

Angela M. Boys, University Health Services
Teresa Brito-Robinson, chemical and biomolecular engineering
Christina A. Brooks, TRiO Programs
Rebeka Ceravolo, Snite Museum
Christina Chandler, Office of Research
Gregory M. Dalby, men's soccer
Frederick Frye, **Effie Gibson**, **Kris Snook** and **Jolinda Whittier**, Custodial Services
Manuela Garcia, **Erica R. Solomon** and **Ralph White**, St. Michael's Laundry
Laura K. Godlewski, Investment Office
Dennis A. Haraszko and **Jessica L. McKay-Chapman**, Kellogg Institute
Bruce Harrison, Fire Protection
Stephanie J. Healey and **Catherine Kennedy**, College of Science

Rebecca Hessen, University Counseling Center
Monica L. Hessey, Morris Inn
Gina P. Jozwiak and **Thomas Lindberg**, chemistry and biochemistry
Hye-jin Juhn, **Andy Wetherill** and **Michael R. Zeiger**, Hesburgh Libraries
Kathy M. Knoll, College of Arts and Letters
Jane Nagy, Alumni Association
Stacey L. Noem, theology
Kallie A. O'Connell, Center for Research Computing
John Pozivilko, EIS - Core Services
Philip Rollins and **Michael Wentzel**, aerospace and mechanical engineering
Ashley E. Sipocz, Freimann Animal Care Facility
Vincent R. Versagli, Law School

More than sweatshirts

New line of Notre Dame-licensed clothing is aimed at working women

BY COLLEEN O'CONNOR, FOR NDWORKS

At the invitation of **Mike Low**, director of Notre Dame's licensing department, **Vesi**, maker of the Lady Irish Collection of women's clothing at the Hammes Bookstore, facilitated a focus group of female staff last winter to hear suggestions on expanding the selection of women's working attire. Subsequent meetings have been held at the company's headquarters. No timeline has been established; however, discussions are under way for additional product development. The current Lady Irish Collection by Vesi includes tops and woven sweaters.

Women's sweaters and high-end jewelry, including rings and bracelets, are available as part of the "Made in Ireland Collection," a shop within a shop at the bookstore. Opening just before football season last fall, the

shop also features woolen shawls in the trademarked ND tartan plaid, outerwear, hats, men's and youth sweaters, and other gift items and knickknacks, such as sustainable bread boards and worry stones, all of which were made in Ireland. The worry stones are the most popular item in the collection.

A new licensed product is ear bud covers for earphones. The ear buds feature the interlocking ND.

These are available along with cell phone covers in various styles with ND logos and flash drives with the ND logo. Another one of the newer products is the "sportula," a spatula with an interlocking ND on the blade and "Irish" on the handle, great for upcoming summer outdoor grilling.

For any questions concerning the products, please contact the Licensing Department at 631-9327.



The bookstore's "Made in Ireland Collection" features blankets in the trademarked Notre Dame tartan, knitted sweaters and decorative items.

Old2Gold sale changes location, hours

Move due to renovations at Notre Dame Stadium

BY BRITTANY COLLINS, NDWORKS

Major changes are in store for the University's 2012 **Old2Gold** sale, which will take place from 9 a.m. to noon Saturday, June 16.

Because of construction at Notre Dame Stadium, the sale will be held off-campus at the old Target/Steve & Barry's store near the intersection of McKinley Avenue and Hickory Road on the east side of South Bend, across from the Town & Country shopping center. This is the first year since the annual event began in 2004 that it has not been held in the stadium.

Early-bird shoppers will note a change in the hours as well. **Amy Coughlin**, director of administrative services, says organizers sought feedback from volunteers and

shoppers, who agreed that set hours for the sale would make the experience easier.

This year the coordinators decided to forgo early-bird hours. Shoppers will not be let into the store until 9 a.m. However, general admission tickets will go on sale at 7 a.m.

A flat \$5 admission fee will be charged this year to all shoppers. Proceeds from the sale benefit local organizations that volunteer their time and talent to help set up and run the event. Last year, Coughlin says, the sale raised more than \$50,000 to distribute among the organizations. The coordinators are not accepting any new groups this year.

"It's honestly a wonderful partnership the University has with the community," Coughlin says. "The organizations work with us very hard to make sure it goes smoothly,

and it's a great way to keep all the items students leave behind out of a landfill."

Every year, organizers collect items donated by students at the end of the school year to include in the sale. Popular items include bicycles, clothing, electronics and housewares. Coughlin says the coordinators are using the space provided by the former Target building to their advantage by setting up signage, tables and shelving that will make the different areas easier to find than they were in the stadium, which is more compartmentalized.

The sale is open to the public. Only cash is accepted, and buyers must be able to carry and transport all items. For more information, visit old2gold.nd.edu, which will be updated with pictures and descriptions of items that will be available at the event.

New program ties dining FOAPAL to employee ID card

Program allows FOAPAL access through employee ID cards

BY COLLEEN O'CONNOR, FOR NDWORKS

Have you ever taken a business guest to Sorin's, Legends or other campus food service locations and realized at the end of the meal that you have no idea what FOAPAL to charge? You are not alone. Half of the walk-ins at Sorin's do not have a FOAPAL ready to use. Twenty-three percent of the FOAPALS given are incomplete and 10 percent are incorrect.

A team at the **Morris Inn**, with support from the **Office of Continuous Improvement** and **Notre Dame Food Services**, is making University dining much easier for you. A newly developed program will allow you to tie your departmental FOAPAL to your own

employee ID card and use this as a payment method for on-campus dining expenses. Going forward, it will not be necessary to remember or write out your FOAPAL. All you need to do is present your ID card.

Five peer institutions were benchmarked: Purdue, Princeton, Michigan, Stanford and Northwestern. Additionally, a focus group consisting of diners, campus business managers and representatives from the Office of the Controller and the tax department was held to get feedback from all parties affected by the process.

"Must-haves" that came out of the feedback included easy use for diners, who specifically did not want to have to fill out an expense report; electronic availability of transaction details for business managers; and information required by the tax department for compliance, such as the business purpose of the meal. From these criteria came the choice to utilize employee ID

cards. The solution meets all of the requirements.

Anyone interested in obtaining authorization to charge to a FOAPAL account on their Notre Dame employee ID card has only to fill out a form found online at food.nd.edu and return it to the Card Services Office, 1 South Dining Hall, or idcard@nd.edu.

The form must bear the approval signature of the budget administrator or business manager of the campus unit of the requestor. The user has the option of requesting charge access at all University food unit locations or just selected ones of choice, e.g. Sorin's, Greenfields, Decio Commons, Café de Grasta, etc. For "Sorin's to You" orders placed by telephone, continue to provide your FOAPAL over the phone at the time you place your order.

Here is how the ID card charge program works. Following a meal or purchase, the diner informs the server he/she is using a FOAPAL by ID card



Greenfields

and presents the ID card. Since other "tenders" may also be registered to an individual's card, such as Domer Dollars, it is wise to clearly state that the payment is by FOAPAL.

Once a charge has been processed, the user will receive an email the next business day, which will include a copy of the receipt. It is the user's responsibility to approve the charge and complete the requested

compliance information within three business days.

At the same time, the authorized business manager or budget administrator may access department charge history at fsntserv.foodserv.nd.edu/interdeptweb. For questions or comments, please contact Card Services at idcard@nd.edu or 631-7814.

MAKING A DIFFERENCE

Robinson Center team takes part in the Bald & The Beautiful

Event benefits Memorial's Pediatric Oncology Unit

BY GENE STOWE, FOR NDWORKS

The Take Ten Team at Robinson Community Learning Center is participating in this year's The Bald & The Beautiful cancer-fighting event April 18-20 at the LaFortune Student Center.

The team, led by **Ellen Kyes**, director of the skills-based violence

prevention program, is focusing on the benefit for Memorial Hospital's Pediatric Oncology Unit in honor of 6-year-old Phoenix Bridegroom, who is undergoing chemotherapy treatment for leukemia.

"We can't cure the cancer from which Phoenix suffers, but we can show her and her family our love and support and do our part to alleviate her family's financial burden," the team wrote in a letter promoting the event. "So orange hair and shaved heads will help local kids with cancer!"

The Bald & The Beautiful, started four years ago by the Class of 2012, has raised more than \$115,000 for the St. Baldrick's Foundation, Memorial Hospital and Pantene Beautiful Lengths to fight cancer. It started as a head-shaving initiative for solidarity with cancer patients and has expanded into hair donations and

colored hair extensions.

"Throughout the years we have had some staff involvement," said senior **Catherine Soler**, including dining hall workers, priests and a rector. "One professor shaved his head during class. We'd love to get more of that side of campus involved in our event."

The three-day experience, sponsored by the Class of 2012, Class of 2013, and Pangborn, Duncan and Badin halls, includes



Ellen Kyes, fourth from left, and the Take Ten team will participate in The Bald & The Beautiful.

one room dedicated to head-shaving and another to haircuts and hair extensions. Children from Memorial Hospital and football student-athletes, among others, attend.

The event closes with a dinner in honor of Sam Marx, a member of the Class of 2012 and Duncan Hall resident who died of cancer. His father will attend, and organizers hope to have at least 80 shaved heads. For more information, visit bald.nd.edu.

CommUniversity brings campus and community together

BY GENE STOWE, FOR NDWORKS

More than 800 campus and community people participated in the fourth CommUniversity Day on March 31, organized by Student Government in collaboration with other colleges, South Bend officials, the Robinson Community Learning Center and other Notre Dame groups.

Projects included painting at El Campito Day Care, door-to-door collections in the Robinson Center neighborhood for the Food Bank of Northern Indiana, and projects at the Near Northeast Neighborhood, the Martin Luther King Center, the Center for the Homeless, Unity Gardens and local parks.

At the Robinson Community Learning Center in the morning, volunteers painted rain barrels and loaded soil into raised garden boxes next to the building—"kids and grown-ups and Notre Dame students," said **Jennifer Knapp Beudert**, who became manager of the center on CommUniversity Day 2010. "That's the great thing about the day—you get all the generations together."

"We're going to plant a garden with the kids," she said. "Hopefully we'll have some vegetables throughout the summer, which will be a different experience for these urban kids."

As the once-gray day brightened and warmed, roommates **Jack**

Yusko and **Thomas Meyer** of Dillon Hall and **Brendan Dolan**, a student senator from Carroll Hall, lit charcoal in long grills for the coming community picnic.

"I think the CommUniversity Day is a good idea—linking the school that can sometimes feel isolated," Dolan said.

"I live in the neighborhood too, so I see both sides," said **Annie Cahill Kelly**, director of community partnership and service learning

at Notre Dame, an informal group that started this year to foster collaboration among arts organizations on campus, aims to reach into the community, said student **Hal Melia**.

The Bald & The Beautiful, a four-year-old event that started as a head-shaving initiative for solidarity with cancer patients and has expanded into hair donations and colored hair extensions, has raised \$115,000 for Memorial Hospital, said senior **Catherine Soler**.

The Irish Experience, a new initiative organized by **Kevin Dugan**, manager of youth and community programs in the Department of Athletics, brought young people from the Martin Luther King Center to Irish Green activities and the picnic.

In addition, bus tours offered residents

an inside look at the campus, a new experience even for near neighbors, then brought them back to the picnic.

"I had never gone to all the buildings we went to see today," said **Katherine Hughley**, who has lived more than 20 years on Howard Street without such a thorough campus tour. "It was very exciting."

"I'm really pleased with how the day all went," said senior **Erika Hansen**, chair of community relations for Student Government. "This is perfect picnic weather. I couldn't be happier."

at the Center for Social Concerns, who waited in line later for grilled hamburgers with her 6-year-old daughter, Grace, in the sun-splashed Robinson parking lot.

The picnic, dotted with blue CommUniversity Day T-shirts bearing the slogan "Deepening our Roots," included a performance by the Halftime a cappella group and display tables with representatives of organizations that seek to serve the community, including Neighborhood Watch.

Among them were: **The Arts**



Painting a rain barrel for Unity Gardens in South Bend.

Collaborating to support research into Down syndrome

Breakthroughs in treatment on the horizon

BY GENE STOWE, FOR NDWORKS

Dozens of people from across the campus are collaborating to support groundbreaking research on Down syndrome. **Michael Mannor**, an assistant professor of management in the Mendoza College of Business whose daughter Sophia has Down syndrome, is leading the initiative.

Mannor said a group of people on campus who have friends or family members with Down syndrome launched the project, which has grown to more than 75 faculty, staff, administrators, students and alumni. The group will hold a fundraiser on Friday, May 11, at O'Brien's Pub in the Compton Ice Arena.

"Over the last few years I've become very involved in the community, and have been blown away to find out that in the last five years, massive breakthroughs have been happening in the science of Down syndrome," Mannor said.

"Essentially, up until 10 years ago, there was never any research on the cognitive effects of Down syndrome because scientists thought that it was an intractably complex problem—too many gene mutations to solve."

Mapping of the human genome, new understanding of brain neuroplasticity and development of a mouse model for Down syndrome testing have led to research on new treatments at leading institutions since a wave of discovery in 2007. "The possibility of dramatically improving learning, memory and situational awareness for people with Down syndrome is now being viewed



Michael Mannor and daughter Sophia.

as a real and near-term possibility," Mannor said.

Because research held little promise in the past, fundraising to support it has not been developed until recently, he said. More than 20 of Mannor's MBA students who did a class project this semester on a related issue are helping with the event, and the MBA military vets club has adopted the

project. Supporters have come from across the campus.

The May 11 Night of Art and Blues, to support Research Down Syndrome, will include a silent auction of original high-quality art, among other things, created by people with Down syndrome. For more information, visit researchds.wufoo.com/forms/s7x3a7.

5TH ANNUAL FATHER TED RUN GIVES YOUTH A RUNNING START AT EDUCATION

Father Ted's 10K, the fifth annual run benefiting TRiO Upward Bound, starts at 10 a.m. Sunday, April 29, at the Jordan Hall of Science. The event include 5K and 10K competitive races and a family walk.

For the first time, the race will be chip-timed, with digital tags embedded in the race bibs. Participants will see their names in lights when they cross the finish line.

Registration fees for faculty and staff are \$5 per person for walkers,

\$25 per person for runners (\$35 after April 20). Discounts are available for families and teams. Visit nd.edu/~upbound for more information or to register.

EASTER BASKETS FOR HOMELESS CHILDREN

The **Ladies of Notre Dame and Saint Mary's**, with assistance from ND faculty and staff, assembled and delivered 48 Easter baskets to children at the Center for the Homeless. The project was spearheaded by **Heidi Lamm**, physics department coordinator.



“Nothing is so beautiful as spring...”

—Gerard Manley Hopkins

Images of spring on campus by University photographers
Matt Cashore and Barbara Johnston.

