Information and communication technologies such as the Internet, e-mail, and mobile phones are not just the domain of the young. According to Sara Czaja, a UM professor with joint appointments in the Miller School of Medicine’s Department of Psychiatry and Behavioral Sciences and the College of Engineering, “Seniors are anxious to participate in the technology explosion, but they’re looking for specific tools that are not too complicated in design.” Czaja is director and principal investigator of the Center on Research and Education for Aging and Technology Enhancement (CREATE), an NIH-funded multi-site center coordinated at the University of Miami. CREATE seeks to improve the interface between elders and information technology so that they can increase their access to services, maintain close touch with family and friends, and stay independent longer. As principal investigator of CREATE, Czaja recently received renewed funding of $9 million over five years from the National Institute on Aging.

“Our research focuses on tasks and technologies that people use on a daily basis, such as health care websites, telehealth technologies, or the Internet for activities like banking, shopping, or finding information about community resources,” Czaja explains. She and other UM researchers are then developing interventions and educational programs that can help seniors use these technologies. Clearly, there’s a need for such efforts. A study by Czaja and colleague Joseph Sharit, a professor of industrial engineering, found that elderly people who used Medicare’s website found it “confusing and overly complex.” She hopes to convince Medicare to make the site easier for older individuals to use. As the study concluded, “To ensure that electronic health tools reach their full potential, broad and inclusive input from consumers should serve as the basis for design.”

The use of powerful supercomputers to protect both human health and the natural environment, ingenious strategies to treat diabetes, new ways to help the elderly cope with an increasingly high-tech society: UM investigators are partnering across disciplines to address some of the world’s toughest challenges. Information and communication technologies such as the Internet, e-mail, and mobile phones are not part of the domain of the young. According to Sara Czaja, a UM professor with joint appointments in the Miller School of Medicine’s Department of Psychiatry and Behavioral Sciences and the College of Engineering, “Seniors are anxious to participate in the technology explosion, but they’re looking for specific tools that are not too complicated in design.” Czaja is director and principal investigator of the Center on Research and Education for Aging and Technology Enhancement (CREATE), an NIH-funded multi-site center coordinated at the University of Miami. CREATE seeks to improve the interface between elders and information technology so that they can increase their access to services, maintain close touch with family and friends, and stay independent longer. As principal investigator of CREATE, Czaja recently received renewed funding of $9 million over five years from the National Institute on Aging.

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improving outcomes for diabetic patients who receive islet cell transplants to achieve insulin indepen-
dence is the goal of biomedical engineer Cherie Stabler’s research. The cells, which are harvested from the pancreas of a donor and trans-
planted into a patient with diabetes, come under attack in the patient’s im-
mune system, necessitating the need to give patients powerful immunsuppres-
sant drugs that leave them open to infections.

Stabler’s strategy for overcoming this is to coat the harvested islet cells with biomaterials, cam-
ouflage them from the patient’s im-
mune system. Now she is applying her methods with a new strategy: creating functional scaffolds that will house islet cells in three-dimensional space, ensuring that they get the nutrients they need to survive.

“I’d like to see that islet cells are like super-athletes,” says Stabler, an assistant professor of biomedical engi-
neering and director of the tissue engineering program at the Miller School of Medicine. “They have a high nutrient demand.” When transplanted just under the skin, the cells tend to cluster, competing with each other for nour-
sishment. “The islets on the outside come up first, and those on the inside begin to die.” Stabler explains. So the scaffold and her team are developing artificial scaffolds that house the islets better and act like kitchen sponges, absorbing the right amount of fluids, or nutrients, while maintaining their stability.

Stabler also plans to scaffold scaffolding strategy even further, working with researcher Norma Sue Kenyon, the Martin Kleiman Professor of Sur-
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Stabler notes that, through her collaboration with Kenyon, she and her team have been able to get diabetic animals off insulin using this technique. “Our ultimate goal is to move the technology to clinical trials.”

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Last fall, Telukuntla was a finalist for a prestigious Rhodes Scholarship. “It was an honor to be part of such an accomplished group of students,” he says. “It forced me to think more about what I want to accomplish.”

As an undergraduate, Telukuntla delved into political science courses and served as chief justice of the Student Government Association and president of the Honor Council. A member of the President’s Steel, Iron Arrow, and Phi Beta Kappa, he completed the Medical Scholars program with honors.

Now studying at the Miller School of Medicine, Telukuntla plans to focus on health policy issues. “I see political science as an avenue to apply medical science on a larger scale,” he says. “The best way to tackle a problem is to inspire more people to join you.”

C A M O U F L A G I N G  A  C U R E

The NIH-funded bioanalytical ontol-
yogy project of Miller School’s Cooperative Institute for Marine and Atmospheric Studies’ director, Stephen Schuerer is moving forward with computational support from CCS. The project seeks to describe the hundreds of different assays used to study how perturbing agents such as drugs alter cell function, enabling scientists to more effectively identify and prioritize chemicals for further development into chemical probes.

Stabler’s strategy for overcoming this is to coat the harvested islet cells with biomaterials, camouflage them from the patient’s immune system. Now she is applying her methods with a new strategy: creating functional scaffolds that will house islet cells in three-dimensional space, ensuring that they get the nutrients they need to survive. “I’d like to see that islet cells are like super-athletes,” says Stabler, an assistant professor of biomedical engineering and director of the tissue engineering program at the Miller School of Medicine. “They have a high nutrient demand.” When transplanted just under the skin, the cells tend to cluster, competing with each other for nourishment. “The islets on the outside come up first, and those on the inside begin to die.” Stabler explains. So the scaffold and her team are developing artificial scaffolds that house the islets better and act like kitchen sponges, absorbing the right amount of fluids, or nutrients, while maintaining their stability.

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This scanning electron microgram shows the beginning of a synapse in a fruit fly. A human brain is believed to have more than a trillion synapses, dynamically created and eliminated throughout life.

CONTROLLING GLOBAL WARMING

Trapping harmful gases in a bottle, then putting it away so they won’t poison the air, might sound like a simplistic approach to fighting pollution. But that’s exactly the premise behind carbon sequestration—a means of capturing carbon dioxide from sources such as fossil fuel power plants, converting it to a liquid, and storing it underground. The gas is thus, in theory, kept out of the atmosphere so that it won’t contribute to global warming. “We’re not really sure exactly what happens to carbon dioxide when it gets pumped in the ground,” says Peter Swart, professor and chair of atmospheric Science. The U.S. govern- ment has given Swart and his colleagues $2 million—including $300,000 in stimulus funding—to find out.

Swart is training a group of doctoral students to determine whether carbon dioxide is leaking from the ground or staying put at Department of Energy sites around the country. His project teammates include fellow Rosenstiel School scientist Tim Dixon, Falk Amelung, Metropolitan Atmospheric Science. The U.S. govern- ments’ Rosenstiel School professor Peter Swart and graduate student Ben Galfond, B.S. ’09, test a device used for monitoring carbon dioxide levels above underground storage sites. funding grants via the American Recovery and Reinvestment Act (ARRA), University of Miami research projects. Like the examples profiled here, Garnering nearly $93 million in federal “stimulus” funds, many seek solutions to some of the world’s most urgent medical and environmental issues.

PROPELLING PROTEOMICS

With a $2.6 million NIH stimulus grant, Akira Chiba hopes to begin doing for proteomics—the study of protein-protein interactions and the human genome did for genomics. Chiba, a professor in the Department of Biology, and his colleagues have designed a powerful new tool to help make it possible: a photon-based fluorescence microscope designed specifically to visualize the interactions of living proteins.

The highly specialized new equipment is poised to some such interactions and the cells of living animals much faster and in far greater detail than ever before. The advance opens the door to the new science of “isPIN” (in situ protein-protein interaction networks). Chiba and his team have shown that the approach works; the two-year NIH award will support work to demonstrate the technique’s expandability.

Chiba’s lab is currently cre- ating the first map of protein-protein interaction networks in the brains of fruit flies. A human brain is believed to have more than a trillion synapses, dynamically created and eliminated throughout life.

ENHANCING AIDS PREVENTION

After someone tests positive for HIV, counseling is typically offered as both a first step to initiate medical care and as a strategy to reduce the patient’s risky behavior. But counseling can help those who test negative for the virus remain at risk. Lisa Metsch, a Miller School of Medicine professor of epidemiology and public health who studies HIV prevention, has embarked on a two-year NIH-funded study to find the answer. Her $12.2 million grant, shared with the San Francisco Department of Health, is examining the effectiveness of HIV prevention counseling at nine clinics around the country. “We need to recognize that most people will not have accurate test results,” says Metsch. “For the people who get a negative test result, is there value in also doing counseling? That’s why this study is needed.”

The Rosenstiel School’s Center for Computational Science is set to provide memory space and assist in data analysis. The NIH project, says Chiba, is “to cast new light on the dynamics of the molecules of life.”

Peter Swart, professor and chair of atmospheric Science. The U.S. govern- ments’ Rosenstiel School professor Peter Swart and graduate student Ben Galfond, B.S. ’09, test a device used for monitoring carbon dioxide levels above underground storage sites.
hurricanes are the costliest natural disasters that strike the United States—and as more and more Americans gravitate toward the coasts, their negative impacts will only rise. A $15 million ARRA grant from the National Institute of Standards and Technology (NIST) of the U.S. Department of Commerce supports construction of the Rosenstiel School’s 8,520-square-foot, state-of-the-art Surge-Structure-Atmosphere (SUSTAIN) laboratory. Slated to be completed in 2012, SUSTAIN will offer the capability to model entire segments of coastal systems, letting researchers study changes in the way buildings are designed and constructed.

SUSTAIN will operate in a 3-D test environment. The wind-wave-storm surge stimulator, a component of the Rosenstiel School’s new SUSTAIN facility, generates hurricane-force winds in a 3-D test environment, says SUSTAIN principal investigator Brian Haus, associate professor of applied marine physics and director of UM’s Air-Sea Interaction Saltwater Laboratory. This building will help us better understand and protect our coastal communities and ecosystems.”

The only facility in the world with a wind-wave-storm surge simulator that can generate hurricane-like winds in a 3-D test environment, SUSTAIN will allow the capability to model entire segments of coastal systems. Researchers can study changes in the way buildings are designed and constructed. Slated to be completed in 2012, SUSTAIN is part of an integrated environmental research laboratory that will house a state-of-the-art Marine Life Science Center. The center, which will focus on coral reef research, will also be home to fisheries and biologic oceanography research, as well as collaborative studies probing the complex connections between the oceans and human health.

The Rosenstiel School’s Brian Haus, principal investigator at the Windable Laboratory, advises that “developing a more complete understanding of our environment and its weather, as well as how it affects the structures, ecosystems, and human hands, is essential.”

**MEDICINE AND LIFE**

**MENDING BODY TISSUES**

University of Miami biomedical engineer Yeong Gw is working long hours to get his lab to build an instrument that could help pave the way for advanced techniques in the engineering of human tissue.

The biomarker on which Gw and colleague Charles Huang, an assistant professor of biomedical engineering, are working could make it possible to monitor the electrical, chemical, and mechanical characteristics of engineered tissue and predict its growth and other traits without having to remove it from the device—something that can’t be done with current biosensors.

The two College of Engineering researchers, their work funded by an ARRA grant of $735,000 from the National Institute of Biomedical Imaging and Bioengineering, hope to have a prototype of the instrument ready and tested within two years. “Imagine using engineered tissue to replace damaged or damaged organs,” Gw says. “That’s the potential of this work.”

**IMAGING THE NERVOUS SYSTEM**

One of the challenges to understanding human emotions, cognition, and neurological disorders is linking changes in brain cell function to changes in subjective experiences and observable behaviors. This ability to track neuron cell activity and make real-time connections to human behavior is revolutionizing the way scientists and physicians study the brain. Sustained neuroscience and health, which received $8.8 million from ARRA, is designed to build on these advances. Within this state-of-the-art, 25,000-square-foot addition to the Cox Science Center, scientists from the College of Arts and Sciences and Miller School of Medicine will conduct interdisciplinary studies based on neurological imaging and health research, accelerating the pace of discovery in neurological processes and related diseases.

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**A FINE-TUNED PLAN**

“Music has always been part of my life,” says brass player Katie Kilburn, who has performed in school bands since sixth grade. “I wasn’t ready to be done with it.” As a UM freshman last year, she was accepted as a tuba player in the Front School of Miami’s Symphonic Winds, and a hornist through the UM Band. While making music floats her boat, the New York-born Texas transplant also has known since age 9 that she’s destined to be a marine scientist—which is why she’s juggling majors in biology, marine science, and music.

One of 10 students nationwide awarded a prestigious Hugler scholarship by UM in 2009, Kilburn is in her second year as lab assistant to Carl Hart, a research assistant professor in the College of Arts and Sciences who is conducting genetic studies of common shrimp. Extracting and sequencing the DNA of the marine invertebrates is, Kilburn admits, “tedious.” But helps answer questions about how ecological changes affect biodiversity. Not only will she receive credit for an ongoing scientific publication of hers, Kilburn says her mentor has encouraged her to start her own research project.

Active in the law department, student clubs, and the marine studies honor society Phi Rho Rho, Kilburn also works as a dorm security assistant to raise funds for study abroad on Australia’s Great Barrier Reef. UM, she says, is a great location “for hands-on work in marine science” and “to make friends from around the country and the world.”

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Pursuing Cancer’s Secrets

Cancer remains a highly complex, elusive disease that demands the most novel diagnostic and treatment approaches. The Sylvester Comprehensive Cancer Center’s Sheila and David Fuente Graduate Program in Cancer Biology teaches the next generation of cancer researchers to integrate the most advanced concepts and techniques in molecular and cell biology, biochemistry, genetics, genomics, proteomics, animal models, and biostatistics in the quest for more accurate diagnostic strategies and improved therapies.

This innovative doctoral training program enables students to balance the desires of the market, residents, government leaders, community stakeholders, and financial interests, while designing a development plan. Students in the MRED+U program bring diverse academic backgrounds and work experience, enriching the interdisciplinary learning environment. The program has drawn applications from throughout the United States, including Hawaii, South America, and the Caribbean; as well as India, Saudi Arabia, South Korea, and China. Each applicant’s interest is natural, says MRED+U program director Charles Bohl, considering the dramatic social, economic, and demographic trends that are shifting the industry toward a new paradigm combining livable community design and sustainable urban development.

The MRED+U program is directed by Kerry Burnstein, a professor of molecular and cellular pharmacology, leads the MRED+U program at the Miller School of Medicine, and oversees a curriculum that integrates students into comprehensive cancer research programs of the Sylvester Comprehensive Cancer Center while reinforcing the interrelationships of basic biological discoveries and clinical applications.

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The Program’s Two-Tiered Mentoring System Provides Graduate Students with Unique and Valuable Training, says Burnstein. “This dual mentoring has the added benefit of increasing interactions among faculty scientists and clinicians, which is a strong impetus for University-wide translational research efforts.”
UNIVERSITY OF MIAMI
40 years to explore a unique decade of FIU’s Cuban Research Institute, Center for Latin American Studies

Entertaining Ambitions
Staying ahead in today’s music business requires finding creative ways to ride the digital wave that transformed the age of online downloading. The Frost School of Music’s Music Business and Entertainment Industries (MBEI) program, led by associate professor Rey Sanchez, M.M. ’04, M.B. ’11, is one of the few programs designed specifically to prepare students for the publishing, promotion, and administration of intellectual property in this rapidly changing industry.

This year the MBI program teamed with the law school’s School of Law to design the first joint-judicial program in law and music business, a unique opportunity for aspiring entertainment attorneys. The J.D./M.M. program in music business and entertainment law was welcomed into first students in fall 2010, offering them the ability to complete both degrees in three years, including two summers of coursework. Graduates are prepared to offer legal services in arts and entertainment, as well as in general fields such as contractual, business, and intellectual property, tax, and torts. Students will be well prepared to enter the rapidly changing field.

Serona Elton, M.M. ’95, who as a longtime director Steven Stein.

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Within a day of the devastating January 12 earthquake in Haiti, Miller School of Medicine teams began arriving in Port-au-Prince to save the lives of critically injured survivors. In the months since, UM faculty, staff, students, and alumni have continued to provide a diverse array of urgently needed services to help Haiti recover and rebuild.

**Medical Miracles**

The first wave of doctors landed at Port-au-Prince’s ruined airport the day after the earthquake withparagraphs full of sutures, antibiotics, and wound dressing—whatever they could grab before their flight took off. They prepared to treat the chaos and heartbreak they encountered.

The Miller School’s Barth Green, a leader of efforts to improve health care in Haiti for more than 16 years, was in Haiti the day after the January 12 earthquake, spearheading the Miller School’s Department of Neurological Surgery, had been helping to bring health care to the people of Haiti since 1994. He and his colleagues, including several members of the Miller School’s Department of Community Health and Development, were quickly at the forefront of the global medical response to the ravaged country, treating thousands of severely wounded survivors.

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**Legal Lifeline**

Just ten days after the devastating earthquake in Haiti, UM law students were helping Haitians living in South Florida file for Temporary Protected Status (TPS), which allows them to live and work legally in the U.S. In March, 52 law students from eight universities across the nation, including Yale and Stanford, came to Miami for alternative spring breaks to pitch in.

“TPS does help Haiti. Lawyers can help Haiti. We can be first responders in a way,” says Nneka Utti, 23, who participated in the TPS effort.

The UM Global Institute’s Newman, who directs the Health Law and Elder Law Clinic, knew that many in Miami’s large Haitian community would need help completing the complicated TPS application and sending money back to Haiti, “I see this as an opportunity to make sure people don’t become marginalized,” says Newman. TPS does help Haiti.

**Compassion and Commitment**

A Miami-based command center transformed Haiti’s Port-au-Prince’s ruined airport into a well-equipped, 240-bed University of Miami Hospital de Haití in just over a week. University of Miami for alternative spring breaks including Yale and Stanford, came to Miami for alternative spring breaks to pitch in.

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Dean Elizabeth Plater-Zyberk explained School of Architecture urgency in what’s being done here, "faculty and students on a recovery tals, and schools, partnering with UM Reconstruction, attendees sketched Haiti’s Commission on Planning and UM hosted in March at the request of data about seismic measurements provides scientists with satellite Earth Observations) Supersite that is Dixon’s colleague Falk Amelung, participating in efforts to find feasible sites away from the danger zone. Partici-critical parts of its infrastructure the Haitian government to rebuild. At Atmospheric Science, has urged the Rosenstiel School of Marine and marine geology and geophysics at another quake. is another quake. the island’s surface that could trigger of seismologic stress beneath the Haiti’s not-too-distant future. Using for another destructive tremblor in Transcending Turmoil

Haitian-born anthropolo-professor Louis Herme was in Haiti with students such as Kristina Rosales has been a strong proponent of sustainable development. Rosales lived in Eastern Europe, and that allow it to flourish in the midst of the storms.”

The School of Communication lecturer worked with international media orga-nist for another destructive tremblor in Haiti with students such as Kristina Rosales (see profile on facing page) when the earthquake hit. In March 2010, Louis Herns Marcelin was in Haiti and in Miami’s Haitian com-munity and in Haiti. "The cultural traditions of her native Haitian community and in Haiti. For her native country, she has written, are “the roots that continue to sustain Haiti and that allow it to flourish in the midst of the storms.”

In President’s Report University of Miami 2010

Looking Toward the Future

A team of University of Miami geolo-gists says there’s a high probability for another destructive tremblor in Haiti from a series of earthquake swarms using optical data and satellite imagery, the geologists discovered a buildup of seismic stress beneath the island’s surface that could trigger another quake. Ten years, breast, professor of marine geology and geophysics at the Rosenstiel School of Marine and Atmospheric Science, has urged the Haitian government to rebuild the island’s infrastructure. To the desirability to open portals of communication, which creates daily 10- to 15-min- Just days before a group of nation-led as an assistant editor at the World Review, one of the editors of Thelma’s Descent, a monthly magazine on the group’s Port-au-Prince team, was the only Creole-speaking editor on the group’s Port-au-Prince team. At the request of the University to work and that allow it to flourish in the midst of the storms.”

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Opening facilities for the Center for the Humanities included a lecture on Shakespeare’s relevance to modern culture by renowned Harvard University professor and author Marjorie Garber.

Shakespeare’s relevance to modern culture by renowned Harvard University professor and author Marjorie Garber.

Scholar and author Marjorie Garber delved into the enduring power of Shakespeare’s works in and about the Atlantic world through the mid-19th century, drawing parallels to the contemporary world. She reflected that the center’s inaugural events—from the general public to students from colleges throughout Florida—demonstrates the ability of the center to foster constructive dialogue on important topics among people who might not otherwise interact.

The center’s robust online presence sets it apart from the 200-plus centers of its kind around the world. Its website (www.humanities.miami.edu) provides discussion by faculty who would otherwise interact.

Can an elusive idea be conveyed with nightmares, then visually represented? As science are to each other.”

“We learned how important art and science are to each other.”

ArtScience, the course is designed to encourage interdisciplinary endeavors with the hope that they see where their topics on the formation of gender and sexual identity. Symposium like these, says center director and professor of English Mihoko Suzuki, demonstrate how scholarship in humanities disciplines provides “the necessary contexts for us to arrive at a more informed understanding of issues we face in the contemporary world.”

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In the 21st century, libraries are much more than repositories of books. The University of Miami libraries are at the cutting edge of what a contemporary academic library can be. With early education, literacy, computer training, and any research, information literacy and digital technology courses, rare objects that tell the history of South Florida and surrounding regions, and an on-site Starbucks, the Otto G. Richter Library, the flagship of the University libraries system, is a social, cultural, and intellectual hub for the entire university community.

In recent years, Dean and University Librarian William D. Walker has spearheaded dramatic growth at the University Libraries, helping it to rank among the nation’s top 50 academic research libraries. The Libraries’ 44,000 digital resources include on-site Starbucks, the Otto G. Richter Library, the flagship of the University Libraries system, is a social, cultural, and intellectual hub for the entire university community.

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