2009

Research & Innovation for 2008-2009

University of Rhode Island

RESEARCH & INNOVATION

2008-2009

THE
UNIVERSITY
OF RHODE ISLAND

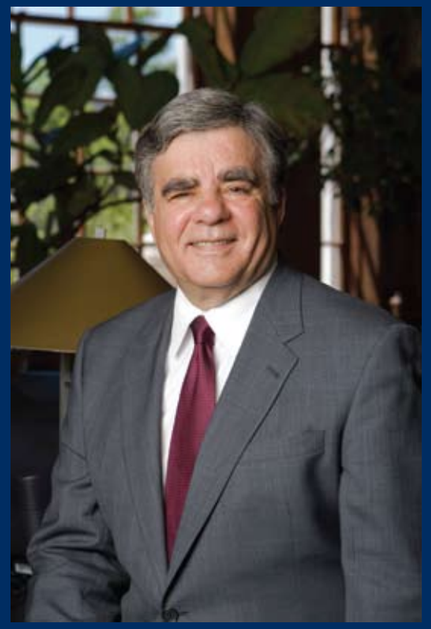
inside this issue:

State drawing on URI's expertise in considering offshore wind farm

From food to fuel new project has undergraduates turning dining hall grease into biodiesel

Wherever energy solutions are, that's where URI wants to be

Enhancing Economic Development in Rhode Island



PETER ALFONSO, Ph. D.
Vice President for Research and Economic Development

A well known mission of the University of Rhode Island's research enterprise is to engage in a wide range of sciences to seek resolutions to a host of critical issues that not only affect our state but also our region, nation, and the world. Indeed, researchers at URI continue to have a major impact on these critical issues. Another perhaps less well known mission is to commercialize the significant portion of the URI research enterprise that generates products, technologies and processes that have meaningful economic impact. In this 2008-09 edition of "Research and Innovation" we highlight a few of the ongoing research projects at URI that have a direct economic impact particularly to the State of Rhode Island but also to our region, nation, and the world.

For example, in this issue we highlight URI researchers who are playing critical roles in helping our state and nation become more energy independent, who are making major impacts on local and global health issues, and who are helping to create a more competitive workforce. At our Narragansett Bay campus, the Graduate School of Oceanography has a large team of researchers who are developing a planning tool for Rhode Island that will determine if and where renewable energy development should be located – something that will be a tremendous economic boost. The College of the Environment and Life Sciences is developing an alternative fuel source – ethanol – that is made from switchgrass. URI Chemistry professors are spearheading an effort to turn waste oil into biodiesel fuel. In the area of health, our College of Pharmacy is discovering new medicines for the prevention of HIV transmission, and are working to improve the quality of lives for patients with schizophrenia. In the College of Nursing, researchers are discovering novel approaches to improving health outcomes for premature infants. All of these discoveries will not only advance science but will also translate into tremendous savings in energy and health care costs. In the area of workforce development, a Center of Excellence in Undersea Technology has been created that will help build a highly trained workforce for our state's defense industry. And to make our workforce more competitive, our School of Education is improving the quality of science education. These advances will improve our scientific workforce and increase the number of students who pursue careers in science – key factors to growing our state and national economy.

While the scope of URI research goes well beyond our state borders, the economic impact of the URI research enterprise makes a significant contribution directly to the State of Rhode Island. For example, it is estimated that the $69 million in sponsored program awards received in fiscal year 2008, which represents new money to the state that we would not have otherwise, generates an additional $100 million in local economic impact, which in turn generates additional jobs, and additional state and local taxes. And, these numbers do not include the revenue and resultant economic impact that will accrue with the commercialization that stems from URI research generated inventions.

While this year's edition of "Research and Innovation" offers only a glimpse of our comprehensive research programs and commercialization opportunities, I trust you will see that the research enterprise at the University of Rhode Island is definitely on the move. Our research programs span an impressive number of disciplines, all of which bring resources to bear on the problems facing Rhode Island, our country, and the world.

URI Department of Communications and Marketing photo by Joe Giblin

THE
UNIVERSITY
OF RHODE ISLAND

ACKNOWLEDGEMENTS

THE UNIVERSITY OF RHODE ISLAND

President: Robert L. Carothers, Ph. D.

Vice President for Research
and Economic Development: Peter Alfonso, Ph. D.

Managing Editor: Melissa McCarthy, MA
Editor: Charlene Dunn, MMA, MLS
Associate Editor: Susan Gomes, MA
Writer: Mary Harrington
Design: Images Design Company
Photography: Beau Jones

INSIDE THIS ISSUE OF RESEARCH & INNOVATION

4 URI Scientist Transforms Switchgrass into Hero Biofuel

6 That's Not a Bouncy Ball, It's a Physics Lesson Elementary School Science Classes Grow Up

8 From Food to Fuel: New Project Turns Dining Hall Grease into Biodiesel

9 Artist-Activist

10 Making Medicine Smarter: Molecular Biologist Pinpoints Best Drugs for Patients

12 Center of Excellence in Undersea Technology Merges Know-How and Need

14 State Drawing on URI's Expertise in Considering an Offshore Wind Farm

16 URI Professor Researching Delayed Cord Clamping

18 Energy Solutions: Where URI Wants to Be

19 Compelling Cancer Survivor Memoir

20 A Major Impact on Global Health: HIV Prevention

22 URI's Answer to Going Green
Go Blue: The Blue MBA

24 URI Faculty Book Publications 2007

26 Award Winning Filmmaker

26 Orchestral Activities Director

27 URI's Research Enterprise at a Glance

COLLEGE OF THE
ENVIRONMENT & LIFE SCIENCES

URI scientist transforms

SWITCHGRASS

INTO HERO BIOFUEL

If the year's record-setting gasoline prices have made you more interested in alternative fuel sources, here's something you'll want to pay attention to: Switchgrass.

Well before the most recent crisis, URI plant geneticist Albert P. Kausch was studying this alternate fuel source. He thinks it could make a great biofuel, help decrease dependence on imported oil, cut down on greenhouse gas emissions, reduce reliance on corn and other food crops as a source of energy, and grow the economy.

Switchgrass is a prairie grass that once covered vast amounts of the country from Buffalo to Denver. It can grow 12 feet tall in a season even on marginal soil and requires little in the way of fertilizers, insecticides and irrigation. It's also a perennial and can last 20 years without being replanted.

And – most importantly from Kausch's point of view – it can be turned into ethanol, a form of alcohol that burns more cleanly than gasoline and produces fewer emissions, including carbon dioxide, a major greenhouse gas that is contributing to climate change. The more of it that can be used in gasoline, the less the United States has to rely on foreign oil.

Altering the genetic traits of switchgrass to make it a better source of ethanol is behind Kausch's Project Golden Switchgrass, which got a boost in August when U.S. Senator Jack Reed (D-RI) announced a nearly $1.5-million appropriation he secured to help Kausch's lab continue its research.

"As the demand for energy grows across the globe, it is imperative that the United States develop new, renewable sources of energy that can be produced here at home," Reed said. "I am proud that URI is at the forefront of this critical effort to help America become more energy independent."

Reed announced the appropriation outside the Center for Biotechnology and Life Sciences, a state-of-the-art research and education building under construction on the URI Kingston campus. The building, financed with a $50-million bond initiative, is being touted as an icon for Rhode Island's 21st-century innovation economy.

It will also be the home of Kausch's lab, one of five labs in the country working on genetically engineering switchgrass to make it a better biofuel. The work in Kausch's lab centers on creating a switchgrass that is more tolerant of drought, cold and salt. And, importantly, one that is sterile so that the altered traits do not make their way into the native switchgrass population.

Kausch has worked on the genetic engineering of plants – including corn, rice and grasses – for 30 years.

In 2003, switchgrass as a biofuel caught his attention. Since then, Kausch has formed a consortium with URI, Yale University, the University of Connecticut, Ernst Conservation Seeds, the largest producer of switchgrass seeds, and Plant Advancements LLC, a private company that Kausch helped to found. This company will have an agreement with URI for commercialization when that time comes, he says.

"What we need to do here is very practical and that is to make road fuel," Kausch says.

Kausch explains that switchgrass could be a better source of ethanol than the commonly used corn. Most of the $53-billion corn industry is devoted to feed or high-fructose corn syrup. The rest is exported or converted into ethanol.

"The more corn you use for fuel, the more food costs will rise; this will worsen the impact on foreign countries that depend on this commodity," Kausch says. This dilemma explains why using corn as an ethanol source is a real problem.

In addition, corn takes a lot of energy to grow and requires tractors, pesticides and water to a much higher degree than switchgrass.

Switchgrass, on the other hand, can be grown on marginal land, is inherently pest resistant, and has an extensive root system. It also produces 5 to 10 tons of material that could be converted into ethanol – called biomass – per acre per year, which could be turned into 400 gallons of ethanol, Kausch says.

Kausch, along with graduate and undergraduate students and research assistants, is working to alter switchgrass so that it would never germinate or flower and so that other genes could be introduced in them without them being replicated in the wild. Additionally, plants that do not use their energy to produce flowers can use it to produce more biomass instead.

"If we can accomplish that, we'd make a contribution," he says. "We're further than the beginning, but we have a long way to go."

One drawback to using switchgrass is that cellulose – which makes up about 40 percent of a plant – is tougher to break down into ethanol. But, a number of researchers are working on solutions to that, Kausch says.

URI chemists Brett L. Lucht and Brenton L. DeBoef are among them. They are using a specialty catalyst to decompose the cellulose molecules and convert them more efficiently to create a much easier process for the country to switch over to ethanol.

"I am proud that URI is at the forefront of this critical effort to help America become more energy independent."

Senator Jack Reed, RI-D

That's not a bouncy ball, it's a

PHYSICS LESSON:

ELEMENTARY SCHOOL SCIENCE CLASSES GROW UP, THANKS TO URI

About 13 years ago, URI Education Professor Betty Young took a close look at science classes in Rhode Island elementary schools.

Here's what she found: That kids were learning about penguins – year after year. That owl pellets were a frequent feature of lesson plans. And that students were finding out about the solar system – by studying the mythology behind the planet names.

"Some may have old textbooks and they would read about science," says Young, who has been directing an effort since then to improve the way students are taught science in Rhode Island and, more importantly she says, are taught to become critical thinkers.

The program she heads is Guiding Education in Math & Science Network (GEMS-Net) in URI's College of Human Science and Services and it offers school districts that opt in science lesson kits, training and access to teachers-in-residence and URI scientists.

With about $106,000 from the Eisenhower Higher Education Grant Program and later $1.4 million from the National Science Foundation, the work got underway. Over the years, GEMS-Net has trained 2,011 teachers in 13 RI school districts, who, in turn, have worked with tens of thousands of children in kindergarten through the eighth grade.

The results, Young says, "Students who are scientifically literate, appreciate the importance of science and are better prepared for an increasingly technologically complex global economy."

Sally Beauman, project coordinator, says that as the GEMS-Net program continues, it falls in line with Governor Donald Carcieri's goal to improve the skill base of the Rhode Island workforce.

It all started in 1995 with a request from Exeter-West Greenwich School Superintendent Robert Hicks, who is now school superintendent in South Kingstown. On behalf of the elementary teachers he asked for help in developing ideas for improving the science curriculum. At about the same time, statewide science standards were coming out.

URI got to work and selected kits from Science and Technology for Children, which uses the Smithsonian Institute as a resource, and the Full Option Science System developed in conjunction with the Lawrence Hall of Science at University of California, Berkeley. The kits cover in-depth topics and provide experiments in life, earth, space and physical sciences and technology. One year's curriculum builds off the last.

Barbara Fitzsimmons, who retired last year as the curriculum director of the North Kingstown School Department, was involved to make sure everyone kept the realities of the classroom in mind. "Many teachers really welcomed the organization," she says.

The pilot program drew attention, Young says. "Immediately the parents said, 'How come these kids in that classroom have these wonderful experiments and mine don't have that?' "

Over time, the number of participating districts has grown and the program has been able to sustain itself, with districts paying to participate. Signed on as partnering districts are Chariho, East Greenwich, Exeter-West Greenwich, Jamestown, Narragansett, North Kingstown, South Kingstown, Warwick, Westerly and Woonsocket. As partnering districts, they take advantage of the coordination by a project manager, the resources of the 3 teachers-in-residence, a science teacher educator, and 25 URI scientists and engineers who volunteer their services.

The Foster, Scituate and West Warwick school districts are also using the kits and join in the GEMS-Net training sessions so their teachers understand the science content and how to guide the inquiry lessons.

"Providing quality science education will help to increase the number of students who pursue careers in science - a key factor to growing our state and national economy. URI's School of Education is proud to be leading the way."

Barbara Fitzsimmons

Students in those districts start by learning about physics – in kindergarten. They study how and why balls bounce and ramps that make them roll work. In first grade, they tackle the center of gravity and point of balance with spinning tops. By the middle school, students are studying properties of matter and energy, machines and motion.

Young says she asked Randy Watts, a world-renowned URI physical oceanography professor, to test the kits and he promised to be brutally honest about whether they met high standards. He was pleased. He came back and was not only happy with the science, he said, "These are just the things that I played with that made me want to be a physicist."

The kits are also designed to enhance reading, writing, and math skills, which helps elementary teachers who are under pressure to focus on all subjects, Young says.

Fitzsimmons says she saw changes in her district when the students reached high school. "There was a definite increase in both the number of students taking science classes and the number of sections we'd have to run in any particular course."

And students thought more about careers in science, she says. "It really makes it accessible too because children begin to think of themselves as scientific thinkers. Going into that career field later is not a stretch."

In addition to changing the way that students think about science, the URI School of Education is also focusing on improving the quality of science teaching. Young recently received a $2.24-million grant over six years to study how to best train elementary school teachers to instruct exploratory and inquiry-based science lessons.

Increasing the number of students who pursue science, technology, engineering and mathematics careers (STEM) is an important state and national goal, and Fitzsimmons knows that excellent science teachers are critical in this plan.

To improve the STEM talent pool, she says, we must enhance and increase the number of quality science teachers at all levels.

Fitzsimmons says that there must be an incentive to attract quality science educators and encourage them to stay in the classroom. And support through professional development, like the type that URI is providing, can play an important role in developing and retaining quality science educators.

Providing quality science education will help to increase the number of students who pursue careers in science – a key factor to growing our state and national economy. URI's School of Education is proud to be leading the way.

FROM FOOD TO FUEL

NEW PROJECT TURNS DINING HALL GREASE INTO BIODIESEL

When students returned to the URI Kingston Campus in the fall, they were greeted with the usual fare of French fries, fish filets and onion rings. But there was something new on the menu: a chance to learn how to turn the dining hall grease into biodiesel fuel.

Chemistry professors Brett L. Lucht and Brenton L. DeBoef are spearheading an effort to turn 2,500 gallons of waste oil, primarily from the Mainfare and Butterfield dining halls and the Memorial Student Union into biodiesel fuel to operate the trucks on campus.

The technology is nothing new – you can even figure out how to covert grease into biodiesel fuel by searching the Internet – and companies in Rhode Island do it every day. But the project is meant to be an educational experience.

It's a chance, DeBoef says, for undergraduates to get "good, practical research experience in green chemistry" and to stimulate interest in related science careers.

Lucht says he got the idea from his wife, who is the coordinator of Ocean State Clean Cities, a government-industry partnership designed to reduce petroleum consumption in the transportation sector by advancing the use of alternative fuels and vehicles, idle reduction technologies, hybrid electric vehicles, fuel blends, and fuel economy measures.

Clean Cities also works with the URI Partnership for Energy, a new interdisciplinary team working to develop locally based solutions to energy issues. The Partnership for Energy is providing the $5,000 to $7,000 in startup costs needed for the new lab to convert the waste oil into biodiesel fuel.

Lucht says his wife's idea came just as he received a flyer from his URI department chair announcing the Sustainable Energy Symposium at the University of Connecticut, where chemical engineer Richard Parnas was speaking on biodiesel fuel.

As a result of attending the symposium and speaking with him, Parnas agreed to help URI set up the biodiesel fuel lab in Pastore Hall.

"URI Chemistry professors are spearheading an effort to turn 2,500 gallons of waste oil into biodiesel fuel to operate the trucks on campus."

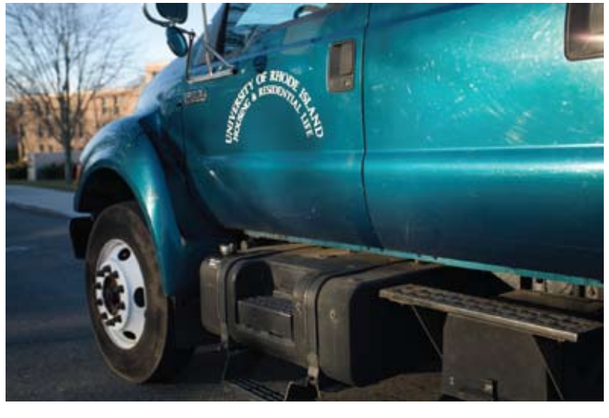
"Everyone has been very cooperative and excited about the project," Lucht says.

The lab is expected to be a self-sustaining project, with URI buying about 2,000 gallons of the fuel, at about half the price it would normally have to pay. An additional savings: until July, URI was paying a $1 a gallon to dispose of its waste oil.

This summer, two undergraduate students worked in the lab, producing small quantities of the biodiesel fuel and developing protocols for testing purity to meet American Society for Testing and Materials (ASTM) standards. Five undergraduates were scheduled to work in the lab in the fall.

The professors expect the fuel will start being used in campus mowers first, with the full-scale operation to move to trucks by January.

"Integrating research and education is one of the big benefits of this," DeBoef says. It's also a good opportunity, he and Lucht say, to get students thinking about pursuing careers in science developing alternative fuel sources – something of great benefit to the environment and the economy.



the arts

Annu Palakunnathu Matthew

Annu Palakunnathu Matthew, a URI associate professor of art and art history, is well-known as an artist-activist who has tackled the issues of gender, race and transnationalism.

For example, Bollywood Satirized was a critical commentary on the societal expectations that she experienced as a woman growing up in India. In The Backlash in the Wake of September 11, she examines how some people need to be conscious of the way others perceive them and their names, as those identifiers have taken on new and unintended meanings.

Her latest project, not yet completed, is Re-Generation, where she uses digital technology to reorient a viewer's connection to time as she collapses the progression of a family and its history, so the past and present appear in the same virtual space.

"The final animation is a combination of a scan of an archival image and recent photographs of three or more generations of Indian women," Matthew says. "These animations weave in and out of spaces of time, allowing the viewer to simultaneously ponder the history, future and aging of the subjects. This malleable flowing object leaves the viewer to wonder where the past and present overlap. Here, history is distorted, evoking a new dimension of memories which is uniquely digital."

She says: "Seeing the three generations of Indian women together makes one aware of the influence of globalization within a short span of time."

This project was funded by the MacColl Johnson Fellowship from the Rhode Island Foundation with additional support from the University of Rhode Island.

Matthew's work (some of which can be viewed at www.annumatthew.com) has shown or is showing in Paris, Minnesota, New Delhi, Newark, and New York City among other professional venues and will be included in the book titled Self Portraits by Susan Bright, published by Thames and Hudson.

David H. Wells

Making medicine smarter

MOLECULAR BIOLOGIST

PINPOINTS BEST DRUGS FOR PATIENTS

The chance discovery in the early 1950s of the antipsychotic properties of Chlorpromazine has been described as the single biggest advance in psychiatric treatment. For example, according to the Analysis Group, Inc., the total overall cost in the US to treat schizophrenia was estimated to be $62.7 billion in 2002.

Chlorpromazine was the earliest of the first generation of drugs used to suppress the psychotic symptoms associated with mental illnesses such as schizophrenia. Before the clinical introduction of the first generation antipsychotic drugs, mentally ill patients experienced hallucinations, paranoia and delusions. They were treated with electroshock therapy, insulin shock therapy or were given lobotomies.

The drug Chlorpromazine meant they could leave the institutions and live closer-to-normal lives. But by the late 1960s, Chlorpromazine, by then sold as a generic drug, was no longer considered a miracle drug, due to the side effect tardive dyskinesia (TD). TD causes involuntary movements of the arms and legs, tongue rolling and rapid blinking among other symptoms. For some patients, the involuntary movements remain even after treatment stops. TD can become a social handicap and can even lead to respiratory failure.

In an attempt to decrease these movement side-effects, drug companies introduced a second generation of antipsychotic agents. However, as a group these drugs are more expensive than the typical antipsychotics which are available as generics, and a spate of recent medical studies have questioned their effectiveness. In addition, the second generation drugs produce side-effects such as severe weight gain and increased risk of stroke.

But there's a silver lining, explains Dr. Abraham Kovoor, a molecular biologist in the University of Rhode Island's, College of Pharmacy. Some people don't get TD when they take antipsychotic drugs and every patient has different risk factors for developing different antipsychotic drug side-effects.

What if you could predict who would get the side-effect by using a simple blood test?

Such a test would allow psychiatrists to individualize therapy by assisting in the selection for each individual patient the drug that would produce the greatest benefit and least harm. The implications, Kovoor explains, are not just for the patients. Health-care systems would benefit by more frequently prescribing generic, inexpensive drugs instead of the more expensive second generations drugs that often carry their own potential, sometimes lethal, side-effects.

Kovoor didn't start out studying this question. During his post-graduate work at the California Institute of Technology, he was working on RGS9, a protein expressed in the eye and part of the brain that controls movement.

"It just turns out that some of the work that we did ended up having some relationship to schizophrenia," Kovoor says. It turns out that a mouse that is genetically engineered to not produce that protein behaves as do people afflicted with TD.

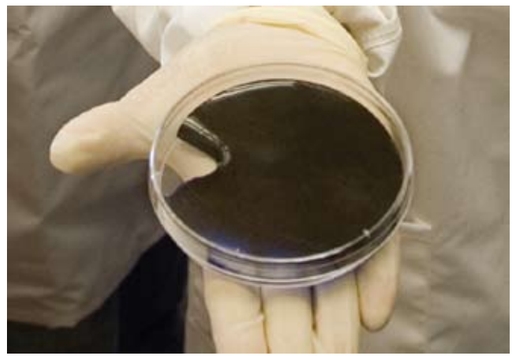
Scientists know very little about the molecular mechanisms underlying TD and the engineered mice provide a starting point for studying it, Kovoor says.

Kovoor was granted $500,000 from the National Institutes of Health, and an additional $450,000 for three years if a second phase is approved to develop a genetic test to predict which patients would experience TD.

Additionally, with a $450,000 grant from The Institutional Development Award (IDeA) Network of Biomedical Research Excellence (INBRE), Kovoor is researching the basic science of the cellular functions of the protein.

A lab to test blood samples would require workers. And a screening test would help lower health-care costs, Kovoor says.

Often people with schizophrenia are disabled, and the state pays for their health care. Oftentimes, physicians prescribe the later-generation drugs for schizophrenia, which don't cause TD, but require more monitoring because of potential, and sometimes fatal, side effects.



"What if you could predict who would get the side-effect by using a simple blood test? "

"It makes a huge impact on state budgets, " Kovoor says.

If a physician knows a patient is unlikely to experience TD with the older, generic drugs, the patient would fare better, continue to take the drug rather than abandoning it because of the side effects, and the state would pay less.

Kovoor says he has the preliminary data to support and apply for larger grants to expand trials. "We're basically slowly trying to tease out the cellular functions of RGS9," he says. "We have a good solid start now in studying this molecule."

The science he is working on with this project, he says, could leverage other commercial ventures with other URI professors, such as one dealing with congestive heart failure.

Kovoor came to URI with the NIH grant when he joined the College of Pharmacy last year. He says part of the reason he decided to come to URI is because it is a research university and would be supportive of his work with biotech companies.

And coming to URI has paid off – in terms of the tremendous economic benefits to the state and nation, and for the improvement in the quality of life for the millions of patients that suffer from this potentially debilitating disease.

Center of Excellence in

UNDERSEA TECHNOLOGY

MERGES KNOW-HOW AND NEED

It sounds like something out of a sci-fi movie: Underwater sensors that transmit messages to the shore, perhaps reporting on wave conditions, water clarity and temperature before a military engagement. And the sensors are disguised as jellyfish, ones that not only look like the sea creatures, but move like them.

The technology is not there yet, but the jellyfish are hardly science fiction. In fact, researchers are working on the project as part of the Center of Excellence in Undersea Technology, headquartered at and managed by the University of Rhode Island.

The jellyfish project is a perfect collaboration between academia, businesses and the military. And that's just the point of the Center of Excellence in Undersea Technology, which was established two years ago by the University and the Naval Undersea Warfare Center (NUWC).

NUWC, with its headquarters in Newport, is the Navy's research, development, test and evaluation, engineering and fleet support center for submarines, autonomous underwater systems, and offensive and defensive weapons systems associated with undersea warfare.

URI's Graduate School of Oceanography, with its world-class reputation, experience, and facilities for marine science and engineering, made for an excellent collaborative pair with NUWC.

Malcolm L. Spaulding, a URI professor of ocean engineering and the center's director says, "The center was born with a $150,000 grant from NUWC. We essentially got called upon because of shared interest." GSO Associate Dean Kate Moran is the associate director.

The center performs basic and applied research focused on the cutting-edge design, development, testing, and implementation of a variety of undersea technologies that benefit the Navy and homeland security and have civilian applications.

The collaborative nature of the center brings together NUWC, technology companies, including General Dynamics/Electric Boat, Lockheed Martin and Raytheon, and academic institutions beyond URI, including the University of Massachusetts, Providence College, Woods Hole Oceanographic Institution, Naval Postgraduate School, University of Southern California, North Carolina A&T State University, University of Delaware, and Virginia Polytechnic Institute.

When the center was announced, RI Governor Donald Carcieri said: "Additionally, this center will help us build a highly trained workforce for both NUWC and our state's defense industry."

One of the center's first activities was establishing a master's program in distributed systems engineering for NUWC engineers.

By pulling from existing degree programs in ocean, mechanical, systems and electrical engineering and computer science, URI established the three-year master's degree program for NUWC engineers, many of whom who do not have oceanography experience.

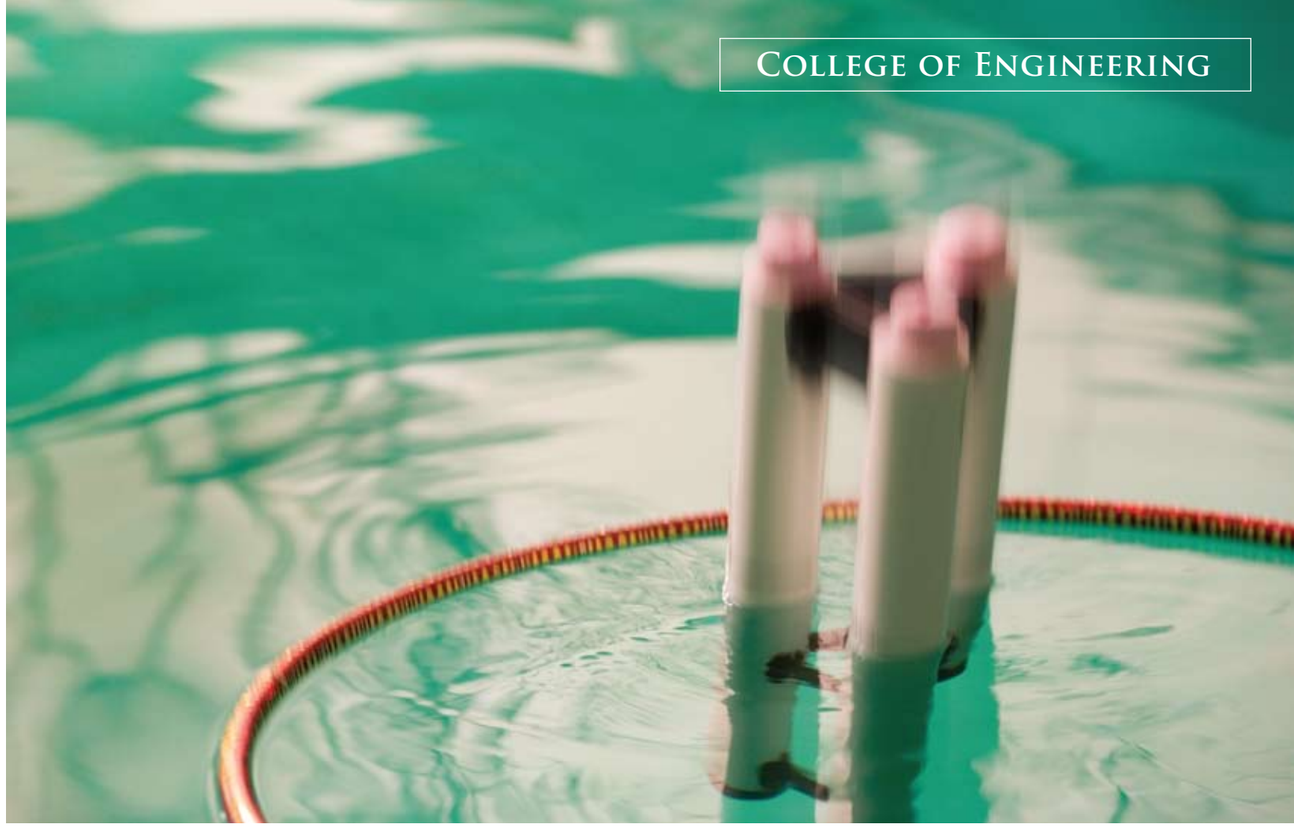
To ensure URI would be able to continue offering the program even if the number of students dropped, URI asked NUWC to pay $360,000 upfront and it did. The program is in its third semester on the Community College of Rhode Island campus in Newport.

The engineers are expected to gain knowledge in distributed systems engineering - a network of undersea sensors that don't rely on cables says Bud T. Vincent, the academic advisor and coordinator for the program.

Distributed technology has "many, many technical hurdles to overcome," says Vincent, a Navy veteran and a former NUWC ocean and electronics engineer. And the NUWC engineers need training to tackle these issues, he says.

Undersea sensors could be used to conduct surveillance, monitor ship traffic, pollution, or anything where you need to get data back to shore without an underwater cable or the permitting processes that surround that, Vincent says.

Triton Systems Inc. contracted with the center for a sensor project – the one that uses artificial jellyfish. Researchers are studying jellyfish details, light penetration and propulsion. The two-year contract is for $100,000. In all, the center has facilitated about $1 million in contracts.



OTHER PROJECTS ON THE CENTER'S ROSTER:

- A buoy that harnesses the energy from waves to power a beacon. URI created the buoy, but looked to Electro Standards Laboratories of Cranston to produce its inner workings.

  "Because of the team relationship, we helped get them some business they wouldn't otherwise have," Spaulding says.

- A coating to protect materials from bio-fouling – the barnacles, seaweed and other matter that builds up on ships.

  Bio-fouling creates drag and other problems. The Navy spends about $1 million a year having it manually removed to save another $20 million in fuel costs. The Navy is under a mandate to stop using a toxic metal that had helped prevent bio-fouling, Spaulding says.

  The work at URI involves studying bacteria that colonize on a surface as a precursor to bio-fouling.

- A chemical sensor that could be used to search for bombs in cargo by detecting trace amounts of chemicals in the water at ports. Remotely operated underwater vehicles could be used to take a closer look.

"...this center will help us build a highly trained workforce for both NUWC and our state's defense industry."

Governor Donald L. Carcieri

State drawing on URI's expertise in considering an

OFFSHORE WIND FARM

Being situated on the Atlantic Ocean has brought Rhode Island many perks: tourism, trade, and natural beauty. Next it could provide wind power to generate electricity.

Under the direction of the state Coastal Resources Management Council, the University of Rhode Island is leading a two-year study to identify possible suitable spots for renewable-energy development.

Work on the Ocean SAMP (Special Area Management Plan) began in August. A SAMP is a planning tool for evaluating environmental issues and determining regulations for development within an area. A goal of the Ocean SAMP is to outline zoning for commercial fishing, critical habitats and marine transportation. It will also determine if and where renewable energy development, likely a wind farm, should be located in state waters.

In September, Governor Carcieri selected Deepwater Wind, a New Jersey private company to build and operate wind turbines off the coast of Rhode Island that would produce about 1.3 million megawatts of power a year, or enough to supply 15 percent of the state's electricity. If it endorses the wind farm, the SAMP is expected to streamline the permitting process because it would have already garnered input from the federal and state governments.

"We're basically preparing the groundwork for the industry to come in and generate power. No other state has done this," says Kate Moran, Associate Dean of the Graduate School of Oceanography (GSO) who is a senior advisor on the project with Malcolm L. Spaulding, Professor of Ocean Engineering.

In addition to providing a renewable form of energy and cutting down on the state's carbon footprint, a wind farm will be an economic boost, with the creation of jobs and the need for materials, Moran says.

The Ocean SAMP is expected to cost $3.2 million, paid from the RI Renewable Energy Fund, which Rhode Islanders contribute to via their electric bills. If a private company winds up developing a wind farm, it would pay the cost.

The Ocean SAMP is studying an area off Block Island that is about 10 times the size of the island. The boundary extends west from Westerly, and continues south beyond state waters south of Block Island. It continues northwest to include the most eastern portion of the Rhode Island shoreline. The northern boundary makes its way up the entire Rhode Island coastline. It excludes Narragansett Bay, the waters south of Narrow River east past Beaver Tail Point, the southern tip of Aquidneck Island, and Sakonnet Point; the Rhode Island Salt Ponds; Little Narragansett Bay; and Narrow River.

In all, about 60 URI experts will work on the plan. Among them are about a dozen URI scientists who headed out for 10 days in October aboard the 185-foot Research Vessel Endeavor, based at the GSO and owned by the National Science Foundation.

"In addition to providing a renewable form of energy and cutting down on the state's carbon footprint, a wind farm will be an economic boost, with the creation of jobs and the need for materials."

Kate Moran, Associate Dean, GSO

The scientists plan to map the ocean floor using sonar and collect data on everything from marine life to geology. They'll look at birds' migratory paths and foraging habits. They'll study ocean currents, wind strength and air quality. They'll determine the makeup of the ocean floor, whether it is mud, sand or rocks. They'll look for historic artifacts, possible shipwrecks and rare species.

URI has experts to do all this work, says Sam DeBow, manager of Research Operations and Special Projects at the GSO. "That's why it was so convenient to be here," he says.

In all, 30 to 40 scientists, graduate students and research assistants will participate in the scientific portion of the project, DeBow says.

Working alongside the scientists to create policy and get public input is the Coastal Resources Center (CRC) at the GSO and The Rhode Island Sea Grant College Program, a federal-state-university partnership based at URI.

In addition to assisting in the development and implementation of coastal management programs in Rhode Island and the United States, the center is active and well-respected throughout the world.

The CRC has already developed five Special Area Management Plans in Rhode Island and is working on one for Aquidneck Island in addition to the Ocean SAMP, says Jennifer McCann, leader of the Sustainable Coastal Community Program for the RI Sea Grant College Program and the CRC.

"We are responsible for both the policy creation and the outreach," McCann says. "That is the key to ensure that this SAMP is successful."

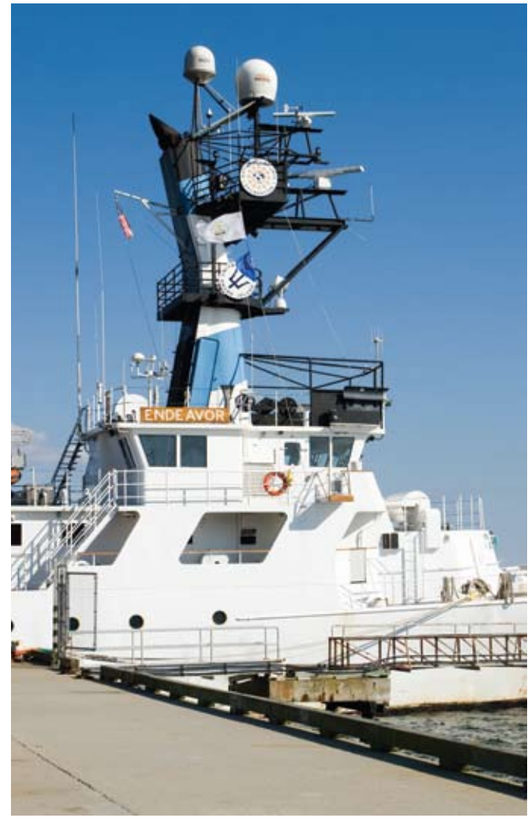
Everyone from decision-makers to ordinary citizens will be able to get information during the two years the plan is being developed, make comments and ask questions, she says. A stakeholders group will be formed as well.

The CRC has been creating policy for coastal management for more than 30 years and is not approaching this SAMP with an agenda, she says. "We have spent over 30 years creating trust and we know how to facilitate a valid process."

The final plan will create zoning of a possible wind farm but also clarify areas for commercial fishing and other uses. It would also outline what rules a developer of a wind farm, if that is included, would have to follow in constructing, using and decommissioning wind turbines.

The idea is to provide zoning that would have a minimum impact on the environment and other industries, says David M. Farmer, Dean of the Graduate School of Oceanography.

"This is a wonderful opportunity for the United States to start to catch up with other nations that are way ahead of the game," Farmer says. "And Rhode Island is leading the way.



URI professor researching

DELAYED CORD CLAMPING

It's a brilliantly simple idea, the kind that Mother Nature specializes in: delay clamping a baby's umbilical cord just briefly so the newborn can absorb more oxygen- and stem-cell rich blood.

Judith Mercer, a URI professor of clinical nursing, has thought for years that the delay can do wonders for a baby, especially one born prematurely. And so far her research confirms that. "It's a technique that respects the normal process of birth," she says.

The National Institutes of Health recently awarded Mercer a $2 million grant to expand on two of her earlier research projects on the topic. This time, Mercer is studying 212 premature babies born at Women & Infants Hospital in Providence to gauge the effectiveness of delayed cord clamping by 30 to 45 seconds.

It's a topic Mercer knows a lot about.

She's been a nurse-midwife for 30 years, and has often delayed the clamping – usually for less than a minute. "It just made so much sense," Mercer says. "The baby needs a little bit of time to adjust to being outside the womb."

Mercer came across the idea in 1975, after reading "Birth Without Violence" by Frederick Leboyer, who talked about a "gentle birth," she says.

After that, she allowed for the delay, saying that as a midwife, sometimes delivering at homes or small hospitals, the technique was a "best friend." The babies, she says, did better. "They get pink; they get better tone and they breathe."

She also found they were stronger and nursed better. "Birth has to be more gentle. Everyone has to just take a deep breath and let the baby have a minute."

Since then, her studies have revealed that premature babies who have the benefit of the additional cord blood have fewer incidents of brain hemorrhaging and infection. Cord blood contains stem cells, the body's master cells that help it renew and repair its tissues. "They are miraculous cells. We don't know enough about them yet, but we arrogantly oftentimes cut that cord right away." The immediate cord clamping is especially prevalent in the United States when midwives are not involved.

When Mercer came to URI in 1998, she wanted to research the issue and found supporters in Margaret M. McGrath, the former Dean of the College of Nursing, who agreed to be her mentor, and William Oh, M.D., who was the Chief of Pediatrics at Women & Infants Hospital. "They were exactly what I needed," she says.

The next year, she started a study of babies who were born at 24 to 32 weeks. A full-term baby is born after 37 weeks, with the typical gestation being 40 weeks. The study showed the newborns with delayed cord clamping had better blood pressure and fewer needed to be put on oxygen, she says.

In 2003, a second study involved 72 preterm babies whose cord clamping was delayed. They were gently lowered below the mother to allow gravity to help cord blood make its way to the newborn.

There was a significant decrease in the number of babies with bleeding in their brains and babies with infections. Boys, who often have more problems than girls when they are born premature, did even better, she says.

Now Mercer is in the midst of the $2-million, 5-year grant from the National Institutes of Health. She and her staff will study 212 babies, with a delay in cord clamping in half the cases.

As part of the study, Mercer hopes to determine how many stem cells the baby receives with the delay. She is working with Yale University in devising a way to do that. Likewise, she is hoping to determine the level of a protein called cytokines, which causes inflammation. A study from Germany has shown that premature babies who have bleeding in their brains have a higher level of those proteins six hours after birth.

Mercer's latest study started in May and as of early September, she and her staff had 15 babies enrolled. They follow the children in the Neonatal Intensive Care Unit (NICU), monitoring how well they do. The researchers plan to track the children until they are seven months old, where they will be assessed by Dr. Betty Vohr's lab. Vohr, an expert on high-risk babies, is a co-investigator with Mercer on the study as is Dr. Oh.

Other studies on delayed cord clamping with premature and full-term babies are under way in Japan, Germany and Australia, where Mercer is a consultant on a project. "There's a lot of interest in this throughout the world," Mercer says.

> **"The practice could save lives or improve the quality of lives and reduce the extraordinarily high cost of treating premature babies."**
>
> Judith Mercer, Clinical Professor,
> College of Nursing

Mercer is also an advisor to a URI graduate student who is doing her doctoral thesis on the effects of "milking" the cord when a baby is born via C-section where there wouldn't be time to allow gravity to pump the cord blood into the baby.

So far, various concerns about delaying the cord clamping have been eliminated. They include the babies becoming cold or jaundiced or having lower Apgar scores, which are used to assess a baby's health right after birth.

If research continues to support delayed cord clamping and medical personnel perform this procedure, there are potentially many benefits, ranging from fewer deaths in the NICU, to fewer cases of anemia, which can cause IQ, motor and behavior issues. Developmental issues can occur even up to age 19, she says.

"The effects may be well beyond the newborn period," Mercer says.

In the long-term, the practice could save lives or improve the quality of lives and reduce the extraordinarily high cost of treating premature babies, Mercer says.

Energy Solutions:

WHERE URI WANTS TO BE

Rhode Islanders have grown to rely on the RI Cooperative Extension at URI for all sorts of gardening, landscape and horticultural information, whether they have attended a class, called the hotline or watched Marion Gold's Plant Pro spots on WJAR Channel10.

Now URI expects that residents will come to do the same for a recently formed Energy Center. The center is serving as a hub for information, research and solutions regarding renewable energy resources, energy efficiency and conservation, and energy economics and policy issues, says Gold, co-director of the center with URI chemistry professor Brett L. Lucht.

The center is working with national, state and local governments, residents, energy providers and the business community to develop local solutions to global energy issues.

"This land-grant university has the potential to do for energy what we did for agriculture 100 years ago," Gold says. "It's moving the university into a leadership role on these issues," she says.

The Energy Center was born in the summer of 2007 with $150,000 for each of three years as part of the President's Partnership Program, a URI effort to increase interdisciplinary work in critical research areas. Faculty, staff and students from the colleges of the Environment and Life Sciences, Engineering, Arts and Sciences, and Business Administration are participating.

The center is also working closely with the State Office of Energy Resources, taking on some of the work the state does not have the personnel to handle.

The work is as far-reaching as the energy problems the nation and world are facing. Among the center's projects:

- Establishing a Rapid Policy Analysis Center that can quickly analyze energy-related issues and questions so policy-makers have reliable, non-biased information.

- Meeting with municipal leaders to talk about how their tax codes and zoning laws may be a hindrance or a help in promoting better energy practices.

For instance, Gold says, would a town have the zoning laws in place if someone wanted to build a wind turbine? Does it know about state and federal subsidies for renewable energy? Does it know what resources are available to people having trouble paying their heating bills?

- Creating a Master Energy Volunteer Training Program, much along the lines of URI's well-known Master Gardener Program.

About 100 people ranging from home owners to small business owners to local school administrators enrolled in the program in the fall to learn how to use energy more efficiently, forming a cadre of well-informed people who can go out and talk to their neighbors about the issue, Gold says.

- Hosting an Energy Solutions Expo at the Ryan Center on URI's Kingston campus. Open to the public, it offers a wide variety of strategies for going green and saving energy.

> **"A state that does a better job with energy efficiency has a competitive economic advantage over other states."**
>
> Brett L. Lucht, Chemistry Professor
> College of Arts and Sciences

- Creating a winter energy hotline to answer questions from the general public about how to deal with high heating costs and where to get help.

"The idea is to establish the university as a good source of information for the public," Gold says.

- Coordinating the Clean Cities Program, a state program funded through the U.S. Department of Energy. The program aims to reduce petroleum consumption in the transportation industry by promoting alternative fuels and vehicles, idle reduction technologies, hybrid electric vehicles, fuel blends, as well as fuel economy measures.

- Outreach programs for children in grades K-12.

Research is another big component of the center's work. That's where Lucht comes in. This scientist, who is doing alternative energy research himself, wanted to coordinate other energy-related work at URI. "We've helped create collaborative efforts between the researchers," he says.

Efficiencies and infrastructure make URI more competitive when applying for grants to tackle energy solutions, Lucht says. Beyond that, a state that does a better job with energy efficiency has a competitive economic advantage over other states, he says.

Another major feature of the Center is an Energy Fellows Program, where undergraduate students get hands-on experience working on energy issues through research and outreach programs.

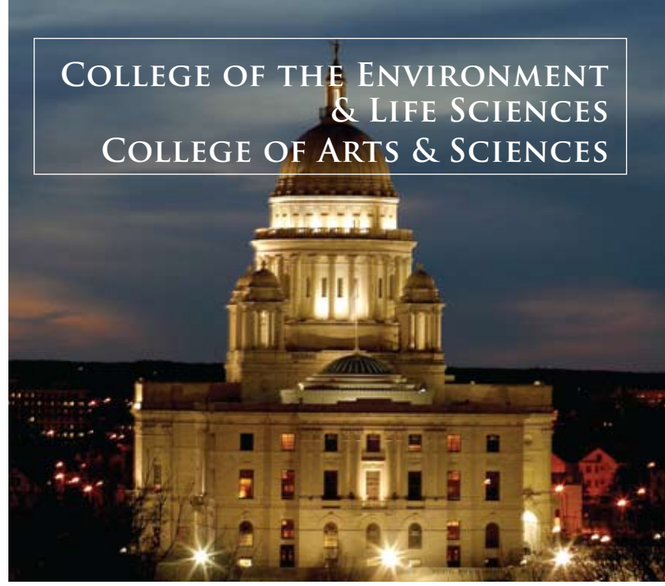
Four of the current undergraduate Energy Fellows collaborated on a report prepared with consultants from the Energy Efficiency and Resources Management Council. This report was submitted to the Rhode Island's Public Utilities Commission. The report described the challenges and opportunities for renewable energy in households, businesses and RI institutions. The report also outlines the economic benefit of various measures.

Lucht says that the students' knowledge will continue to benefit the state and region once they leave URI.

"Society also benefits as these students become tomorrow's scientists, business leaders and researchers, making discoveries and creating and designing products that will enhance the quality of life on this planet. These discoveries will provide cost savings and economic benefits as well," says Lucht.

Gold agrees. "It's really been a remarkable opportunity that these students are provided. I would have to say they are unparalleled."

"These opportunities are only possible," Gold says, "because URI is a major research university, with unique opportunities for education, research and outreach activities for all students."



the arts

Mary Cappello

At a glance, two recent works by bestselling author and URI English professor Mary Cappello seem quite disparate.

One is a memoir of her cancer survival, and the other, an examination of thousands of objects that were removed from people non-surgically by a pioneering laryngologist.

Cappello explains the connection: "I was trained in the field of Medical Humanities, and both of these books are certainly contributions to that field." But she also says the works are quite different. "Though it has been said that writers write the same book over and over again, I like to think that each of my books performs a different kind of thought experiment."

The author of the highly regarded memoirs Night Bloom and Awkward: A Detour, Cappello is expecting Swallow: Foreign Bodies, Their Ingestion, Aspiration and Extraction in the Age of Chevalier Jackson will be published in 2010.

The book is based on Chevalier Jackson, who Cappello describes as "the father of endoscopy, an eccentric genius, artist, and humanitarian."

An aspect of the book is what Cappello calls a "psycho-biography" of Jackson and an attempt to connect the found objects with the people they were removed from. "To that end, I've carried out a great deal of archival work uncovering case histories, and in the process, tales of poverty, trauma, violence, madness, and freak accident. "

Cappello's compelling and eloquent breast cancer manuscript is Called Back: A Breast Cancer Memoir. "The book is very much an account of the multi-part cancer treatment trajectory that most women must go through who have the disease - diagnosis, surgery, chemotherapy, and radiation - but from the point of view of a reader and a poet."

A major impact on global health:

HIV PREVENTION

Keykavous Parang's work to design compounds against human immunodeficiency virus (HIV) infection, the virus that can cause acquired immunodeficiency syndrome (AIDS), started in 1991 when he was a graduate student. After joining the University of Rhode Island in 2000, he continued his research in the area of developing anti-HIV agents for prevention of AIDS.

HIV was discovered in 1981 by Luc Montagnier and Francoise Barré-Sinoussi, the recipients of this year's Nobel Prize in physiology and medicine. In a quarter of a century, over 60 million people have been infected with HIV and over 25 million people died.

"There are 35 million people still living with HIV," says Parang, a professor of biomedical and pharmaceutical sciences. In nine southern African countries, more than 12% of adults are infected with HIV.

Women are 4 to 17 times more likely to contract HIV, due to economic, social, and biological factors, Parang says.

More than anything, Parang would like to be part of the scientific effort to prevent new cases. There is an urgent need to develop a safe over-the-counter microbicide for prevention of HIV transmission in females. Toward that end, his lab is in the midst of intensive efforts to develop a topical microbicide cream or gel that could prevent HIV in women who apply it before intercourse.

An over-the-counter cream or gel would have advantages over a condom, which are not used consistently and correctly, Parang says. "The use of microbicides will be under the control of women for their protection against HIV." While the focus is on women, the use of a cream or gel by men is also a possibility in the future, Parang says.

"Approximately, 2.1 million people died of AIDS-related diseases in 2007." Parang says. "Thus, a successful formulation would have a major impact on global health."

Over 10 billion dollars is spent globally on HIV/AIDS treatment annually. In addition to saving lives, a new preventive medicine could mean a huge savings in health care.

Using chemistry to solve biological problems, Parang's lab is developing multi-functional compounds that would attack HIV on three levels in the HIV life cycle:

- By preventing the attachment of HIV to normal cells.
- If attachment occurs, by inhibiting the enzyme that converts the RNA of the virus to DNA and therefore blocking the replication of the virus.
- And finally, by preventing infected cells from passing the infection to healthy cells.

Parang has received more than $750,000 in grant money for anti-HIV research in the last five years for his lab, where undergraduate, graduate and post-graduate students work.

The research work on developing anti-HIV microbicides is especially important now that an HIV vaccine developed by Merck & Co. failed in 2007, he says.

One of the problems with developing a vaccine against HIV is that, much like the flu, there are many strains of HIV and virus which evade immune response through high mutation rates. "This has been very challenging to design neutralizing antibodies that recognize the broad range of epitopes, a portion of a molecule to which an antibody binds, needed for effective immune protection," Parang says, "but there is still a lot of work going on in vaccine development."

The challenges in Parang's lab include improving the potency of the compounds, decreasing their toxicity, enhancing their cellular uptake, increasing the stability and length of time they are effective, and generating compounds with broad-spectrum activity against drug-resistant HIV.

"Over 10 billion dollars is spent globally on HIV/AIDS treatment annually. In addition to saving lives, a new preventive medicine could mean a huge savings in health care."

The lab is synthesizing large quantities of a number of lead compounds, optimizing several other compounds, testing and refining them. Once a candidate compound is selected, the next phase will be preclinical and animal studies by Professor Gustavo Doncel, Director of Preclinical Research at the Eastern Virginia Medical School, who is collaborating with Parang.

After successful preclinical testing, a pharmaceutical company would take it from there, running human clinical trials in conjunction with the National Institutes of Health, and eventually formulating a product for sale. URI would share in any royalties if the technology is licensed by a pharmaceutical company.

"Drug development is a long process. The success requires an innovative idea, patience, investment, and hard work," Parang says.

Potentially, some of the compounds could also protect against some other sexually transmitted pathogens and prevent unwanted pregnancy because of their spermicidal activity.

Parang's lab is also working on an oral multi-functional compound that attacks the virus in the lymphatic system and the brain, places where it can hide and resist the treatment, he says.

He has also received a $627,000 grant from the American Cancer Society to study an enzyme, Src, which has been implicated in the development of several types of cancer, including breast, colon and pancreatic cancer.

"If you can spend your life to help other people," Parang says, "that is the major reward and accomplishment for me. Then I can say I have lived a productive life."

Untitled, Acrylic, Steve Hayes

POSITIVELY AWARE: (Mis)perceptions of Living with HIV/AIDS", an exhibit sponsored by the URI Feinstein Providence Campus Gallery and The Traveling Theatre Company, at the URI Feinstein Providence Campus.

URI's answer to going green

GO BLUE:

THE BLUE MBA

For a long time, the color green in the business world meant only one thing: money.

In recent years, energy costs, consumer demand and concerns for the environment and the bottom line have shifted the thinking in corporate boardrooms, where talk of global climate change and alternative fuel sources is now taking place.

This shift in focus has taken place because climate change represents a major challenge and opportunity to a broad range of businesses and the global economy.

Industry leaders are now realizing what an asset it would be for a business to have seated in its boardroom not only the MBAs who understand how to finance, manage and market a business, but also some who are experts in the science, particularly the climate-related science, of going green in the 21st century and beyond.

That was the thinking at the University of Rhode Island when it decided to offer the world's first Blue MBA, which is a Master of Business Administration-Master of Oceanography (MBA-MO) dual degree. Blue (think the ocean) because it partners the College of Business Administration and the Graduate School of Oceanography, one of the largest and most widely known graduate schools of its kind in the United States.

"Green MBAs" have begun to dot the landscape of universities throughout the country and tend to focus on teaching MBA candidates about sustainability and corporate responsibility. But at URI, the Blue MBA program will lean heavily on the science side of going green. "When you look at these Green MBA programs, they are primarily attracting business students," says College of Business Administration Dean Mark M. Higgins. "We want scientists and will teach them business."

The Blue MBA is meant for students with a pure science, environmental science, or engineering undergraduate degree who want to work in industries such as energy, ocean technology and engineering, hazard risk management, water resources, fisheries, marine navigation and tourism, as well as ocean and human health. The program will not require a thesis, but an internship.

The first Blue MBA candidate arrived on the URI campus in September, coincidentally just as URI was launching its Honors Colloquium on ocean science and climate change. She enrolled a remarkable 15 months after URI Professor of Oceanography S. Bradley Moran approached Higgins with his idea for the dual-degree program. The speed of the program's establishment points to the enthusiasm for the concept at URI, the pair say.

With no marketing while approvals were pending, the program still attracted four applicants and URI accepted Sarah Sylvia.

Sylvia, a Barrington resident who graduated from the College of Charleston, SC, with a BS in marine biology, says she liked what she heard. "I could still do research, but having an MBA would open up the number of companies I could do research at," says Sylvia, who has worked as a research assistant with Save The Bay's eelgrass restoration project. "I had other interviews with different departments, but none seemed to give the same wide ranging choices as the Blue MBA."

Higgins and Moran expect they'll have no problem expanding the program once word gets out and students see the demand that their skills will bring.

"Every young person wants to make a decent income and contribute to making the world a better place – you can do that with the Blue MBA," Moran says. "You would be getting your business degree but you wouldn't be limiting yourself to Wall Street."

Already the possibilities are being noticed: A blog post in Businessweek.com this summer asks: "It seems like URI has taken a bold and important step in designing a program for environmentalists who want to use business skills to impact climate change. Do you think other business schools will follow in their footsteps?"

> **"It seems like URI has taken a bold and important step in designing a program for environmentalists who want to use business skills to impact climate change."**
>
> Businessweek.com

The demand wouldn't surprise Higgins and Moran. "You tell me the company going forward that can completely ignore global change," Moran says.

Likewise, Higgins points out the emergence of CIOs (Chief Information Officers) in the 1990s to address information technology and envisions Chief Environmental Officers or Chief Science Officers on the horizon.

"You start putting wind turbines in Narragansett Bay, somebody has to manage all that," Higgins says.

The Blue MBA program isn't just good for students and area businesses, which will have a resource in URI in filling important positions, but it benefits URI as well, Higgins says. While the 80-year-old College of Business Administration is considered one of the best in the region, it can't compete for students with some other nearby institutions, such as Harvard and Yale.

"A school like URI has to make niches in the MBA program," Higgins says. "Your only recourse is to create programs that are unique and attract students."

URI FACULTY BOOK PUBLICATIONS 2007

COLLEGE OF ARTS & SCIENCES

College Writing Program

Anson, Christopher M., Robert A. Schwegler and Marcia Murth. The Longman's Concise Companion. Pearson Longman. 2007. 577p. (Also CD From Recording for the Blind & Dyslexic)

Axelrod, Rise B., Charles R. Cooper, Nedra Reynolds and Richard Rice. St. Martin's Guide to Writing 8th Ed + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Bartholomae, David, Anthony Petrofsky, Nedra Reynolds and Rich Rice. Ways of Reading 7e + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007

Cohen, Samuel, Nedra Reynolds and Rich Rice. 50 Essays 2e + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Dilks, Stephen, Regina Hansen, Matthew Parfitt and Nedra Reynolds. Cultural Conversations + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Ede, Lisa A., Nedra Reynolds and Rich Rice. Work in Progress 6e + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Kirszner, Laurie G., Stephen R. Mandell and Nedra Reynolds. Writing in Context + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Lundsford, Andrea A., Nedra Reynolds and Rich Rice. Easy Writer 3e + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Lundsford, Andrea A., John J. Ruszkiewicz, Nedra Reynolds and Rich Rice. Everything's an Argument 4th Ed + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Lundsford, Andrea A. and Nedra Reynolds. St. Martin's handbook 6e + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Muth, Marcia F., Nedra Reynolds and Rich Rice. Research and Writing + Portfolio Keeping 2nd Ed. Bedford/St. Martins. 2007.

Reynolds, Nedra. Geographies of Writing: Inhabiting Places and Encountering Differences. Southern Illinois Press. 2007. 207p. (Paperback; Originally Published 2004)

Schwegler, Robert A. Patterns of Exposition. 18th ed. Pearson Longman. 2007. 668p.

Computer Science & Statistics

Carrano, Frank M. Data Abstraction and Problem Solving With C++: Walls and Mirrors. 5th Edition. Pearson/Addison Wesley. 2007. 998p.

Carrano, Frank M. Data Structures and Abstractions With Java, 2d ed. Pearson Prentice-Hall. 2007. 998p.

Carrano, Frank M. and Ming Jin. Shu Ju Jie Gou Yu Suan Fa Fen Xi: Java Yu Yan Miao Shu. Qing Hua Da Xue Chu Ban She. 2007. 870p. (Data Structures and Abstractions With Java,. Pearson Prentice-Hall. 2007.)

DiPippo, Lisa and Christopher D. Gill, Editors. Design Patterns for Distributed Real-Time Embedded Systems. Springer. 2007.

Economics

Sharif, Mohammad. Poverty Reduction -- an Effective Means of Population Control: Theory, Evidence and Policy. Ashgate. 2007. 166p.

English

Cappello, Mary. Awkward: A Detour. Bellevue Literary Press. 2007. 236p.

Gaige, Amity. The Folded World. Other Press. 2007. 300p.

History

Klein, Maury. The Genesis of Industrial America, 1870-1920. Cambridge. 2007. 224p.

Library & Information Studies

Gilton, Donna L. Multicultural and Ethnic Children's Literature in the United States. Scarecrow Press. 2007. 236p.

Mathematics

Ladas, Gerasimos, Associate Editor. Journal of Concrete and Applicable Mathematics. 2007.

Ladas, Gerry, Open Problems Editor. Journal of Difference Equations and Applications. Vol.7, 2007.

Philosophy

Meghani, Zahra. Can Medical Theories Be Objective? Michigan State University. (Thesis-Ph.D.) 2007. 146p.

Mollgaard, Eske. An Introduction to Daoist Thought: Action, Language, and Ethics in Zhuangzi. Routledge. 2007. 160p.

Psychology

Abrams, David B. The Tobacco Dependence Treatment Handbook: A Guide to Best Practices. Rev. Guilford. 2007. 366p.

Prochaska, James O., John C. Norcross and Carlo DiClemente. Changing for Good: The Revolutionary Program That Explains the Six Stages of Change and Teaches You How to Free Yourself From Bad Habits. Quill. 2007. 304p.

Prochaska, James O. and John C. Norcross. Systems of Psychotherapy: Transtheoretical Analysis. 6th Edition. Thomson Brooks/Cole. 2007. 638p.

publications list courtesy of Professor Mimi Keefe, University Libraries

Sociology & Anthropology

Campbell, Bernard Grant, James Loy and Kathryn Cruz-Uribe. Humankind Emerging. 9th Edition. Recording for the Blind. 2007. (CD; Originally Published by Pearson Allyn and Bacon 2006)

Cunnigen, Donald. Teaching Race and Ethnic Relations: Syllabi and Instructional Materials. 5th ed. American Sociological Association. 2007. 365p.

Turnbaugh, William A., Associate Editor. Historical Archaeology. Vol.41, 2007.

Turnbaugh, William A. and Sarah Peabody Turnbaugh. Indian Jewelry of the American Southwest. Schiffer Publishing. 2007. 95p.

COLLEGE OF ENGINEERING

Electrical, Computer & Biomedical Engineering

Monogan, David and David O. Williams. Journey Into the Heart: A Tale of Pioneering Doctors and Their Race to Transform Cardiovascular Medicine. Gotham Books. 2007. 386p.

COLLEGE OF THE ENVIRONMENT & LIFE SCIENCES

Biological Sciences

Heppner, Frank H. Teaching the Large College Class: The Guidebook for Instructors With Multitudes. Jossey-Boss. 2007. 190p.

Environmental & Natural Resource Economics

Hanley, Nick, Jason F. Shogren and Ben White. Environmental Ethics: In Theory and Practice. 2d ed. Palgrave Macmillan. 2007. 459p.

Lusk, Jayson and Jason F. Shogren. Experimental Auctions: Methods and Applications in Economic and Marketing Research. Cambridge. 2007.

FEINSTEIN COLLEGE OF CONTINUING EDUCATION

Schmidt Labor Research Center

Molloy, Scott. Trolley Wars: Streetcar Workers on the Line. University of New Hampshire Press/UPNE Paperback. 2007. 238p. (Originally Published by Smithsonian Institution, 1996)

COLLEGE OF HUMAN SCIENCE & SERVICES

Education

Burden, Paul R. and David M. Byrd. Methods for Effective Teaching. 4th Edition. Pearson/Allyn & Bacon. 2007. 378p.

Coiro, Julie. Exploring Changes to Reading Comprehension on the Internet: Paradoxes and Possibilities for Diverse Adolescent Readers. University of Connecticut. (Thesis, Ph.D.) 2007. 348p.

Marsh, Colin J. and George Willis. Curriculum: Alternative Approaches, Ongoing Issues. 4th Edition. Pearson/Merrill Prentice Hall. 2007. 394p.

Human Development & Family Studies

Newman, Barbara M. and Philip R. Newman. Theories of Human Development. Lawrence Erlbaum. 2007. 338p.

Textiles, Fashion Merchandising & Design

Welters, Linda and Abby Lillethun, Editors. The Fashion Reader. Oxford. 2007. 456p.

COLLEGE OF NURSING

Birnkrant, Jonathan, Anthony J. Alario and David Pang. Brinker. Pediatrics. Mosby Elsevier. 2007. 308p.

GRADUATE SCHOOL OF OCEANOGRAPHY

Ballard, Robert D., Donald Lynch and Ken Marschall. Atlas of the Titanic. Sparkford. 2007.

Ballard, Robert D. and Rick Archibald. Ballard's Bismark. Chartwell Books. 2007. 231p.

Ballard, Robert D. and Rick Archibald. Ballard's Guadacanal. Chartwell Books. 2007. 227p. (Originally Warner Books, 1993 as The Lost Ships of Guadacanal)

Ballard, Robert and Spencer Dunmore. Robert Ballard's Lusitania: Probing the Mysteries of the Sinking That Changed History. Chartwell. 2007. 227p. (Originally Published as Exploring the Lusitania. Warner Books. 1995)

Ballard, Robert D., Rick Archbold and Ken Marshall. Robert Ballard's Titanic. Madison Press. 2007. 239p. (26th Anniversary Edition)

COLLEGE OF PHARMACY

Pharmacy Practice

Friedman, Joseph H. Behaviors in Parkinson's Disease: A Guide for patients, Families, and Caregivers. Demos Medical Publications. 2008.

Lasky, Tamar. Epidemiological Principles and Food Safety. Oxford. 2007. 254p.

Obaro, S., K. L. Matson, E. C. Lutterloh, D. L. Pugatch. IN: Alario, A. J. and J. Birnkrant, Editors. Practical Guide to the Care of the Pediatric Patient. 2ned ed. Elsevier. 2007. p.583-689.

the arts

Ann Danis

If you think "research" and scientists in lab coats come to mind, then it's time for you to meet Ann Danis.

A URI Associate Professor of Music and Director of Orchestral Activities, Danis is in demand as a performer on violin and viola and as a guest conductor throughout the country.

And for her, getting ready for a performance means more than you might think. "There's a tremendous amount of research involved," Danis says.

For instance, next month in New York she'll be performing Serenade in Strings by Czech composer and violinist Josef Suk. Danis says her research revealed to her that he was the son-in-law of Czech composer Antonín Dvorák and that he created Serenade in Strings when he was 18.

Knowing what an artist went through, the historical and cultural context, the tragedies and happy times, reveals clues to their music. "All of that reflects on the piece…why did they use a certain key at a certain time?" Danis says.

Also this year, Danis conducted the New York All-State String Orchestra at the Eastman School of Music at the University of Rochester and performed with Lesa Terry and the Women's Jazz Orchestra of Los Angeles at the World Sacred Music Festival. Danis serves as the conductor and music director of the Fall River Symphony Orchestra.

Mary Healey Jamiel

Is there anyone who hasn't had Lyme disease or doesn't know someone who has?

Probably not. In fact, more than 717,000 Rhode Islanders live where they could encounter deer ticks, which carry the disease.

That's why URI professor and award-winning filmmaker Mary Healey Jamiel was pleased to hear from URI Professor Thomas Mather, director of the Center for Vector-Borne Disease, when he wanted to make a documentary on the topic.

"The subject had been of great interest to me, as many people in my life, including colleagues, have suffered from the disease," says Jamiel, who directed, produced and narrated the film. "I am most proud that Dr. Mather uses the film for his outreach efforts."

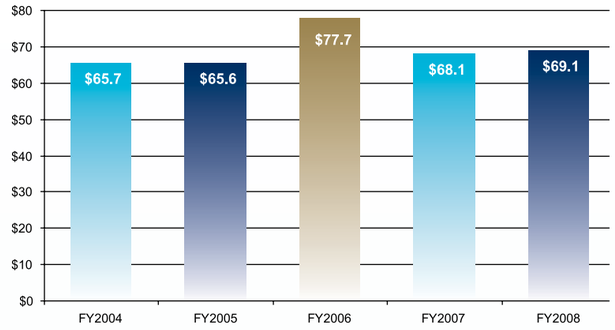
The 24-minute Hidden in the Leaves examines the emergence of Lyme disease and related infections and their alarming rate of expansion. The film was screened at the Rhode Island International Film Festival this year and was shown on RI PBS during high tick season.

Jamiel's work can also be viewed online (www.uri.edu/hc/videos.shtml). She filmed and directed 3- to 4-minute segments highlighting 10 Graduate School of Oceanography scientists and their perspectives on climate change for the Fall 2008 Honors Colloquium, Global Environmental Change.

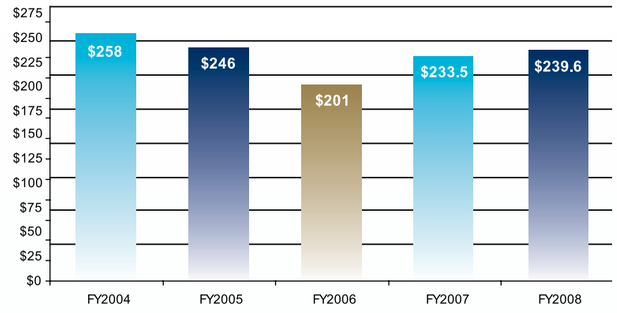
Her acclaimed documentary Holy Water-gate: Abuse Cover-Up in the Catholic Church won a CINE Golden Eagle Award in 2004, won Best of the Festival at the RI International Film Festival and was broadcast on Showtime.

URI'S RESEARCH ENTERPRISE AT A GLANCE

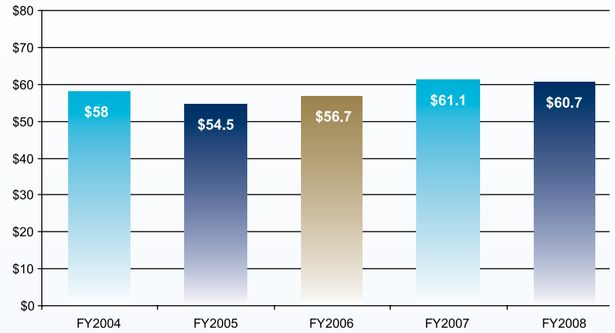
Sponsored Program Awards FY2004 to FY2008
[$millions]



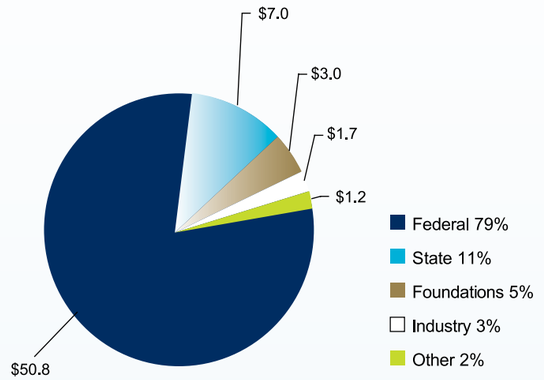
Dollar Value of Proposals FY2004 to FY2008
[$millions]



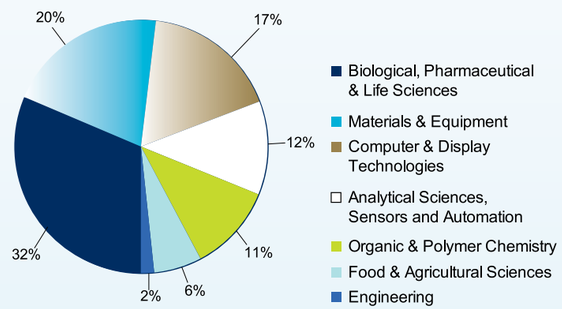
Sponsored Programs Expenditures FY2004 to FY2008
[$millions]



Sources of Grants and Contracts Funding FY2008
[$millions]



Invention Disclosures, 2004 to present



2004 to 2008 PATENT & LICENSING ACTIVITY

	Disclosures Received	US Patent Applications Filed	US Patent Issued	Licenses Generating Royalties
2008	17	19	3	9
2007	14	23	4	7
2006	22	29	4	6
2005	11	20	9	7
2004	18	25	7	9

THE UNIVERSITY OF RHODE ISLAND

OFFICE OF THE VICE PRESIDENT

DIVISION OF RESEARCH
AND ECONOMIC DEVELOPMENT

75 Lower College Road, Suite 001
Kingston, Rhode Island 02881

THINK BIG WE DO℠

Enhancing Economic Development in Rhode Island