THE UNIVERSITY OF RHODE ISLAND
DIVISION OF RESEARCH AND ECONOMIC DEVELOPMENT

Momentum
Research & Innovation

THE URI RESEARCH FOUNDATION

Connecting Academia, Government and Industry to Advance Economic Development in Rhode Island

FALL 2021

WHAT'S INSIDE

Momentum

Research & Innovation

Cover photo: From the grow room of the Rhode Island Agricultural Technology Park Innovation Campus potential partner the RI Mushroom Co.

Oyster farmers in Potters Pond, South Kingstown

ACKNOWLEDGEMENTS

THE UNIVERSITY OF RHODE ISLAND

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THE URI RESEARCH FOUNDATION

seeks to connect our faculty with corporate research partners, to promote our discoveries and to commercialize our novel technologies to improve our world, and to develop new innovations that make our world safer and more secure.

Big Ideas. Bold Plans.

The Campaign for the
University of Rhode Island

Photo by U.S. Department of Defense Air Force Master Sgt. Julius Delos Reyes

FROM THE VICE PRESIDENT

This fall has been a busy semester at URI. We welcomed a new president, we have been fully open with a bustling campus after an uncomfortably quiet preceding year, and we are in the midst of many exciting projects to share with our readers.

This is my first opportunity to publicly welcome to campus the 12th president of the University, Marc B. Parlange, Ph.D. President Parlange arrived in August, after both he and his talented wife, Mary, spent the month of July hiking the Colorado Trail. He has been working hard ever since to deeply understand the institution's strengths, its weaknesses, its potential and its opportunities for growth and greater excellence as an emerging top-tier research university. Dr. Parlange brings tremendous background and expertise as a scholar, mentor, former dean, and most recently as the former provost of Monash University in Melbourne, Australia. The University is equally fortunate that Mary is an excellent scientific writer and editor who has published articles in top scientific magazines all over the world. Mary's skills will be put to good use as URI continues to grow its programs and emphasis on scientific communication. This is an area of focus that is desperately needed in this country, and particularly at this point in our tumultuous social history. In just a few short months, Marc and Mary have become part of the fabric of our community, and I am delighted that they are here. In fact, I knew this would be the case when, prior to their move from Melbourne last summer, Dr. Parlange sent me an email to let me know that they had both sat together for an evening and read the last issue of *Momentum* from cover-to-cover!

This issue contains important articles, including one on how the University is rising to the challenge of addressing the same critically important diversity, equity and inclusion issues that have been reverberating across our society. We also are celebrating the 50th anniversary of our world-renowned Coastal Resources Center, as well as tipping our hat to an innovative student led non-profit company that opens pathways for success in the STEM fields for students from underrepresented backgrounds. Half of this issue is devoted to introducing you to an important affiliate of URI, namely, the URI Research Foundation (URIRF). The URIRF is a cousin to URI's larger affiliate non-profit foundation, the URI Foundation, but the two foundations have very different purposes in the service of the University. Although the URIRF closely aligns with the larger foundation's Business Engagement Center, its mission is not to raise philanthropic funds or keep our alumni connected to the University. These hugely important tasks are best left to the experts at the URI Foundation. Rather, the smaller URIRF seeks to connect our faculty with corporate research partners, to promote our discoveries and to commercialize our novel technologies to improve our world, and to develop new innovations that make our world safer and more secure. The URIRF works locally and internationally to expand our partnerships in burgeoning areas of interest, ranging from offshore renewable wind energy, to protecting and growing our local supply of healthy foods, to expanding the "blue economy" for our state and region. The impact of the URIRF is large, but most faculty, students and staff are unaware of the research foundation and its important work. As the vice president for research at URI, I have the honour and privilege of serving concurrently as the chair of the board for the URIRF. In this dual role, I ensure that the URIRF is nimble and able to respond rapidly to emergent needs of the larger institution, to drive the development of a COVID-19 viral test forward as a business to meet critical time requirements, partner with more than 70 collaborating entities throughout Rhode Island and the surrounding region in developing a "blue print" for new ocean-based economic growth in the state, or attract a new partner and source of start-up venture capital funding for URI alumni, faculty and student entrepreneurs. With this issue, everyone should be familiar with, and proud of URI's efforts to improve the long-term economic health of our beloved state.

Peter J. Snyder, Ph.D.
Vice President for Research and Economic Development
Professor of Biomedical and Pharmaceutical Sciences
Professor of Art and Art History
University of Rhode Island

Scholar-in-Residence
Rhode Island School of Design

TECHNOLOGY PARTNERSHIPS

LAY THE FOUNDATION FOR FUTURE INNOVATION

written by **CLEA HARRELSON '20**

"THE CLOSER THE TIES BETWEEN OUR RESEARCH COMMUNITY AND RELATED INDUSTRY, THE MORE LIKELY IT IS THAT WE WILL BE CREATING TECHNOLOGIES THAT HAVE REAL COMMERCIAL VALUE TO THE PUBLIC."

- Michael E. Katz

As a research institution where discoveries are made, the University of Rhode Island (URI) is an economic engine for the state, and a key element of the URI Research Foundation (URIRF) mission is to enhance URI's contribution to economic development in Rhode Island and beyond.

"The closer the ties between our research community and related industry, the more likely it is that we will be creating technologies that have real commercial value to the public," says Michael E. Katz, associate vice president for URI Intellectual Property and Economic Development and executive director of URIRF.

URIRF — created by the Rhode Island Legislature through the University of Rhode Island Research Foundation Act in 2007 as a 501(c)(3) — provides research programs, promotes education, and obtains and protects intellectual property rights arising from the creative work of the University's faculty,

THE URI RESEARCH FOUNDATION

provides research programs, promotes education, and obtains and protects intellectual property rights arising from the creative work of the University's faculty, students and staff.

students and staff. URIRF advances URI technology commercialization and has helped faculty form eight companies to bring their discoveries to market.

While not all ideas generated through research have the potential to be developed into commercial products or services, Katz and his research foundation team are always on the lookout for ways to translate discoveries from URI faculty and labs into products that could benefit the public.

During the COVID-19 pandemic URIRF assisted URI's Pharmacy Professor Angela Slitt and Associate Research Professor Margaret Teasdale launch URI's RAM Lab. Slitt developed an innovative saliva-based test for SARS-CoV-2, the virus that causes COVID-19. Unlike most tests on the market, Slitt's test is not polymerase chain reaction (PCR) based, does not require a nasal swab and aims to differentiate between variants of SARS-CoV-2 without detecting viruses with similar symptoms (article on page 30). Seeing that this new test might be important for URI as the University managed its way through the global pandemic, URI's vice president for research and chair of the URIRF board of directors, Professor Peter Snyder, redirected the expertise and personnel of the foundation to drive the development of this new COVID-19 test as if it were a private business on campus. As a result, the test moved rapidly from being a bright idea within the URI College of

"URIRF is situated within a dynamic web of university, government, industry, and private partnerships. There is much we can accomplish for the University and the Ocean State."

- Michael E. Katz

Pharmacy, to bench research, and to a human clinical trial that validated the test as being highly sensitive in detecting the virus — in just nine months.

URIRF is a key intermediary in connecting URI faculty with companies and investors across the state, region, and nation. To Katz, achieving this mission starts with forging close partnerships across URI's departments, and raising awareness among faculty and students about the potential for their ideas to be assessed and, if appropriate, licensed to be developed for commercial use.

URIRF helps students, faculty, and the University overall navigate the details of invention disclosures, patent applications, and the licensing of intellectual property. This work has resulted in the development of multiple successful startups led by URI faculty, (article on page 10) including VeloBit, Inc., an information storage technology company created by engineering Professor Qing "Ken" Yang. URIRF is also supporting the creation of a new company co-founded by URI Physics Professors Oleg Andreev and Yana Reshetnyak (alongside Yale University Professor Donald Engelman) called pHLIP Inc., which produces a nanotechnology tool to deliver anti-cancer drugs and imaging agents preferentially to diseased tissues.

URIRF additionally facilitates industry funded research at the University in collaboration with URI's Business Engagement Center and the Office of Sponsored Projects.

Katz describes industry connections as critical. He emphasizes that the URIRF's work to integrate industry with the URI research community directly benefits students through exposure to real-world business challenges as part of research collaborations, internships, and entrepreneurial training.

"We're partnering with the URI College of Business, with mentors across the state, and with Rogue Venture Partners (article on page 24), and through these partnerships we hope to grow a pool of entrepreneurial talent, so that when we have technology that looks like it could be the basis of a startup, the resources exist to support the formation of a new company," Katz says.

Although supporting URI's research community is one of its central objectives, URIRF through its division, Polaris MEP (article on page 34), is also increasingly focused on supporting the larger landscape of manufacturing and technology development

companies across the state.

Katz emphasizes that what's good for URI is great for Rhode Island and the region as a whole.

"We've helped expand URI's role to grow the economy of the state and the region," says Katz. "Economic development is a key part of the University's mission."

URIRF tackles this charge through engagement with a multi-layered network of organizations supported by state and private investments that work together to train future business leaders, foster successful startup ventures, and support industry growth. The Innovation Campuses, a $20 million initiative funded by a Rhode Island Higher Education Bond passed in 2016, is one mechanism driving these activities forward. URIRF is closely involved in the development of three current Innovation Campuses: 401 Tech Bridge, Rhode Island Agriculture Technology, and RIHub (article on page 18).

Katz describes these Innovation Campuses as an exciting chance for the University and the state to lay the foundation for future technological advances, saying, "The ultimate goal is to build a more robust, high-tech industrial ecosystem in the state."

As each Innovation Campus develops, the benefits will be felt across the state, providing hubs for industry investment as well as opportunities for more internships and research collaborations across URI departments and local businesses.

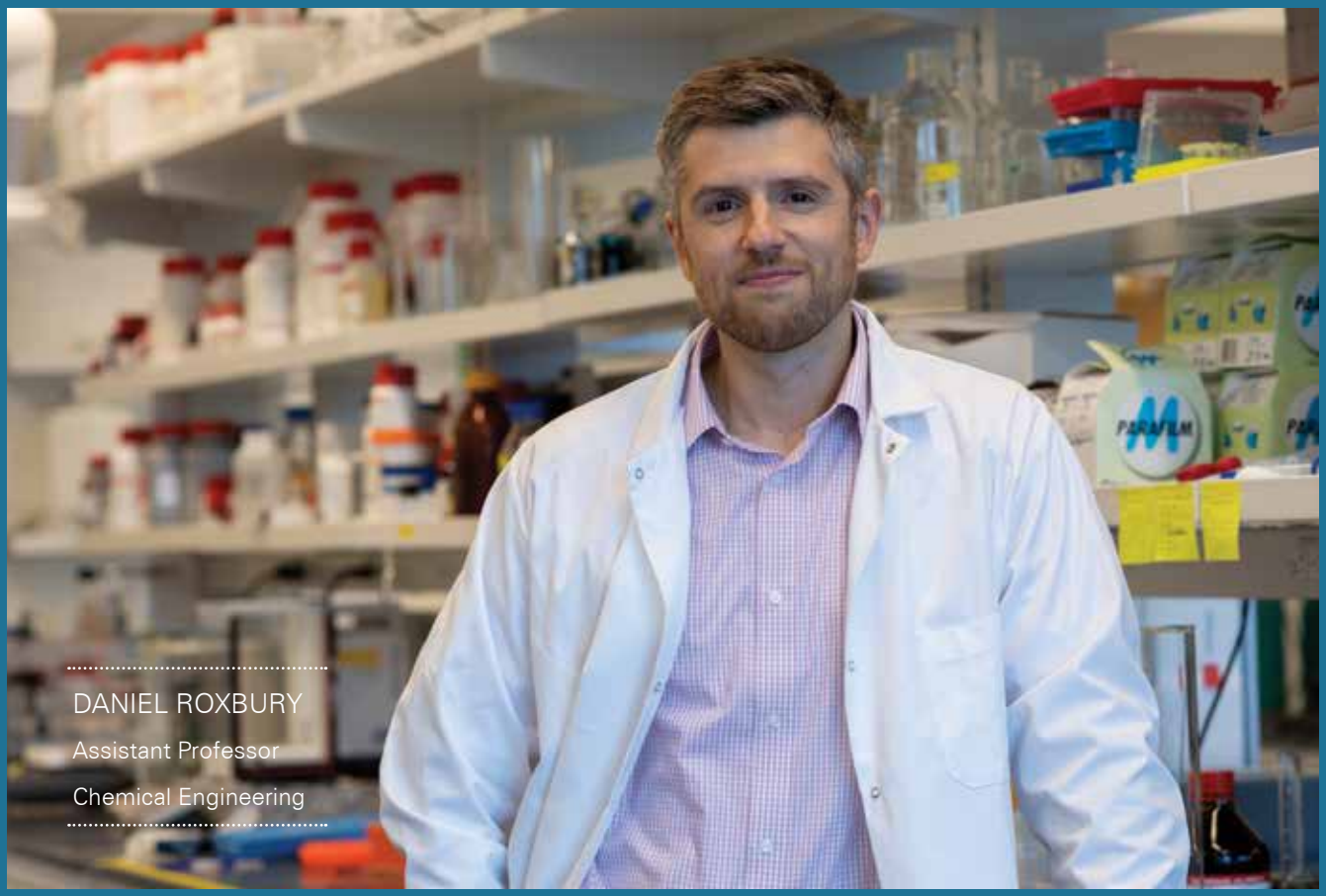
Katz sees URIRF involvement in collaborations such as the Innovation Campuses as one of multiple examples of its expanding role on campus and in the state.

"We're taking on more, we're doing more, we're growing," says Katz.

As part of its growth URIRF recently hired Colonel Erik Brine to be the first director of defense sector research and development initiatives. Jointly reporting to the URIRF, the vice president for research, the director of the Business Engagement Center, and the dean of the College of Engineering, Col. Brine plays a unique role that spans the University to build and manage new partnerships with the U.S. Department of Defense, national security agencies, and related companies. His mission is to create new opportunities and to advance defense-related research and initiatives (article page 26).

Katz underscores the importance of innovative people in technology development, saying, "URIRF is situated within a dynamic web of university, government, industry, and private partnerships. There is much we can accomplish for the University and the Ocean State."

In partnership with Katz, the foundation's board chair, Dr. Peter Snyder has been hiring the talent and aligning the URIRF's new initiatives to pair well with the University's high priorities, including increasing activities in creating ocean-based technologies and companies, clean energy, and in waste plastics mitigation.



DANIEL ROXBURY
Assistant Professor
Chemical Engineering

HELPING
FACULTY NAVIGATE INDUSTRY PARTNERSHIPS AND LAUNCHING COMPANIES

written by **CHRIS BARRETT '08**

Chemical engineering undergraduate students Lauren Hubert and Aidan Kindopp, performing image processing on data.

Professor Daniel Roxbury developed "smart bandages" that he hopes will prevent amputations and potentially save lives by detecting chronic wound infections before they fester. However, his lab at the University of Rhode Island (URI) lacks the scale to produce and ship millions of bandages worldwide.

He needs an industry partner and such potential companies desire the equivalent of a prenup agreement.

Enter The URI Research Foundation: An independent nonprofit affiliate of URI that provides support to University researchers in protecting intellectual property and shepherding new discoveries through the long process of commercialization.

"If you do get an industry partner, the first thing they ask is what kind of intellectual protection do you have," says Roxbury, an assistant professor of chemical engineering. "If they're going to invest millions of dollars to commercialize your product, they need to have some guarantee of a return on investment."

Founded in 2007, URIRF works with about 50 to 75 faculty annually and manages 54 license agreements. It provides a suite of services to URI researchers from refining research ideas to legal advice to tips on talking with venture capitalists.

A frequent client is computer engineering Professor Qing "Ken" Yang, who has worked with URIRF to form multiple companies over the years. One, VeloBit, sold software that increased the speed computers could access information on solid-state drives. After raising more than $5 million in investments, VeloBit was acquired by HGST, a Western Digital company, to incorporate Yang's inventions into their product offerings.

Yang's most recent venture, Fast Bus, develops technology that sits on interfaces of a computer or memory chip to detect physical attacks. Along

ENTER THE URI RESEARCH FOUNDATION:

An independent nonprofit affiliate of URI that provides support to University researchers in protecting intellectual property and shepherding new discoveries through the long process of commercialization.

Chemical engineering Ph.D. candidate Matthew Card, observing the smart bandage textiles through a hyperspectral fluorescence microscope.

Circuit board from Prof. Yang's lab.

with fellow computer engineering Associate Professor Tao Wei, the research led to three patents and piqued the interest of major computer chip manufacturers. URIRF now holds a place on Yang's speed dial.

"These are really nice and experienced professionals, they know what they are doing, and they are very good at intellectual property and technology transfer," Yang says.

He says URIRF plays an important role protecting the University and its researchers. Under the institution's intellectual property policy, faculty must disclose inventions supported by University resources. URIRF and the University share in proceeds garnered from licensing deals and plow that back into additional research investments. Faculty rest easy knowing their work is protected from theft or misuse and follows export control laws.

"Research is exciting and fun for us," Yang says. "That's our job as academics. That's what we love. We are not trained as scientists to attend to these legal processes, contract negotiations and other such activities."

URIRF takes on the "red tape," some of which faculty never knew existed. When the national media picked up Roxbury's smart bandage, he found himself on the phone almost daily with URIRF. They coached Roxbury on what to share publicly and what was better left unsaid. Professors typically aim to publish and share their work, so Roxbury found himself in unfamiliar territory.

"If I was on my own it would have been much more difficult," he says. "Intellectual property is a black box. It is sometimes difficult to know what is protected and what is not."

URIRF plays an important role protecting the University and its researchers.

So, when executives at a major medical supply company rang, Roxbury wasted little time calling URIRF Executive Director Michael E. Katz. The former pharmaceutical executive arranged a tour for the potential investors and met them at Roxbury's lab to field questions about patents and licensing while Roxbury stayed focused on the technology.

Since then, other companies also have expressed interest in the bandages and see a potential for them to treat chronic open wounds experienced by diabetics or burn victims. It all puts Roxbury's idea one step closer to the patient.

"We wear many different hats as faculty," Roxbury says. "I've always enjoyed the research and striving to make products that help people. But I think the invention is much less than half the battle. Getting that invention in the right hands, that's the tricky part."

He'll happily leave that part of the process to URIRF.

QING "KEN" YANG

Professor

Electrical, Computer and Biomedical Engineering

TITAN

the Cutting-Edge Submersible that Surveyed the Titanic Visited URI

written by **HUGH MARKEY**

OceanGate's Titan, a five-person submersible that can dive to depths of 4,000 meters, is towed behind a research ship. (Photo courtesy of David Concannon)

OceanGate's Titan, a five-person submersible that can dive to depths of 4,000 meters, is towed behind a research ship.

The University of Rhode Island (URI) hosted an open house for Titan, the five-crewmember submersible that recently completed a six-week expedition to document the Titanic maritime heritage site. Titan is a unique carbon fiber and titanium crewed submersible designed to take five people to depths of 4,000 meters (13,123 feet).

Bridget Buxton, a URI associate professor of ancient history and Mediterranean archaeology, arranged the viewing of the submersible in cooperation with the URI Research Foundation (URIRF) and OceanGate Inc., a company dedicated to providing state-of-the-art submersibles that make deep ocean exploration possible for a wide variety of researchers and explorers. Buxton, chief archaeologist of the Titanic Survey Expedition, and her team supported OceanGate Expeditions during a series of 12,800-foot-deep dives to survey the wreck of the Titanic.

People waiting in line to go inside the Titan at URI.

URIRF Executive Director and URI Associate Vice President Michael E. Katz and OceanGate President Stockton Rush.

Titan is specifically designed for deep sea exploration. It provides researchers the ability to explore ocean archaeology that is not easily reached by other means. The submersible provides greater impact for the scientific community because it makes direct observation of archaeological sites rather than viewing sites through a camera mounted on an autonomous underwater vehicle or remotely operated vehicle.

"We are proud to be working with Professor Buxton and the University of Rhode Island to share the importance of our innovative technology in supporting crucial deep sea archaeological research," says Stockton Rush, president, OceanGate Expeditions. "The OceanGate Inc. submersible, Titan, is the first and only five-crewmember submersible to reach the Titanic. This summer marked the inaugural year for the Titanic Survey Expedition. The ongoing participation of experts like Professor Buxton is an integral part of this longitudinal study to document the wreck of the Titanic and its rate of decay."

Buxton says, "OceanGate decided to take Titan on a tour to introduce people to the submersible. It's exciting to share our dive experiences and to show some of the footage and images we gathered during the expedition."

URIRF supplied the funds and organized logistics for bringing the vessel to the Quad. Michael Katz, executive director of URIRF, works on collaborations between industry and URI faculty. "When I heard about this opportunity, I thought this would be great for our students, faculty, and the general public to look at a state of the art, advanced materials submersible," says Katz. "It would be a chance to fire up some of our students to get involved in cutting edge innovative ocean technology research."

Katz says part of the URIRF mission is to encourage a culture of entrepreneurship on campus. Hosting Titan in Kingston is a good example of the partnership between research and industry.

Buxton states that work carried out using this submersible as a research platform was part of a pioneering set of dives.

"This is a revolutionary construction of carbon fiber and titanium," Buxton says. "I'm an underwater

The submersible provides greater impact for the scientific community because it makes direct observation of archaeological sites.

OceanGate's Titan, being launched from its platform. (Photo courtesy of David Concannon)

URI Associate Professor Bridget Buxton, URI President Marc B. Parlange, OceanGate President Stockton Rush, OceanGate Foundation Trustee Wendy Rush.

archaeologist, and one of the things I've been very involved in during the last 10 years is developing new technology to make underwater research, and in particular archaeology, more accessible and affordable to scientists and people in developing countries."

Buxton received a grant from the URI Division of Research and Economic Development to help develop an affordable scanning sonar for oceanographic technology purposes. Her involvement with the OceanGate, Inc. Titan submersible is part of this research.

"The submersible can be operated behind any ship," says Buxton. "In addition to deep ocean exploration, it can also be used in shallow and coastal areas. This technology makes it much more affordable to do oceanographic research."

TITAN, IS THE FIRST AND ONLY FIVE-CREWMEMBER SUBMERSIBLE TO REACH THE TITANIC.

FROM INNOVATION TO Economic Development

RI INNOVATION CAMPUSES SHOW THE WAY

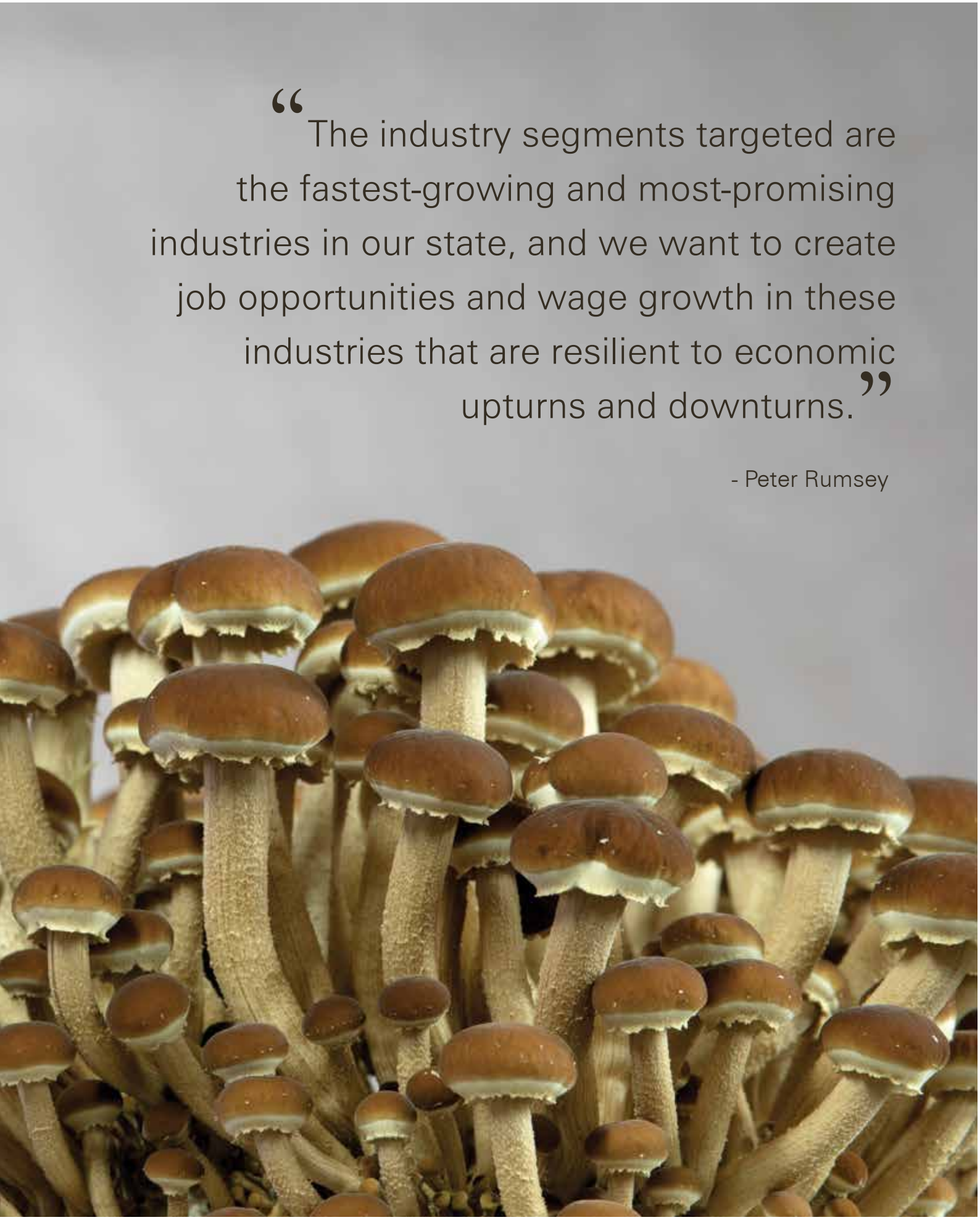
written by **TODD MCLEISH**

Entrepreneurs, inventors and others seeking to transform cutting-edge research into commercial products and services in Rhode Island often run into stumbling blocks when trying to establish new businesses and create jobs in the state.

But a new series of innovation campuses — all in partnership with the University of Rhode Island (URI) and the URI Research Foundation (URIRF) — are now in the works to bridge the gaps in the process.

"An innovation campus, in our case, is a place proposed by a consortium of private companies and public players to partner and focus on creating companies and jobs using entrepreneurship and innovation in a targeted industry segment or cluster," explains Peter Rumsey, chief business development officer at URIRF.

Rumsey is helping with a team that includes Katharine Flynn, executive director of URI's Business Engagement Center, to oversee the development of the campuses. Educated as an electrical engineer at Cornell University, Rumsey served in the Air Force during Desert Storm, and then worked for more than 25 years in high-tech startups largely focused on power systems, renewables (including lithium-ion batteries and solar), LED lighting and battery testing. For the last four years Rumsey worked for the Rhode Island Governor and commerce secretary in cooperation with URI in creating these innovation campuses.


“The industry segments targeted are the fastest-growing and most-promising industries in our state, and we want to create job opportunities and wage growth in these industries that are resilient to economic upturns and downturns.”
- Peter Rumsey

The innovation campuses are already adding hugely beneficial programs and assets to URI that will help attract and retain students and faculty and ultimately create economic development for the University and the state.

Rumsey says, "The industry segments targeted are the fastest-growing and most-promising industries in our state, and we want to create job opportunities and wage growth in these industries that are resilient to economic upturns and downturns."

A $20 million bond approved by Rhode Island voters in 2016, plus matching funds provided by the industry partners, are funding the initial development of the state's innovation campuses. The state funds are intended for use in providing and outfitting the physical spaces for collaboration.

"The physical manifestation is very important because we find that great innovation usually happens when you bring a very diverse set of skills and disciplines together with targeted acceleration programs and create 'collision spaces' where people share ideas," Rumsey says. "That has become a little more subtle with COVID requiring virtual interactions, but we have to have human talent proximity — even if it means using Zoom — to make innovation happen."

As the state's flagship research university, URI is a key player in all of the innovation campuses to leverage resources and talent and to ensure continuity in shepherding the projects through to become self-sustaining entities.

Three innovation campuses are already underway or being developed.

Rhode Island Hub — or RIHub — is intended to be a super-accelerator and incubator for those in the early stages of creating a start-up company. In partnership with Brown University, IBM and MassChallenge, RIHub provides among other programs a three-month intensive mentoring and training program on business plan development, legal and accounting issues, customer development and other topics that will enable entrepreneurs to build their companies.

With the main office located at the Wexford Innovation Center in Providence, RIHub also offers venture mentoring

URI researchers launching Smart Bay equipment. Photo by Shaun Kirby/RI NSF EPSCoR.

services, based on a program at the Massachusetts Institute of Technology, that are delivered by more than 75 entrepreneurs and experts — including Rumsey and several members of URIRF's board of directors — who provide personalized mentoring to start-up founders to help them be successful. RIHub also helps run programs and provides support in partnership with URI's Launch Lab on the main campus.

"RIHub is also where student ventures can consider going once they leave URI," explains Rumsey. "Now more than ever we're building programs on campus that will enable that to happen. URI's Launch Lab, for instance, provides on-campus meeting spaces and a support system to help students and faculty create their own start-up companies before they're ready to move to RIHub."

401 Tech Bridge, the second innovation campus now in operation, is a partnership between Polaris MEP — the manufacturing extension program based at URI — the Office of Naval Research, Naval Undersea Warfare Center, Rhode Island Marine Trade Association, Rhode Island Textile Innovation Network, and several area textile and composites manufacturers (article on page 34).

The group established an innovation campus in Portsmouth, RI focused on advanced materials technology and are constructing a nanomaterials wet lab facility for the rapid development of textile and composite projects. An advanced electron microscope, located in URI's Fascitelli Center for Advanced Engineering, is being used by the partners to see deep inside the molecular structure of composite materials.

The Rhode Island Agricultural Technology Park, an innovation campus planned to be adjacent to URI's Kingston Campus, is tentatively slated to be developed in 2022 to 2023, pending next steps. A partnership of the Rhode Island Mushroom Co., American Ag Energy, plant genomics company Verinomics and seed technology company VoloAgri, the park plans to feature more than 30 acres of high-tech greenhouses for controlled environment agriculture. This innovation campus when built will also include a 20,000-square foot agriculture innovation center managed by URI as an accelerator and incubator for agricultural technology companies and to facilitate internships and other programs.


“Now that we have a couple of the innovation campuses up and running, our focus for them will be to do our best to help the partners make sure they flourish.”
- Peter Rumsey

In addition to these three innovation campus projects, a team at URI is now working in partnership with RI Commerce together with collaborators around the state to develop a possible "**Blue Tech Innovation Campus**" featuring a "Smart-Bay" research, development, testing, and training platform together with a possible Blue Tech Innovation Center to be located on the Narragansett Bay Campus and with satellite "nodes" in other locations around the state.

If developed, the Smart Bay is envisioned as a world-leading research and development, prototyping, testing and training platform for ocean related technology. In RI the unique geography of the Narragansett Bay enables the cost-effective deployment of a constellation of infrastructure, sensors, equipment, and 5G. Exciting work already well underway at URI at the National Science Foundation's EPSCoR funded C-AIM project could be leveraged and expanded on as part of this project. Future physical infrastructure could be combined with an institutional ecosystem that brings together Blue Technology leaders in government, industry, academia, and a regulatory environment designed to support Blue Technology R&D and testing.

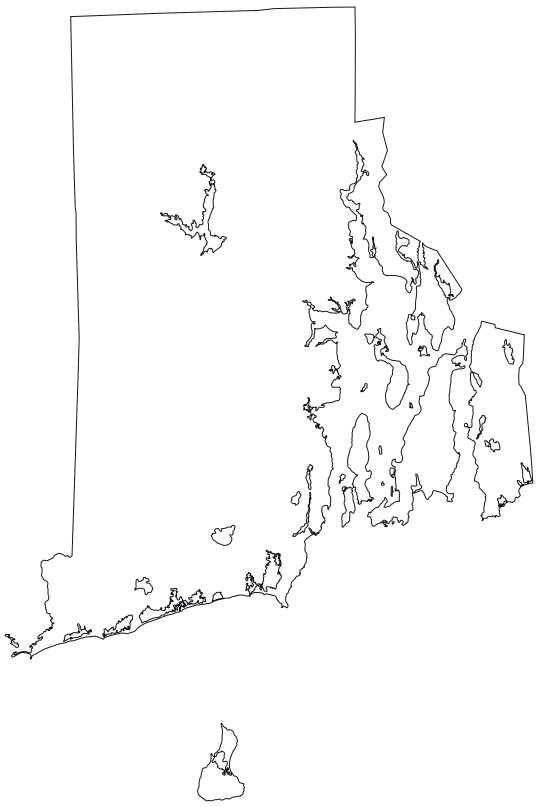
The envisioned Blue Technology Innovation Center (BTIC) would be one of the first in the world where globally leading Blue Technology accelerators, venture capital, startup ventures, research faculty, ocean and coastal resilience experts, and innovative non-profits are located in one space. The planned center would build on the URI Narragansett Bay Campus' globally renowned academic leadership in blue technology, engineering, and policy, with the unique offerings of industry-based programming.

Proposals for an additional campus focused on the biosciences will be pursued.

"Now that we have a couple of the innovation campuses up and running, our focus for them will be to do our best to help the partners make sure they flourish," says Rumsey. "These campuses can and will change the nature of URI. They're already adding hugely beneficial programs and assets to URI that will help attract and retain students and faculty and ultimately create economic development for the University and the state."

Rumsey adds, "Ultimately, URI and URIRF want to do all they can to support faculty research and to create opportunities for launching products and services that lead to vibrant industry growth, so Rhode Island becomes a more resilient and competitive state."

INVESTING IN URI:
A CATALYST TO BUILD CAPITAL IN THE OCEAN STATE AND CREATE ENTREPRENEURIAL OPPORTUNITY



written by **THERESA BROWN '21**

The URI Research Foundation (URIRF) and Rogue Venture Partners' (RVP) goal is to create early-stage capital in Rhode Island and give student and faculty entrepreneurs access to venture capital to grow their ideas.

RVP is a venture capital company that looks at tier two and tier three cities where there is not a lot of capital for entrepreneurs — where funds of $5 million to $20 million could go a long way. Areas such as this are where RVP helps build great ecosystems supporting economic development.

According to Thomas Sperry, co-founder and managing partner of RVP, since there is very limited access to such capital in Rhode Island, many people with business start-up ideas either take capital from outside of the state or leave altogether to make funding their business easier.

"You can think of this current fund of Rogue with URIRF as being a beacon for early-stage capital, being a big fish in a small pond, where our funds can drive real change in the state," says Sperry.

Sperry started RVP in Portland, Oregon. Seeing the similarities between Providence, RI and Portland and how institutional investors were an asset in both the university and the state, he came to URI with the goal of repeating the successes he had with Oregon State University.

"I approached URI to say, 'We should look at how we can be leaders in the local entrepreneurial ecosystem and help shape a future for the state of Rhode Island,'" he says.

Sperry is hopeful that with URIRF support as the anchor investor, the fund can act as the first to push aspiring current and future entrepreneurs to keep their startups in Rhode Island and to grow the entrepreneurial ecosystem in the state.

> "You can think of this current fund of Rogue with URIRF as being a beacon for early-stage capital, where our funds can drive real change in the state."
>
> - Thomas Sperry

"At a university level, in other highly capitalized areas, we're seeing tons of startup activity with access to capital that is driving major valuations and a lot of opportunities," Sperry says. "I would hope we can deliver that in Rhode Island as well, but that is yet to be seen."

According to Sperry, many universities are now recognizing entrepreneurship as a core of their curriculum and he aims to help this happen at URI.

In addition to managing the fund, RVP provides additional resources to universities and entrepreneurs that they work with by collaborating closely with the intellectual property offices, teaching case study classes in business schools, providing mentorship for capstone projects, providing entrepreneur mentorship for students and professors, as well as assisting with making network connections, portfolio reviews and early business development advice.

"Rogue wants to be a central figure in working to look at the best and brightest opportunities and hopefully find some entrepreneurs and startups that we can back," Sperry says. "We would like to work with the different departments within the University to build out an entrepreneurial ecosystem in classes and work with alumni to find great ideas."

Creating the fund in Rhode Island with URIRF support, says Sperry, will create the next generation of wealth and great startups and allow Rhode Island to shine as a new area of opportunity for young entrepreneurs coming out of the University and throughout the country.

As this issue of *Momentum* goes to print, this new VC fund already has invested in a startup tech company that is being led by a URI alumnus, and a novel smartphone app company that spun out of RIHUB, one of the new innovation campuses (article on page 18).

COLONEL ERIK BRINE

Director, Defense Sector Research & Development Initiatives and Operations

URI Research Foundation

COORDINATING URI'S DEFENSE RELATED RESEARCH

written by **ALLISON FARRELLY '16**

Brine will work across the University community to build partnerships, create new business opportunities, and advance defense-related research efforts.

Clocking in at more than $700 billion annually, the United States Department of Defense (DoD) budget accounts for more than half of discretionary government spending. The University of Rhode Island (URI) hopes to secure a bigger chunk of that funding for researchers and businesses in the Ocean State.

Spearheading the effort is Colonel Erik Brine, the first director of defense sector research and development initiatives and operations at URI. With a salary and reporting line that has been split between the URI Research Foundation (URIRF), the URI Business Engagement Center, the College of Engineering, the Vice President for Research and the Office of the President, Brine will work across the University community to build partnerships, create new business opportunities, and advance defense-related research efforts.

"Having a focus in this area creates an intentional and coordinated effort to work with the largest sector of the government that provides significant funding," Brine says. "It's incredibly important for our local economic development as well. The biggest pieces of the economy in Rhode Island, after tourism, are health care and defense, so it's really important to us as a state."

An Air Force pilot veteran and reservist, Brine comes equipped with vast experience in defense, technology, veteran affairs and public policy. He served as an adviser to U.S. Senator Tim Kaine of Virginia, and in his most recent role in Washington, oversaw the $93 billion research and development portion of the Defense Budget as a White House Office of Management and Budget

program examiner and policy adviser for what Brine describes as "all things defense science, and technology and innovation."

Brine's first brush with URI was during his tenure as the first executive director of the National Institute for Undersea Vehicle Technology (NIUVT), a research institute formed in collaboration with the defense industry led by General Dynamics Electric Boat, the Navy led by the Naval Undersea Warfare Center, the University of Connecticut, and URI. In three years, he helped grow the institute's undersea vehicle technology development program to $37 million in research funded by the U.S. Navy.

Some people ask if it's Brine's military experience as a pilot that drew the University to him, but he says, "It was that D.C. experience with Defense programs and budgeting on the Hill, in the Pentagon, and at the White House that NIUVT was looking for, while my experience as an operator in the Air Force is definitely helpful for understanding the needs of the warfighter."

Impressed with the rapid growth he facilitated at NIUVT, URIRF approached Brine with a proposition: What kind of collaborations could he facilitate across different domains and agencies at the University?

Brine's initial objectives are to double down on what the University is already good at, expand URI's partnerships to other defense agencies, and connect faculty and students to defense organizations through workforce development programs.

Currently, much of the defense work being done at the University is with controlled unclassified information (CUI), but Brine hopes to help URI secure more contracts for applied research, ranging from unclassified basic research to those at the secret level. He plans to work closely with Cort Burke, URI's facility security officer, to obtain security clearances for more faculty members and students, and eventually create spaces on campus where secure work can be conducted.

In terms of partnerships, Brine has his eye on continuing URI's strong relationship with the Navy, while building deeper connections with the Rhode Island National Guard, the Army, the Air Force, DARPA, and local manufacturers and defense industrial base partners.

"We're right in the middle of this densely packed ecosystem of impressive industry, government, and academic partners with some amazing facilities," he says. "How can we grow and continue to do interesting, collaborative things with all those partners?"

In addition to building strategic partnerships, Brine hopes to help expose students to careers in defense industries, both through workforce development programs and education. He's currently planning a Hacking for Defense course, slated to run in spring 2022 for business and engineering students.

"URI supplies more engineers and researchers to the Naval Undersea Warfare Center than any other university," he says. "They also supply a lot of the workforce to Electric Boat, Raytheon, and other big defense organizations. We need to continue to do that well and do it better."

> "Having a focus in this area creates an intentional and coordinated effort to work with the largest sector of the government that provides significant funding, it's incredibly important for our local economic development as well."
>
> - Col. Erik Brine

Ocean Engineering Assistant Professor Lora Van Uffelen, with the Seaglider, an autonomous underwater vehicle used for taking oceanographic measurements 1000 meters deep. Coming to the surface every few hours for satellite communication it can be in the ocean for months.

Throughout his time in Washington, Brine saw firsthand how challenging advancing technology and defense related initiatives can be. But part of what excites him about his new role at URI is the ability to dig into creating change on the local and tactical level.

"One of the amazing things about research universities is that you have experts on just about everything," he says. "If you bring them together, that's how you really can move the needle, whether you're starting a new business or advancing a new technology.

"There's this incredible group of individuals who are pushing to make things happen at URI, and I'm personally excited to invest in this community. I'm growing strong roots here locally (Brine is also serving as a member of Jamestown's Town Council). I want to make Rhode Island better, and this is one of the ways I can do it."

"The URI Research Foundation provided numerous resources quickly and efficiently, despite delays due to high demand and low production. They helped to secure crucial supplies and hard-to-find laboratory equipment."

~ Margaret Teasdale

LAUNCHING ADVANCED LABORATORY FACILITIES

written by **BETHANY DELOOF '21**

As the coronavirus spread across the globe, Margaret Teasdale, wanted to contribute to the essential testing needed to detect the virus. Simultaneously, the University of Rhode Island (URI) Pharmacy Professor Angela Slitt developed an innovative saliva-based test for SARS-CoV-2, better known as COVID-19. Unlike most tests on the market, Slitt's test is not polymerase chain reaction (PCR) based, doesn't require a nasal swab, and aims to differentiate between variants of COVID-19 without detecting viruses with similar symptoms, such as the flu, the common cold, or pneumonia.

To prove the test works, URI needed a high-complexity lab under the Clinical Laboratory Improvement Amendments (CLIA) to run a human diagnostic test. Federal regulations require clinical diagnostic labs prove their facilities meet stringent guidelines.

Teasdale, a research associate professor in URI's College of Pharmacy, created the RAM Lab with the help of the URI Research Foundation (URIRF). RAM Lab, which was funded by $300,000 from the institution as well as a generous $100,000 donation, is the University's first high-complexity CLIA lab.

RAM LAB

UNIVERSITY OF RHODE ISLAND
CLINICAL ASSAY LABORATORY

A spectrophotometer/luminometer determines how much virus present in a sample.

MARGARET TEASDALE

Research Associate Professor

Pharmacy

URI needed a high-complexity lab under the Clinical Laboratory Improvement Amendments (CLIA) to run a human diagnostic test.

"The URI Research Foundation provided numerous resources quickly and efficiently, despite delays due to high demand and low production," says Teasdale. "They helped to secure crucial supplies and hard-to-find laboratory equipment."

In addition, URIRF connected the Polaris Manufacturing Extension Program (article page 34) to the project. Polaris provided services including the ordering and tracking of supplies and equipment, mapping laboratory space to design workflow, and working with Professor Slitt to create the standard operating procedures to reliably run the new test.

With the RAM Lab up and running, Teasdale hopes to continue to grow the lab and open the door to researchers conducting tests on other medical innovations.

"Everything evolves," says Teasdale, who is also working to become the University's first certified laboratory director for a high-complexity lab under CLIA. "You start with an idea and it evolves."

Teasdale says there are several benefits for the University from both the saliva-based test and RAM Lab in general. Now the University can analyze Slitt's test right on campus, cost effectively simplifying and speeding up the process rather than sending tests off site. And while no one can predict the next medical diagnostic test society will need, URI will be ready. In addition, this new lab may be able to assist the University's Health Services in providing more cost-effective services for routine lab tests.

"URI has a lot of up-and-coming research, all of which can be capitalized on," Teasdale says. "This lab can be a crucial step."

WITH THE RAM LAB UP AND RUNNING, TEASDALE HOPES TO CONTINUE TO GROW THE LAB AND OPEN THE DOOR TO RESEARCHERS CONDUCTING TESTS ON OTHER MEDICAL INNOVATIONS.

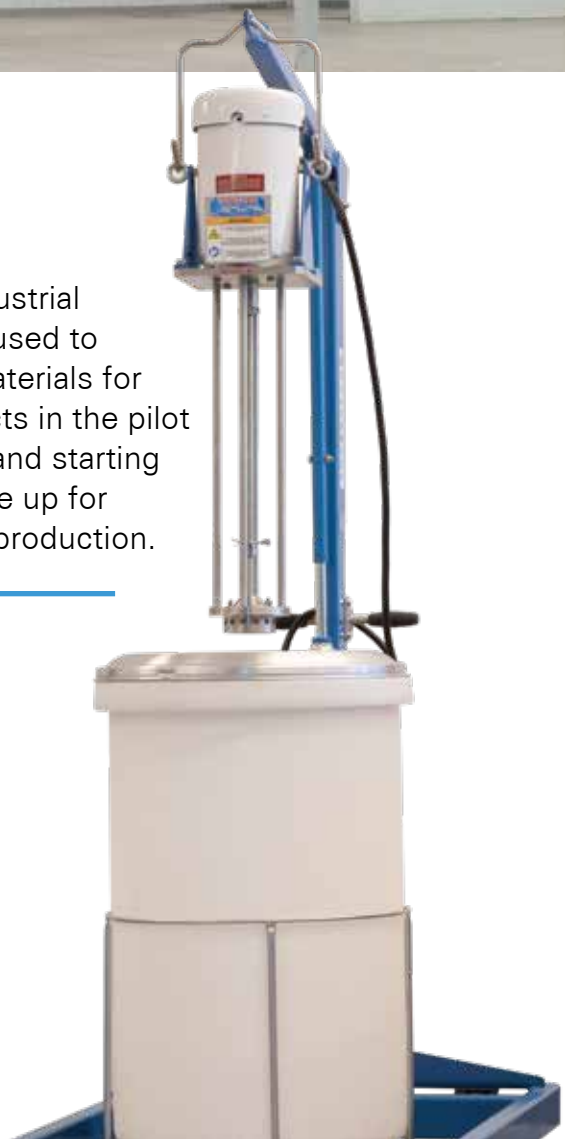
Engaging with Rhode Island COMPANIES

written by **ALLISON FARRELLY '16**

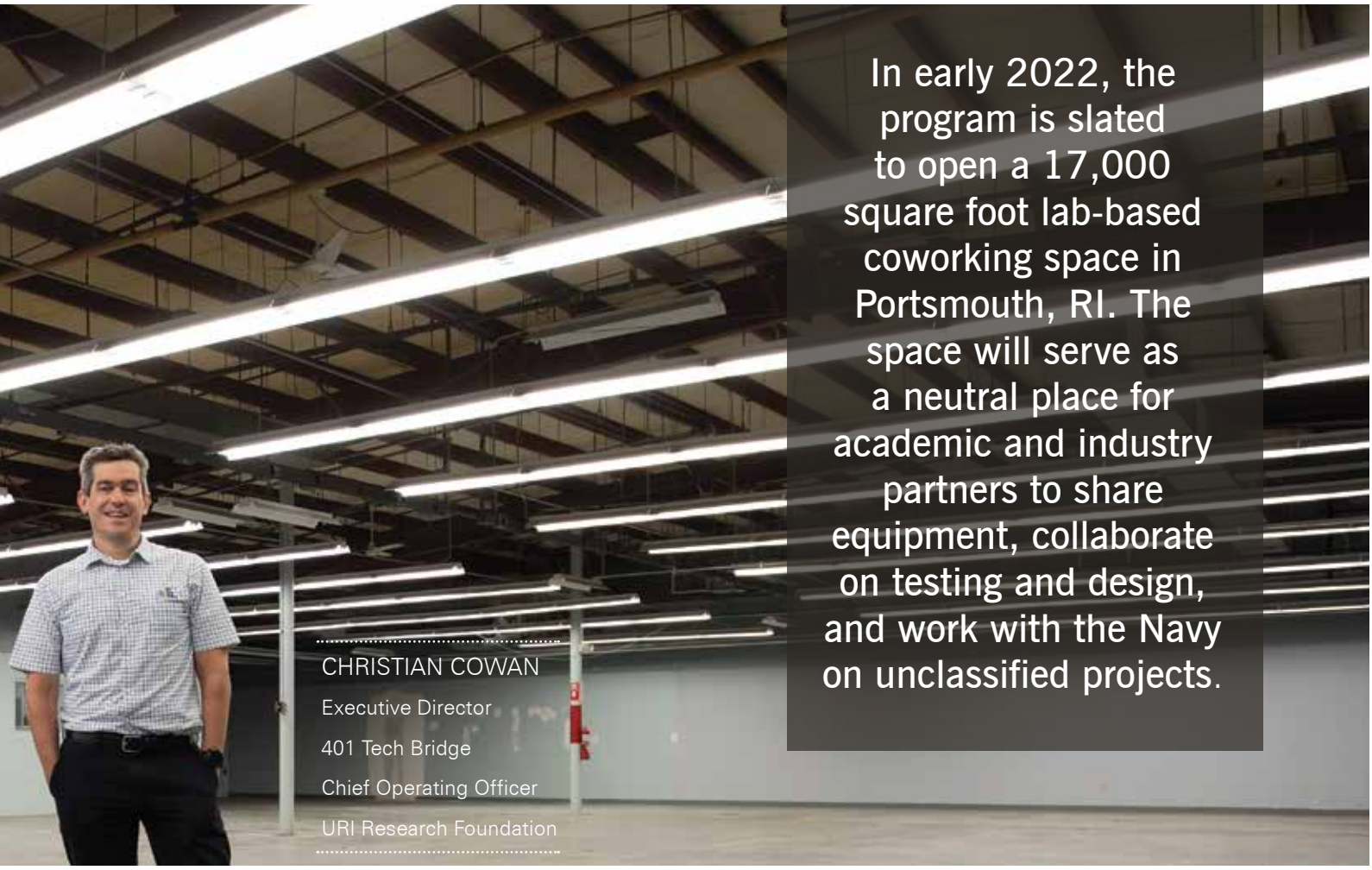
For the smallest state in the union, Rhode Island punches above its weight in the manufacturing arena. The URI Research Foundation (URIRF) is working to support innovation at those 1,600+ businesses and connect them to resources and talent at the University.

URIRF interacts with manufacturing businesses on a local and regional level through the institution's Polaris Manufacturing Extension Program (MEP) and 401 Tech Bridge programs, both of which aim to boost local economy and use federal funding to help companies better engage with URI.

"We're a good connector between researchers, students, and small manufacturers in Rhode Island,"



An industrial mixer used to mix materials for products in the pilot stage and starting to scale up for larger production.



says Christian Cowan, chief operating officer for URIRF and executive director of 401 Tech Bridge. "Companies come to us when they are looking to make new products based on the latest and greatest technology."

What started four years ago as an effort to support local composite and textile manufacturers has grown into a regional initiative connecting URI researchers, industry, and government. 401 Tech Bridge facilitates the sharing of resources to develop and manufacture new products and connects them with contractors, like the U.S. Navy, looking for innovative partners.

401 Tech Bridge currently offers local manufacturers access to a suite of research and development equipment, funded by the state, at URI's Kingston campus. In early 2022, the program is slated to open a 17,000 square foot lab-based coworking space in Portsmouth, RI. Funded by a $2.3 million Economic Development Agency grant and $1.75 million from the RI Innovation Campus program, the space will

401 TECH BRIDGE

FACILITATES THE SHARING OF RESOURCES TO DEVELOP AND MANUFACTURE NEW PRODUCTS AND CONNECTS THEM WITH CONTRACTORS, LIKE THE U.S. NAVY, LOOKING FOR INNOVATIVE PARTNERS.

serve as a neutral place for academic and industry partners to share equipment, collaborate on testing and design, and work with the Navy on unclassified projects.

"It's a large capital expense to buy high-tech equipment, but often small manufacturing companies don't have the funds to purchase state-of-the-art R&D resources needed to create new products," Cowan explains. "We have federal funding to help purchase that equipment and the companies can use it, try it, make prototypes, make pilots, and if it works for them and they like it, they can go back to their company with resources to start producing."

In addition to breaking ground in Portsmouth this fall, 401 Tech Bridge is launching a blue tech startup accelerator in partnership with MassChallenge and a textile-based innovation challenge to help connect the Navy with smart textile manufacturers.

"I love engaging with all small companies and seeing the incredible products being made here in Rhode Island and New England. That by far is my favorite part of it," Cowan says. "Being able to help these companies figure out what their next generation of products and next generation of technology are, it's exciting to see what's being made now and help them project what will be made in the future."

One of the main advantages to the URI Research Foundation connection is the ability to provide the University with deeper industry engagement and partner with local industries to secure research-based funding for faculty and students.

"The URI Division of Research and Economic Development has been invaluable to making sure we connect to the right resources on campus," Cowan notes. The URIRF board of directors is led by the University's vice president for research and economic development, making the identification of resources and connections across these entities a seamless process.

While 401 Tech Bridge works with companies across New England, Polaris MEP is focused solely on manufacturing in Rhode Island.

Polaris MEP Center Director Kathie Mahoney says, "I like to say we help companies with their topline, their bottom line, and their pipeline."

Polaris' staff works with manufacturing companies

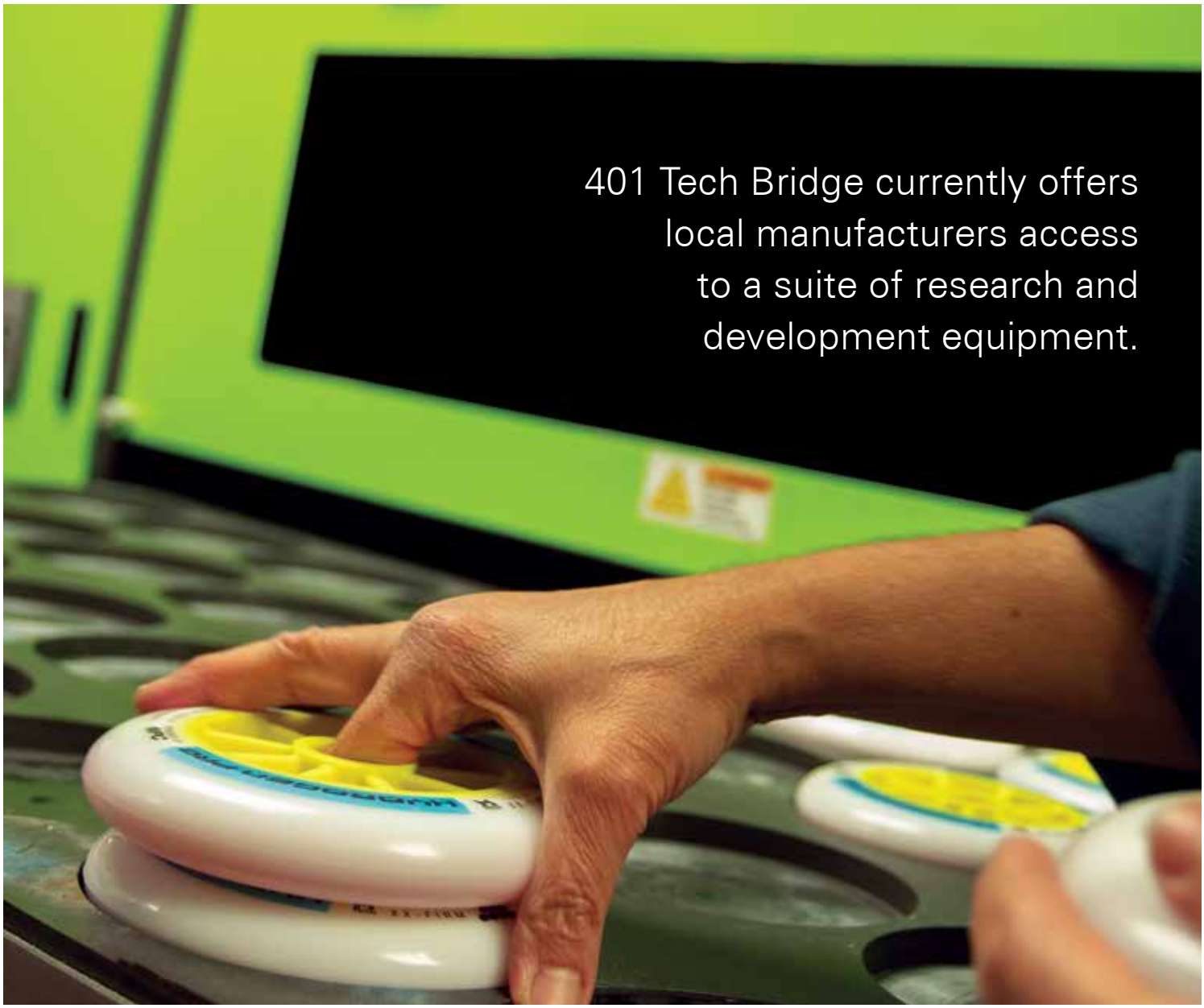
in every industry, including food, textile, and defense, to identify and solve key business problems. With a staff of 11 project managers and a wide network of third-party consultants, Polaris provides businesses mentorship and training in areas like shop floor improvements, ISO, marketing, succession planning, business plan development, SEO optimization, and 3D printing prototyping.

"For example, if someone came to us and said, 'During the pandemic we pivoted to make PPE, and now we want to make something in the medical industry related to PPE, how do we get the word out? How do we market and brand ourselves in that particular space?'" Mahoney says. "We have resources that could help."

In addition to the rotating case load of 80 to 100 businesses, Polaris has two key initiatives on the horizon this year: a cyber security program to help small manufacturers complete U.S. Department of Defense requirements and a training center to expand the Computer Numerical Control (CNC) machining talent in Rhode Island.

Mahoney came to URI in fall 2020 from the Massachusetts' MEP program and has been struck by the state's energy.

"The collaboration here in Rhode Island is phenomenal, as is support from the state, colleges and universities," she says. "Because the state is so small, everyone knows each other so all the partners work well together."



Justice, Equity and Inclusion Initiatives:

MAKING HEADWAY IN THE ADMINISTRATION, THE CLASSROOM AND IN RESEARCH

written by **DIANE STERRETT**

"THE SURVEY IS AN EXTENSIVE RESEARCH PROJECT THAT OUR COMMUNITY HAS BEEN ASKING FOR. IT'S A DATA-DRIVEN ACTION AND STRATEGIC PLANNING PROJECT, AND THE RESULTS WILL BE USED TO INFORM THE UNIVERSITY'S NEXT STRATEGIC PLAN."

- Mary Grace A. Almandrez

URI Media Specialist Alex DeCiccio, Associate Professor Amelia Moore and Professor Kendall Moore work on *The Decolonizing Science Documentary Film*.

Building an inclusive community takes work. The University of Rhode Island (URI) faculty and staff are tackling the issue from different angles grounded by current and historical research.

AT THE HELM

At the forefront stands Associate Vice President for Community, Equity and Diversity Mary Grace A. Almandrez. Also carrying the title of chief diversity officer, she operates across the University on emergent issues of diversity, equity and inclusion by facilitating action-oriented conversations and spearheading programming. To drive those initiatives, her office recently completed the institution's first-ever Campus Climate Survey with 22 percent of the community responding.

"The survey is an extensive research project that our community has been asking for," Almandrez says. "It's a data-driven action and strategic planning project, and the results will be used to inform the University's next Strategic Plan. We're really excited about what's to come."

A Climate Survey Working Group was formed to develop, implement and interpret the survey, working in conjunction with Rankin and Associates Consulting, which has conducted more than 200 campus climate assessment projects. The findings were presented to the campus community in October 2021 and a series of town hall meetings took place in November to identify specific short-term action items.

In a parallel effort, the University has made significant investments based on URI's Anti-Black Racism: Academic Affairs Action Agenda for Change. The agenda was developed through conversations with Black faculty and staff, as well as the national Black Lives Matter movement.

Now, the University has eight clear initiatives to push an anti-racism agenda, including hiring an inclusive pedagogy specialist, developing an anti-racist curriculum and hiring additional faculty to diversify departments and programs.

URI also piloted a 365 Diversity, Equity and Inclusion Symposium to provide an avenue to discuss social justice issues affecting the Black community. Open to all faculty, staff, students, alumni and affiliates, more than 35 sessions have been held.

"It is important to bring together the community to have honest and courageous conversations about different topics within a specific theme," Almandrez says. "Next year, the University plans to host another symposium focused on advocacy and allies for social justice."

Another initiative, advocated for by URI's Native American Advisory Council (NAAC), is a new undergraduate scholarship for students who are enrolled citizens of the Narragansett Indian Tribe. The scholarship covers full tuition, mandatory fees, and money for books. The first was awarded this fall. NAAC is also working with University faculty and staff to support the Native American Student Organization (NASO).

URI remains steadfast in its commitment to social justice, equity, access, and inclusion, and there are many more initiatives underway to advance the institution's strategic diversity goals.

EQUITY IN TEACHING, LEARNING, AND FACULTY DEVELOPMENT

Being a social justice activist can take many different forms, from writing letters to staging protests. Professor Annemarie Vaccaro, in the URI School of Education and College Student Personnel Program director, has woven her activism into every aspect of her life: teaching, research, publication, faculty development, even volunteer activity. She serves on the URI Diversity Council and is a faculty development affiliate.

"I have an incredible privilege as a faculty member to infuse my empirical research and my passion for social justice into my teaching and my service," she says. "I am passionate about equity and justice — it's the core of who I am. I am driven to do equity research that matters."

She has conducted numerous equity and justice focused empirical studies as well as projects centering the scholarship of teaching and learning about social justice. Recently, she was co-primary investigator for a study that conducted intensive individual interviews with 56 undergraduate and graduate students from four college campuses. The main research question was: *How do students with Minoritized Identities of Sexuality and/or Gender majoring in STEM experience and navigate campus learning environments and their disciplines/fields?*

The University has eight clear initiatives from the Anti-Black Racism: An Academic Afffairs Action Agenda for Change

1. Infuse Anti-Racism, Social Justice, and DEI Perspectives in the Curriculum.
2. Expand Professional Development Focused on Anti-Black Racism and Racism Overall.
3. Transform Search and Hiring Processes. Prioritize Recruitment, Hiring, and Retention of Faculty and Staff of Color.
4. "Build Our Own" Diverse Graduate Programs in Selected Fields.
5. Develop College Plans for DEI and Appoint College Diversity Coordinators.
6. Transform and Expand the Multicultural Faculty Fellows Program Into the Distinguished Multicultural Postdoctoral Faculty Fellows Program.
7. As an Institution Committed to DEI, Combatting Anti-Black Racism, and Advancing an Inclusive Agenda, Acknowledge and Value Evidenced Based Faculty Contributions to Anti-Racism and DEI.
8. Implement Annual College Diversity Progress and Accountability Reports.

"I am passionate about equity and justice — it's the core of who I am. I am driven to do equity research that matters."

- Annemarie Vaccaro

ANNEMARIE VACCARO

Professor, Alan Shawn Feinstein College of Education and Professional Studies

Director, College Student Personnel Program

"Students shared their narratives, and it was quite enlightening," Vaccaro says. "We began by looking at the campus climate for diversity in the classroom, and it evolved into a holistic image of what it's like to be an LGBTQ student. Students expressed concern about finding a job in their chosen field and whether they would be accepted. Many women came forward and discussed gender issues in the classroom, such as their ideas being co-opted by men and presented as their own."

But it's not just research for research's sake. Vaccaro shares their narratives in publications, at conferences, and at campuses across the U.S. to help faculty, administrators and staff create more affirming spaces.

Vaccaro explains, "Participant stories are educational, illuminating data that can help us be better, and help others have a more equitable experience."

As facilitator for URI's Faculty Inclusion Workshops, Vaccaro has facilitated more than 50 workshops to more than 1,000 attendees between August 2018 and June 2021. Geared for both faculty and administration, she infused equity research from scholars around the globe as well as her own work. Topics included using inclusive pedagogy, designing equitable course content, and fostering belonging in faculty spheres of influence.

A prolific and passionate writer, Vaccaro has published many peer-reviewed articles, book chapters and two books on equitable higher education as well as inclusive and socially just teaching, research and professional practice.

"One of my goals is to contribute to the body of scholarly literature that helps other educators engage in inclusive teaching and administration," she says. "My hope is that someone will read my work and say, 'I'm going to use that to do equity work on my campus.'"

REORIENTING MARINE AFFAIRS TOWARDS JUSTICE

With a doctorate in sociocultural anthropology, Associate Professor Amelia Moore, URI Department of Marine Affairs, has been crisscrossing the globe studying marine affairs through the lens of anthropology and social justice advocacy.

"My current research focuses on coastal places, especially islands, and how they have been imagined and used in colonial experimental ways for the advancement of settler control, ownership, and exploitation," she says. "My hope is that by conducting research, teaching and changing the curriculum, we can raise awareness of the history of colonialism, enslavement, and migration, as well as recognize that our coasts and seas have been subject to many generations of structural and institutional injustice."

Moore says marine affairs can become a tool for all forms of justice: environmental, climate, and racial, in order to dismantle some of the colonial infrastructures that shape the way we live on and manage our coasts, resources and marine spaces.

From The Bahamas to Indonesia to the state of Rhode Island, she found that the structures of governance, the decision makers, and even the scientific community were deeply colonized, making it nearly impossible to imagine alternatives that might address historical and contemporary injustices.

Currently, she is co-producing *The Decolonizing Science Documentary Film* (working title), directed by Professor Kendall Moore in URI's Harrington School of Communication and Media. Slated for release in early 2023, the documentary explains the historical context for supremacy in higher education and the natural sciences and explores the need to create a more inclusive and equitable STEM culture. Still actively filming, the duo hopes to pack as much narrative as possible into 90 minutes.

MARY GRACE A. ALMANDREZ

Associate Vice President for Community, Equity and Diversity

Chief Diversity Officer

The film follows scientists and policymakers as they face the changing social justice landscape and seascape in the U.S. For example, there's an effort underway to memorialize the Middle Passage in the Atlantic Ocean, the route slave ships took from Africa to the Americas,

From The Bahamas to Indonesia to the state of Rhode Island, she found that the structures of governance, the decision makers, even the scientific community were deeply colonized, making it nearly impossible to imagine alternatives that might address historical and contemporary injustices.

during which over a million enslaved people died.

Moore says, "We're asking scientists who study the Atlantic, particularly Black scientists, what does it mean to think of the ocean as a site of genocidal death and as a graveyard? How do you design ethical scientific research while understanding the ocean as a historical and cultural space?"

The film also follows the process of renaming URI's R/V *Resolution,* which was named after a ship in the British Royal Navy that infamously traversed the Pacific in the 18th century, to the R/V *Narragansett Dawn*, named after the Narragansett Tribe, with inference to a historical Tribal newspaper of the same name and to the people of the northeastern dawn lands.

"We wanted to show how complicated and uncomfortable and tense it can be, but also show how scientists are learning and thinking about deconstructing colonial processes and infrastructures guided by Indigenous organizations and representatives," Amelia Moore explains. "We explore what it means to rename a research vessel to honor Indigenous sovereignty and perpetuity in a region that was basically stolen from Indigenous people. We're hoping the film will speak to others who are interested in beginning this anti-colonial work of reimagining what is possible to do, and inspire them to do what they can in the spaces they are in."

THE AGE-FRIENDLY UNIVERSITY

Promoting Lifelong Learning and Interdisciplinary Research at URI

written by **Hugh Markey**

Interdisciplinary health promotion project members Deborah Riebe, Phillip Clark, Geoffrey Greene, Christine Ferrone, Faith Helm, and Bryan Blissmer.

In Professor Phillip Clark's world, hanging out on the University of Rhode Island (URI) Quad on a spring morning would look a bit different from the current scene.

Yes, there would be lots of young people sunning themselves on the grass and playing Frisbee. But there also would be older adults heading to their next class or engaged in discussion with younger students.

Clark and his colleagues are proposing a new university environment, one that welcomes both traditional (younger) students pursuing a bachelor's degree and adults at later stages of life, who are taking courses that interest them or are required for a new job or career change. For example, maybe they are retooling for another career at a later life stage and have to take certain courses that are required for that program to move into a new job or profession.

"My sort of fantasy is that we'll walk across the Quad at some point, and you'll see a lot of people who have gray hair," Clark envisions. "That would be an expression of success."

Clark, a professor of gerontology at the University, is proposing new interdisciplinary research focusing on promoting a healthier old age. That research, in turn, can become a cornerstone of what's called an Age-Friendly University.

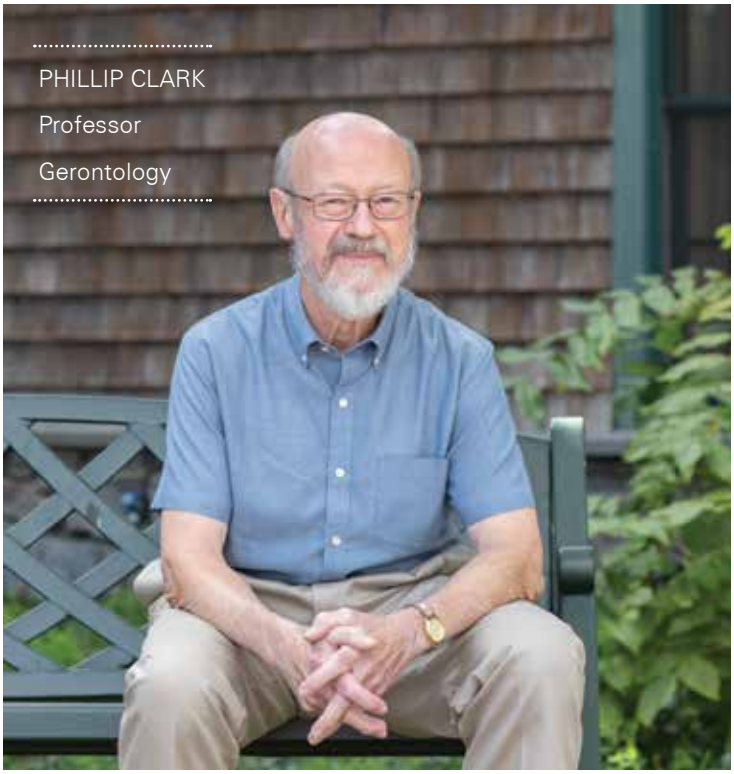
"Aging is one of those areas that we can see increasingly important globally as well as in the U.S. and then in our own state," he says. "In fact, it's been tied to Rhode Island's economic development."

Southern New England has been suggested as a hub for services and products for older adults in much the same way Silicon Valley is a resource for technology. URI faculty members have been involved in initiatives to make Rhode Island an age-friendly state. Achieving that goal necessitates the participation of multiple academic disciplines.

"The very foundation of this is to understand the

CLARK IS PROPOSING

new interdisciplinary research focusing on promoting a healthier old age. That research, in turn, can become a cornerstone of what's called an Age-Friendly University.



PHILLIP CLARK
Professor
Gerontology

multifaceted aging process," Clark says. "There are three key dimensions of that."

According to Clark, the aging process dimensions are the biological or the physical, such as understanding aging bodies and the organs. Another area is the psychological, including how people process information, their attitudes toward aging, how they deal with changes and challenges as they get older. Lastly, there's the social aspect.

"You really need to understand aging within a social context, such as how older people relate to others: family members, other people in society, social institutions," Clark says. "Otherwise, you're missing key parts of the experience of getting older, and particularly for people who want to assist older people in achieving a healthy old age. That translates into a realization that you need different lenses of different disciplines in the University."

The way to achieve understanding is having people from different academic disciplines collaborating as a team on a project.

Clark points to a University collaborative research project funded by a series of National Institutes of Health grants. The project included faculty and students from kinesiology, nutrition and food science, psychology, nursing, and others. The focus was on promoting health in older adults by getting them to exercise and eat a healthier diet. Research of this kind contributes to achieving the Age-Friendly University.

Taking a Tai Chi class at the South Kingstown Senior Center, illustrating the linkages of gerontology at URI with community groups promoting healthy aging.

Based on a concept originating in Ireland in 2012, the Age-Friendly University challenges universities to adjust their paradigm to welcome students beyond those enrolled in a traditional degree track. This would involve applying a host of "Age-Friendly Principles," such as the creation of alternative educational programs that fit students' needs later in life. It also would encourage intergenerational programs involving classes comprised of both younger and older students.

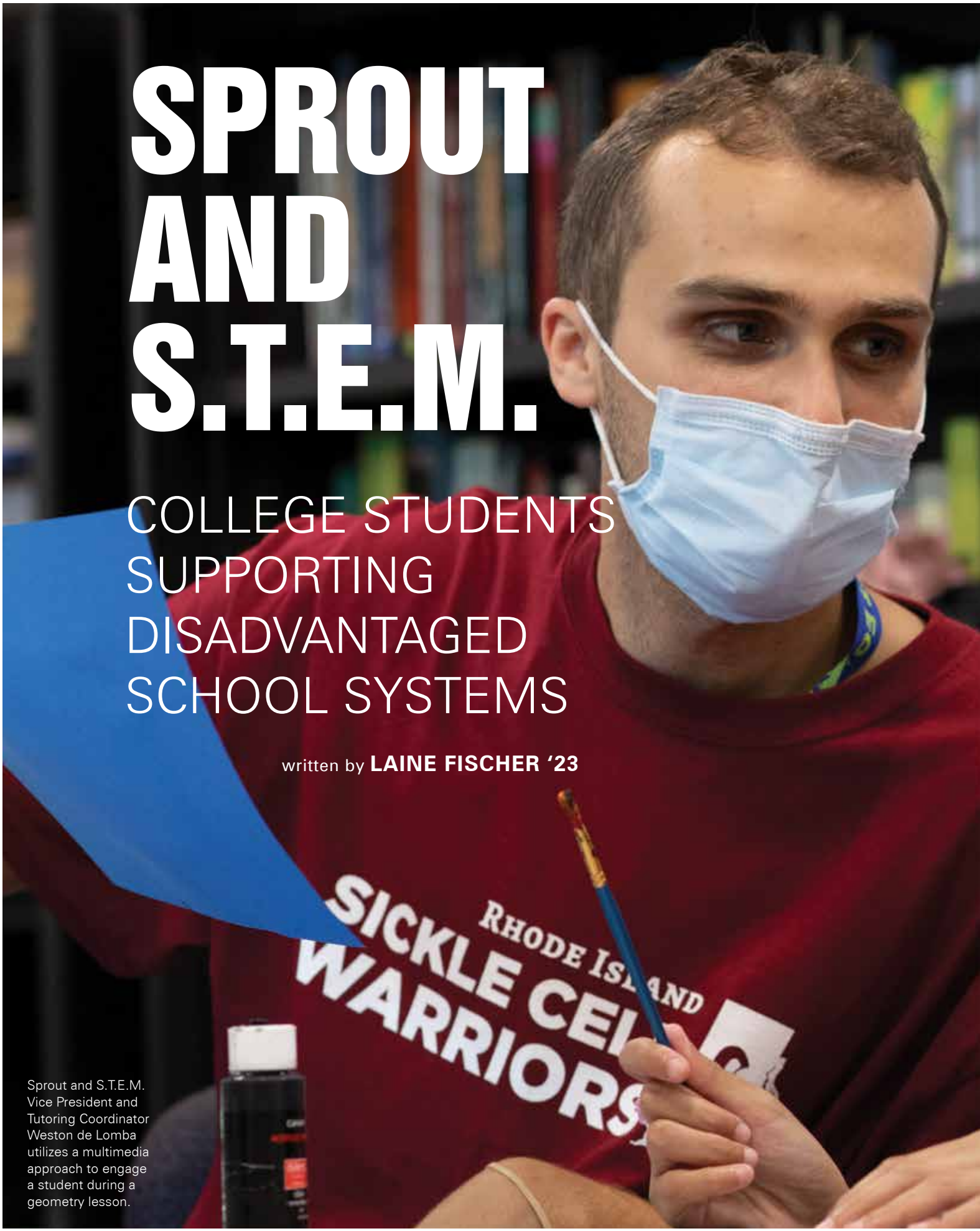
"Often you hear the phrase 'lifelong learning' mentioned," notes Clark. "The University has programs intended to encourage this, such as the College of Education and Professional Studies, the Master Gardener program, Finish What You Started, the Osher Lifelong Learning Institute, and others. The Age-Friendly University model really embraces the lifelong learning idea and breaks it down to a very concrete level."

Clark estimates that more than 50 universities in the U.S. have committed to the Age-Friendly University model: "It's a global movement spreading through North America and across Europe, and it's dramatically increasing every year. I think it's taking off because people recognize the need for this, but they also see the exciting potential about embracing aging in a really positive way."

SPROUT AND S.T.E.M.

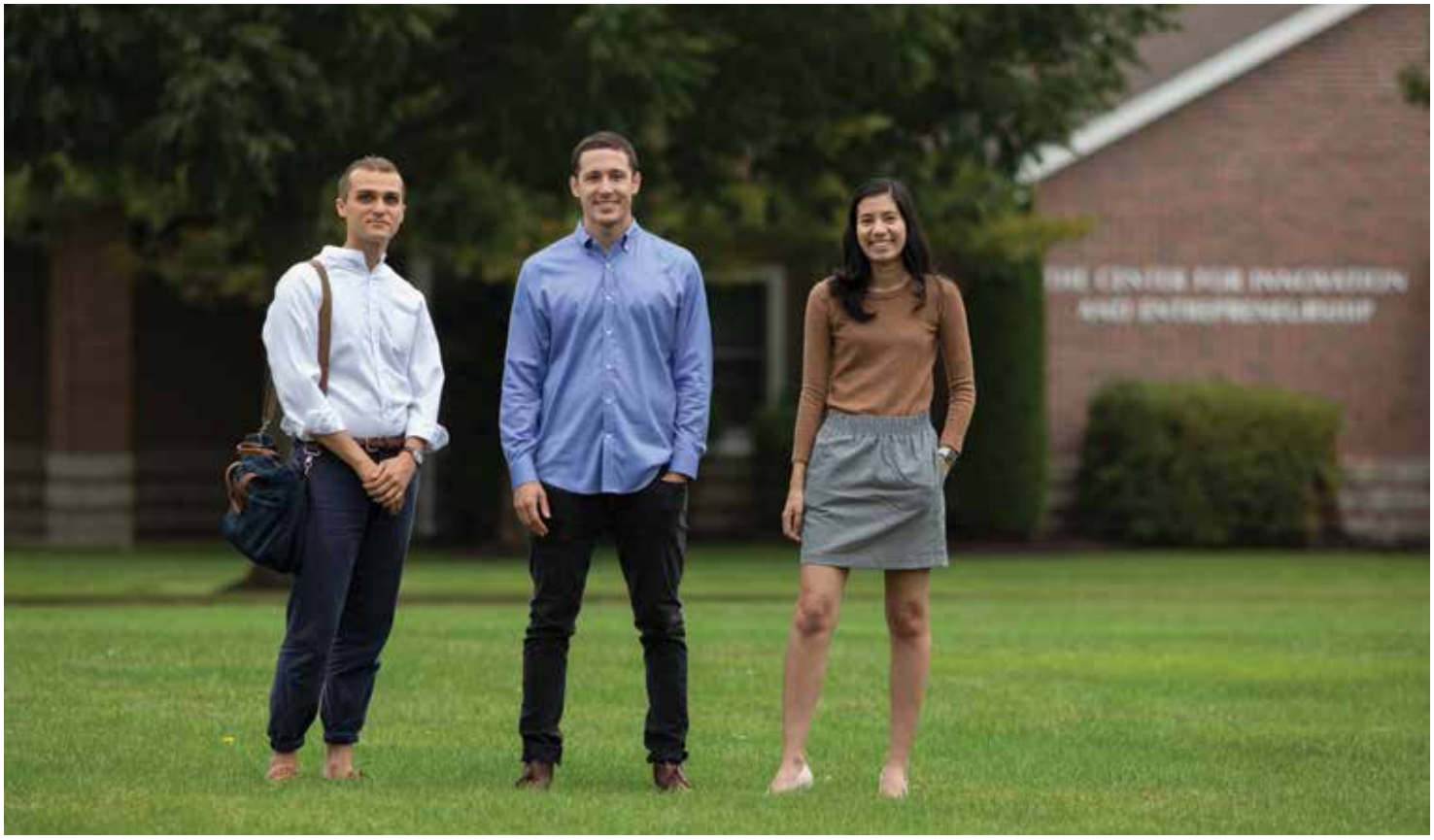
COLLEGE STUDENTS SUPPORTING DISADVANTAGED SCHOOL SYSTEMS

written by **LAINE FISCHER '23**



Sprout and S.T.E.M. Vice President and Tutoring Coordinator Weston de Lomba utilizes a multimedia approach to engage a student during a geometry lesson.

> “GIVEN THE PROXIMITY OF SO MANY COLLEGES AND UNIVERSITIES TO PUBLIC SCHOOLS IN PROVIDENCE, IT MAKES SENSE FOR US TO CONNECT WITH LOCAL HIGH SCHOOL STUDENTS.”
>
> **- VICTOR M. HUNT**



Sprout and S.T.E.M. executive board members Weston de Lomba, Victor Hunt and Noor Kouki.

"In the very beginning, we would go to Classical High School at the end of the school day and host tutoring sessions in biology, chemistry, physics, and math. This is where our passion for helping students really came to life."

- Mark Liptak

Biochemical neuroscience master's candidate Victor Hunt, loads samples of hydrophobic proteins into an SDS-PAGE gel to conduct an aggregation assay.

When a 2019 review by the Johns Hopkins School of Education painted a disappointing picture of the Providence public schools, two University of Rhode Island (URI) alumni saw an opportunity to intervene.

Concerned by chronic underperformance and a lack of academic resources, Victor M. Hunt '19 and Mark Liptak '19 established the nonprofit organization Sprout and S.T.E.M. to support historically disadvantaged school systems. With a focus on science and math, the organization has recruited dozens of undergraduate and graduate students to provide a free tutoring service.

"Given the proximity of so many colleges and universities to public schools in Providence, it makes sense for us to connect with local high school students," Hunt states. "We have so much intellectual talent at these institutions — why not draw from them and reallocate human resources to the schools that need them the most?"

Over several months, Hunt scoured his social and professional networks to connect Sprout and S.T.E.M. with talented individuals who shared a passion for science and a strong desire to help the local community. Now the nonprofit boasts

"We're trying to better prepare students with free academic resources and get them the things that they don't normally have."

- Victor M. Hunt

more than 70 volunteers, with the majority sourced from URI, Brown University, and Rhode Island College.

In addition to his role as the organization's executive director, Hunt is completing a master's degree in biochemical neuroscience and is in the midst of applying to medical school.

Liptak, who completed his bachelor's degree in psychology and joined Hunt as a co-founder in the earliest days of the organization, recalls when Sprout and S.T.E.M. was in its infancy.

"In the very beginning, we would go to Classical High School at the end of the school day and host tutoring sessions in biology, chemistry, physics, and math," says Liptak. "This is where our passion for helping students really came to life."

The organization faced its most significant challenges when confronted with the COVID-19 pandemic. Fortunately, Hunt and Liptak quickly responded to school closures by adopting a virtual platform. While the organization has since resumed its after school program, one-on-one tutoring sessions continue via Zoom.

Hunt and Liptak have incorporated additional services, including a mentorship program and scholarship fund. The duo has eagerly collaborated with other academically oriented organizations such as Students for Educational Equity at Brown University and the College Crusades.

Presently, Sprout and S.T.E.M. is focused on developing its most recent partnership with the Metropolitan Regional Career and Technical Center, a network of small public high schools in Providence and Newport. Volunteers have collaborated to provide intensive and individualized instruction in math for ninth graders at the Providence campus.

Hunt and Liptak are members of a larger executive board that guides the organization and provides administrative oversight. The board includes several URI alumni (Anthony Rampone '18, Lauren Szpond '19, Christopher Hardy '20) and a group of Connecticut College alumni (Weston de Lomba, Noor Kouki, James Murray). Hunt emphasizes that the entire board has been

VICTOR M. HUNT
President and Founder
Sprout and S.T.E.M

indispensable to the success of the organization.

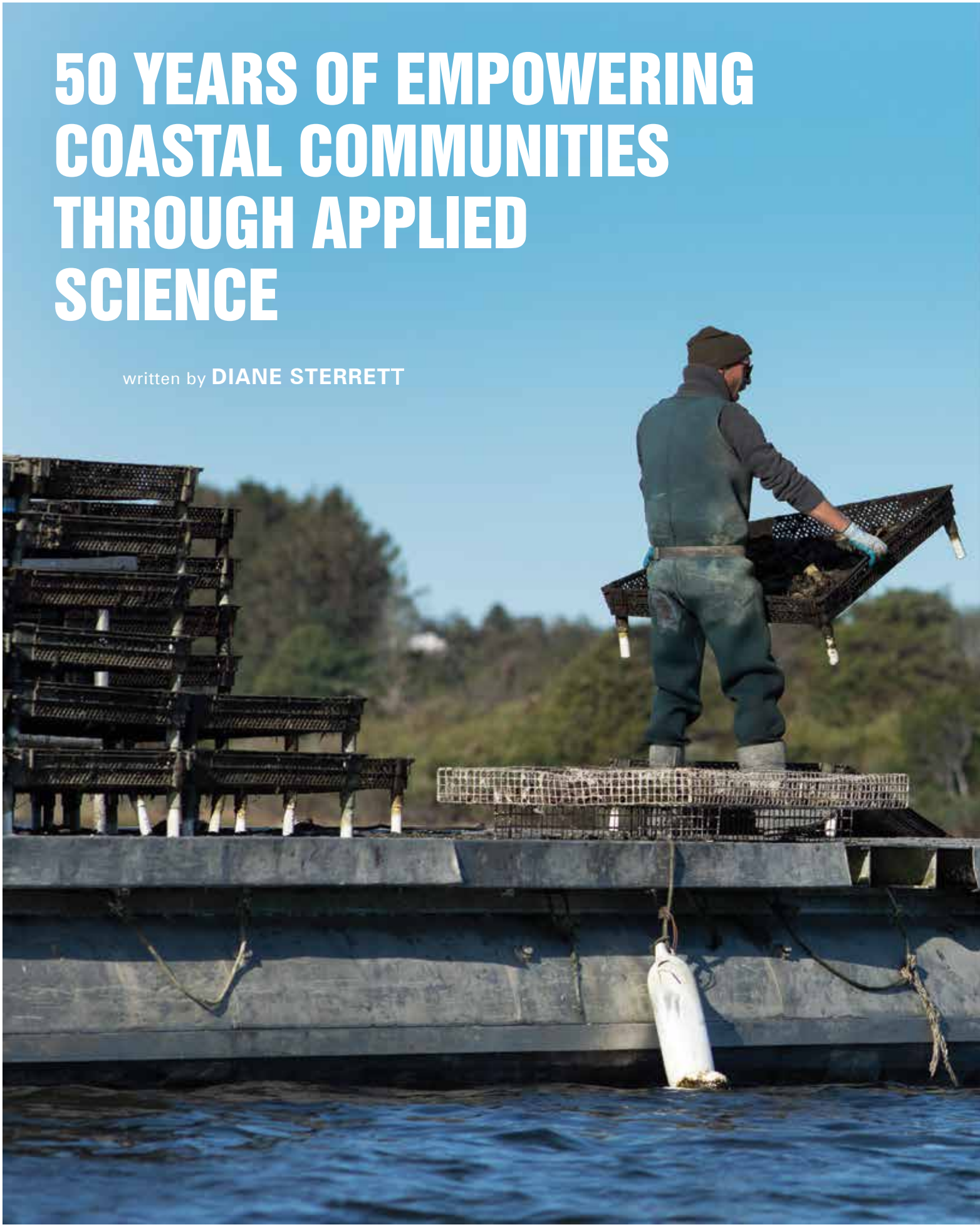
When asked about the future of the Sprout and S.T.E.M., Hunt hopes to increase the participation of URI undergraduates to ensure the long-term sustainability of the organization and continue supporting students in the greatest need.

"We're trying to better prepare students with free academic resources and get them the things that they don't normally have," says Hunt. "We need more help in order to do that. Moving forward, we hope to expand our services to additional high schools throughout the state and beyond."

SPROUT AND S.T.E.M.

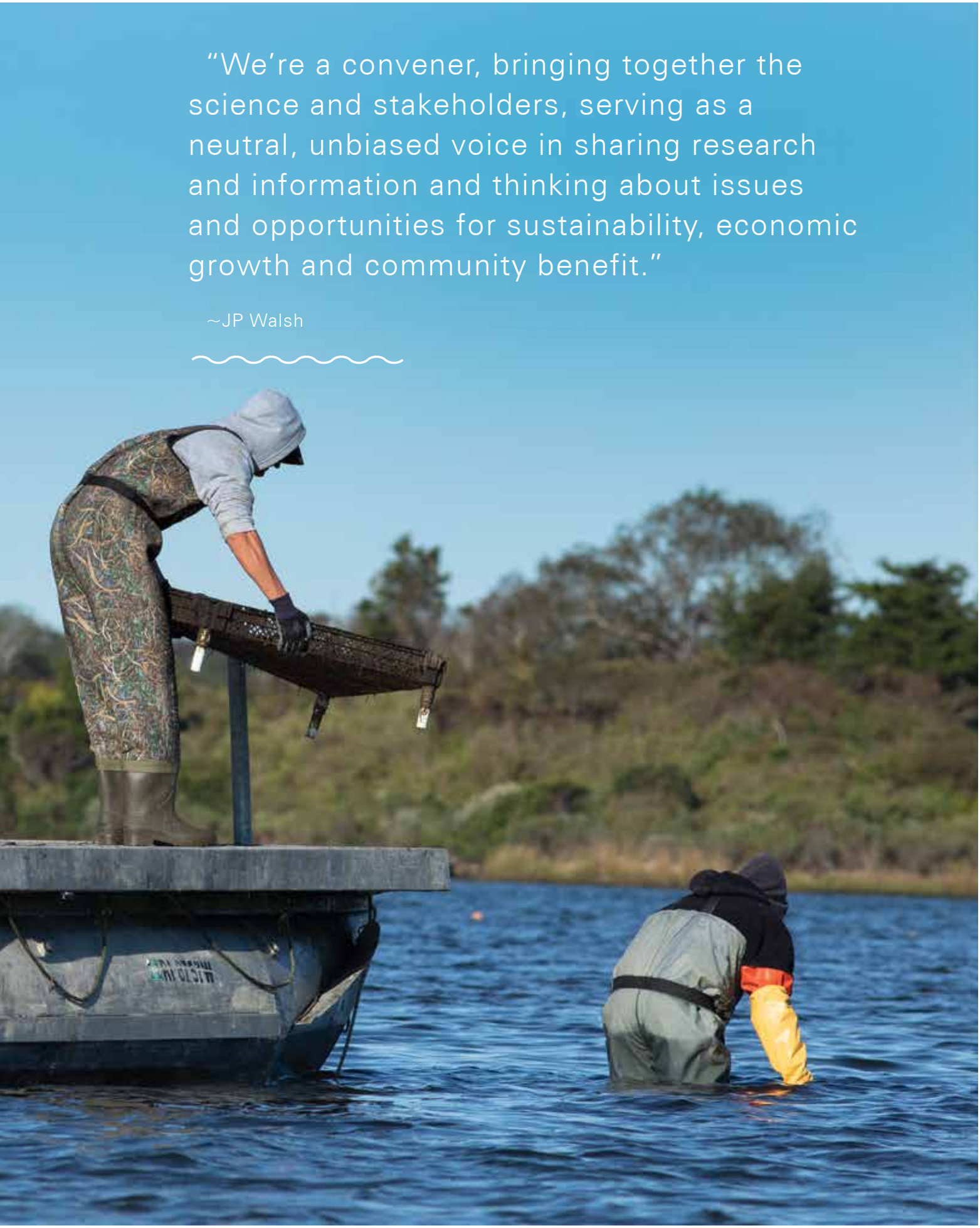
50 YEARS OF EMPOWERING COASTAL COMMUNITIES THROUGH APPLIED SCIENCE

written by **DIANE STERRETT**



"We're a convener, bringing together the science and stakeholders, serving as a neutral, unbiased voice in sharing research and information and thinking about issues and opportunities for sustainability, economic growth and community benefit."

~JP Walsh



"WE HAVE AMAZING RESEARCHERS AND INNOVATORS AT URI. OUR JOB IS TO ENSURE THAT THEIR EXPERTISE GETS CONNECTED TO BLUE TECH AND COMMERCIALIZATION TO INFORM DECISIONS AROUND ISSUES LIKE FOOD SECURITY, PROTECTING OUR OCEANS AND DEFENDING OUR COAST."

- JENNIFER MCCANN

For 50 years, the Coastal Resources Center (CRC) in the University of Rhode Island (URI) Graduate School of Oceanography (GSO) has been helping communities from Providence, RI, to the Philippines, and Galilee, RI to Ghana, become more effective stewards of their coastal and marine resources.

Their overarching goal? The CRC connects communities and stakeholders with the best scientific information so they can make informed decisions and take sustainable actions to preserve coastal resources.

"We're a convener, bringing together the science and stakeholders, serving as a neutral, unbiased voice in sharing research and information and thinking about issues and opportunities for sustainability, economic growth and community benefit," says JP Walsh, CRC director and URI professor of oceanography. "We're building informed stewards of our coasts and oceans."

From CRC's humble beginnings in 1971 in a trailer that washed up on shore during a storm, the center has grown into a respected and sought-after institution. Initially, CRC was created to serve in a consultative role with the state's Coastal Resources Management Council (CRMC) as the need for coastal zone management became more apparent. It's charge was to help state entities understand the coast and how to manage it.

In the 1980s, CRC stepped onto the international stage to share the coastal management work done in the United States, and to bring that knowledge to developing countries. Funded through the U.S. Agency for International Development (USAID), the CRC evolved into a transdisciplinary entity, tackling coastal issues globally, adjusting as appropriate, and bringing research to the world.

"Some of our bigger efforts are working with governments and the private sector," Walsh explains. "We engage and collaborate on topics which concern them; we help answer their questions and guide the research. We focus on the information that will bring them into the future they want and help them develop action plans to achieve their goals."

The CRC maintains a broad portfolio of projects that cover three primary areas: sustainable seafood, capable communities, and healthy habitats.

"One of our more urgent projects is preparing for an increase in sea level rise and increased frequency and intensity of storms," says Jennifer McCann, director of U.S. Coastal Programs. "Another area we focus on is helping state and local governments proactively design our coast so that we are sustainably developing and managing these important areas. We're a small state, and our coast is at a premium."

Under the Sustainable Seafood umbrella, CRC has helped the state design and implement a comprehensive blueprint for shellfish management. It is working with CRMC, the RI Department of Environmental Management, the fishing industry, aquaculture growers and community stakeholders, connecting them to the best collaborative research from URI, Brown University and Roger Williams

ELIN TORELL
Director, International Coastal Programs, Evaluation, Livelihoods and Gender

"CRC is not only adept at bringing the best science to coastal management challenges with local to international scope, but it stands apart from other organizations because of CRC's commitment to helping coastal communities succeed long after a given project concludes."

- Paula Bontempi

University on how to productively grow oysters, how to monitor the shellfish industry, balance different resource uses of the Bay, coastline, and Salt Ponds, and more.

"Right now, it's a very clunky process to identify locations for aquaculture, filled with tension, conflict and emotion," McCann says. "Our job is to minimize tension by creating a neutral and trusted forum based on science to determine places for aquaculture to grow in Narraganset Bay, to ensure we find a solution based on best available science and best management practices."

In the Capable Communities category, CRC, GSO, and the RI Sea Grant published the report, "The Value of Rhode Island's Blue Economy." This career sector directly employs 6 percent to 9 percent of people in Rhode Island and has an economic impact of more than $5 billion. The report looked at all aspects — universities, defense, marine trades, shipping, tourism, fisheries, aquaculture, offshore wind and regulatory agencies — and how to bring them together to bolster the blue economy in a sustainable manner. The report offered five strategies to strengthen economic growth that respects natural resources.

The Value of Rhode Island's Blue Economy

Going forward, CRC is being asked to play a leadership role in making those connections happen. McCann explains, "Oftentimes research doesn't get connected to the private sector, communities or government decision makers. We have amazing researchers and innovators at URI. Our job is to ensure that their expertise gets connected to blue tech and commercialization to inform decisions around issues like food security, protecting our oceans and defending our coast. The end result will be better technologies, policies, and decision making."

"We look at what the stressors are that make people behave unsustainably toward the marine environment and then determine how we can help them address a whole package of issues with the ultimate goal of a sustainable coastal planning situation."

- Elin Torell

Another area of focus is offshore renewable energy, and offshore wind in particular. CRC played a leadership role in siting the Block Island wind farm through the development of the Ocean Special Area Management Plan (SAMP) to ensure that ocean policy and regulations were based on best available science. It has become an international model for siting offshore wind in a way that has the least effect on existing resources, both natural and economic.

"President Biden's commitment to offshore wind means more than 2,000 new wind turbines off our Atlantic coastline by 2030," McCann says. "We are being funded and requested to play a leadership role in building the capacity of other sea grant programs at other universities to engage in dialogue and ensure that stakeholders — fishermen, community members, small businesses, tourism and recreation entities — have a good understanding of the potential effects of offshore wind and possibly encourage synergies among different resource users."

Internationally, CRC has worked on a mix of coastal and marine sustainability projects in many nations including Indonesia, Sri Lanka, Thailand, Ecuador, East Africa, and West Africa. Philippines is one of the countries that CRC currently works in. The center is implementing a $28-million, eight-year sustainable fisheries and biodiversity program called the USAIDs Fish Right Program — partnering with USAID and a multi-sector consortium of local universities and non-government organizations to bring coastal science and fishery reform to one of the world's largest fish producing nations.

Within that framework, CRC supports the establishment of scientific advisory groups that help identify research gaps to determine the right technologies, fishing techniques and the appropriate amount of fish to take out of ocean while keeping it sustainable. The end goal aims to build resiliency of coastal communities.

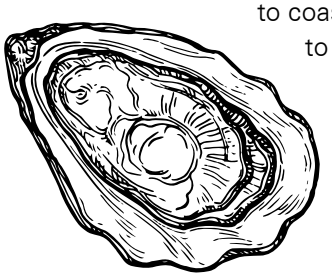
In addition, Walsh is working with Philippine researchers and managers to map coastal habitats so people can understand the value of their ecosystems and how they are changing. This information can be used to guide how these coastal areas with associated services are managed in response to human or event impacts.

In larger projects such as this, CRC takes a holistic approach that involves biodiversity, conservation of coastal and marine resources, livelihood development, poverty alleviation, strengthening of women and youth roles, even integrating family planning and health issues.

Elin Torell, CRC's director for International Programs, says, "We look at what the stressors are that make people behave unsustainably toward the marine environment and then determine how we can help them address a whole package of issues with the ultimate goal of a sustainable coastal planning situation."

Torell, a social scientist, works on the human dimensions and gender related research, currently active in the Philippines and Malawi. The thrust of her work is to determine how to make successful livelihood interventions in developing countries and increase food security in coastal communities.

"Traditionally, fisheries have been thought of as men fish, women process," says Torell. "Our research shows women also catch a lot, fishing from the shore and collecting oysters and crabs. Their work is extremely important for family food security, but it doesn't make it into the statistics. We are trying to change this by making women's engagement in fisheries more visible."



CRC also works in Madagascar and Malawi, playing a supportive role and connecting with local universities on research such as bioeconomic monitoring and stock assessments to protect biodiversity resources through targeted interventions.

What's next? CRC is developing a strategic plan for the future, with an eye toward greater collaboration, increased visibility, and increased impact. The vision is to have communities that are capable, effective stewards of their coasts and oceans. Or, as Walsh says, "to have a healthier planet with healthier coastal systems that provide for all, forever. It may sound dreamy, but we are a hopeful organization."

Through their efforts, the best management practices for cleaner water and well-designed coastlines are transferred around the globe.

"CRC is not only adept at bringing the best science to coastal management challenges with local to international scope, but it stands apart from other organizations because of CRC's commitment to helping coastal communities succeed long after a given project concludes," says GSO Dean Paula Bontempi.

SCIENCE DRIVEN POLICY

written by **DIANE STERRETT**

BRIAN CRAWFORD

Senior Coastal Resources Manager

Coastal Resources Center

Sixty percent of Ghana's animal protein diet comes from fish, but the anchovies and sardines the country's people rely on have faced a severe decline for more than a decade — a consequence of overfishing, illegal fishing, too many fishing vessels, and non-compliance with fisheries laws.

"When we started in Ghana, no one wanted to believe there was a crisis in the fishery," says Brian Crawford, University of Rhode Island (URI) Coastal Resources Center (CRC) senior coastal resources manager. He served as project manager for USAID/ Ghana Sustainable Fisheries Management Project (SFMP) from 2014 to 2021.

United States Agency for International Development (USAID) chose the CRC to lead the project in partnership with several local and international organizations. Ghana's Ministry of Fisheries and Aquaculture Development and its Fisheries Commission was CRC's main government counterpart. The goal: rebuild fish stocks through adoption of sustainable practices and exploitation levels in the four coastal regions stretching from the border with Togo to Cote d' Ivoire.

"Because fish are so important as an animal protein source, and as local fish catch declined, more expensive fish were imported, making life even more difficult for poor people," Crawford says. "Fewer fish caught also affected the businesses, such as small-scale women fish processors, leading to further economic instability. We worked to implement best practice collaborative management processes where fishermen — both canoe operators and industrial trawlers — worked side by side with fishery commissions to come to a consensus."

Previously, outsiders conducted stock assessments and the central government mandated policies in a top-down approach, leading to non-compliance with needed regulations to rebuild the fish stocks. Crawford's team developed the capacity for local scientists, with support from fishermen and academia, to conduct their own assessments, review the data, and provide recommendations to the government. Stakeholders being involved in the decision-making process led to greater buy-in for proposed solutions to the overfishing problem. After much discussion and debate, a closed fishing season was declared for the artisanal fishery in 2019 for the first time ever, and compliance by fisherfolk was almost perfect.

Photo by Danielle Bilecki

USAID chose the CRC to lead the project in partnership with several local and international organizations.

Rosina Cobinna, assistant regional director, Accra Region, Ghana Fisheries Commission pictured with Brian Crawford.

"Once the local scientists drew the conclusions, no one questioned the science and those scientific reports were widely cited by everyone," Crawford says. "To me that was a huge accomplishment, that science-driven decision-making came to be as a result of our project."

Crawford also conducted socioeconomic studies on that first closed season, which revealed that fishing households lost 90 percent of their income, food insecurity increased as did dietary diversity for women.

"I was shocked when I saw the results — they had very few other sources of income generation," he recalls. "We piloted a social safety net scheme for vulnerable households through direct cash payments. After the pilot, we proposed cash payments to vulnerable fisherfolk be made during seasonal closures and this could be paid for from the savings during the closure on fuel subsidies to the fishery, which also exacerbates the overfishing problem. The pilot demonstrated that the government could mitigate temporary income loss and likely made it more enticing to comply with the closure, and the cost would be less than what they spend in fuel subsidies."

"The pilot demonstrated that the government could mitigate temporary income loss and likely made it more enticing to comply with the closure, and the cost would be less than what they spend in fuel subsidies."

- Brian Crawford

One of several Ghana students the project supported to study at URI, Ivy S. G. Akuoko, who worked on the SFMP project in 2016 and earned her master of arts in marine affairs in 2018, became an assistant research fellow at the University of Cape Coast in Ghana. Her research interest is in waste management, pro-environmental behavior, GIS and remote sensing.

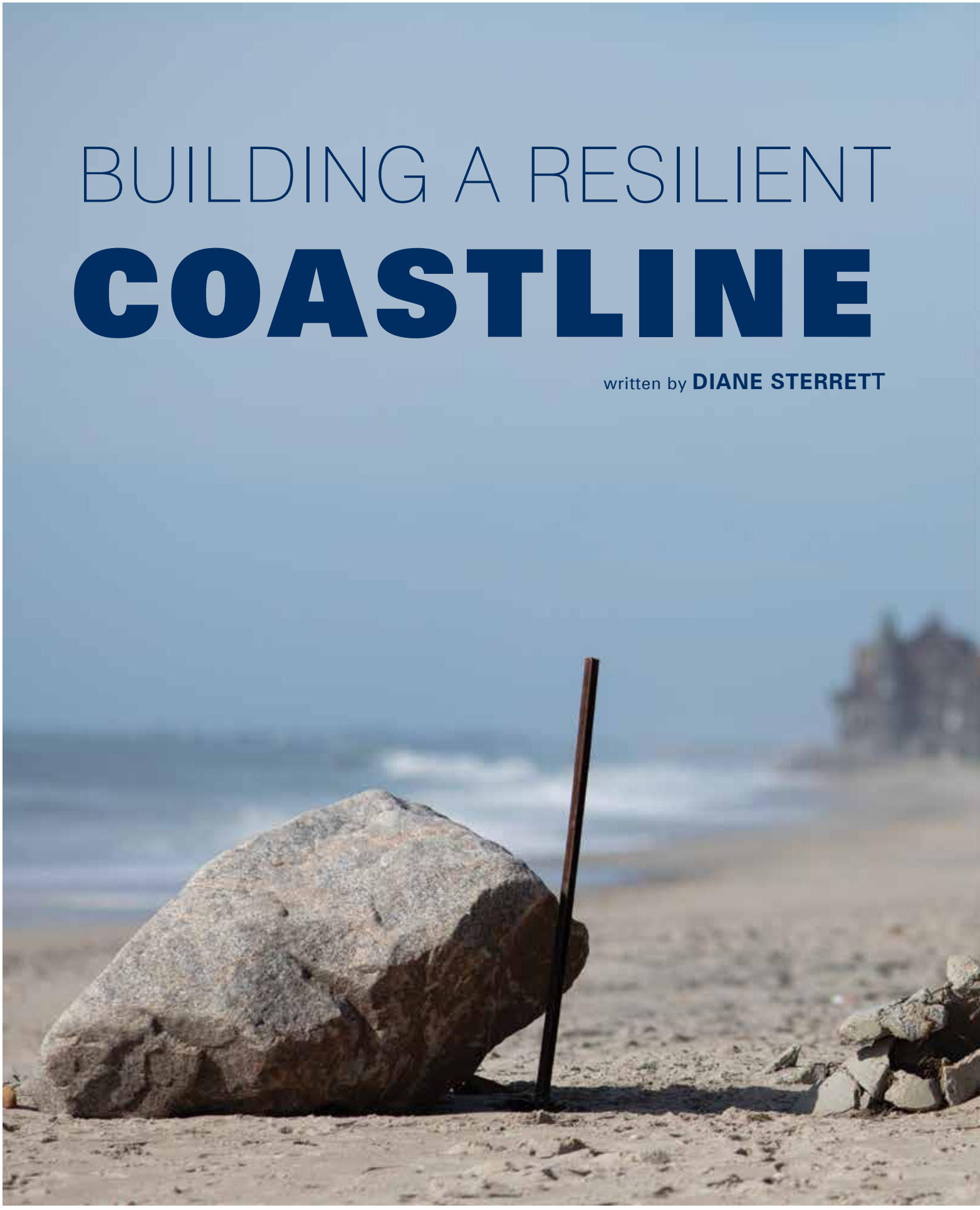
"Waste was being indiscriminately dumped on a wetland in the flood path of a lagoon to claim it for development," explains Akuoko. "Our research using unmanned aerial vehicle images revealed a gradual loss of the lagoon, which had potential impacts on the fisheries. Inadequate dumpsters were also a contributing factor. The study recommended providing dumpsters and placing them at convenient locations as one of the ways to solve this problem."

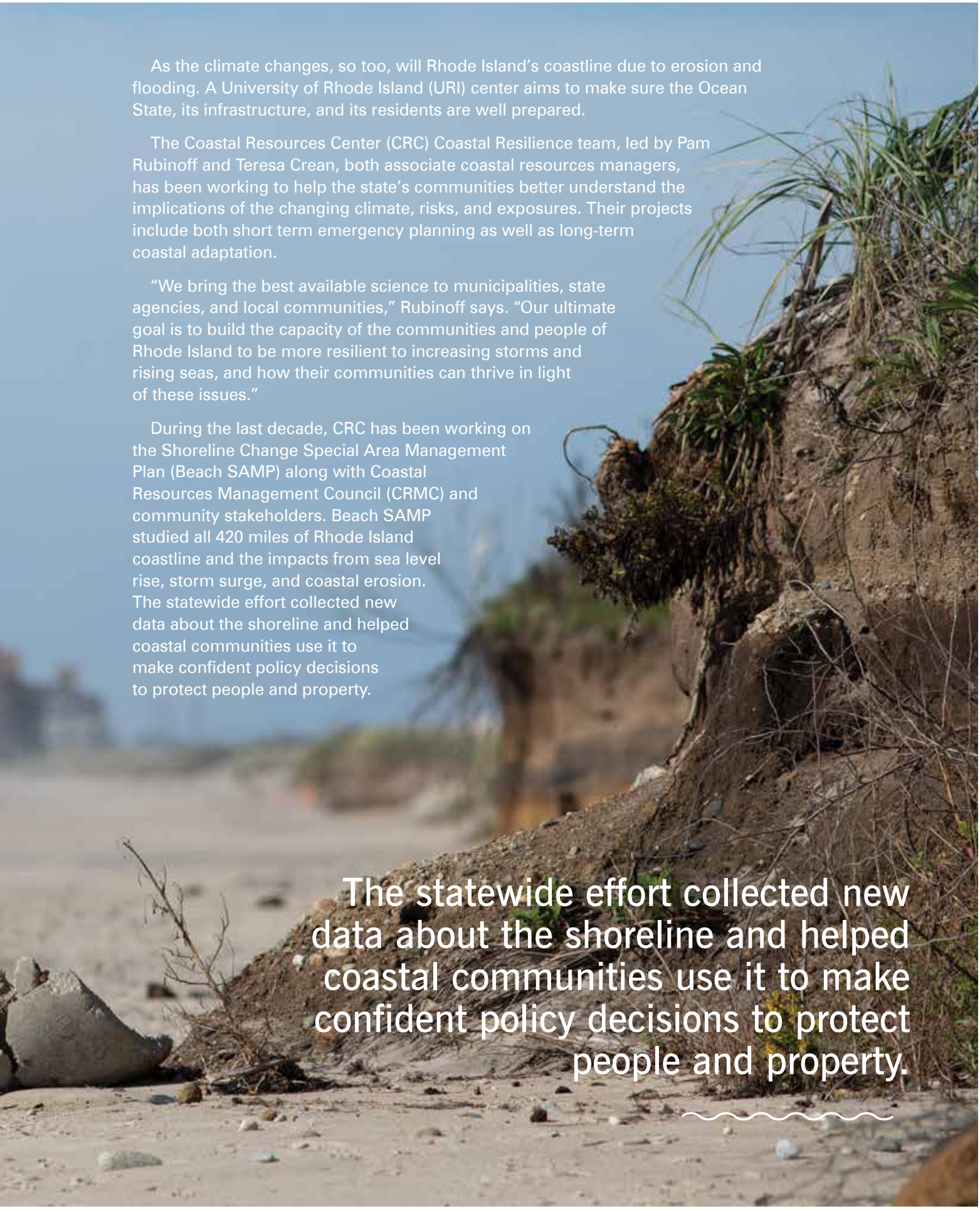
The project also made progress toward developing a vessel registration mechanism and more cost-effective processing technology. The project ended in April 2021 and showed considerable progress and change on Ghana's journey toward fisheries recovery and sustained management, yet there is still much to be done, Crawford says.

Photo by Fery Sutyawan

BUILDING A RESILIENT **COASTLINE**

written by **DIANE STERRETT**





As the climate changes, so too, will Rhode Island's coastline due to erosion and flooding. A University of Rhode Island (URI) center aims to make sure the Ocean State, its infrastructure, and its residents are well prepared.

The Coastal Resources Center (CRC) Coastal Resilience team, led by Pam Rubinoff and Teresa Crean, both associate coastal resources managers, has been working to help the state's communities better understand the implications of the changing climate, risks, and exposures. Their projects include both short term emergency planning as well as long-term coastal adaptation.

"We bring the best available science to municipalities, state agencies, and local communities," Rubinoff says. "Our ultimate goal is to build the capacity of the communities and people of Rhode Island to be more resilient to increasing storms and rising seas, and how their communities can thrive in light of these issues."

During the last decade, CRC has been working on the Shoreline Change Special Area Management Plan (Beach SAMP) along with Coastal Resources Management Council (CRMC) and community stakeholders. Beach SAMP studied all 420 miles of Rhode Island coastline and the impacts from sea level rise, storm surge, and coastal erosion. The statewide effort collected new data about the shoreline and helped coastal communities use it to make confident policy decisions to protect people and property.

The statewide effort collected new data about the shoreline and helped coastal communities use it to make confident policy decisions to protect people and property.

"It shows updated mapping and modeling of sea level rise scenarios, then sea level rise scenarios on top of storm surge, flood extents and coastal erosion from different types of storm events," Crean says. "CRC led the stakeholder process and compiled the report for CRMC to enact policies and procedures that serve to disclose coastal risk to Rhode Island's 21 cities and towns."

The Beach SAMP effort led to the development of RI STORMTOOLS, an interactive online map that illustrates and displays storm inundation, with and without sea level rise, for different types of storms that could occur along Rhode Island's coastline. It can be used by homeowners and planners to support decision making.

Anyone seeking a coastal building or modification permit from CRMC must complete a risk assessment using STORMTOOLS and file the documentation as part of the permit application.

Separately, as part of a U.S. Department of Homeland Security effort to develop storm scenario simulations, CRC collaborated with URI's College of the Environment and Life Sciences and the Graduate School of Oceanography on an impact prediction dashboard tool using high resolution storm models. Called the RI Coastal Hazards Analysis Modeling and Prediction (RICHAMP), the system is geared to emergency managers and municipalities to support planning, preparation, and response.

RI STORMTOOLS

"Currently, this is being used for resilience planning and training with various storm scenarios," Rubinoff says. "They will ultimately be able to see hurricanes and Nor'easters coming up the coast in almost real time and be able to see when that will impact different kinds of infrastructure. We are arming cities and towns with the information they need to put action plans in place."

The system includes cascading consequences of extreme storms impacting critical infrastructure such as wastewater treatment facilities, sewer systems, utilities, airports, and seaports.

As part of RICHAMP, Rosemarie Fusco, graduate research assistant in the Department of Marine Affairs, is developing a database of vulnerable assets and risks to operations to the Naval Station Newport and its tenants. The database will incorporate consequence thresholds, or measurable points at which Naval assets are impacted by wind, water, and waves.

PAM RUBINOFF

Associate Coastal Resources Manager, Coastal Resilience, Extension Specialist

RI Sea Grant

TERESA CREAN

Associate Coastal Resources Manager, Community Planning and Coastal Resilience, Extension Specialist, RI Sea Grant

"Our work is revealing gaps and overlaps between the Navy and its neighboring areas, both in disaster management and in vulnerability to coastal weather events affected by climate change," Fusco says. "I am discovering that experts on the ground who work in facility management and infrastructure facilitation often see the possibilities in reuse, mitigation, and adaptation. If this research is used to guide resources or movement of physical elements, it could better synergize state and local engagement."

Photo by MyCoast.org/RI

PHOTOGRAPHING AND ANALYZING KING TIDES

Rubinoff and Crean also have been engaging citizen scientists using the app called MyCoast, collecting and analyzing photographs of the coast during king tides and storm events to monitor changes. They have five years of photographs showing increasing impacts, which helps people make the case for changes in their neighborhood, such as changing storm drains or wastewater treatment plants.

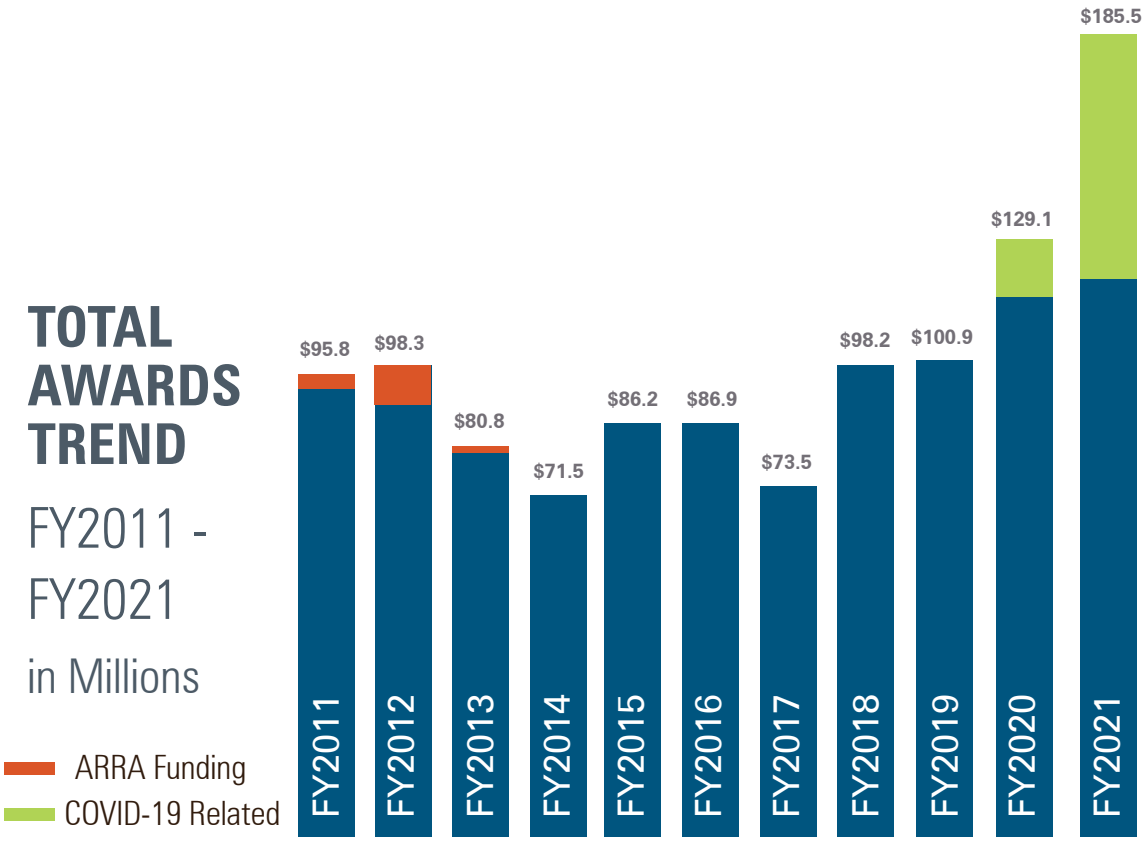
"It's a way to involve and educate people that low-lying inundation is happening, helping them visualize that today's unusual high tide can be 'normal' in future with sea level rise," Rubinoff says.

ANNUAL REPORT FISCAL YEAR 2021

TOTAL AWARDS TREND

FY2011 - FY2021

in Millions



	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
COVID-19 Related										11.2	62.5
ARRA Awards	1.7	4.8	0.8	0.1							
Awards Non-ARRA	94.1	93.5	80.0	71.4	86.2	86.9	73.5	98.2	100.9	117.9	123.0
Total Awards	95.8	98.3	80.8	71.5	86.2	86.9	73.5	98.2	100.9	129.1	185.5

Research Proposals Submitted FY2021

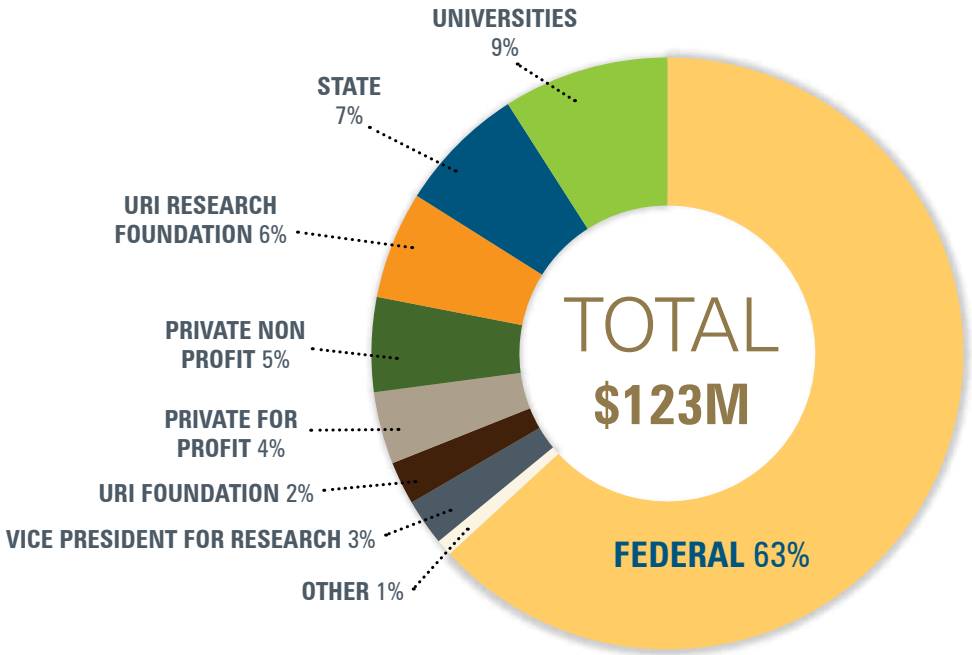
$388 Million*

*Does not include COVID-19 emergency funds

Expenditures FY2021

$93.1 Million*

*Does not include COVID-19 emergency funds

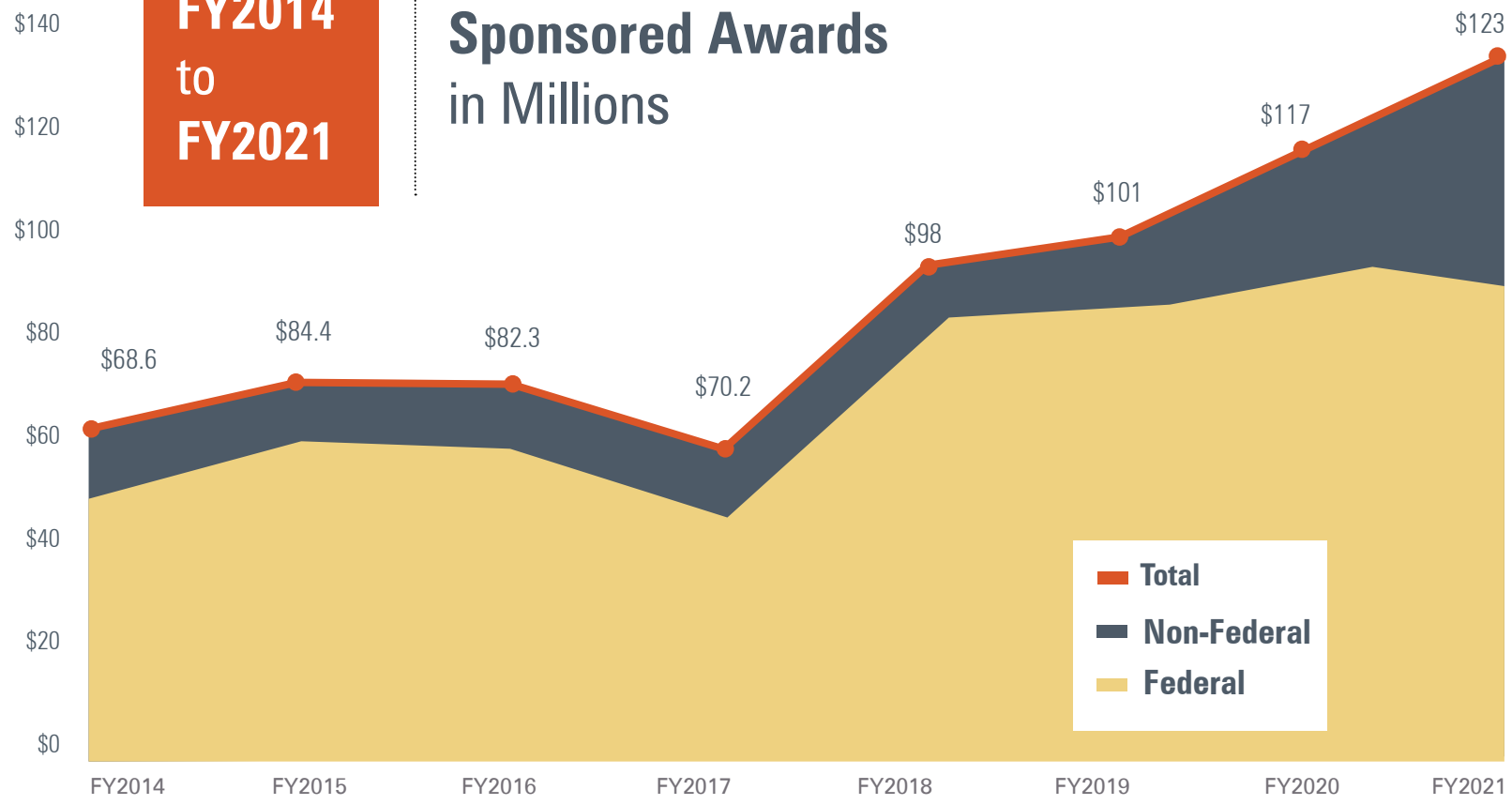


The University of Rhode Island's goal is to reach $125 million in sponsored research funds by FY2024

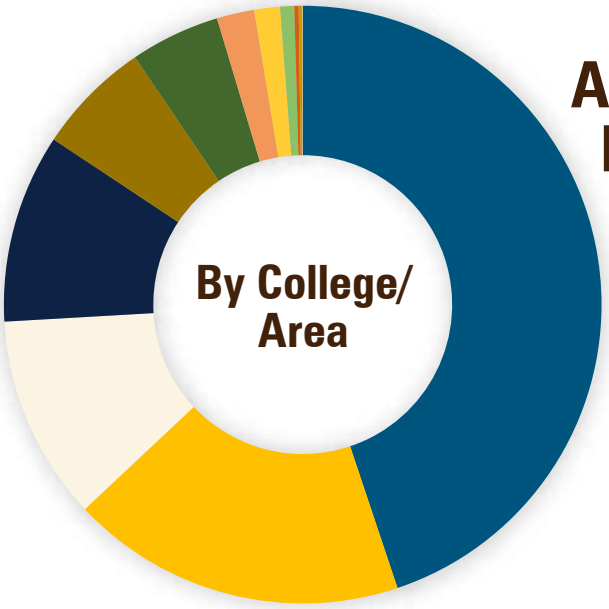
$74M in external funding in 2017

FY2014 to FY2021

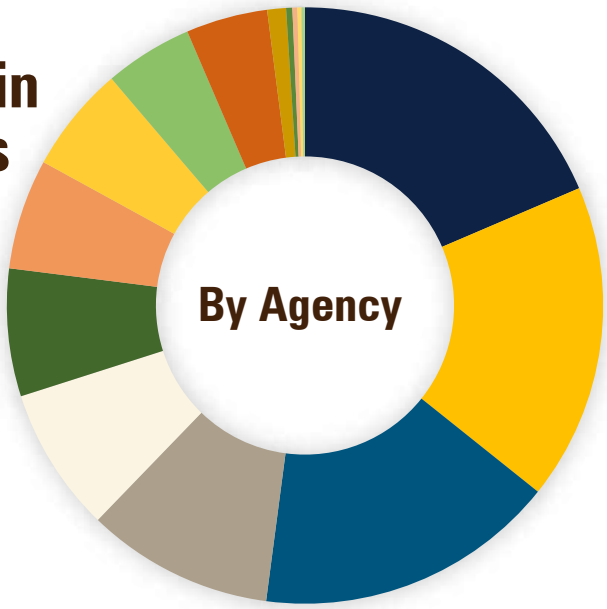
Sponsored Awards in Millions



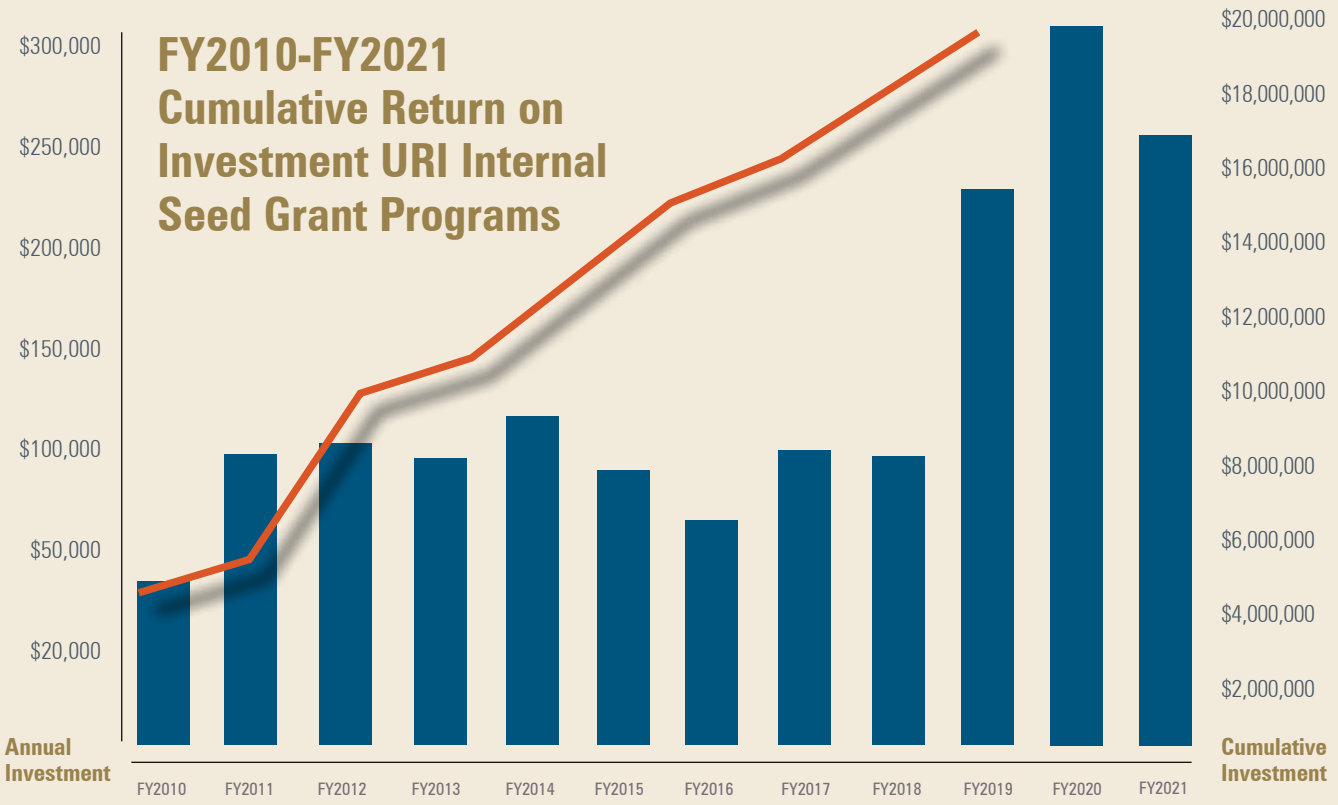
FY2021 Awards in Millions



- Graduate School of Oceanography
- Environment & Life Sciences
- Engineering
- Pharmacy
- Arts & Sciences
- Health Sciences
- Nursing
- University Library
- Academic Health Collaborative
- Education & Professional Studies
- Business
- Information Technology Services
- Administration and Finance
- Research & Economic Development
- Student Affairs



- DOC
- NSF
- HHS
- UNIVERSITIES
- STATE
- AID
- USDA
- NONPROFIT
- DOD
- PRIVATE FOR PROFIT



401 TECH BRIDGE-RISBDC-POLARIS-IP

IMPACTING THE RHODE ISLAND ECONOMY

URI INTELLECTUAL PROPERTY FY2011-FY2021

370 U.S. and Foreign Issued Patents
883 U.S. and Foreign Patent Applications
594 Invention Disclosures
8 Companies Formed: CREmedical, pHLIP, Velobit, Burbank, Labonachip, Plant Advancement, Audiance, Inc., and Modius Techwear

URI IMPACTING RHODE ISLAND BUSINESS POLARIS MANUFACTURING EXTENSION PROGRAM (MEP) FY2020

$89 Million in New Sales
$5 Million in Cost Savings
790 Jobs Created or Retained
$20.6 Million New Investment Capital

RHODE ISLAND SMALL BUSINESS DEVELOPMENT CENTER (FROM 10/1/20 - 9/30/21)

761 Clients Served, 34% were minorities and 51.5% were women
5,080 Business Counseling Hours
$10,231,724 Capital Formation
(amount of funding from all sources that RISBDC staff has assisted clients in receiving)
2,686 Training/Webinar Registrants

401 TECH BRIDGE FY2020

$8M Funding Secured
$1.5M Industry Economic Impact
More than 100 company engagements

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OF RHODE ISLAND

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