UMD Researchers Take On Critical Water Shortages

The University of Maryland will lead a sweeping research project aimed at one of the world’s most pressing problems: increasing freshwater shortages as the planet warms up.

UMD’s School of Public Health received a $10 million award this spring from the National Institute of Food and Agriculture at the U.S. Department of Agriculture (USDA) to establish the CONSERVE (Coordinating Nontraditional Sustainable Water Use in Variable Climates) Center of Excellence.

The approach—tying together a large multi-institutional cast of scientists and scholars in the physical, agricultural, social and biological sciences, law and education—will become increasingly common with research into complex, societally important issues.

“The CONSERVE team brings together the broad collaborative expertise with which we must approach the greatest global challenges of our day,” says UMD Vice President and Chief Research Officer Patrick O’Shea. “We look forward to learning from our colleagues across disciplines and institutions, and together, creating innovative solutions for the availability of clean water.”

According to experts, global climate change is likely to increase drought frequency, endangering agriculture’s ability to feed growing populations. CONSERVE, led by primary investigator Amy Sapkota, associate professor of applied environmental health, seeks alternative sources of water for farms.

“We’re running out of water in key food production areas, and need to be very creative in harnessing nontraditional irrigation water sources that can be safely used to grow our food,” she says.

That means finding farm-based methods to clean up lower-quality water from streams, recycled agricultural water and wastewater treatment plant effluent, Sapkota says.

Using such sources without further treatment on crops eaten raw could increase food-borne disease risk, but CONSERVE researchers from UMD, the University of Delaware and USDA are testing a low-cost filter that uses sand and recycled iron to eliminate microorganisms and chemicals, Sapkota says.

CONSERVE collaborators at the University of Arizona are cleaning water with ultraviolet light and ozone microbubbles, she says.

“We’ve shown that these technologies work effectively in the lab, and now we’re ramping it up to see if they’re feasible in larger settings,” including small farms around the country.

UMD collaborators include researchers in public health, engineering, agriculture, microbiology and chemistry. Researchers from elsewhere, including the University of Maryland, Baltimore, will study the legal, regulatory and consumer dimensions of nontraditional water, Sapkota says.

Because establishing a center like CONSERVE is a huge endeavor for one faculty member to tackle, support from the Division of Research is helpful at key points. Those include proposal development resources, technical writing, links to cross-disciplinary research partners at UMD, external linkages, mentoring and strategy and dialogue with funding agencies.

For CONSERVE, a Tier 2 grant helped catalyze a collaborative grant-application process, which was crucial to its success.

“Without that support, it’s very unlikely we’d have been able to create a center of this magnitude,” Sapkota says.

To discuss research support opportunities, contact Ken Gertz (kgertz@umd.edu) or Tara Burke (tburke13@umd.edu) in the Office of Research Development. For more information, visit research.umd.edu.

NSF CAREER Awards Support Rising UMD Researchers

Nine University of Maryland researchers with projects starting in 2016 received National Science Foundation (NSF) Faculty Early Career Development awards, NSF’s top award for early-career faculty who exemplify the role of teacher-scholars.

This year’s recipients to date are:

- Jacob Bedrossian, assistant professor of mathematics, “Inviscid Limits and Stability at High Reynolds Numbers”
- Maria Cameron, assistant professor of mathematics, “Computational Tools for the Analysis of Large Stochastic Networks”
- Sean Downey, assistant professor of anthropology, “Analyzing the Emergence of a Complex Land Management System”
- Michael Gollner, assistant professor of fire protection engineering, “Understanding the Mechanisms of Wildland Fire Spread”
- Anya Jones, assistant professor of aerospace engineering, “Flow Physics of Aerodynamic Forcing in Unsteady Environments”
- Jeremy Munday, assistant professor of electrical and computer engineering, “Integrated Research and Education on Hot Carrier Effects in Plasmonics”
- Piya Pal, assistant professor of electrical and computer engineering, “Smart Sampling and Correlation-Driven Inference for High Dimensional Signals”
- Joy Deep Sau, assistant professor of physics, “Topologically Protected Quantum Devices”

IT infrastructure, data management services and other resources available to researchers.

The website was created and launched through a partnership between UMD’s Division of Research, Division of Information Technology and University Libraries.

The website provides information and contact points at each step in the research process:

Developing Your Research Idea: Define your idea, assess its novelty, design your study and build your team.

Funding Your Research: Find funding opportunities, get training and develop your proposal to succeed.

Administering Your Project: Oversee your assistants, equipment, schedules and budget.

Performing Your Investigation: Collect, manage and analyze data.

Closing Out Your Project: Wrap up your research and close out your funding.

Communicating and Disseminating Results: Share your findings, data, code or other products.

For more information, visit irroc.umd.edu.

IRRoC’s “One-Stop Shop” Provides Research Roadmap

Taking a research project from conception to completion can sometimes feel like navigating a maze. A new website available to the UMD community can help when it’s not clear which way to turn.

Integrated Research Resources on Campus (IRRoC) will help researchers quickly and easily access necessary information, supporting UMD’s continued rise as one of the best public research institutions in the world.

It serves as a “one-stop shop” that brings together university research resources spanning departments, centers, colleges, divisions and libraries. In addition to offering templates and sample descriptions to include in proposal and letters, it points the way to campus research facilities, IT infrastructure, data management services and other resources available to researchers.

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In This Issue: UMD-Led Team Seeks Freshwater Sources
Nine CAREER Awards for UMD Researchers
IRRoC Your Research!

Wounded Warriors Are Focus of UMD-Walter Reed Partnership

The Society for Risk Analysis awarded Abani Pradhan, assistant professor of nutrition and food science, the 2015 Chauncey Starr Distinguished Young Risk Analyst Award for his work addressing food safety issues such as foodborne pathogens in fresh produce, dairy, meat and poultry.

Wounded Warriors Are Focus of UMD-Walter Reed Partnership

Students from all disciplines will be able to participate, but UMD organizers expect particular interest from students in HESP, the School of Public Health, the Neuroscience and Cognitive Science Program, and the A. James Clark School of Engineering.

UMD and Walter Reed began collaborative research projects involving students in 2012, with the number of students growing to around 10 so far, Gordon-Salant says.

“As we all learn more about what each side can bring to a research project, more opportunities will evolve,” she says. “It paves the way for more collaboration with our faculty here, who have tremendous expertise in so many broad areas. This is a true win-win for both institutions and most importantly, for our military service members.”

New Faculty

University of Maryland Senior Vice President and Provost Mary Ann Rankin, a professor of biology, and Distinguished University Professor Christopher Jarzynski, a professor of chemistry and biochemistry and director of UMD’s Institute for Physical Science and Technology, have been named to the American Academy of Arts and Sciences. It is one of the nation’s oldest and most prestigious honorary societies and independent policy research centers, convening top leaders from academia, business and government to address critical challenges to global society.

We introduce you to new faculty and research scientists in the Maryland research community.

Olivier Bauchau, professor of aerospace engineering, researches multibody dynamics, rotorcraft aeromechanical comprehensive modeling, structural dynamics and composite materials and structures.

Serguey Braginsky, associate professor of management and organization, researches industry evolution, entrepreneurship, innovation, growth and development, as well as economics of incentives, institutions and property rights.

LaMonda Horton-Stallings, associate professor of environmental science and technology, studies the drivers and controls for the management and provision of ecosystem services.

The Division of Research publishes the University of Maryland Research Community Newsletter several times per semester. Its goal is to better inform the University of Maryland. Your comments and suggestions are welcome. Please email them to Tara Burke, Director, Research Development Resources, at tburke13@umd.edu.

Produced by University Publications for the Division of Research

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Managing editor: Chris Carroll

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