

New AGNR Dean: Research Key for Maryland Economy

Farming may not be front and center in highly urbanized Maryland, but issues surrounding agriculture are more vital than ever—from protecting natural resources to ensuring food safety. The College of Agriculture and Natural Resources and its dynamic faculty can play an increasing role in addressing them, says new Dean **Craig Beyrouly**.

"We have some extremely talented researchers here who are highly committed to solving the unique challenges here in Maryland," he says. "Faculty in various disciplines are working to address the central question of how to keep agriculture sustainable in this state. It is really a challenge, not only because of the need to protect the Chesapeake Bay and our natural resources, but because of population growth and the competition for land and water resources from urban sprawl."

Beyrouly, a distinguished soil chemist with more than 35 years of research and teaching experience, started at Maryland in November after six years as Colorado State University's agriculture dean. Before that, he headed the agronomy department at Purdue University and served as a professor of agriculture at the University of Arkansas.

His research focused on nutrients in soils and how plants absorb them to become nutritious food. His vision for AGNR includes broadening the discussion about critical food supply systems to include a wide range of citizens.

"I want to go beyond the traditional stakeholders, and bring in anybody that is involved in some level of the food system," he says. "That includes people involved in production of food, processing of food, distribution, marketing, consumption and even post-consumption—the question of what we do with the 40 percent of food that's being wasted."

That kind of collaboration is important to the success of the University of Maryland and other land-grant universities, says



PHOTO: NASA/GODDARD SPACE FLIGHT CENTER

Beyrouly, who's spent his entire career at such institutions. Land-grant universities and their faculties still view themselves as problem-solvers and information providers for their respective states, he says, but that relationship has evolved as state funding has shrunk nationwide and the United States has become more urban.

"We need to connect with our citizens and help them understand the importance agriculture plays in their day-to-day lives," he says.



Craig Beyrouly

Though Beyrouly says it's too soon in his tenure to begin identifying specific research priorities for the college, AGNR in coming months will begin developing a strategic approach, with "five or six really big areas to focus our attention on over the next five to 10 years. We'll gather teams of scientists with unique expertise within the college around big issues, with the idea of solving them."

Those major initiatives will cross disciplinary divides and institutional boundaries, and there will be joint programming and potentially joint positions with other universities focused on service to their states, he says.

"People look to the university and the College of Agriculture and Natural Resources as a place to come for unbiased, factual information they can't get anywhere else, and then the decisions can be made based on that," he says. "We have to make sure that we can provide that information, and we have to make sure that it's accessible."

Science, Higher Ed Benefit From Federal Budget Action

In a welcome development for research universities, federal investments in scientific research and higher education are increasing this year under the provisions of the omnibus appropriations act signed into law in December.

"This growth in federal support is a testament to the ever-increasing value of academic and scientific research to our state, our nation and beyond," says UMD Vice President and Chief Research Officer **Patrick G. O'Shea**. "Without this funding, leading-edge research in cybersecurity, human health, national and global security, and weather and climate prediction would not be possible."

All major research agencies saw significant budget increases, highlighted by \$2 billion in new funding at the **National Institutes of Health** (right). The 6.6 percent bump helps make up for years of stringent funding, and includes increases for Alzheimer's, brain, antibiotic and precision medicine research.



PHOTO: NIH

NASA funding jumped 7 percent, with additional money for the Science Mission and Space Technology and Exploration directorates.

The **National Science Foundation's** budget rose 1.6 percent, with more than 80 percent of the increase, or \$99 million, directed to research and related activities.

The **Department of Energy's Office of Science** received a 5.5 percent increase, with most programs receiving additional funding, except for its Nuclear Physics and Fusion Energy Science programs, which saw significant cuts of 14 and 32 percent, respectively.

The **Department of Defense's** science programs grew 7.5 percent, with major new funding directed to medical research. But the **Air Force's** basic research budget fell nearly 4 percent, and the **Defense Advanced Research Projects Agency's** about 1 percent.



PHOTO: DAVID B. GLEASON

Meanwhile, the budget of the **Agriculture and Food Research Initiative** rose 7 percent, and the **National Endowment for the Humanities** received an additional \$1.9 million, the agency's first funding hike in six years.

In higher education funding, the maximum Pell Grant award rose \$140 for the 2016-17 school year to \$5,915.

UMD Forms Unique Environmental Collaboration with Brazil



SESYNC Director Margaret Palmer (left) and researcher Solange Filoso visit the Brazilian forest.

Deforestation triggers problems that are both local and global in scope, with hazardous logging and clearing of land for agriculture and development responsible for widespread extinctions, degradation of rivers and streams and even changes in climate. Few areas have been hit harder than Brazil. Deforestation has damaged or destroyed 88 percent of the country's Atlantic Forest, a biodiversity hotspot that is home to most of the nation's 200 million people.

Now, the **National Socio-Environmental Synthesis Center (SESYNC)** at UMD is partnering with researchers from Brazil on a first-of-its-kind collaborative project

to study the effects of forest restoration on water resources. It will primarily investigate how, over time, restoration influences water availability at local and regional scales.

The project's Maryland principal investigators are **Margaret Palmer**, SESYNC director and Distinguished

University Professor, and **Solange Filoso**, a research assistant professor with the **University of Maryland Center for Environmental Science**.

"Understanding the complex relationship between forest restoration and local-to-regional water availability is a difficult—but critical—research problem, especially in the coastal east of Brazil where a large portion of the population is under severe water stress," Palmer says.

This project is a prime example of the cutting-edge research and policy questions SESYNC opened its doors in 2012 to handle. Funded by an initial five-year, \$27.5 million National Science Foundation grant, the center brings together environmental, social and computational scientists, engineers, economists, public policy experts and others to collaborate on the world's most pressing environmental issues.

In a separate collaboration, UMD and the Sao Paulo Research Foundation signed an agreement to fund joint research workshops between Brazilian and UMD researchers. Find details at go.umd.edu/o92.



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SPOTLIGHT

START Traces the Roots of Radicalization

An American jihadist ambushes a police officer. A white supremacist guns down African-American prayer group members. After pledging allegiance to ISIL online, a husband and wife slaughter 14 co-workers.

Law enforcement and intelligence officers seeking to stop this kind of domestic terrorism before it happens rely on University of Maryland-based **National Consortium for the Study of Terrorism and Responses to Terrorism (START)**. The findings of the organization, formed in 2004 by the Department of Homeland Security, are used governmentwide today, including by the Department of Justice, the Pentagon, the State Department, Congress and local agencies.

Researchers at Maryland and other START-affiliated institutions have worked on over 50 research projects aimed at understanding radicalization, the behavior of radicalized individuals and methods of deradicalization, says **Gary LaFree**, START director and a professor of criminology and criminal justice.

START's premier tool for domestic terror research is its Profiles of Individual Radicalization in the United States (PIRUS) database, he says.

"We've studied around 1,500 Americans who were arrested, convicted or killed in connection with terrorism or extremist crimes," LaFree says. "We gather a large number of variables on them, such as how they got involved, psychological characteristics, family backgrounds."

The Internet is increasingly a common link.

"A decade or so ago, being exposed to (radicalizing) messages meant listening to tapes, and later, tracking down magazines like the one al-Qaida published," he says. "Now, you could get online this afternoon and find out how to join ISIL and what to pack by talking to someone who's actually fighting."



Gary LaFree

The Division of Research publishes RESEARCH@MARYLAND several times per semester. Its goal is to better inform and connect the research community at the University of Maryland. Your comments and suggestions are welcome. Please email them to Tara Burke, Director, Research Development Resources, at tburke13@umd.edu.
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Art director: Jennifer Faul

RESEARCH COMMUNITY
CONNECTING the UNIVERSITY of MARYLAND
RESEARCH@MARYLAND



Office of the Vice President for Research
2133 Lee Building
University of Maryland
College Park, MD 20742-5121
www.umresearch.umd.edu

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FACULTY AWARDS & HONORS



Department of Aerospace Engineering Samuel P. Langley Distinguished Professor **JAMES E. HUBBARD JR.** received the International Society for Optics and Photonics' 2016 Smart Structures and Materials Lifetime Achievement Award for his pioneering work advancing the fields of smart buildings and smart materials.



For a second consecutive time, **ANIL K. GUPTA**, the Michael D. Dingman Chair in Strategy and Entrepreneurship in the Robert H. Smith School of Business, has been named to Thinkers50, a compilation of the world's foremost business thinkers by British business consultants and authors Stuart Crainer and Des Dearlove.



JINHEE KIM, an associate professor in the Department of Family Science, was elected president of the Association for Financial Counseling and Planning Education. The organization is dedicated to improving personal financial management education and the training and certification of financial counselors.

NEW FACULTY

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

Barnet Pavao-Zuckerman, associate professor of anthropology, is a zooarchaeologist and historical archaeologist with primary interests in colonial-period Native American and European experiences.

Takumi Saegusa is an assistant professor of statistics whose research involves developing theory and methods for biostatistical problems arising from complex sampling designs.

Ryan Daniel Sochol, assistant professor of mechanical engineering, researches state-of-the-art micro- and nanoscale 3-D printing approaches to solve mechanically and physically complex biological challenges.

Yajin Wang is an assistant professor of business whose research focuses on luxury brands, conspicuous consumption and social and interpersonal influences on consumer behavior.

UPCOMING EVENTS & CONFERENCES

RESEARCH WORKSHOP

Insider's Guide to the NSF and Other Federal Agencies

Kathie L. Olsen, Ph.D., founder and managing director, ScienceWorks
Tuesday, Feb. 16, 9 a.m. to noon
Benjamin Banneker Room,
Stamp Student Union
RSVP: go.umd.edu/olsen

JOINT PHYSICS COLLOQUIUM & RESEARCH SEMINAR SERIES

Fundamental Physics Into High Impact Applications

Robert G.W. Brown, CEO, American Institute of Physics
Tuesday, March 29, 3 p.m. reception; 4 p.m. talk
Physical Sciences Complex lobby
RSVP: go.umd.edu/brown