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CONNECTING *the* UNIVERSITY *of* MARYLAND RESEARCH COMMUNITY
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UMD Research Enterprise Expands Influence, Outreach

University of Maryland officials recently announced several awards totaling more than $90 million, featuring collaborative research in environmental science, air traffic management and space exploration. Combined with an increase in expenditures reported to the National Science Foundation, they solidify Maryland's position as a top public research university steadily expanding its outreach and impact.

"The influence of our scientific and scholarly community will continue to expand as we develop innovative ways to address some of the biggest challenges ahead," says **Patrick O'Shea**, the new vice president for research who took the helm of the university's research enterprise in July (see story, right).

One award was a five-year $27.5 million grant from the National Science Foundation to help establish the Socio-Environmental Synthesis Center, or SeSynC. The center, located in Annapolis, Md., will provide national leadership in addressing large-scale environmental challenges like clean water, sustainable food production and the interaction between human activity and ecosystems.

"We'll seek out scientists and policymakers with particularly creative ideas, and provide them high-end computing resources and other tools that foster collaboration and innovation," says **Margaret Palmer**, a UMD environmental scientist who will lead SeSynC.

The leadership team at SeSynC is also developing an undergraduate curriculum in environmental synthesis to be cross-culturally tested at several universities next year.

Also announced was a seven-year contract from the Federal Aviation Administration to extend and expand the National Center of Excellence for Aviation Operations Research, or NEXTOR.

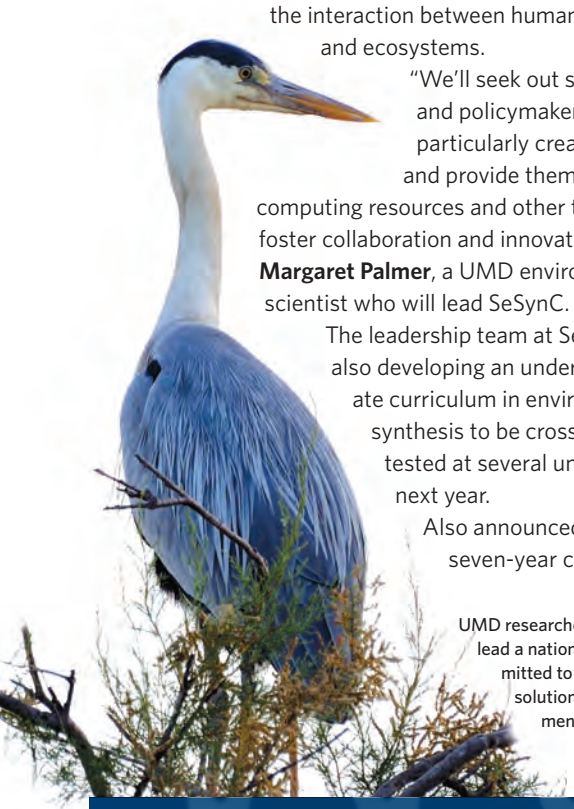
Maryland is part of a $60 million FAA-funded effort to improve airline safety and efficiency.

The $60 million grant will fund NEXTOR II, which joins an eight-university consortium—led by UMD—to examine air traffic management and control, aviation economics and other factors that influence air travel safety and efficiency. **Michael Ball** in business and the Institute for Systems Research will continue to provide leadership in the project.

Maryland astronomers, led by **Jessica Sunshine**, are part of a group recently awarded $3 million from NASA to compete for final selection as an upcoming mission in the agency's Discovery Program. If approved, their Comet Hopper project would launch in 2016, sending a vehicle that would "hop"—landing multiple times—on a comet to collect data from the soil and atmosphere.

The Division of Research also announced that research expenditures were up by 12 percent in fiscal year 2011. The National Science Foundation requests an annual reporting of these expenditures, which cover everything from salaries paid to graduate assistants to purchases of lab equipment.

These numbers are figures of research funding actually spent, and combined, are fairly representative of the strength of an institution's research community, says **Anne Geronimo**, UMD's director of research development.



UMD researchers will help lead a national center committed to finding new solutions to environmental challenges.

O'Shea Is New VP for Research

A noted researcher in applied electromagnetics known for forming strategic relationships with government agencies, universities and private industry is Maryland's new vice president for research.

Patrick O'Shea, former chair of the university's Department of Electrical and Computer Engineering and co-director of the Maryland Cybersecurity Center, now leads a research enterprise that has brought in more than $1.5 billion in external funding over the last three years.

O'Shea says there's a strong need to expand the robust and vibrant "ecosystem" at the university to promote diverse research, scholarship and creativity of the highest caliber. He expects to significantly ramp-up the university's activities in entrepreneurship, technology transfer and commercialization of UMD-based discoveries.

"We'll modernize the reward structure for faculty, thereby enhancing our statewide and national competitiveness, and fueling the region's economic development engine," O'Shea says.

An alumnus of University College Cork, Ireland, and the University of Maryland, where he earned his master's and doctorate degree in physics, O'Shea has been active in interdisciplinary research and management for decades, both in government and academia. He previously served as a project leader at Los Alamos National Laboratory, and as director of the University of Maryland Institute for Research and Electronics and Applied Physics.

UMD Researchers In Service to the Nation

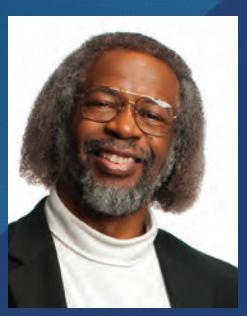
The tenets that define any great public university are research, scholarship and service. Maryland is recognized for all three, and its advantageous location next to the nation's capital makes it particularly suited to serve the federal government.

More than 35 UMD faculty members are currently serving on federal advisory panels or working temporarily for the government through the Intergovernmental Personnel Act. Their service spans everything from counseling the president to leading research programs at federal agencies to improving the nation's move toward electronic health-care records.

"These relationships serve both parties well," says **Ken Gertz**, associate vice president for research development. "The federal government can tap into some of our brightest minds, and our researchers, in turn, can be of service to the nation while gaining insight into some really unique challenges we face."

Examples of UMD researchers working with the federal government include:

Steve Fetter in public policy has taken a leave of absence and is advising President Obama on policy matters related to science and energy.



Sylvester "James" Gates in physics is serving on President Obama's council of advisers in areas involving science and technology.

Ritu Agarwal in business is assisting the U.S. Department of Health and Human Services in health-care policy related to health information technology.

Bonnie Dorr in computer science is leading efforts in machine translation of language for the Defense Advanced Research Projects Agency.

NEW FACULTY

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

Jennifer Hadden is an assistant professor of government and politics. She studies climate and environmental politics, social movements, European governments and integration and social network analysis.

Abani Pradhan is an assistant professor of nutrition and food. His research involves quantitative microbial risk assessment, predictive microbiology, food-safety engineering and molecular epidemiology.

Elisabeth Gilmore is an assistant professor of public affairs. Her research quantifies the costs and environmental impacts of energy and transportation technologies, and applies these values in decision-making frameworks.

Christian Zickert is an assistant professor of mathematics. His research involves low dimensional topography and the interactions between arithmetic and mathematical physics.

Baoxia Mi is an assistant professor of civil and environmental engineering. Her research integrates membrane technology and nanotechnology to seek energy-efficient and environmentally friendly solutions for water safety and sustainability.

Keeping Digital Artifacts Intact

Kari Kraus

The original electronic files of important images, artwork and even popular video games may soon be headed toward a "digital dark age," according to a researcher in Maryland's iSchool.

Kari Kraus, who has a dual appointment in English, says unless steps are taken to address the frailty of digital data—whether a massive dataset of images shared by astronomers or software used to create 1990s video games like "Doom"—such irreplaceable electronic artifacts could be lost forever.

"Disks corrode, bits rot and hardware becomes obsolete," Kraus wrote in an editorial published on Aug. 6 in *The New York Times*. She advocated that digital archivists approach electronic records more as curators, not preservationists, writing: " ... with data, intervention needs to happen earlier, ideally at an object's creation."

Kraus is currently working with a multi-institutional team dedicated to saving the software and hardware from some of the earliest computer games. The team, which includes researchers from the Maryland Institute for Technology in the Humanities, is fully aware that its work has broader implications.

"If we can figure out how to save a first person shooter game like 'Doom,' then we'll have a better idea how to save complex simulations of things like climate change or genetic evolution or the galactic behavior of star systems," Kraus says.

DOOM PHOTO BY MATTSCHILDER/CREATIVE COMMONS

FACULTY AWARDS & HONORS

Kan Cao, an assistant professor of cell biology and molecular genetics, won a New Scholar in Aging Award from the Ellis Medical Foundation. The $400,000 award will support Cao's research on progeria, a rare, premature aging disease in humans. Cao says she is studying the disease to gain further knowledge on the normal aging process.

David Cronrath, dean of the School of Architecture, Planning, and Preservation, was recognized by the National Council of Architectural Registration Boards with its highest honor, the President's Medal for Distinguished Service. Cronrath was noted for his significant contributions to public health and public safety through his service and his practice of architecture.

Mark Lewis, chair of the Department of Aerospace Engineering, was elected to the International Academy of Astronautics. The academy brings together the world's foremost experts in astronautics to explore space research and technology and to provide guidance in the nonmilitary uses of space and the ongoing exploration of the solar system.

UPCOMING EVENTS & CONFERENCES

Robotics Day

Friday, Sept. 9, 10 a.m. to 3 p.m.
A. James Clark School of Engineering
www.engr.umd.edu

DIVISION OF RESEARCH SEMINAR SERIES

ARPA-E Research Priorities and Directions

Featured speaker is **Arun Majumdar**, director of the Office of the Advanced Research Projects Agency–Energy.

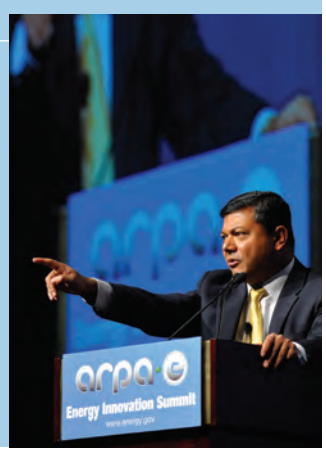
Monday, Sept. 26, 11 a.m. to noon
Lecture Hall, Room 1110
Kim Engineering Building
RSVP to vpr@umd.edu by Sept. 19

IBM: 100 Years of Innovation

Featured speaker is **Steve Mills**, senior vice president and group executive, software and systems, IBM.

Thursday Oct. 20, 11 a.m. to noon
Benjamin Banneker Room, Room 2212
Stamp Student Union
RSVP to vpr@umd.edu by Oct. 14

For more information contact geronimo@umd.edu



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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 e-mail them to Anne Geronimo, Division of Research, at geronimo@umd.edu.

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