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CONNECTING *the* UNIVERSITY *of* MARYLAND RESEARCH COMMUNITY
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Nurturing the Garden of Science and Scholarship

Seed grants and other incentives grow research, bolster partnerships

Even the most promising scientific ideas sometimes need a push to take flight.

The Division of Research often provides that nudge, working with deans and department chairs, administrators at other institutions and federal officials to secure seed funding and other incentives for the campus research community.

These relatively low-cost endeavors often pay big dividends, with interdisciplinary teams of Maryland faculty regularly landing large federal awards supporting research in national security, space exploration, cancer diagnostics, sustainable ecosystems and more. Other seed funding helps university faculty establish partnerships with nearby federal institutions and nonprofits focused on animal conservation, cultural heritage or the visual and performing arts.

"We have some of the brightest and most creative minds anywhere, but we can accomplish even more by collaborating with nearby federal scientists and curators or with clinicians in Bethesda or Baltimore. The seed funding incentives make that happen," says **Patrick O'Shea**, the university's vice president for research and chief research officer.

One program established by the Division of Research offers up to $50,000 to Maryland faculty looking to secure proof of concept for their ideas. In the past four years, these awards, known as Tier 1 grants, have provided more than $2 million to 35 projects that range from studying the social development of young children to designing robotic navigational systems.

The cost of the program is split between the Division of Research and the schools and colleges where the projects originated. The benefits are also shared, with faculty who received Tier 1 grants in 2009 and 2010 reporting almost $1 million in subsequent external funding and more than 40 papers and presentations given, with numerous other grants and submissions still under review.

"We wouldn't be here without those [seed] funds," says **Ira Berlin**, a distinguished university professor of history who launched the Center for the History of the New America in 2010.

The Center for the History of the New America received almost $300,000 in seed funding from the Division of Research, the provost's office and the College of Arts and Humanities. **Ira Berlin** (above) co-directs the center with **Julie Greene.**

Based in the College of Arts and Humanities, the center seeks to greatly expand the scholarly and popular understanding of the nation's immigrant past, which, Berlin says, is directly related to the contemporary immigrant experience and America's future as a nation of nations.

With funding from several nonprofits, the center in September will host a national conference on immigration and entrepreneurship. Long-range plans call for hiring a cluster of five nationally known immigration experts to the university next fall, establishing Maryland as a leader in this field.

RESEARCH DIVIDENDS

- **$37.5K seed grant to Iqbal Hamza to study host-pathogen interactions resulted in $1.6M in external funding.**
- **$75K seed grant to William Fourney to study the energetic effects (pressure changes and violent shaking) of improvised explosive devices on the human brain resulted in $4M in external funding.**
- **$75K in funding to David Segal supports a longitudinal study on military personnel and veterans and their families, with several research team members having contributed chapters to a volume in press of Life Course Perspectives on Military Service.**

Another program initiated by the Division of Research brings together university experts with scientists and clinicians at the University of Maryland, Baltimore (UMB). In the past four years, the Research and Innovation Awards program has provided more than $2.1 million to 32 projects. To date, this has resulted in more than $10 million in external funding and almost 200 publications or presentations.

Vice President for Research **Patrick O'Shea** says seed grants and other incentive programs allow Maryland faculty to take a high-risk/high-reward approach to scientific and societal challenges.

In 2012, 45 proposals were submitted for review, with eight chosen to receive awards ranging from $50,000 to $75,000. In one project, **Amitabh Varshney**, professor of computer science, is using his expertise in machine learning—computers that teach themselves—to improve diagnostic methods for prostate cancer.

Another features **J. Carson Smith**, assistant professor of psychology, who is using fMRI technology in the Maryland Neuroimaging Center to study the effects of exercise on adults showing signs of Alzheimer's disease.

Both projects rely heavily on direct collaboration and data provided by physicians and clinicians at UMB.

"It allows us to effectively compete for large federal grants that often require this type of multi-institutional involvement between scientists and clinicians," says **Ken Gertz**, associate vice president for research development.

In 2012, the Research and Innovation Awards program added new grants funded by the Institute for Bioscience and Biotechnology Research (IBBR) that are specific to "complex therapeutics"—the scientific term for research in biologic drugs and vaccines.

Maryland faculty will collaborate with scientists and clinicians at IBBR, UMB and the National Institute of Standards and Technology on two projects: one looking at unique anti-cancer therapeutic proteins, and another to examine the effectiveness of two antibody-based therapeutics on the progression of Alzheimer's.

"These are the types of projects that can improve patient outcomes and reduce health-care costs in biologic drugs," says **Donald Nuss**, director of IBBR.

UMD/Smithsonian Grants Announced

A competitive seed grant program between the university and the Smithsonian Institution has proven successful: Five projects funded in 2010 for $210,000 have resulted in almost $3.6 million in federal grants and 15 academic papers submitted, with other award proposals still under review.

This year's winners funded for $50,000 apiece are:

- **Judith Freidenberg** in anthropology is working with a Smithsonian curator to document the life histories and material culture of local immigrant communities.
- **Sacoby Wilson** in public health is working with a Smithsonian educational coordinator to examine the health hazards of eating significant amounts of fish from the nearby Anacostia River.
- **Alexa Bely** in biology is working with a Smithsonian research zoologist to study the remarkable regenerative process of nemerteans (ribbon worms).

- **Brian Bequette** and **Carol Keefer**, both in animal and avian sciences, are working with a reproductive physiologist at the Smithsonian to develop metabolic fingerprinting technology to track fertility in certain mammals.
- **Raymond Phaneuf** in materials science and engineering is working with a Smithsonian conservator to investigate oxide films in silver alloys, key in protecting and restoring metallic artifacts.

Innovation Awards in Regulatory Science

The University of Maryland Center of Excellence in Regulatory Science and Innovation (UM-CERSI) announced four innovation awards to support collaborative research projects involving medication and/or medical devices.

Maryland bioengineers will work with experts from UMB and the U.S. Food and Drug Administration (FDA) on projects that include the safety and performance of neonatal ventilators (**Benjamin Shapiro**) and the use of plasmonic technologies to enhance viral diagnostics (**Ian White**).

"These types of partnerships represent a critical, necessary and creative investment—one that will benefit not just FDA and academia, but also American consumers and industry," says FDA Chief Scientist **Jesse L. Goodman**.

PHOTO BY DEVON YU/VEER

Seed Funding Reignites UMD, NASA Goddard Research

Seed funding from the A. James Clark School of Engineering and the Division of Research has reinvigorated longstanding collaborative research between Maryland engineers and government scientists at the nearby NASA Goddard Space Flight Center.

Alison Flatau, associate dean for research in the Clark School, approached a counterpart at NASA last summer and suggested several meet-and-greets where senior NASA officials could see firsthand the latest expertise at Maryland. "We have complimentary research capabilities," says Flatau.

Seven research areas related to NASA Goddard's priorities were subsequently identified as good fits for collaborative projects. Two of them—one to develop a nanoscale silicon material for "far infrared" sensors to study radiation in deep space; another in materials science properties for protecting satellite hardware—received funding via Tier 1 grants, with additional support from the Clark School and NASA.

IMAGE COURTESY OF ESA

The university's proximity to the space flight center in Greenbelt, Md.—it is less than five miles from campus—plays a key role in these new partnerships, says **Michael Johnson**, chief technologist in the applied engineering and technology directorate at NASA.

"Maryland and Goddard researchers can easily meet face-to-face, which makes a difference in the workflow," says Johnson. "These latest projects can jumpstart a new era of research between us."

Alison Flatau

Other Incentives Advance Research and Scholarship

Two funding incentives are strengthening already-established research programs:

* **The Future of Information Alliance**, launched in 2011 to foster campuswide dialogue and research on the evolving role of information in our lives, was just awarded $1 million from the Robert W. Deutsch Foundation to support new programs and research.

  One planned activity is a seed grant competition to engage students across disciplines in seeking innovative solutions to some of the major information-related challenges of our time, says journalism's **Ira Chinoy**, who leads the alliance with **Allison Druin** in the iSchool.

* The Army Research Laboratory has given the University System of Maryland $5.1 million over the past three years to support the **Maryland Proof of Concept Alliance Program**. The alliance has funded 21 projects in areas related to national economic growth and national security. Thirteen of the projects were from the University of Maryland campus, with **Jacques Gansler**, head of the Center for Public Policy and Private Enterprise, serving as principal investigator for the alliance. **Brian Darmody**, associate vice president for research, played a key role in developing the program. "We're building on our 'innovation ecosystem' that nurtures young companies and promising research," he says.

UMD, NCI Partnership Expands

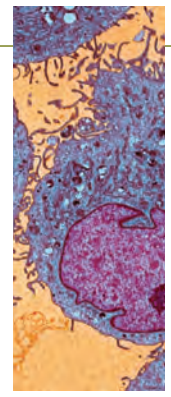

IMAGE BY ALLOY PHOTOGRAPHY/VEER

The University of Maryland–National Cancer Institute Partnership for Cancer Technology has received new federal support for UMD graduate students working at the NCI's laboratories in Bethesda, Md.

The latest grant funds up to four doctoral students in physics and mathematics that are using their knowledge of the physical sciences to aid in the fight against cancer, says **Wolfgang Losert**, who leads the partnership.

One team of UMD students will work with NCI scientists to investigate how anti-microbial peptides may be designed to target and disrupt the membranes of malignant cells, Losert says. Another will create an imaging needle that combines optical computed tomography and fluorescence microscopy.

Health IT Grant Improves Oral Cancer Screening

A new partnership between university health information technology experts and the University of Maryland School of Dentistry could soon make oral cancer screenings for underserved groups quicker and more accessible.

A $25,000 seed grant from the university's Center of Excellence in Health IT Research (COEHITR) provides equipment for clinicians in the campus Health Center to beam high-resolution images, in real time with audio, to oral cancer experts in Baltimore.

The technology will offer clinicians in College Park immediate feedback if something suspicious is found, and also benefits patients lacking adequate transportation from having to travel to Baltimore for a simple screening, says **Kenyon Crowley**, director of health innovation at COEHITR.

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