

DIVISION OF RESEARCH
**Fiscal Year 2010
Facts & Figures**



UNIVERSITY OF
MARYLAND



A MESSAGE FROM DR. NORMA ALLEWELL

As the flagship campus of the University of Maryland System, the University of Maryland at College Park plays a leadership role in Maryland's growth as one of the premier centers for research and technology in the nation. For example, the University is rapidly increasing its visibility and impact and is now ranked 18th among national public research facilities by U.S. News and World Report. This past fiscal year, the University of Maryland received approximately \$545 million in direct research funding, a 5% increase over fiscal year 2009.

By virtually every measure of quality, the University of Maryland has gained national recognition as one of the fastest rising comprehensive research institutions in the country and is helping to redefine the research university of the 21st century.

Key Successes in the Division of Research

The mission of the Division of Research is to support and amplify the scale, impact and visibility of the University's research enterprise; to develop and implement University research policy; and to ensure compliance with federal, state and University policies and regulations. The Vice President for Research (VPR) leads, facilitates and supports existing and new research initiatives across the campus; fosters campus-wide interdisciplinary research initiatives; works to develop research partnerships with other academic institutions, federal and state agencies and corporations; advocates for campus research priorities and resources; promotes and supports technology transfer; initiates and supports economic development programs; and works to reduce administrative burdens for researchers. Offices in the Division include Research Development, Research Administration and Advancement (ORAA), Research Compliance, Research and Economic Development and Technology Commercialization (OTC).

Building Partnerships

Existing collaborations have been expanded at major federal agencies with research facilities near UM, NIH, NASA, NIST, NOAA, National Archives, FDA, NSA, Smithsonian Institution, USDA Beltsville Agricultural Research Center (BARC), Department of the Interior and Army Research Laboratory.

Recently signed partnerships include the following:

- ◆ Cooperative agreement with NASA-Goddard in space-based science and engineering and creation of the Joint Space Science Institute.
- ◆ Cooperative agreement with BARC promotes collaborations with multiple University units and creation of a center for agricultural, environmental and natural resources research.
- ◆ MOU with the National Cancer Institute to enable Maryland graduate students to be trained/mentored in NCI laboratories and to promote professional exchanges among University faculty and NCI researchers.
- ◆ A broad three-year strategic agreement with Lockheed Martin to enhance research development collaborations in cyber security, logistics and climate change.
- ◆ MOU with the Smithsonian Institution that includes a seed grant program to support joint research collaborations.

Inside This Report

Message from Dr. Allewell

Key Successes in the Division of Research

UM Contract & Grant Activity - 10 Year Trend

Sponsored Research & Outreach Activity by College

Federal and Non-Federal Award Funding by Sponsor

Sponsored Research Award & Expenditure Totals - 10 Year Trend

Technology Commercialization

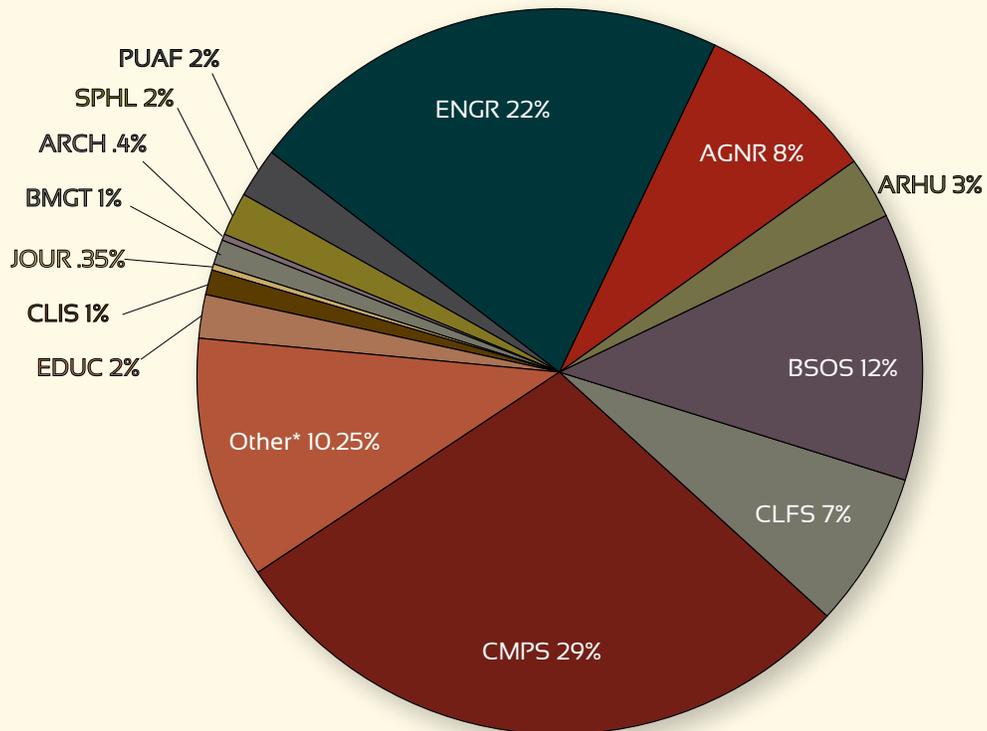
ARRA @ UM



UM Contract & Grant Award Activity — Fiscal Years 2000-2010



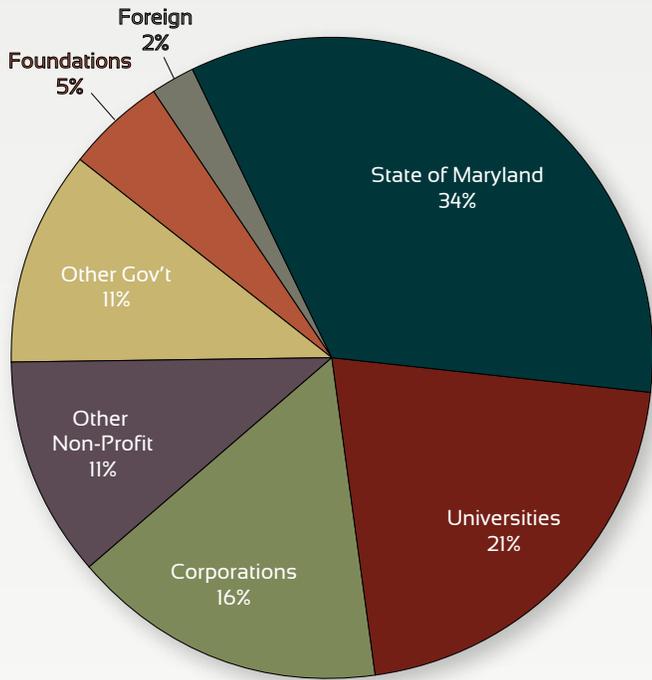
FY10 Sponsored Research & Outreach Activity by College



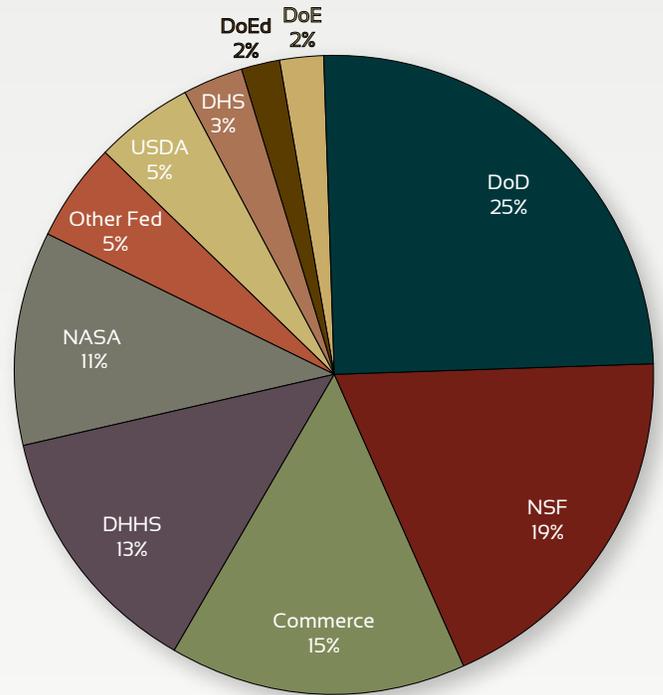
*Other units on campus:

EXST, FMGT, GRAD, LIBR, OIT, PRES, SVPAAP, UGST, VPAA, VPR, VPSA

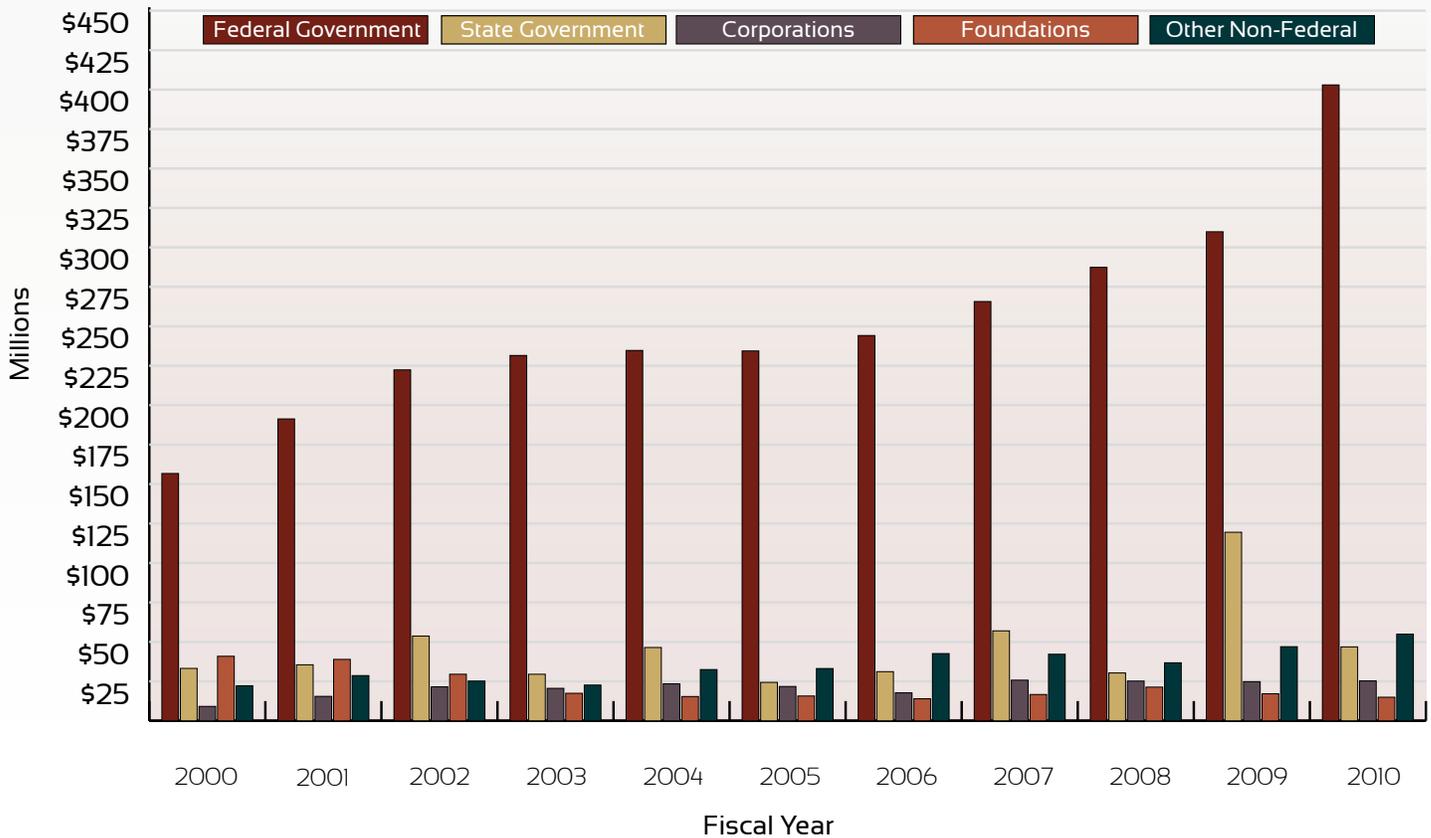
FY 2010 Sources of Non-Federal Award Funding



FY2010 Federal Award Funding by Sponsor



Sponsor Funding by Type



UM Sponsored Research and Outreach Activity, FY 2010: Projects Administered & not Administered by ORAA

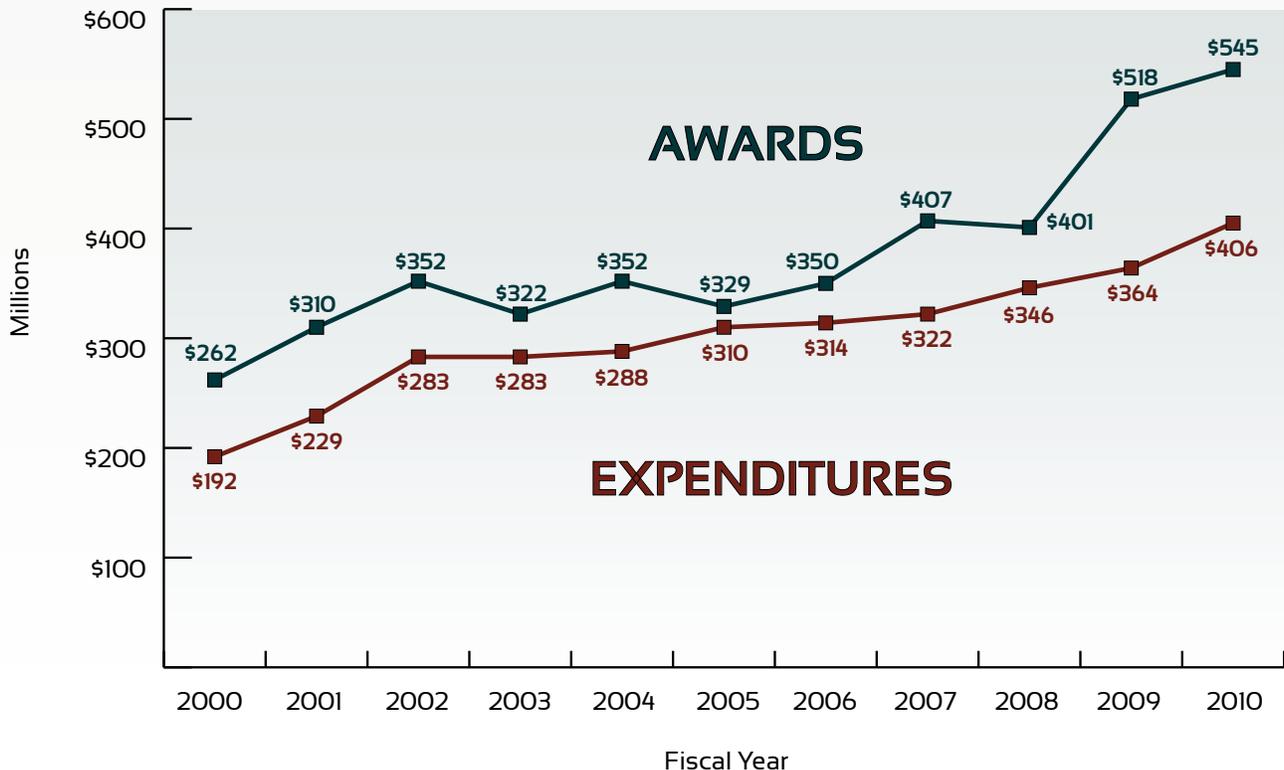
Data below summarize external support received for research, training, service and fellowships.

UM College	Projects Administered by ORAA *	Research & Outreach	Total Amount Received
A. James Clark School of Engineering	\$107,883,420	\$13,140,992	\$121,024,412
College of Agriculture & Natural Resources	\$34,292,798	\$10,713,242	\$45,006,041
College of Arts & Humanities	\$15,736,673	\$385,000	\$16,121,673
College of Behavioral & Social Sciences	\$55,851,347	\$10,243,657	\$66,095,004
College of Chemical & Life Sciences	\$34,397,963	\$738,283	\$35,136,246
College of Computer, Math & Physical Sciences	\$155,638,239	\$1,328,432	\$156,966,671
College of Education	\$12,834,216	\$152,122	\$12,986,338
College of Information Studies	\$3,365,350	\$89,194	\$3,454,544
Other Units **	\$38,201,156	\$19,155,447	\$57,356,603
Philip Merrill College of Journalism	\$1,117,989	\$770,245	\$1,888,234
Robert H. Smith School of Business	\$1,534,310	\$1,428,200	\$2,962,510
School of Architecture	\$1,467,228	\$710,348	\$2,177,576
School of Public Health	\$11,851,517	\$480,264	\$12,331,781
School of Public Policy	\$7,517,079	\$3,836,543	\$11,353,622
TOTAL AWARDED FOR ALL SPONSORED PROJECTS	\$481,689,284	\$ 63,171,969	\$544,861,253

* Based on assigned Unit credit

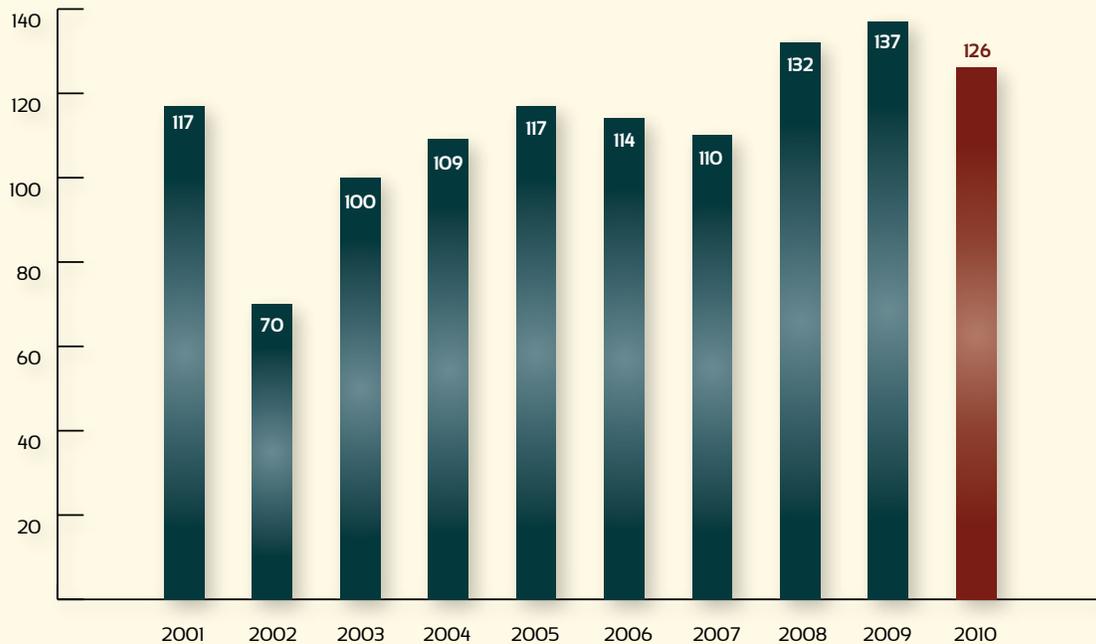
** "Other" Includes - EXST, FMGT, GRAD, LIBR, OIT, OPS, PRES, SVPAAP, UGST, VPAA, VPR, VPSA

UM Sponsored Research Award & Expenditure Totals, FY 2000-2010



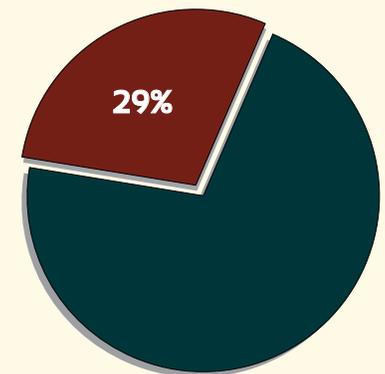
OFFICE OF TECHNOLOGY COMMERCIALIZATION

Disclosures over the past 10 years



Joint Ownership

29% of FY2010's 126 disclosures (**36**) are jointly owned with **24** different universities, businesses, and government institutions.



An OTC Success Story:

VisiSonics
As Good as Being There!
www.visisonics.com

developed an audio camera that can “see” noise by creating audio images from sound arriving from all directions. The technology has varied applications, from pinpointing the direction of gunfire to helping architects better design

Start-up company **VisiSonics**, created in fiscal year 2010, has

concert halls. VisiSonics uses technologies created by University of Maryland inventors from the College of Computer, Mathematical and Physical Sciences: Dr. Ramani Duraiswami, Dr. Nail Gumerov, Dr. Dmitry Zotkin, and Mr. Adam O'Donovan. One of these technologies is the winner of OTC's 2007 Invention of the Year award. VisiSonics is already doing a brisk business.

NIST Awards UM \$15 Million in Stimulus Funds for Fellowships

The University of Maryland has been awarded a \$15 million grant from the National Institute of Standards and Technology (NIST) American Recovery and Reinvestment Act (ARRA) funds, to develop and implement a national measurement science and engineering fellowship program. The UM NIST-ARRA program focuses on selection and awarding of research positions for undergraduate, graduate, postdoctoral and senior fellows in all six laboratories at NIST headquarters in Gaithersburg, Maryland, and at Hollings Marine Laboratory in Charleston, South Carolina. Daniel Lathrop, Principal Investigator, says that this program will strengthen ties between NIST and UM and will “employ a highly talented pool of fellows to work with NIST.”

According to Co-Principal Investigator, Robert Briber, the NIST-ARRA program “will create jobs and support top level students and scientists drawn from the national pool ... to advance the science and technology crucial for maintaining U.S. leadership in the world economy.” The NIST-ARRA program actively recruits fellows from Maryland and from across the U.S., to spur technological advancements and to develop and support the American scientific talent pool. As such, it provides both immediate and long-term benefits to the economy by bolstering the national science and technology infrastructure, and by creating new jobs for scientists and engineers (including, so far, 32 undergraduate summer and semester internships, 13 postdoctoral positions and 13 senior positions). With ongoing recruitment, the program and its impact will continue to grow.

At the core of the NIST-ARRA program is a cutting-edge, cross-disciplinary group of UM researchers, representing such departments and groups as Engineering, Physics, BioEngineering, Chemistry and Biochemistry, Materials Science, Fire Protection Engineering, Mechanical

Engineering, Computer Engineering, the UM Nanocenter, the Institute for Advanced Computer Studies, the Institute for Research in Electronics and Applied Physics, and the Joint Quantum Institute. With these researchers, the program is fostering and strengthening collaborations between UM and NIST scientists on projects including: development of semiconductor optical switches using quantum dots; study of spin-orbit coupling and conductivity in ultra-cold atoms; development of innovative fire protection via sustainable infrastructure materials and disaster-resilient structures; complete thermodynamic analysis of metal-hydride transformation via construction of standard coherent phase diagrams; characterization and modeling of silicon carbide devices; development of a new instrument with high mid-infrared spectral resolution for measurement of metal-organic frameworks; and in situ liquid-cell transmission electron microscopy studies.

Among NIST-ARRA's ten supported Fall 2010 undergraduates, 6 are from UM and 4 are from nearby universities, including UM Baltimore County, UM Towson, Mount Saint Mary's and George Mason. James O'Beirne of George Mason is an example of the NIST-ARRA program in action. He is at NIST in Gaithersburg, working on the development of a finite-volume partial differential equation solver. Mr. O'Beirne's experiences thus far in his fellowship have allowed him to solidify and apply his learning in a “hands-on, real-world environment which goes beyond the academic exercises presented in classes.” He hopes that his experiences will serve as a foundation to further his studies, and that he'll be able to apply this research to other important projects in the future.

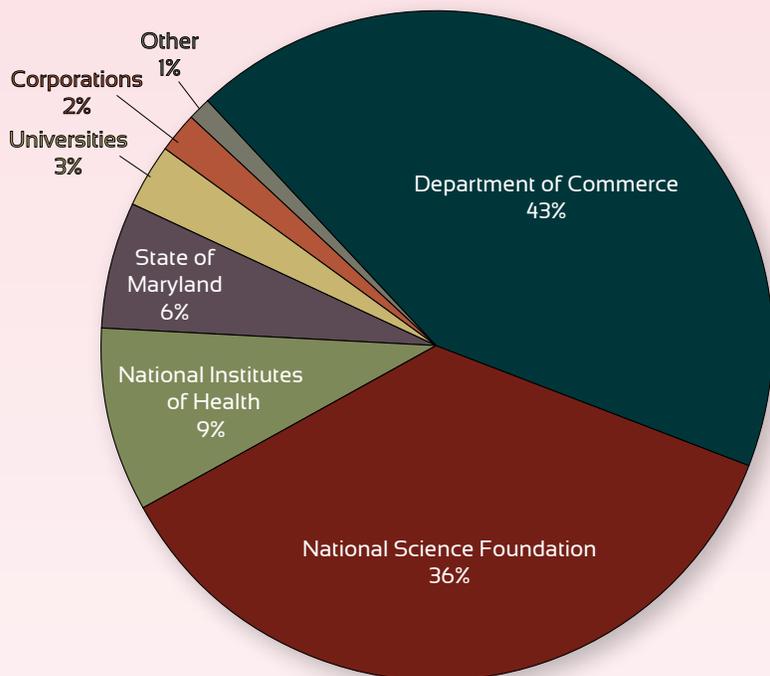


NIST ARRA post doc, Cassiah Cox, placing samples in a Nuclear Magnetic Resonance (NMR) apparatus. Cassiah investigates the role of nucleic acids in various biological processes, with a particular emphasis on RNA structure and function, and on discovering potential drug targets.



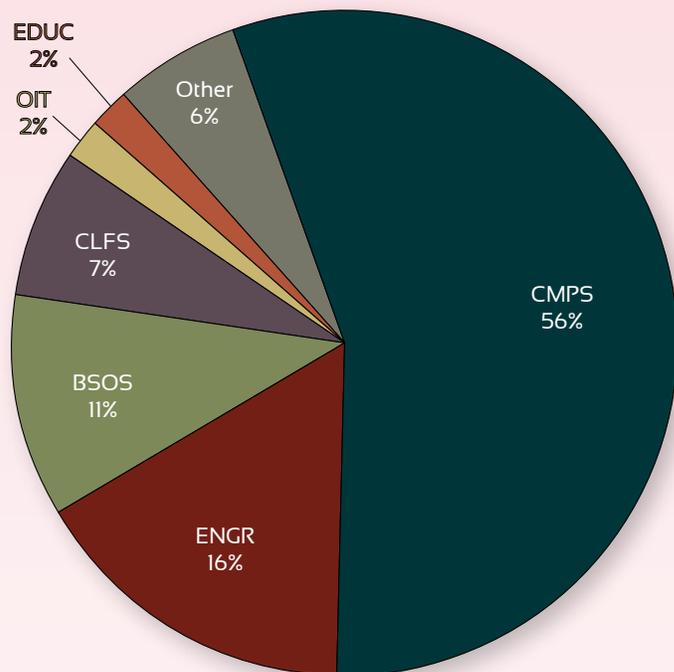
**Chad Ropp, NIST Fellow with Dr. Edo Waks
Photograph by Jess Molina**

Recovery Act Funding by Agency



*Other: DOE, Government Labs

ARRA Funding by College



*Other: AGNR, SVPAAP, SPHL, VPAA, PUAFA, ARHU, ARCH, BMGT



Shilpi Gupta, NIST Fellow with Dr. Edo Waks
Jess Molina, photographer



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- Sources:**
- *UM Newsdesk-"NIST Awards UM \$15 Million in Stimulus Funds for Fellowships" (*permission granted by Dr. Daniel Lathrop*)
 - *Jess Molina-UM NIST photos
 - *UM Newsdesk-Photo of Physical Sciences Complex-Joint Quantum Lab
 - *UM Division of Research
 - *UM Office of Research Administration and Advancement
 - *UM Office of Technology Commercialization
 - *Nanoparticles: Medical Imaging-H.Kang/NIST & F. Tokumasu/NIAID
 - *Nanoscale Vise, Quantum Daisy, Cobalt Nanoparticles-NIST
 - *How to Heat a "Nano Bathtub" the JILA Way-K. Talbott/NIST
 - *Nanotechnology: Magnesium Oxide Dice-J.H. Scott, J. Bonevich/NIST
 - *Graphic Design - ivdesignhouse.com