

FAU

DIVISION OF RESEARCH
Florida Atlantic University



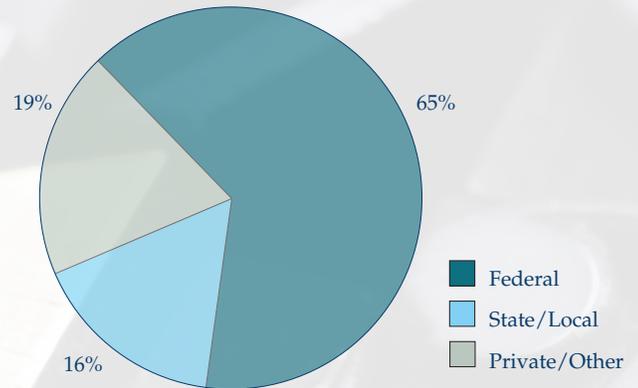
Research Annual Report 2009



Federal Funding by Agency

U.S. Department of Education	\$6,351,387
Office of Naval Research	\$5,821,801
National Science Foundation	\$4,623,397
National Institutes of Health	\$3,936,945
U.S. Department of Health and Human Services	\$2,041,687
U.S. Department of Agriculture	\$825,061
U.S. Department of Interior	\$492,720
U.S. Department of Defense	\$470,658
National Oceanic and Atmospheric Administration (NOAA)	\$232,432
U.S. Department of Transportation	\$212,073
Federal Emergency Management Agency	\$199,584
National Aeronautics and Space Administration (NASA)	\$76,000
National Marine Fisheries	\$53,100
U.S. Department of Homeland Security	\$50,954
U.S. Department of Elder Affairs	\$35,207
National Foundation on the Arts & Humanities	\$32,500
American Nurses Association	\$10,000

External Funding Sources

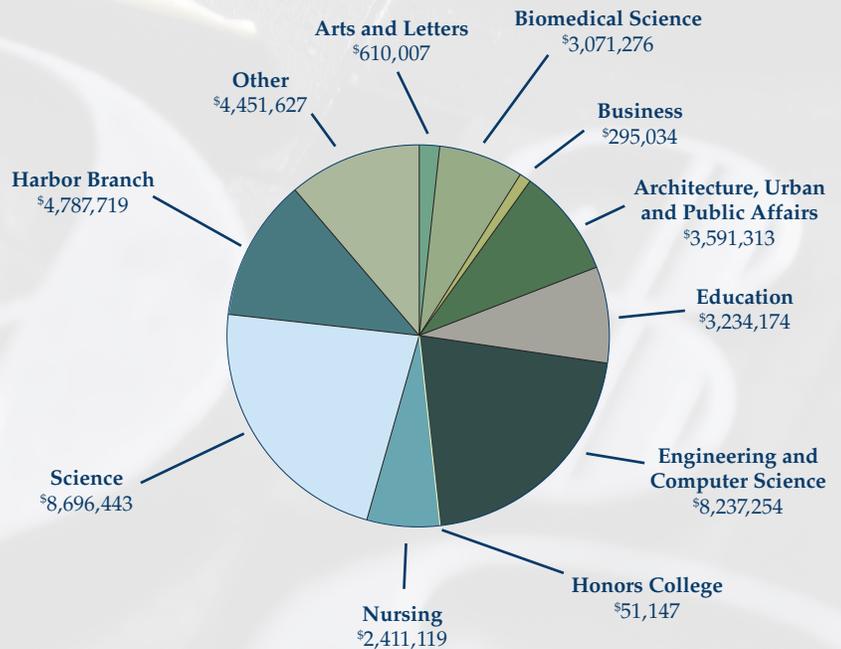


Research Facts

Research and Commercialization Facts 2008-2009

Number of proposals submitted to prospective funding agencies	693
Number of new awards or contracts received	231
Number of projects active during the fiscal year	615
Number of applications for U.S. patents submitted	21
Number of U.S. patents granted	3
Total research expenditures	\$43,772,065

Research Awards by Academic Unit 2008-2009



Did You Know?

- FAU is ranked by the Carnegie Foundation for the Advancement of Teaching as a “Research University – High Research Activity” institution.
- FAU has more than 4,000 graduate and professional students out of a total student population of 28,000.
- FAU is working on collaborative research and education projects with three of the world’s premier scientific research organizations—Scripps Florida, Torrey Pines Institute for Molecular Studies and the Max Planck Florida Institute.
- Harbor Branch Oceanographic Institute, a premier marine science research organization, is now part of FAU, and is in the forefront of ocean exploration, innovation, conservation and education.
- FAU has more than 40 research centers and institutes, many of which involve interdisciplinary research, established to carry out the research, service and instructional activities which supplement and extend instruction and research offered by the University.
- FAU offers more than 60 graduate degrees and 21 doctoral degrees ranging from computer science to integrative biology to business administration.
- In addition to more than 244,000 square feet of laboratory space and other vital research facilities, FAU houses two fully-equipped, state-of-the-art nucleic acid and proteomics core laboratories, and an imaging laboratory which enable faculty and student researchers as well as other scientists to perform cutting-edge research.
- FAU has a number of technologies available for licensing which span a broad range of fields including cancer, inflammation, arthritis, imaging and security and surveillance.
- FAU formed the Florida Atlantic Research & Development Authority in 1985, with the support of the Broward and Palm Beach county commissions.
- The Florida Atlantic Research & Development Park is situated on 77 acres at the north end of FAU’s Boca Raton campus and on 14 acres in Deerfield Beach, Fla. Both parks enable businesses to have a fundamental connection with FAU and its faculty and students. This unique set-up assists the University in developing synergistic efforts in research, as well as providing opportunities for students to be employed in their fields of study.



While it is certain that we face many challenges today, we are also presented with unprecedented opportunities to succeed. As a university, we are judged by many criteria including awards and admissions as these are important benchmarks that measure the success of an educational institution. But it is through academic research where a university truly achieves greatness and gains the respect not only of its peers, but of the world at large. A top priority for FAU is to increase collaboration across fields and to immerse our students in research as well. Across disciplines, campuses, departments, centers and institutes, our students, faculty and staff are working on critical societal issues ranging from climate change and conservation, to public health and national security. They are teaming up to address questions that affect and shape our future and creating solutions that will have an impact across geographic boundaries. They are driving the innovative spirit that we foster and practice at FAU and contributing to new discoveries, inventions and ideas that we bring to society.

We hope this report provides a glimpse of the creativity and innovation that is taking place at FAU, and we thank you for allowing us to share our successes and accomplishments with you.



John F. Pritchett
John F. Pritchett, Ph.D.
President (Interim)



C. Michael Moriarty
C. Michael Moriarty, Ph.D.
Interim Vice President for Research



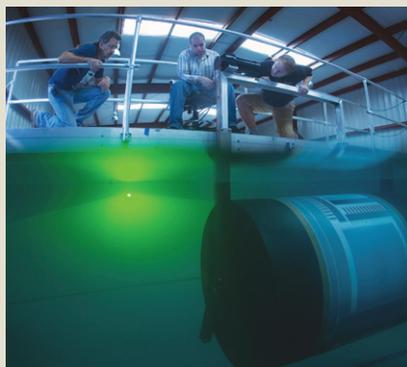
Research Snapshots

Through its 10 colleges, seven campuses and leading centers and institutes, FAU researchers, scholars and students are tackling real-world problems and enriching the quality of life in Florida and beyond.

Addressing our Nation's Health and Safety



- In an effort to address Florida's and the nation's nursing shortage, FAU's 12-month, full-time baccalaureate program in nursing is designed to enable students with bachelor's degrees in other disciplines to launch their nursing careers sooner through accelerated education. FAU was among the first institutions in the nation to receive funding from the Robert Wood Johnson Foundation's New Careers in Nursing Scholarship Program. Ten, \$10,000 grants through this competitive program were provided to individuals in under-represented groups and to those with disadvantaged backgrounds to support their full-time study in nursing. The scholarship program has helped increase the number of students who are able to enroll in FAU's accelerated nursing program without having to work.



- Assistant Research Professor Fraser Dagleish received \$2 million from the U.S. Department of Defense's Office of Naval Research for his cutting-edge research in underwater laser sensing and robotics to develop next generation underwater sensing networks to enhance the security of coastal waters and ports, and to expand ecosystem monitoring capabilities. When the technology is fully developed, it will be used onboard a group of small, cooperating underwater robots and will have extensive utility for future U.S. military operations including U.S. war fighters (intelligence, surveillance and reconnaissance, and mine countermeasures operations). Domestically, it will be used for maritime security and environmental assessment to address some of the most critical areas in need of ocean research and technology development over the next 10 years.



- FAU opened its second Disaster and Emergency Healthcare Training Facility on the grounds of St. Mary's Hospital in West Palm Beach, Fla.—its first training facility, a simulation center, is located on the Boca Raton campus. Training at

these facilities uses “responsive” human mannequins and other sophisticated technologies to improve patient care through the simulation of realistic scenarios that provide an opportunity for students and professionals to practice, prepare and analyze every aspect of the chain of care and treatment. By practicing on lifelike mannequins with realistic human responses, the center trains healthcare professionals to reduce preventable medical errors and enhance their expertise.

- Schmidt Senior Fellow and Distinguished Professor Keith Brew is developing and evaluating a novel approach for the treatment of osteoarthritis (OA) using engineered proteins and other molecules that specifically block the enzymes responsible for degrading cartilage in OA. He received a five-year renewal grant of \$2.6 million from the National Institutes of Health for this research project. His collaborators on the project include Dr. Hideaki Nagase, a scientist at the Kennedy Institute for Rheumatology in London. Using rodent models of the disease and human tissues derived from joint replacement surgery, they are investigating the mechanisms through which these enzymes act and assessing their effectiveness.

Discovering our Past, Present and Future

- For more than 25 years, scientists in FAU's Center for Complex Systems and Brain Sciences have been working to decipher the laws of coordinated behavior called “coordination dynamics.” In a groundbreaking study, a team of researchers led by J. A. Scott Kelso, Gonzalo de Guzman and Emmanuelle Tognoli, created a hybrid system of a human interacting with a machine, which they call “Virtual Partner Interaction.” They placed the equations of human coordination dynamics into the machine and studied real-time interactions between the human and virtual partners. Imagine a machine whose behavior is based on the very equations that are supposed to govern human coordination. Then imagine a human interacting with such a machine whereby the human can modify the behavior of the machine and

the machine can modify the behavior of the human. Their findings open up the possibility of exploring and understanding a wide variety of interactions between minds and machines.

- Tamara Frank, research professor and director of FAU's Center for Ocean Exploration and Deep-Sea Research, was among the scientists who discovered grape-sized protists and their complex tracks on the ocean floor near the Bahamas. These groove-like tracks were made by giant deep-sea, single-celled organisms which could lead to new insights into the evolutionary origin of animals. This was the first time a single-celled organism was shown to make such animal-like traces, and the team's discovery was published in *Current Biology*. The finding was significant because similar fossil grooves and furrows found from the Precambrian era, as early as 1.8 billion years ago, have always been attributed to early-evolving multi-cellular animals. NOAA's Office of Ocean Exploration and Research has provided several years of significant interdisciplinary funding to the research group involved in this discovery.

Exploring Renewable Energy and Enabling Sustainability

- FAU's Harbor Branch Oceanographic Institute received its single-largest award—\$22.5 million over five-years—from NOAA for a new cooperative institute headquartered at Harbor Branch in Fort Pierce, and co-managed by the University of North Carolina Wilmington. The new institute will conduct research under three main themes: development of advanced underwater technologies, exploration and research of frontier regions of the eastern continental shelf and beyond, and improved understanding of deep and shallow coral ecosystems.

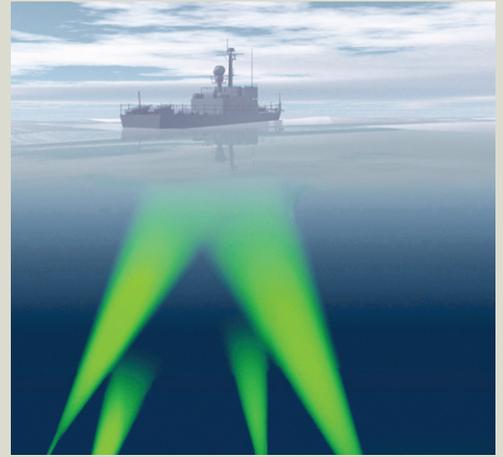
- FAU's Center for Ocean Energy Technology (COET) was created in 2007 to research, design, develop, implement and test ocean energy technologies that are cost-competitive with existing power technologies. Academic, government and industry partners of the COET are assessing hydrokinetic and thermal ocean energy resources off





the east coast of Florida to advance the development of these resources for commercial-scale electrical power production. Researchers are performing several projects, including developing a 20-kilowatt turbine. They have also deployed Acoustic Doppler Current Profilers to evaluate the state's ocean energy resources in the Gulf Stream. This instrumentation is helping them to gather baseline information that

is needed to characterize, in detail, the spatial and temporal variability of the Gulf Stream, the most energy dense ocean current, for its potential use as an abundant renewable energy source. In addition to receiving two awards totaling \$13.7 million from the state of Florida, the COET received nearly \$1.2 million in federal support from the U.S. Department of Energy.



- Community leaders joined FAU officials and Florida Governor Charlie Crist to unveil downtown Fort Lauderdale's first large-scale solar roof installation on FAU's Higher Education Complex building on its Fort Lauderdale campus. The Photovoltaic Solar Panel installation project, conducted by Advanced Roofing, Inc. and headed by Jaap Vos, associate professor and director of FAU's School of Urban & Regional Planning, was funded by a generous private gift from an anonymous donor, as well funds from Florida Power & Light, the State of Florida Solar Energy System Incentives program and other state funding. FAU was the first university in South Florida to implement the solar panel project initiative which covers the installation of 240 photovoltaic panels designed to produce 50,000 watts of energy.

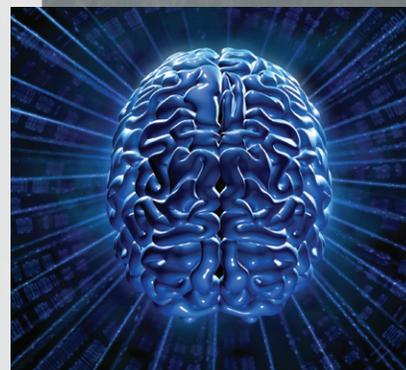


Enhancing Entrepreneurship — Preparing Future Leaders

- FAU's Adams Center for Entrepreneurship is assisting aspiring entrepreneurs who are interested in business ownership and business ventures, and preparing students to be leaders in business, science, engineering and other disciplines. The center received a generous scholarship donation of \$10,000 from Jeffrey Firestone, an avid supporter of the center. The "In Good Company" scholarship is providing aid to students exploring the latest theories and potential solutions in social entrepreneurship, new venture creation and sustainability concepts, and how it relates to local and global issues. A requirement of the scholarship and those receiving it includes the completion of community service, thereby educating students that an entrepreneur is only successful when they also give back to community.

Research Centers and Institutes

- Center for Applied Stochastics Research
- Center for Complex Systems and Brain Sciences
- Women's Studies Center
- Center for Economic Education
- Ernest O. Melby Community Education Center
- Center for Biological and Materials Physics
- Center for Ocean Energy Technology
- Center for Acoustics and Vibrations
- Center for Marine Materials
- Center for Marine Structures and Geotechniques
- Center for Services Marketing and Management
- Center for Urban Redevelopment and Education
- Center for Infrastructure and Constructed Facilities
- Center for Systems Integration
- Center for Molecular Biology and Biotechnology
- Institute for Ocean and Systems Engineering
- Carl DeSantis Business and Economic Center for the Study and Development of the Motion Picture
- Christine E. Lynn Center for Caring
- Center for Hydrodynamics and Physical Oceanography
- Public Procurement Research Center
- Intensive English Institute
- Quantum Foundation Center for Innovation in School and Community Well Being
- Community Justice Institute
- Adams Center for IT Entrepreneurship and Venture Capital
- InternetCoast Institute
- Center for the Conservation of Architectural and Cultural Heritage
- Center for Holocaust and Human Rights Education
- Center for the Study of Values and Violence after Auschwitz
- Center for Advancement of Distance Education Technologies
- Louis and Anne Green Alzheimer's Research Center
- Center for Information Networks and Engineering
- Teaching and Leadership Center at Florida Atlantic University
- Center of Excellence in Biomedical and Marine Biotechnology
- Center for Cryptology and Information Security
- Center for Intermodal Transportation Safety and Security
- Center for Rare and Genetic Neurological Diseases
- Center for Coastline Security Technology
- International Center for the Advancement of Political Communication and Argumentation
- Child Welfare Institute
- Center for the Study of Neurological Disabilities
- Anthony James Catanese Center for Urban and Environmental Solutions
- Florida Center for Environmental Studies



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