The amount of grant and contract money acquired each year is a commonly accepted measure of the quality of a university's research programs. Crossing the $100-million threshold is a significant milestone in UCF's progress from promise to prominence.

—UCF President John C. Hitt
UCF FACULTY TO THANK FOR RESEARCH RISE

UCF is a rapidly growing and changing university. Thus we are always looking for milestones or benchmarks to measure our progress. We passed two such milestones recently, over $100 million in sponsored programs and advancement from Tier 4 to Tier 3 in the U.S. News and World Report rankings. These two milestones are indications that as we have become a Great Big University (eligible in the nation in enrollment) and we are also becoming a Great University.

We have enjoyed compounded, double-digit increases in funding in five of the last six years. This period of growth followed a five-year period during which funding averaged just $35 million. What happened? I suggest three major factors are responsible for this change:

1. Our FY 05 funding is the result of approximately 1,000 proposals written by our faculty. This faculty is driven to achieve excellence in their disciplines and to provide their students with an exceptional educational experience. Simply put, this success is a direct result of a lot of hard work by our faculty.

2. Once funding is secured, our faculty, staff, and students work extremely hard to produce the kinds of accomplishments, best described as the creation of new knowledge, that in turn, builds the university’s reputation. As our reputation improves so does our U.S. News and World Report rating, our ability to attract better students and faculty, and the success of our faculty’s research proposals.

3. The university made major commitments to help our faculty in what is a hyper-competitive environment as they go head-to-head with the top research faculty from the nation’s top research universities. This commitment starts with our office which is dedicated to assisting the faculty in overcoming the ‘administration’ associated with contracts and grants. The university administration, starting with President Hitt, provided substantial funds for major capital equipment, matching funds to make proposals to federal agencies more competitive, and matching funds to provide incentives to our faculty to work with regional industry and to encourage those industries to invest their funds in research at UCF.

There is probably a fourth, less tangible, reason for our success. Our faculty are recruiting colleagues who will challenge them to do better. This great faculty also challenge us as administrators to work as hard as they do and at the level of excellence that they expect of themselves.

Great faculty, accomplishing great things, draw great students to the university. Together they produce top scholarship that has IMPACT.

The most common question that I’ve received since we crossed the $100 million mark is: “When will we reach $200 million?” As Danish physicist and Nobel Prize winner Niels Bohr said, “Prediction is difficult, especially about the future.” Our current quest for a medical school is the greatest opportunity for continued growth of our sponsored programs. According to a 2002 report from the RAND Corp., 75 percent of all federal funds to universities come from the National Institutes of Health (NIH) and half of all NIH funds go to medical schools.

Needless to say, there are obstacles. Our rapid growth has long outstripped our infrastructure. We continue to manage (indeed progress at a rapid pace), but there is just so much that we can expect to accomplish given our chronic shortage of research space. The money that my office alone spends for rent exceeds all the funds spent on the incentives that have helped us reach the $100 million mark. Our support infrastructure needs to reflect the responsiveness and cost associated with nationally competitive programs. Indeed there is work to be done.

Thanks so much to our faculty, students, staff, and my bosses for the hard work that pushed us over the $100 million mark. Let’s keep chugging and see what happens next. Cheers! MJS

University of Central Florida professors received a record $103.6 million in research funding in 2004-05, exceeding the $100 million milestone for the first time in the university’s history. Researchers in engineering, education and optics led the way as UCF increased its research funding by 15 percent over the 2003-04 total of $87 million. Expansions of nanoscience and biomedical sciences programs also helped to attract more research dollars.

“The amount of grant and contract money acquired each year is a commonly accepted measure of the quality of a university’s research programs,” said President John Hitt. “These funds come through the efforts of UCF’s dedicated faculty members who invest their time and considerable talents in projects that advance knowledge, improve student learning, and increase the quality of life throughout our community, state and nation. Crossing the $100 million threshold is a significant milestone in UCF’s progress from promise to prominence.”

UCF has posted double-digit percentage increases in research funding during five of the last six years. The university received $37.5 million in research dollars six years ago. Before 2004-05, the most successful year for research funding was 2002-03, when UCF researchers pulled in $88.8 million. Those totals do not include in-kind gifts, such as the donations of equipment or intellectual property for research projects.

The 2004-05 funding includes $43.7 million from federal government agencies, $56.5 million from state agencies and $34.3 million from industries and corporations.

The College of Engineering and Computer Science posted the highest total among UCF’s nine colleges with $43.7 million in research funding. College of Education professors received $17.5 million in research funding, and the College of Optics and Photonics faculty were awarded $15 million. The Florida Solar Energy Center received $4.6 million, most of which involves federal grants for hydrogen research.

Longtime faculty members and administrators also work with junior professors on grant applications to improve their chances of getting funding, Soileau said.

“This year is an exceptional year, and it’s a reflection on our faculty and the support that we provide,” he said. “We’re helping them [new faculty] get started, and we’re providing them with investments that help to make the university more competitive.”

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COOKIN’ WITH M.J. SOILEAU, PROVOST AND VICE PRESIDENT

"Research IMPACT starts with quality ingredients"
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2005 SPONSORED RESEARCH PROGRAM AWARDS BY SPONSOR TYPE

<table>
<thead>
<tr>
<th>Sponsor Type</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Federal</td>
<td>$43.7 M</td>
</tr>
<tr>
<td>State</td>
<td>$25.6 M</td>
</tr>
<tr>
<td>Private/Other</td>
<td>$34.3 M</td>
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Chad Binette

Other factors also help UCF compete for different types of grants. The university’s emphasis on involving undergraduates in research strengthens its applications with the National Science Foundation. For example, while UCF’s extensive partnerships with industry and the military help the university compete for grants from the Department of Defense, Soileau said.

“Research IMPACT starts with quality ingredients”

Chair Professor
Department of Economics
N. J. Soileau
If the numbers mean anything, UCF researchers are making a significant IMPACT in their respective fields of study. I used to be amazed by the great stuff I knew was going on here. Now I have to add that I'm even more amazed by all the stuff that I didn't know about.

It's a good time to remind UCF researchers of the assistance that the university provides to faculty in their academic and research pursuits.

There are six different programs available. To help faculty obtain major equipment, UCF offers the President’s Major Equipment Initiative. This $1 million dollar fund provides up to 50 percent of the cost associated with the purchase of major research equipment.

The In-House research program provides $150,000 per year, in $7,500 grants, to new faculty. The goal is to acclimate new faculty to the world of sponsored research. The funding often provides for summer salaries or student support.

The UCF/UF Space-related research program supports collaborative research between the University of Florida and UCF. The program’s main focus is to provide matching funds to help make joint proposals more competitive.

The Matching Funds for Federal Agencies (MFFA) program provides funding that can be leveraged to increase Federal funding to UCF.

The Undergraduate Research Initiative provides dollar-for-dollar matching support up to $3,000 per year per student for researchers who use undergraduates in their research programs. The goal is to increase the number of undergraduates in research and to encourage them to pursue graduate-level research and study.

The Florida High Tech Corridor program provides matching funds to support research between Florida-based industry and UCF. The three options under this program include an open call, an annual competitive call that provides a higher matching rate, and a Small Business Innovation Research (SBIR) component targeting SBIR partnerships.

We also have programs to support start-up companies.

As you can see, the major goal is leveraging our resources with others to have the biggest IMPACT. For details, such as award amounts and due dates, call us or visit the ORC Web site under Sponsored Programs > Funding Opportunities > UCF Programs.

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oneal@mail.ucf.edu
Glenn Boreman, Program Director, Subrato Chandra, as possible. Managing major research programs: “Send lots of proposals. Keep pushing on the major research programs: “It begins with understanding the needs of the funding agency in the program area of interest. Each agency is unique and to fully understand their needs you need to develop a great rapport with the program managers, which may take a few years. Of course we need to do great work, but that is often not sufficient. In our area, it is extremely important to develop industry partnerships that use our results.”

Research: “Our projects centered on developing next-generation infrared sensors using electronic-beam lithography and millimeter-wave radiation for detecting buried landmines. We’re also focused on the implementation of radio-frequency concepts at infrared frequencies.”

Advice on how to secure and manage major research programs: “Get a mentor. There’s no substitute for tagging to do the job by the organization. Most times, especially in recent years, advice on how to secure and manage major research programs: “Probably the most vital thing is to understand the nature of the agency and the individual with whom you are dealing. Cold proposals (those which contain no personal contact) are difficult to obtain and sometimes difficult to manage. Most times, especially in recent years, I’m more interested in working with an involved scientist who acts as a grant manager, rather than someone who simply tagged to do the job by the organization. In this way, the work becomes a collaborative project.” Advice on how to secure and manage major research programs: “My only advice is to work hard and use your creativity. When applying grants, it is not unusual to require submission of revised grants before a favorable funding decision. In one case, it took me to rewrite a grant that scored among the highest all applications reviewed in that round.”

Mary Little, Associate Professor, Child, Family and Community Sciences
Total Funding FY 2005: $1,344,219

Research: “Our state-funded project, the Effective Instructional Practices project, a.k.a. Project CENTRAL, is focused on building capacity among teachers, administrators, and educational service providers throughout Florida by identifying and disseminating resources, professional development, and other means to current and emerging effective instructional practices. The ultimate goal of these resources is to provide quality professional development products, and resources to ensure quality and improved outcomes for all students in Florida, including those with disabilities and diverse learning needs.”

Advice on how to secure and manage major research programs: “We were successful with our first authoring of this project, however, I have not been successful with every proposal. I have been blessed with excellent grant opportunities through my career. My advice is to follow your passion for research and scholarship, as this defines your line of research and continues to mature through the project. I am also extremely grateful to the grant support personnel, both in the College of Education and at the University of Central Florida.”

Mubarak Shah, Assistant Vice President for Research, Computer Vision Initiative
Total Funding FY 2005: $3,969,527

Research: “My research deals with automatic analysis of video and images to extract useful information e.g. - detecting if a moving object is a person, a truck, a missile, etc. - tracking object in a video from frame to frame and determining their activities and behavior.”

Advice on how to secure and manage major research programs: “Work on something which is useful to industry and government. Try to publish your work in the most prestigious journals and conferences in your field, people will start noticing you, and funding will start pouring in. Establish partnership with industry to jointly go after government funding. Industry does not give away much money to universities, they want you to help them with their funding from the government, so partnership is important.”

“Do not be selective in seeking research funding, you should go after basic research, applied research, training funding, you should go after basic research, applied research, training etc. It is still possible to do world class research, when you are funded on some applied grant. You can do great research to pay the bills and basic research to publish papers.”
Glenn Boreman
Trustee Chair, Professor of Optics, Electrical Engineering, and Physics at the College of Optics and Photonics Total Funding FY 2005: $2,697,140

Research: “Our projects centered on developing next-generation infrared sensors using electronic-beam lithography and millimeter-wave radiation for detecting buried land mines. We’re also focused on the implementation of radio-frequency concepts at infrared frequencies.”

Advice on how to secure and manage major research programs: “It begins with understanding the needs of the funding agency in the program area of interest. Each agency is driven by a goal and to fully understand their needs you need to develop a grant program with the appropriate managers, which may take a few years. Of course we need to do great work, but that is often not sufficient. In our area, it is extremely important to develop industry partnerships that use our results.”

Peter Delfyett
Professor of Optics, ECE and Physics Total Funding FY 2005: $1,598,440

Research: “I’m involved in multiple research programs that are funded by the Department of Defense, the National Science Foundation, and industry.

The programs deal with fundamental optical physics in semiconductor lasers, and novel semiconductor laser device development/fabrication. I’m relinquishing the use of these devices in optical networking/communications, signal processing and novel measurement and characterization instrumentation.

The technologies that we develop are then transferred to local industry to help build and strengthen the economic vitality of the Central Florida region.”

Advice on how to secure and manage major research programs: “The highest priorities are those which contain no revisions of a grant application scored the highest among all applications reviewed for funding. I am more interested in working with an involved scientist who acts as a grant manager, rather than someone simply tagged to do the job by the organization. In this way, the work becomes a collaborative project.”

“Get a mentor. There’s no substitute for experience, it was persistent. I failed many times, and it works out that I am good at failure. I know how to deal with rejection. My worst year was when I had 18 projects running at one time – the paperwork was a nightmare. It turns out that paperwork for a large grant is pretty much the same as for a small grant, so try for the larger ones.”

Pappachan Kolattukudy
Dean, Burnett College of Biomedical Sciences Total Funding FY 2005: $1,465,500

Research: “Tuberculosis is a leading cause of death in the world with 2 million deaths per year. The spread of multi-drug resistant TB has emerged as a major public health problem. Funded by the National Institute of Health, our program seeks to identify new targets for developing novel anti-mycobacterial drugs to fight TB.”

Advice on how to secure and manage major research programs: “It is often not sufficient to require submission of revised grants before a favorable funding decision. In one project, I know the second revision of a grant application scored the highest among all applications reviewed in that round.”

Mary Little
Associate Professor, Child, Family and Community Sciences Total Funding FY 2005: $1,144,215

Research: “Our state-funded project, the Effective Instructional Practices project, a.k.a. Project CENTRAL, is focused on building capacity among teachers, administrators, and educational service providers throughout Florida by identifying and disseminating resources, professional development, and feedback to current and emerging effective instructional practices. The ultimate goal is to provide quality professional development products, and resources to ensure quality and improved outcomes for all students in Florida, including those with disabilities and diverse learning needs.”

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Assistant Vice President for Research Computer Vision Initiative Total Funding FY 2005: $9,619,527

Research: “My research deals with automatic analysis of video and images to extract useful information e.g. - detecting if a moving object is a person, a truck, a missile, etc. - tracking object in a video from frame to frame and determining their activities and behavior

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“Do not be selective in seeking research funding, you should go after basic research, applied research, training, and education etc. It is still possible to do world class research, when you are funded on some applied grant. You can do both. I love to research to pay the bills and basic research to publish papers.”

Sandra Robinson
Dean, College of Education Total Funding FY 2005: $13,693,527

Research: First Professional Development is a multi-dimensional initiative created to implement a comprehensive systematic organizational development in reading. The program is based on scientific research and principles of effective methodologies, to develop, disseminate, high-quality implementation of methods and strategies for all K-3 teachers.

Florida Literacy and Reading Excellence Center (FaLE) provides a system for delivering professional development to schools districts in literacy to teachers throughout the state of Florida; serves as a clearinghouse for literacy research and practice, provides a center for professional development materials related to literacy; coordinates linkages for school districts, institutions of higher education, community organizations, and other stakeholders; and provides Florida Reading Endorsement for support and reading teachers acquiring a reading endorsement.

Advice on how to secure and manage major research programs: “In the same manner as the advice given to aspiring novelists. Write about what you know.”
Nursing School Reaps NIH Funding

UCF’s School of Nursing led state efforts to secure funding from the National Institutes of Health for Florida in 2004. The School of Nursing research efforts benefited by receiving $856,000 of the $1.7 million awarded across the state.

Scientist’s Work Published in ‘Nature’

A UCF biomolecular scientist’s genetic-engineering research and its applications into the “cytoplasmic male sterility” phenomenon in plants has been featured in the August edition of the prestigious journal in the August edition of the prestigious Nature. The work, by Henry Daniell, was also featured on the cover of the Plant Physiology journal in July 2005.

Engineer Receives CAREER Award

John Shen, associate professor of electrical engineering, has received the prestigious National Science Foundation CAREER award to research a new semiconductor device to control the flow of electrical current and ultimately reduce the amount of energy we use. Shen received $420,000 from the agency to study so-called “superjunction” switches which enable electrical power to be routed more efficiently. By utilizing superjunction switches, less raw energy will be required for operating any type of electronic system. Shen reports this is especially significant in the development of energy-efficient equipment or products such as hybrid electric vehicles as well as high-efficiency power supplies. The CAREER grant will enable him to continue this research into 2008. Bobbie Jeanpierre, an assistant professor in the College of Education, also received the award this year. (See IMPACT, Spring 2005 edition)

Biologist Receives USFWS Grant to Study Grasshopper Sparrows

Davis-Shine Endowed Biology Professor Reed Noss received a $615,594 grant from the U.S. Fish and Wildlife Foundation to study the conservation of Florida Grasshopper Sparrow. Noss will use field surveys and evaluation of aerial photographs, satellite images, vegetation maps and other tools to investigate the landscape around the Kissimmee Prairie where the birds are found.

S.T. Wu Named Editor of New Journal

S.T. Wu, a professor in the College of Optics and Photonics, has been named inaugural editor of the Journal of Display Technology, sponsored jointly by seven IEEE Societies and OSA. This is a new archival journal devoted to the timely dissemination of new results and discussions on all aspects of display technologies, spanning many disciplines.

The journal will, for the first time, bridge themes of multidisciplinary interest in the field. The inaugural issue was for September 2005.

Peter Hancock Named Fellow

Psychology professor Peter Hancock has been named a Fellow by the American Psychological Society. Hancock is a four-time member of the ORC’s Millionaire’s Club, largely due to his work using simulation and ergonomics to relieve stress on the battlefield.

Biologist Focuses On Forest Density

A UCF biologist spent his summer shedding light — laser light — on the workings of the Harvard Forest, a long-term ecological research site west of Boston. John Weishampel and his laboratory team use lasers to measure the density of forests. The lasers, one mounted on an airplane and the other held by hand, send out pulses of light, which reflect off of the terrain. The scientists measure the length of time it takes for the laser to reflect and use that knowledge to build 3-D models of the landscape that are accurate within centimeters. His laboratory recently created the world’s first accurate 3-D image of a tropical rainforest. The Harvard Forest is the most studied in North America and has been well-documented since Europeans colonized the northeast. This extensive documentation will enable Weishampel to compare his 3-D models to centuries-old historic records.

FSEC Energy Summit Stimulates New Ideas

For 30 years scientists at UCF’s Florida Solar Energy Center have studied virtually all aspects of energy, from renewable energy to hydrogen research to energy efficiency. These efforts have saved Floridians billions of dollars.

At a recent Energy Summit, researchers from across campus joined with their counterparts from FSEC to discuss new ideas for collaborations and creative solutions for today’s energy challenges.

At the summit, UCF President John Hitt announced the formation of The Florida Energy Institute to consolidate research efforts in hydrogen, building sciences and solar energy.

President Hitt and keynote speaker Allan Bedwell, leader of Florida’s Department of Environmental Protection, each stressed that Florida must utilize its best research and economic development resources to achieve energy efficiency.

The following day, at a community breakfast sponsored by FSEC, Orange County Mayor Rich Crotty called for a 20 percent reduction in the county’s use of petroleum fuels over the next five years. And President Hitt said he would promote similar measures at UCF.
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The journal will, for the first time, bridge themes of multidisciplinary interest in the field. The inaugural issue was for September 2005.

Peter Hancock Named Fellow
Psychology professor Peter Hancock has been named a Fellow by the American Psychological Society. Hancock is a four-time member of the ORC’s Millionaire’s Club, largely due to his work using simulation and ergonomics to relieve stress on the battlefield.

Biologist Focuses On Forest Density
A UCF biologist spent his summer shedding light – laser light – on the workings of the Harvard Forest, a long-term ecological research site west of Boston. John Weishampel and his laboratory team use lasers to measure the density of forests. The lasers, one mounted on an airplane and the other held by hand, send out pulses of light, which reflect off of the terrain. The scientists measure the length of time it takes for the laser to reflect and use that knowledge to build 3-D models of the landscape that are accurate within centimeters. His laboratory recently created the world’s first accurate 3-D image of a tropical rainforest. The Harvard Forest is the most studied in North America and has been well-documented since Europeans colonized the northeast. This extensive documentation will enable Weishampel to compare his 3-D models to centuries-old historic records.

FSEC Energy Summit Stimulates New Ideas
For 30 years scientists at UCF’s Florida Solar Energy Center have studied virtually all aspects of energy, from renewable energy to hydrogen research to energy efficiency. For five years. And President Hitt said he would promote similar measures at UCF.
Tiny pieces of gold and the properties of light can help scientists find and remove mercury from polluted water, two University of Central Florida chemistry professors have found.

Professors Florencio E. Hernández and Andres Campiglia can quickly and inexpensively detect even trace amounts of mercury in less than 10 minutes by mixing small amounts of gold with water. The gold absorbs the mercury while the researchers monitor changes in the amount of light through a hand-held device called an optical spectrometer. This process can be used to create water filters and reclaim contaminated water.

Florida’s soil and water, especially in the Everglades, contain some of the highest levels of mercury in the world. Mercury pollution often comes from coal-burning power plants, waste incinerators and certain manufacturing processes. The mercury from these industries is absorbed into the atmosphere, where precipitation deposits it in streams, lakes and oceans. Once in the water, bacteria change the mercury into methylmercury, which is absorbed by fish and transferred to people or animals that eat the fish.

According to the Environmental Protection Agency, mercury pollution presents a serious health hazard to humans. Although most people have small, safe amounts of mercury in their bodies, large amounts can cause injury to the brain, kidneys, heart, lungs or immune system. Mercury is especially damaging to unborn children, who can develop permanent mental problems from exposure to mercury while in the womb.

Hernández and Campiglia are applying these techniques to the removal of mercury from water systems. The same technology used to create the gold nanoparticles for detection can also be used to produce water filters on both large and small scales. These filters could be fitted in drainage systems that lead to major waterways, in residential sinks and at power plants.

For more information on Hernández and Campiglia, go to www.cas.ucf.edu/chemistry. To learn more about mercury pollution and its impact on people and the environment, go to www.epa.gov/mercury.

Matthew Dunn
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The first step in cleaning polluted water is detecting it. Hernández and Campiglia’s mercury detection method uses gold nanoparticles, each of which is about 1/2000th the width of a human hair. First, a liquid solution containing gold nanoparticles is mixed with a sample of the possibly contaminated water. Because mercury has such a strong affinity for gold, any mercury in the water quickly binds with the gold. Next, the scientists use the portable optical spectrometer to monitor the way the gold absorbs light. By observing the changes in the light, they can determine how much mercury was present in the water.

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It is difficult to detect mercury in contaminated water. Commonly used detection equipment is bulky, and it cannot detect small amounts of the pollutant. Hernández and Campiglia hope to obtain support from the state of Florida and the Environmental Protection Agency as they continue to refine their approach to detecting mercury.

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— Matthew Dunn

UCF Researchers Use Gold, Light to Detect, Remove Mercury from Polluted Water

The University of Central Florida is pleased to announce that UCF faculty and staff received a record $103.6 million in research funding in 2004-05, exceeding the $100 million milestone for the first time in the university’s history. Thank you and congratulations to all the great faculty, students, and staff who have made this dream a reality.

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WWW.UCF.EDU

$100 million reasons
to say thank you.
"The amount of grant and contract money acquired each year is a commonly accepted measure of the quality of a university’s research programs. Crossing the $100-million threshold is a significant milestone in UCF’s progress from promise to prominence."

— UCF President John C. Hitt