

2013
Annual Report

UCF Office of Research & Commercialization

POWERING FLORIDA'S PROSPERITY



Partners in Progress

Commercialization Services Cultivate Companies

UCF's Research & Commercialization Leadership Receives Recognition

Fifty years ago, UCF (then Florida Technological University) was founded to develop workforce and technology to serve the Space Coast. UCF has grown, but fostering innovation and economic development remains the cornerstone of our identity.

The cover features a composite image of Florida assembled from data acquired by the Suomi National Polar-orbiting Partnership satellite. The satellite's Visible Infrared Imaging Radiometer Suite was able to make the first quantitative measurements of light emissions and reflections, distinguishing the intensity and the sources of night light. The resulting image clearly shows the power and intensity of the UCF service area and the Florida High Tech Corridor.

The inside cover includes logos of some of the hundreds of companies that have benefited from UCF innovation programs.

UCF is a vital force for driving the economic prosperity of the region and state and is truly America's Partnership University.®

CREDITS

Cover image: NASA Earth Observatory image by Robert Simmon, using Suomi NPP VIIRS data provided courtesy of Chris Elvidge (NOAA National Geophysical Data Center). Suomi NPP is the result of a partnership between NASA, NOAA and the Department of Defense.

Design: KP Creative, kpcreativefl@gmail.com
Principal photography: Jack Edwards
Photography, JackEdwardsPhotography.com

In recognition of UCF's impact on the economic development of Central Florida, the Orlando Economic Development Commission (EDC) selected MJ Soileau, vice president for Research & Commercialization, as the recipient of its coveted Chairman's Award for 2014.

Soileau, who was the first director of the now internationally recognized Center for Research and Education in Optics and Lasers (CREOL), is laser-focused on what he considers to be fundamental missions of a research university, serving as a hub for intellectual pursuit and coupling research expertise to the economic needs of the region.

Under Soileau's leadership, research funding earned by UCF faculty members has increased to more than \$100 million annually for each of the past nine years. UCF also has been recognized for ranking among the world's top universities for patents earned by faculty members.

Soileau has also helped guide UCF's Business Incubation Program since its founding in 1999. The program, led by Associate Vice President for Research & Commercialization Tom O'Neal, was recognized as the National Incubator Network of the Year by the National Business Incubation Association.

"MJ's intelligence, tenacity and passion have helped our university grow into one of the nation's major metropolitan research universities and, more important, have helped UCF make major contributions to the economic growth and diversity of the Central Florida region," said President John C. Hitt.

The Chairman's Award, first presented in 2007, recognizes a long-term contributor to the work of the Orlando EDC.

Soileau and O'Neal direct the strategy that is producing cutting-edge research, world-recognized commercialization activity and intellectual innovation.

"MJ's intelligence, tenacity and passion have helped our university grow into one of the nation's major metropolitan research universities and, more important, have helped UCF make major contributions to the economic growth and diversity of the Central Florida region."

— President John C. Hitt

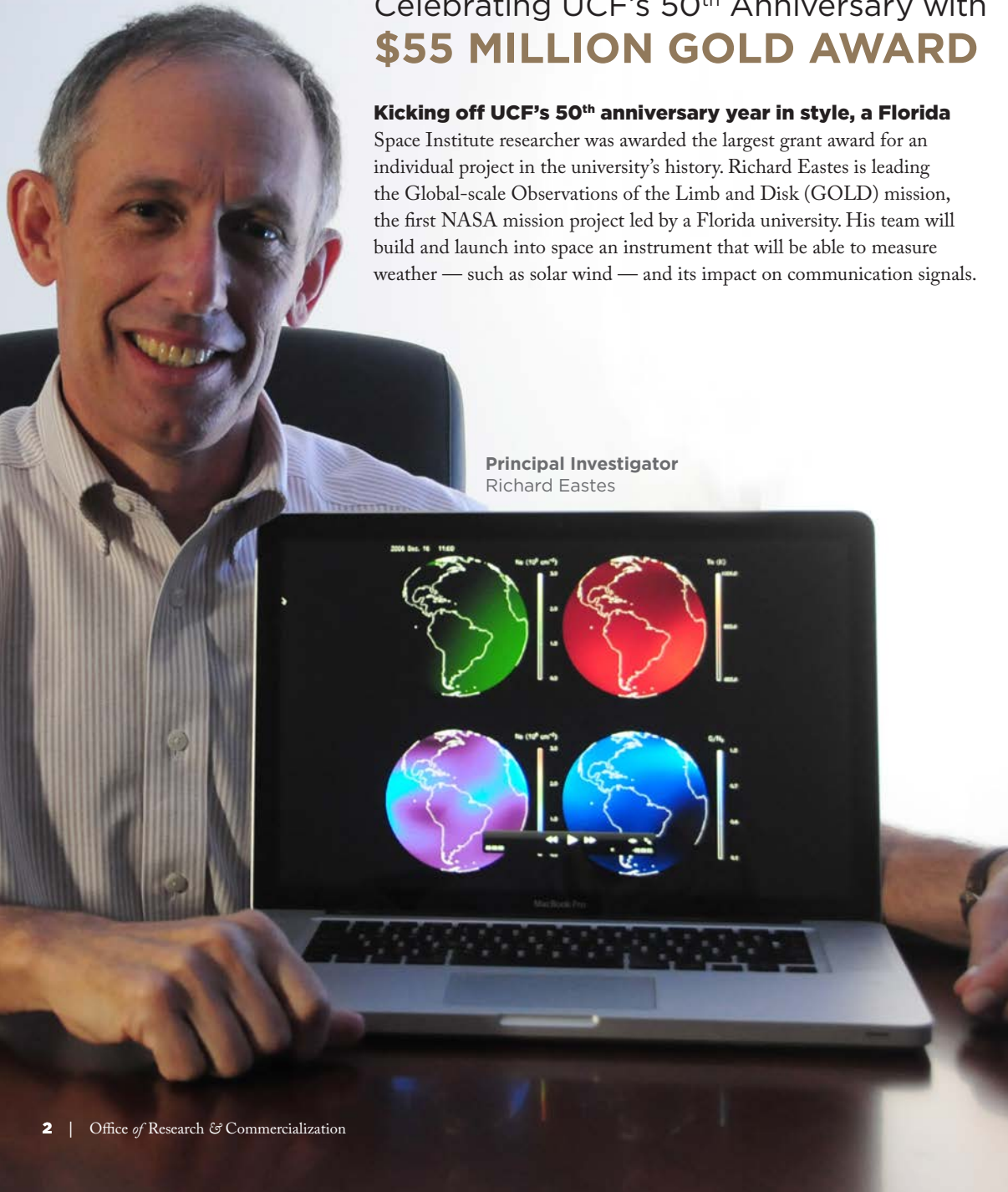
UCF:
**America's
Partnership
University®**

MJ SOILEAU
Vice President
Office of Research & Commercialization

Celebrating UCF's 50th Anniversary with **\$55 MILLION GOLD AWARD**

Kicking off UCF's 50th anniversary year in style, a Florida Space Institute researcher was awarded the largest grant award for an individual project in the university's history. Richard Eastes is leading the Global-scale Observations of the Limb and Disk (GOLD) mission, the first NASA mission project led by a Florida university. His team will build and launch into space an instrument that will be able to measure weather — such as solar wind — and its impact on communication signals.

Principal Investigator
Richard Eastes



Collaboration Sparks New Approaches **SIMULATION BRINGS CLASSROOM TO TEACHERS**

The TLE TeachLivE™ software program, which was developed by educators and simulation experts, is shaping the future of teacher preparation by allowing aspiring teachers to learn instructional techniques while working with a virtual classroom full of avatar students. Lisa Dieker and Michael Hynes, professors with the College of Education and Human Performance, worked with Charles Hughes of the College of Engineering and Computer Science and the Institute for Simulation and Technology Synthetic Reality Lab to bring the computerized classroom to life. TLE TeachLivE™ is being used in 40 universities and districts across the country and has helped over 10,000 teachers improve their practice.

The program is also winning awards from across the disciplinary spectrum. Pictured here, Dieker holds an honorable mention award from the International Computing conference; Hughes holds the Governor's Award from the National Simulation and Training Association; and Hynes holds an award from the American Association of Colleges of Teacher Education.





UNIVERSITY OF CENTRAL FLORIDA

Modeling & Simulation Anchors a \$5B REGIONAL INDUSTRY

The Central Florida Research Park, next to UCF, is home to one of the largest concentration of modeling, simulation and training (MS&T) clusters in the U.S. Its proximity to the nation's second-largest university, representatives of all branches of the U.S. military, and a plethora of contractor companies makes the region the natural hub for innovation in all aspects of the MS&T industry.



- | | |
|--|--|
| 1. General Dynamics
CISCO
Raytheon | 15. U.S. Army |
| 2. UCF Innovative Center | 16. U.S. Army |
| 3. UCF Bennett Research Building | 17. U.S. Navy
U.S. Army
U.S. Coast Guard |
| 4. University Tech Center | 18. Northrop Grumman |
| 5. U.S. Geological Survey | 19. Bohemia International
Intelligent Decisions |
| 6. Raytheon | 20. U.S. Air Force
U.S. Army |
| 7. U.S. Army | 21. U.S. Navy Support |
| 8. UCF College of Nursing
UCF Office of Research & Commercialization | 22. U.S. Army |
| 9. Simulation & Training Center
U.S. Army Research Institute
UCF Institute for Simulation & Training | 23. SAIC |
| 10. L3 Communications | 24. Leidos |
| 11. AT&T | 25. Boeing
Booz Allen Hamilton |
| 12. Partnership I:
UCF Forensic Science
UCF Office of Research & Commercialization
Florida Space Institute
U.S. Navy Research
U.S. Army Acquisition Academy | |
| 13. Partnership II:
Institute for Simulation & Training
UCF Distributed Learning
U.S. Army | |
| 14. Partnership III:
Institute for Simulation & Training
U.S. Army
U.S. Marine Corps
National Center for Simulation | |

KEY
ACADEMIA
COMMERCIAL
GOVERNMENT
MIXED

Florida Space Institute,
University Researchers

REACH FOR THE STARS

Future space crews will have a better chance of working together effectively for months or even years thanks to research by Professor Eduardo Salas of the College of Sciences and the Institute for Simulation and Training (IST). Salas, whose specialty is team training and human performance, won the \$50,000 Michael R. Losey Human Research Award as well as two NASA awards totaling \$1.8 million to help pave the way for travel to the moon or beyond.

Research conducted at a center funded by NASA for \$6 million will help scientists better understand the makeup of asteroids and planets. The work is critical for the space agency's planned exploration missions to asteroids, the moon, the moons of Mars, and beyond. College of Sciences Professor Dan Britt is leading the Center for Lunar and Asteroid Surface Science.



EDUARDO SALAS
College of Sciences
and IST



DAN BRITT
College of Sciences



Photo courtesy: NASA/JPL



Energy Researchers & Engineers **FUEL LOCAL ECONOMY**

Research from the Florida Solar Energy Center (FSEC) and the College of Engineering and Computer Science (CECS) is helping the nation's transportation planners prepare the nation's highways for an influx in plug-in electric vehicles. The \$9 million grant funds the Electric Vehicle Transportation Center, located at the FSEC in Cocoa. The center will also focus on developing smart grid applications so that users of electric vehicles will have adequate power supplies.

Other successful collaborations between the CECS and FSEC include revamping the nation's energy grid in preparation for alternative energy sources and training the future workforce to develop and operate needed technologies. With a \$3.2 million grant from the U.S. Department of Energy, UCF is leading a team from throughout the southeast to develop research and training programs to prepare for a more energy-efficient future.



Photo by Enrico Sachetti

CREOL | College of Optics & Photonics **KEY TO FUTURE JOBS**

U.S. Rep. John Mica is just one of the nation's leaders to recognize the potential that the Center for Research and Education in Optics & Lasers CREOL | College of Optics and Photonics, has to stimulate the economy. In an *Orlando Sentinel* editorial published after he visited CREOL last fall, Mica called on local, state and national leaders to pay attention to the potential photonics offers for world-class companies and middle-class jobs.

U.S. REP. MICA VISITS UCF.

Professor Peter Delfyett shows U.S. Rep. John Mica a semiconductor diode laser the size of a grain of sand. Diode lasers are the devices that transmit all the information carried by the Internet and DVD players.



CREOL | College of Optics & Photonics Researchers **RELISH DISRUPTION**

The faculty, joint faculty, research scientists, and visiting scientists at CREOL | College of Optics and Photonics

pursue disruption every day in their labs. The researchers below are among those who have achieved it by displacing a previously established way of doing something.



AYMAN ABOURADDY
Assistant Professor of Optics

An experiment seemingly gone awry led a student in Abouraddy's group to discover a method for breaking molten fiber into spherical droplets. The finding could change the way pharmaceuticals are produced and delivered.



ZENGHU CHANG
Distinguished Professor of Physics & Optics

Chang generated the world's fastest laser pulse, leading to the possibility of actually seeing atoms move.



DEMETRIOS CHRISTODOULIDES
Pegasus Professor of Optics
Provost's Distinguished Research Professor

Christodoulides' group was the first to discover that a light beam in free space can be made to travel along a curved path – which led to a new class of light beams, known as Airy beams.



PETER DELFYETT
Trustee Chair and Pegasus Professor of Optics, ECE & Physics

Delfyett has developed semiconductor diode-based lasers (laser-pointer technology) that have produced the world's shortest pulses and the highest power from a laser diode, and generated both the most data from a single laser diode and an optical timing signal that is the most accurate ever recorded from a laser diode.



ARISTIDE DOGARIU
Pegasus Professor of Optics

Dogariu and his collaborator Kiminobu Sugaya from the College of Medicine successfully moved cells with light in 2009. Their pioneering work is leading to new ways of controlling tissue regeneration for wound healing and preventing malignant tumors from spreading through the body.



SASAN FATHPOUR
Assistant Professor of Optics

Fathpour and his team have developed a new way of integrating photonic devices. This innovative method can potentially revolutionize integrated optics for applications in telecommunications in optical devices on chips.

Advanced Materials/NanoScience Researchers **PARTNER WITH INDUSTRY TO CREATE A PERFECT ECOSYSTEM**

Graphene technology developed by Richard Blair in the NanoScience Technology Center (NSTC) was licensed to Garmor, Inc., a client company of the UCF Business Incubation Program.



 UNIVERSITY OF CENTRAL FLORIDA
BUSINESS INCUBATION PROGRAM

Garmor opened a 10,000-square-foot production facility with the capacity to produce 100 tons a year of Edge Functionalized Graphene Oxide (EFGO), which can be used as a super-strong coating by manufacturers of everything from airplanes to truck bed liners.



GARMOR

Garmor receives the annual William C. Schwartz
Industry Innovation Award from the city of Orlando and
a matching grant from the Florida High Tech Corridor Council.



**WILLIAM C. SCHWARTZ
INDUSTRY INNOVATION
AWARDS**



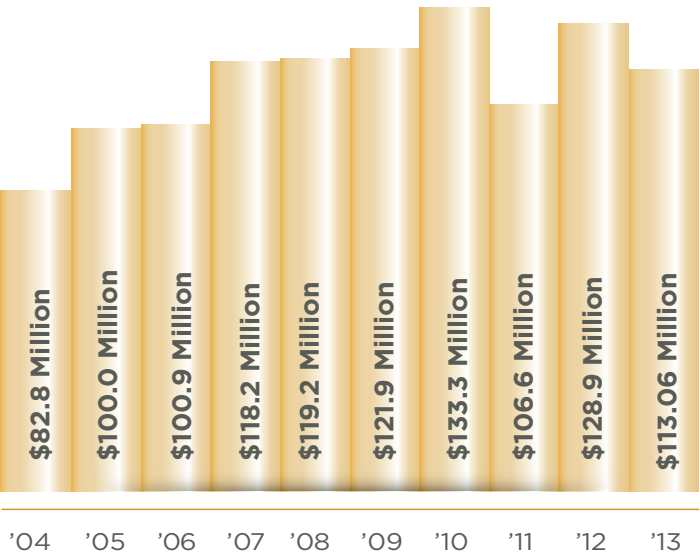
Photo courtesy: Jim Garchid/Orlando Business Journal

Garmor invests in sponsored research in a new NSTC
program to make a graphene-based spray coating that would help
multiple industries fight corrosion.

Sponsored Research Drives Prosperity

For the past nine years, UCF researchers have brought in more than \$100 million annually in contracts and grants.

10-YEAR FUNDING HISTORY



The largest percentage of funds is typically from the federal government, which has a vested interest in advancing knowledge and fueling America's innovation pipeline.

FISCAL YEAR 2013 FUNDING

FY13 Funding by Type (industry, state/local, federal)

Industry	\$19,364,863
State/Local	\$40,810,543
Federal	\$52,880,558
Total	\$113,055,964



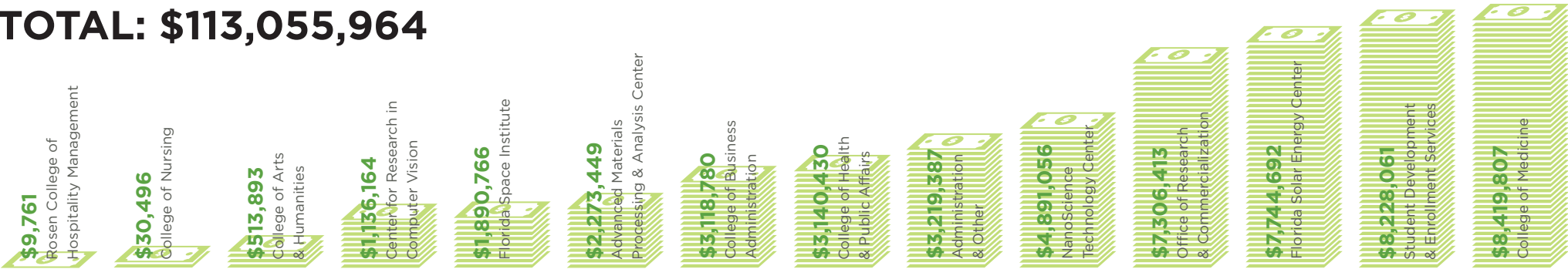
10-YEAR FEDERAL FUNDING



This activity is conducted in colleges and research centers across UCF.

FISCAL YEAR 2013 RESEARCH AWARDS BY ACADEMIC UNIT

TOTAL: \$113,055,964



Commercialization Moves Research from the LABORATORY TO THE MARKETPLACE

Blackstone LaunchPad

- Opened in Fall 2013
- Has advised >350 unique venture proposals

Center for Entrepreneurial Leadership

- Served 1,400-plus undergraduates
- Facilitated events and competitions including first-ever Starter Riot attracting 2,500 participants

Florida Angel Nexus

- Invested \$1 million in its first year

Florida High Tech Corridor Council

- Awarded 30 projects
- \$3.3 million in industry funding
- \$2.2 million FHHTCC match

Florida Small Business Development Center at UCF

(Most current data from 2012)

- 9,961 jobs
- \$1.3 billion sales
- 108 new businesses

GrowFL (Nov. 1, 2009 – June 30, 2013)

- 13,493 jobs represented by client companies
- \$2.33 billion client company contribution to Florida economy
- 3,745 new direct, indirect/induced jobs created
- \$587 million annual economic impact
- \$7.587-to-\$1 return on investment

National Entrepreneur Center

(Activity from July 1, 2003 – Dec. 31, 2013 includes cooperative work with UCFBIP and Florida Small Business Development Center at UCF)

- Counseled and trained: 137,080 clients
- Facilitated 1,108 loans for a combined total \$177,772,097
- Facilitated \$20,124,485 in alternative capital
- 2014: Launched the Central Florida International Trade Office

Student Accelerator

- Upstarts – Sponsored by the FHTCC, Coming Fall 2014

UCF Business Incubation Program

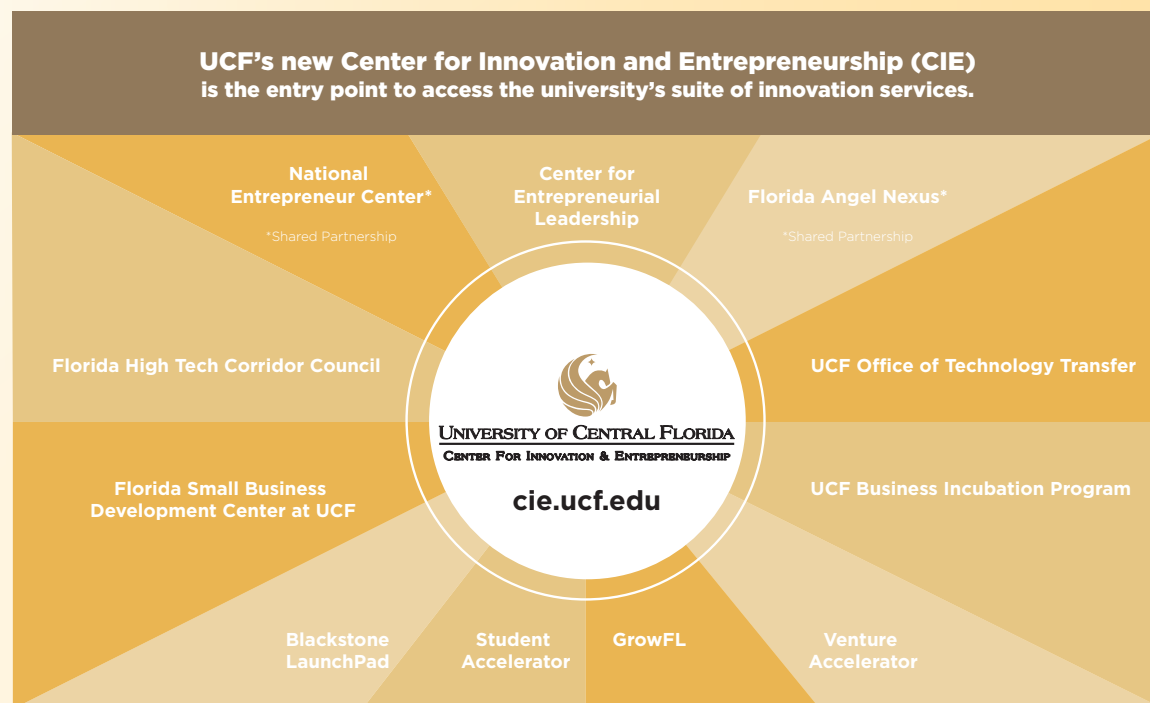
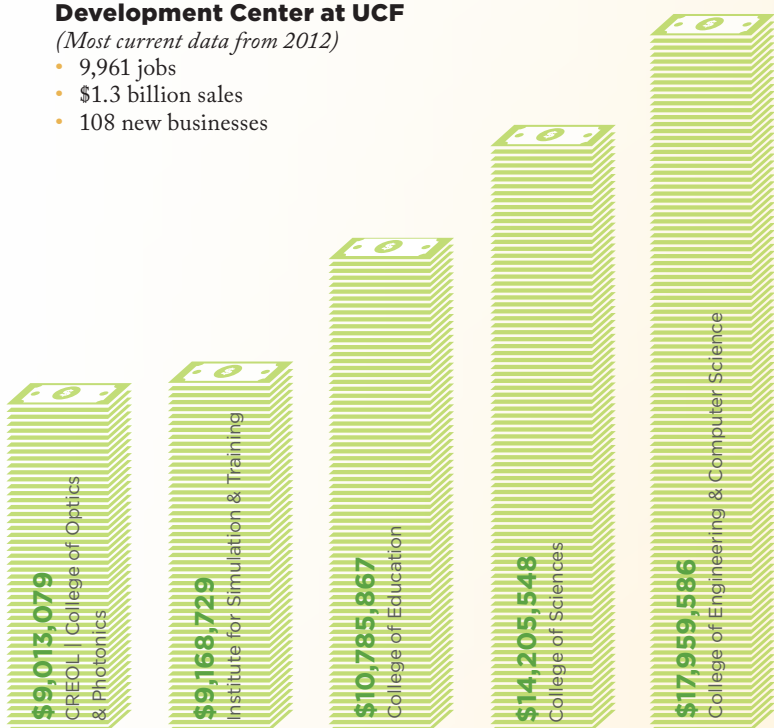
- >135 client companies
- >70 graduates.
- >1,800 jobs at an average salary greater than \$60 thousand
- \$300 million in annual revenues and \$190 million in investment capital

UCF Office of Technology Transfer

- 121 intellectual property disclosures
- 244 patent applications filed
- 77 patents issued
- 705 cumulative patents issued since 1989
- \$798,000 total revenue

Venture Accelerator

- Assisted >150 companies, entrepreneurs and UCF faculty
- >\$900,000 total investment received by supported companies



UCF MILLIONAIRES

Researchers who receive \$1 million or more in funding are inducted into the Millionaires Club, which has recognized the university's highest funded researchers since 2000. Nineteen researchers were recognized in 2013, for work ranging from how the human immune system defends itself against viruses to programs for the establishment and retention of Science, Technology, Engineering and Mathematics (STEM) students. Since 2000, members of the Millionaires Club have received \$672.3 million in funding.

\$8 Million



LYNN HANSEN
UCF Career Services

Hansen runs a student work program with Lockheed Martin that provides on the job training for students consistent with their academic focus.

\$6.9 Million



TOM O'NEAL
Office of Research & Commercialization

O'Neal receives funding from multiple sources in support of UCF's innovation and entrepreneurship programs.

\$4.1 Million



DEBORAH BEIDEL
College of Sciences

Beidel develops and evaluates various virtual environments for the treatment of anxiety and post-traumatic stress disorders.

\$3 Million



MARTIN RICHARDSON
CREOL | College of Optics & Photonics

Richardson runs the Townes Laser Institute and conducts research on X-ray and extreme ultraviolet optics and light sources, X-ray microscopy, laser-aided materials processing, and laser-generated plasmas.

\$2.9 Million



BRIAN PLAMONDON
Institute for Simulation & Training

Plamondon supports the U.S. Army Research Lab's Simulation and Training Technology Center in a variety of research areas, including soldier training and decision-aiding technologies, training applications, serious games for training, and synthetic natural environments.

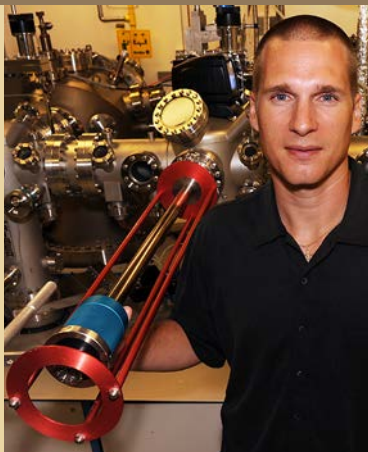
\$2.3 Million



ANDREW DAIRE
College of Education &
Human Performance

Daire runs Project Together, a program that provides intervention and education services for married and unmarried low-income parents of children age 0 to 5.

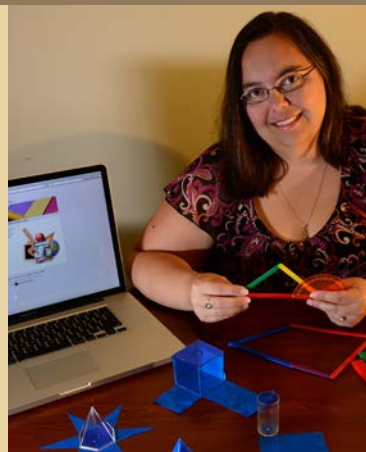
\$2.3 Million



WINSTON SCHOENFELD
Florida Solar Energy Center

Schoenfeld is focused on the establishment and management of the first industrial-led consortium that is leading to better U.S. manufacturing competitiveness in the production of crystalline silicon solar cells.

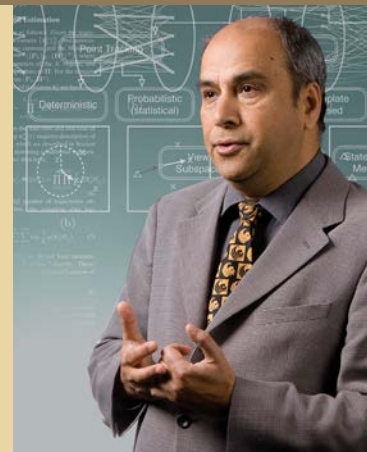
\$2.2 Million



JANET ANDREASEN
College of Education &
Human Performance

Andreasen designs, tests and implements professional development for high school geometry teachers focused on implementing the latest standards.

\$2 Million



MUBARAK SHAH
College of Engineering &
Computer Science

Shah uses advanced computer vision algorithms to detect and track objects such as people, cars and airplanes and develops corresponding tools for video surveillance, and visual crowd and biometric analyses.

\$1.7 Million



EUNICE CHOI
Small Business
Development Center

Choi helps entrepreneurs and businesses start, grow and succeed by supplying no-cost, expert consulting, specialized economic development programs, business training and access to vast database resources.

UCF MILLIONAIRES

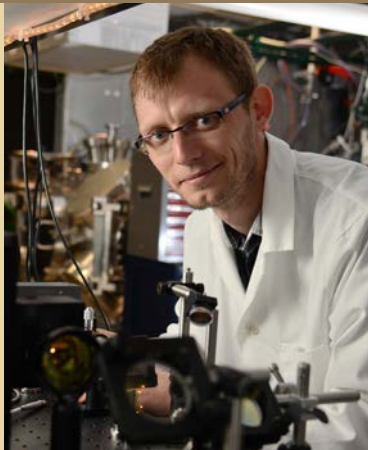
\$1.5 Million



ALEXANDER COLE
College of Medicine

Cole's lab investigates how the human innate immune system defends itself against bacteria and viruses, and is developing unique therapies to combat these infections.

\$1.4 Million



MATTHIEU BAUDELET
CREOL | College of Optics & Photonics

Baudelet is working on developing compact, efficient and robust high-power femtosecond fiber lasers.

\$1.3 Million



JAYDEEP MUKHARJEE
Florida Space Institute

Mukharjee's work supports the expansion and diversification of Florida's space industry through research grants, scholarships and fellowships to students and educators from Florida colleges and universities.

\$1.3 Million



MICHAEL GEORGIPOULOS
College of Engineering & Computer Science

Georgiopoulos focuses on increasing the retention and graduation of STEM students at UCF and providing them with outside-the-classroom learning such as research and internship experiences.

\$1.2 Million



CAMERON FORD
College of Business Administration

Ford directs the UCF Blackstone LaunchPad, which introduces UCF students to entrepreneurship as a viable career path, empowers them with the knowledge and skills necessary to become entrepreneurial leaders, and supports students working toward creating new ventures.

\$1.2 Million

\$1.1 Million

\$1 Million

\$1 Million



TALAT RAHMAN
College of Sciences

Rahman studies microscopic factors that control the novel properties of materials at the nanoscale with the overarching goal of facilitating rational design of functional materials, using a range of computational techniques and input from experimental data.



ERHAN HACIOMEROGLU
College of Education & Human Performance

Haciomeroglu's work includes the Geometry Professional Development Series for Teachers, a program to design, test and implement sustained professional development for high school geometry teachers, as well as the Resident Teacher Professional Preparation Program, which is focused on training high-performing graduates to teach math and science in middle and high schools.



TAMMIE MCCLELLAN
Institute for Simulation & Training

McClellan and her team provide information technology consulting, application development and systems services utilizing the latest technologies for the Internet. These advanced applications support data manipulation, workflow and decision-making for a variety of sponsors, including the Department of Defense, commercial and nonprofit agencies, and several universities.



SUDIPTA SEAL
NanoScience Technology Center & Advanced Materials Processing & Analysis Center

Seal develops unique nanomaterials that are used in many ways — from antioxidant therapy to functional coatings — resulting in both fundamental development and industrial transformation.

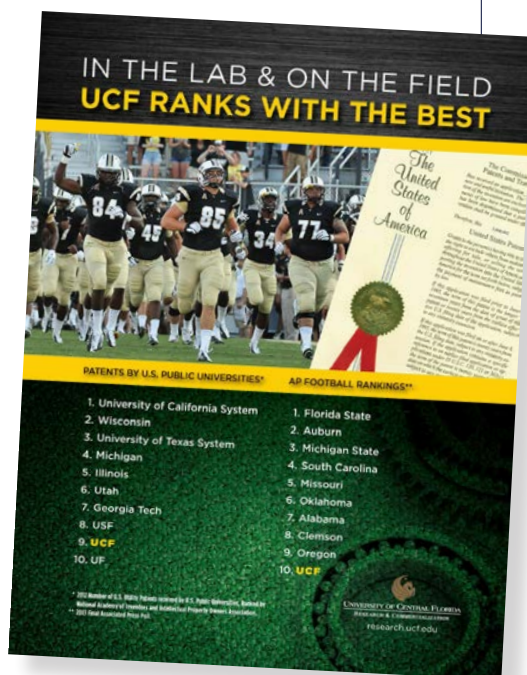
AMONG U.S. PUBLIC UNIVERSITIES

RANKED 9TH IN NATION

for the number of patents
produced in 2012

Among U.S. public universities, UCF

was ranked ninth in nation for the number of patents produced in 2012. The survey was released in 2013 by the National Academy of Inventors and Intellectual Property Owners Association. Combined with UCF's final football standings, UCF is competing with the best, on and off the field.



BUSINESS INCUBATION PROGRAM CREATES

>3,350 jobs SINCE 1999



Companies are being grown at a rapid pace through-

out Central Florida, and the nation is noticing. UCF's Business Incubation Program (UCFBIP), which has led to the creation of more than 3,350 jobs since its beginning in 1999, was recognized in 2013 as the National Business Incubator Network of the Year by the National Business Incubation Association (NBIA). Tom O'Neal, associate vice president for Research & Commercialization, Karl LaPan of the NBIA, and Gordon Hogan UCFBIP director, are pictured at the award podium.



Business Incubation Program's Client named
2013 Small Business of the Year



Seminole County recognized UCFBIP client Dicapta
 Corp. as its 2013 Small Business of the Year. The company provides
 high-tech services to make educational, news and entertainment
 media accessible to people with hearing and/or visual limitations.



CONGRATULATIONS TO THE CLASS OF 2013 FLORIDA COMPANIES TO WATCH



Executives from 50 of Florida's most high-performing, up-and-coming companies kicked up their heels at the Hard Rock Live as they were officially recognized as "Florida Companies to Watch." The program, which honors second-stage companies for their impressive employment rates and revenue growth, is sponsored by GrowFL at UCF in association with the Edward Lowe Foundation.

**21st Century Learning
 Solutions, Inc.**

AgileThought

Albu & Associates, Inc.

**Alpha-Omega Training
 and Compliance, Inc.**

Amzur Technologies, Inc.

Apollidon

Applied Fiber

**Arcadia Aerospace
 Industries, LLC**

AVT Simulation

B&C Technologies, LLC

CERTON

College Hunks Hauling Junk

Convergence Consulting Group

COWs Mobile Storage

Creative Sign Designs

Cube Care Co.

Custom Agronomics, Inc.

Custom Control Solutions

Dignitas Technologies, LLC

**Doctors Administrative
 Solutions**

Domital Corporation

Envy Labs

First Green Bank

Flagship Solutions Group

Florikan ESA, LLC

HNM Global Logistics

iDatix Corporation

IDEAS

Kavaliro

LRM Industries, Inc.

**Mainstream Engineering
 Corporation**

Manufacturers Distributor, Inc.

MB2x

Mercedes Medical

MY Shower Door

Pacer Group, Inc.

Pelican Wire Company, Inc.

Refrigerated Express, LLC

Sancilio and Company, Inc.

Seatorque Control Systems, LLC

ShayCore Enterprises, Inc.

Sixto Packaging

Snapt

Solodev

Solstice Benefits, Inc.

SouthTech

Tactical Machining, LLC

Teas Etc.

Therigy, LLC

Uber Operations



Selected Awards & Recognitions

Researchers Rake in **PRESTIGIOUS & COMPETITIVE NATIONAL AWARDS**

Sasan Fathpour from CREOL | COP and Jennifer Pazour from the College of Engineering and Computer Science received Young Investigator awards from the Office of Naval Research. The program selects the nation's most promising young scientists who hold exceptional promise for doing creative research. Fathpour and Pazour are among only 16 award winners nationwide.

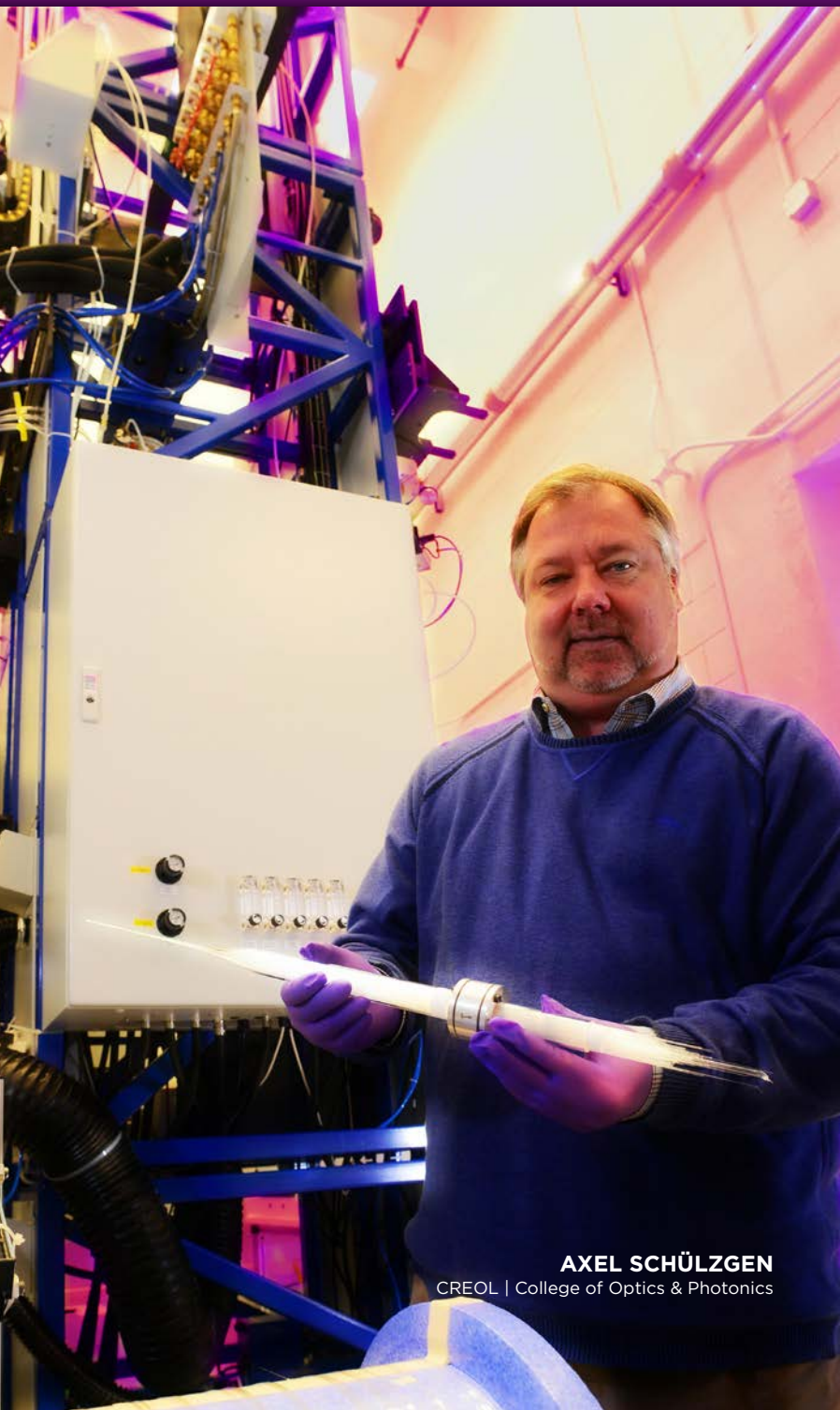
UCF optics researchers received four awards from the Defense University Research Instrumentation Program. Only one other Florida university received an award. The most recent award, from the U.S. Air Force, went to Axel Schülzgen and his team. They received \$870,000 to purchase a lathe machine, enabling them to create their own preforms that are used to create fiber optics. Other recipients are Rodrigo Amezcua Correa, Matthieu Baudet and Ron Phillips, all of the Townes Laser Institute at CREOL | College of Optics and Photonics.



SASAN FATHPOUR
CREOL | College of Optics & Photonics



JENNIFER PAZOUR
College of Engineering & Computer Science



AXEL SCHÜLZGEN
CREOL | College of Optics & Photonics

Inventors Reign In **PRODUCING PATENTS**

The National Academy of Inventors recognized three researchers for their work in photonics and nanotechnology. Peter Delfyett, Michael Bass and Sudipta Seal were named 2013 Fellows for their prowess in transitioning their research into inventions that improve quality of life and stimulate economic development. Together they have produced 110 patents.



PETER DELFYETT
CREOL | College of Optics & Photonics



MICHAEL BASS
CREOL | College of Optics & Photonics



SUDIPTA SEAL
NanoScience Technology Center,
Advanced Materials Processing &
Analysis Center

Public and Nonprofit Management **MEASURING IMPACT BY RETURN ON ENGAGEMENT**

A College of Health and Public Affairs center, in partnership with community service organizations, is changing Central Florida lives for the better.

The Center for Public and Nonprofit Management (CPNM), which began in 2003 as the Capacity Building Institute, receives about \$1 million in funding a year to help the community provide such basic services as making sure homeless students don't suffer academically because of their housing situation, establishing a Walking School Bus program to safely walk groups of elementary students to and from school, and training lower-income-residents in healthier eating and cooking habits. The cooking program, conducted in partnership with Hebni Nutrition Consultants, Inc. in the Parramore community, led to the establishment of a fresh produce section in the neighborhood's corner grocery store.

Thomas Bryer, the center's director, emphasizes that CPNM measures its success not only in traditional academic and institutional metrics such as scholarly publications and grants received, but most importantly in impact on lives.

"We measure the use of our research in communities in Central Florida and beyond, as well as the ways the use leads to new policies, programs, institutions or new services provided to our citizens and communities," Bryer said. "We call this our return on engagement because our work is in the community, for the community, and often in partnership with the community."

CPNM PARTNERS INCLUDE:

Corporation for National and Community Service
City of Orlando, Orlando Cares initiative
Hebni Nutrition Consultants, Inc.
Heart of Florida United Way
Romanian Society for Public Administration
Florida Department of Transportation
Seminole and Orange County Public Schools



THOMAS BRYER AND GLEN R. PROVIDENCE, assistant project manager for Hebni Nutritional Consultants, Inc., stand in the training kitchen where Hebni teaches classes on healthy cooking. The CPNM provides data analysis for the program.

Computer Vision

KEEPING PEOPLE SAFE

The Center for Research in Computer Vision, led by Mubarak Shah, is pioneering research that will ultimately keep people safer. Shah, who is the sixth most cited author in the world in computer vision, specializes in electronically acquiring, analyzing and understanding images in ways superior to the human brain. He develops theory and algorithms used for such disparate tasks as scanning crowd scenes for suspicious people, analyzing brain scans for tumors, indexing and effectively searching a large database of images and videos, and triggering a warning when a car or person approaches a railroad crossing when a train is near.



Above is a sample of four frames from a video sequence. Based on the interaction forces between individuals, the algorithm learns the normal behavior in the scene, in this case, pedestrians walking in multiple directions. Abnormal behavior, which is pedestrians running from the scene in panic, is detected based on sudden change in the velocities and interaction forces.



MUBARAK SHAH
Center for Research in
Computer Vision

Horses Key in PTSD Study **VETERANS RESPOND WELL TO EQUINE INTERACTION**

Horse Therapy Shows Positive Early Results

College of Medicine (COM) researchers found that combat veterans diagnosed with post-traumatic stress disorder (PTSD) were less depressed and experienced fewer symptoms after participating in therapeutic horseback-riding therapy.

UCF, Heavenly Hoofs and SADDLES of Umatilla conducted a study following eight Central Florida veterans who sustained physical and emotional injuries through combat in Iraq, Afghanistan or Vietnam. The study found that by working with horses — which are often ultrasensitive to emotions and nonverbal communication — the veterans increased their emotional awareness, elevated their mood, and better modulated their emotions.

After eight weeks of interaction with the horses, the veterans showed substantial improvement in industry standard tests for PTSD disorder and depression.

“The biggest factor for these veterans was that working with the horses made them feel safe and secure,” said Dr. Manette Monroe, an assistant dean for students at the College of Medicine and a lifelong horse rider. She was the study’s lead author. “Most of these guys had never been on a horse in their lives, so to get up on a 1,000-pound animal pushed them beyond their comfort zone. But they were willing to try. And by putting themselves out there, they feel increased confidence and inner peace.”



Photo credit: Courtesy of the UCF College of Medicine



MOLLIE JEWETT
College of Medicine's
Burnett School of Biomedical Sciences

National Studies and Grants **ADDRESS HEALTH AND COMMUNITY NEEDS**

\$1.2 Million Grant Focused on Lyme Disease

Mollie Jewett, an infectious disease specialist at the College of Medicine, is working on preventing and treating Lyme disease with the assistance of a grant from the National Institute of Allergy and Infectious Diseases of the National Institutes of Health (NIH).

The NIH provided the total \$1.2 million grant for four years. R01 or Research Project Grants provide support for health-related research by a sole investigator who addresses a public health need with an innovative approach. Only about 12 percent of new investigator R01 applications are actually funded, making the grants highly competitive.

Jewett's research focuses on *Borrelia burgdorferi*, the bacteria that causes Lyme disease, and ways to better diagnose the disease. Lyme disease is the most commonly reported vector-borne illness in the United States and is on the rise nationwide, yet definitive diagnosis of the disease remains a challenge.

Clinical Trial Will Test Crohn's Treatment

Saleh Naser is participating in a clinical trial to test whether a new antibiotic therapy being sponsored by RedHill Biopharma can be used to treat Crohn's disease patients. The FDA-approved phase III trial is being conducted by RedHill Biopharma, which licensed Naser's DNA technology for detecting *Mycobacterium avium* subspecies *paratuberculosis*, known as MAP. It is believed to be associated with Crohn's disease. RedHill Biopharma developed the anti-MAP antibiotic regimen known as RHB 104.

Pill Mills Pose Threat

The National Institute of Justice has tapped a College of Health and Public Affairs professor to see how well a Florida law abolishing pill mills is working. Jacinta Gau received \$250,000 from the federal agency to study whether wholesalers, pharmacies and physicians are following the law and whether it is making a difference.



JACINTA GAU
College of Health & Public Affairs



SALEH NASER
College of Medicine



ANDREW DAIRE
College of Education &
Human Performance



Marriage and Family Research Institute
**HELPING TO GROW A
HEALTHIER COMMUNITY**

The Marriage and Family Research Institute, led by Andrew Daire from the College of Education and Human Performance, celebrated 10 years of helping Central Floridians through relationship education. The institute, funded by the U.S. Department of Health and Human Services' Office of Family Assistance, has assisted more than 6,000 people through education, counseling, research and other clinical intakes.

THE MARRIAGE AND FAMILY RESEARCH INSTITUTE
has assisted
>6,000 PEOPLE
through education, counseling,
research and other clinical intakes





Innovators Shaping the Future

The following inventors and co-inventors filed invention disclosure forms in 2013, the first step in the process that infuses the economy with new technology.

ADVANCED MATERIALS PROCESSING & ANALYSIS CENTER

Sudipta Seal
Rajan Vaidyanathan

BURNETT SCHOOL OF BIOMEDICAL SCIENCES

Ratna Chakrabarti
Cristina Fernandez-Valle
Mollie Jewett
Yoon-Seong Kim
Pappachan Kolattukudy
Jianli Niu
William Self

CENTER FOR RESEARCH IN COMPUTER VISION

Imran Saleemi
Mubarak Shah

COLLEGE OF ARTS & HUMANITIES

Henry Lenz
Philip Peters

COLLEGE OF EDUCATION

Lisa Dieker
Michael Hynes

COLLEGE OF ENGINEERING & COMPUTER SCIENCE

Linan An
Mostafa Bassiouni
Issa Batarseh
Necati Catbas
Louis Chow
Kevin Coffey
Weiwei Deng
Brian Fisher
Jihua Gou
Robert Hoekstra
Donald Malocha
Nina Orlovskaya
Kenneth Stanley
Marshall Tappen
Xinzhang (Thomas) Wu
Chengying Xu
Changchun Zou

COLLEGE OF MEDICINE

Juan Cendan

COLLEGE OF NURSING

Anne Norris

CREOL | COLLEGE OF OPTICS & PHOTONICS

Ayman Abouraddy
Correa Rodrigo Amezcua
Matthieu Baudelet
Peter Delfyett
Aravinda Kar
Pieter Kik
Guifang Li
Ilya Mingareev
Kathleen Richardson
Martin Richardson
Axel Schülzgen
Lawrence Shah
Konstantin Vodopyanov
Shin-Tson Wu
Su Xu

COLLEGE OF SCIENCES

Kevin Belfield
Richard Blair
Andrew Frazer
Richard Gilson
Alexander Katsevich
Joshua King
Robert Peale
Jingdong Ye

FLORIDA SOLAR ENERGY CENTER

Paul Brooker
Kristopher Davis
Neelkanth Dhere
Nicoleta Hickman
Nahid Mohajeri
Danny Parker
Robert Reedy
Marianne Rodgers
Winston Schoenfeld
John Sherwin
Darlene Slattery

INSTITUTE FOR SIMULATION & TRAINING

Daniel Barber
Tracy Saint Benoit
Charles Hughes
Stephanie Lackey
David Metcalf
Arjun Nagendran
Eric Ortiz
Eduardo Salas
Gregory Welch

NANOSCIENCE TECHNOLOGY CENTER

James Hickman
Qun Huo
Figueroa Manuel Perez
Swadeshmukul Santra
Sudipta Seal
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Jayan Thomas



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