



UNIVERSITY OF CENTRAL FLORIDA

DEVELOPING THE ENTREPRENEURIAL DNA OF CENTRAL FLORIDA

PART I

Turning
Ideas Into
Opportunity

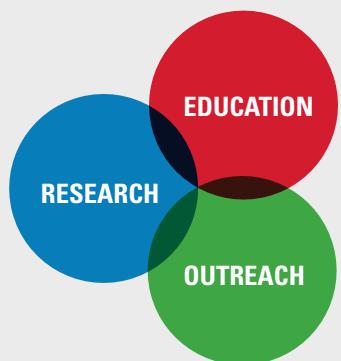




Stands For Opportunity



Thomas O'Neal, Ph.D.
*Associate VP for Research
& Commercialization,
University of Central Florida*



INTRODUCTION BY DR. THOMAS O'NEAL

"UCF Stands for Opportunity." This slogan is perhaps best manifested in UCF's long-standing commitment to creating opportunities for innovation and entrepreneurial success. This commitment has been demonstrated by the development of several important and successful initiatives built over the last decade by UCF.

Collectively, these efforts have helped the region become recognized as one of the most comprehensive and best-integrated collections of entrepreneurship initiatives in the United States. These initiatives contributed to Orlando recently being recognized by *Entrepreneur Magazine* as having "one of the most highly coordinated entrepreneurial engines in the country." These programs have a positive impact on the region's innovation and entrepreneurs. They have also helped UCF, the region, and the state of Florida, earn a better reputation in terms of the entrepreneurial ecosystem that exists here.

The UCF Center for Innovation & Entrepreneurship (UCF CIE) is a university wide program that consolidates and coordinates major innovation and entrepreneurship support activities. Its goal is to leverage university and regional partnerships to create an effective entrepreneurial support infrastructure.

The three objectives for the UCF CIE include:

- 1 EDUCATION** Create nationally-recognized entrepreneurship programs with high-quality degree, certificate, professional development, and experiential learning opportunities.
- 2 RESEARCH** Enrich the research environment, while increasing the visibility of the value of UCF research: Be champion for innovative research, infuse entrepreneurial thinking into the research process, promote industry research partnerships, and by conducting leading research into entrepreneurship and innovation.
- 3 OUTREACH** Foster economic development in Central Florida by providing programs, facilities, resources, and networking opportunities capable of fostering new venture formation, launch and growth.

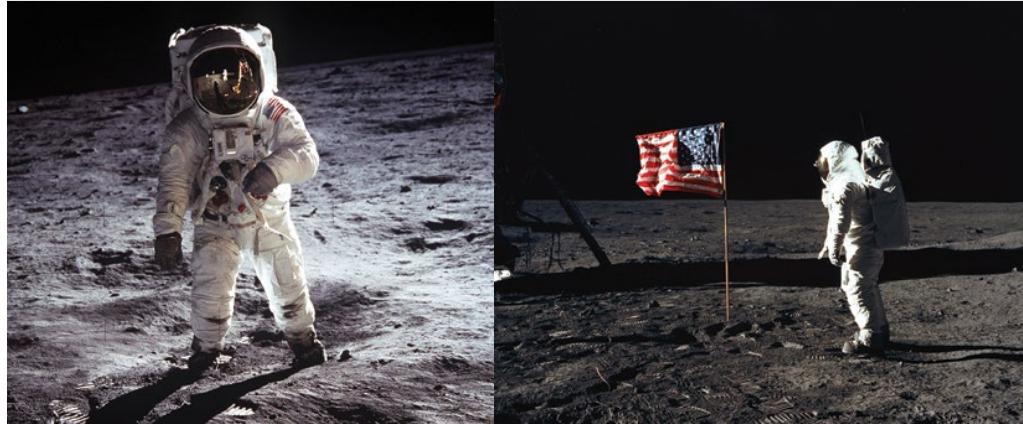
UCF is a catalyst to create research and fuel entrepreneurial processes necessary to introduce exciting and new innovations to society. The UCF CIE's mission is to promote innovation, wealth creation, and the economic vitality of the Central Florida region.

"As we look to the future, it is more evident than ever that our mission is to boldly serve the needs of our Central Florida city-state. It includes participating in our area's social, cultural, political, educational, environmental, and intellectual life...we achieve this end in two ways: 1) by aligning our teaching, research and service with the needs of the regional economy, and 2) by being America's leading partnership university."

— John C. Hitt, Ph.D., UCF President

Inspiring Innovation

by Eric Wright



"All our dreams can come true, if we have the courage to pursue them."

- Walt Disney

Perhaps more than any region in the United States, central Florida's development has been guided by unique and transforming visions. In 1961, President John F. Kennedy announced the dramatic and perhaps audacious goal of sending an American safely to the moon and back before the end of the decade.

Ten years later the dream of the man who said, "All our dreams can come true, if we have the courage to pursue them," came true, with the opening of Walt Disney World Resort. It was another quantum leap for a region, which had captured the attention of the world. Disney's most ambitious endeavor would redefine the region and make it the most visited place in the world.

Spanning these two vibrant endeavors and building on the synergy of technology and innovation they introduced, the University of Central Florida has grown into, not only the second largest university in the country, but one of the nation's premier research institutions. UCF was ranked 21st on a recent list of 100 leading patent producing universities, passing research giants like Harvard, Northwestern and Duke.

ENVIRONMENTS FOR INNOVATION

With the unique vision of not only training the next generation of trendsetters or producing the next great technological breakthrough, UCF has worked to provide an environment where ideas are turned into reality.

The definition found in Wikipedia states that an "Entrepreneurship Ecosystem refers to the elements — individuals, organizations or institutions — outside the individual entrepreneur that are conducive to, or inhibitive of, the choice of a person to become an entrepreneur, or the probabilities of his or her success following launch. Organizations and individuals representing these elements are referred to as entrepreneurship stakeholders. Stakeholders are any entity that has an interest, actually or potentially, in there being more entrepreneurship in the region."

Though there are numerous entrepreneurial stakeholders in the region, there is a significant concentration around **UCF's Center for Innovation & Entrepreneurship (CIE)**. It is obvious that entrepreneurialism is in the university's DNA.

Recognizing that developing a novel concept or technology doesn't automatically transmit into a successful and scalable business, nor does creating a job for oneself constitute a viable business model, the **UCF's Center for Innovation & Entrepreneurship** works to identify, develop and position entrepreneurs and their businesses for lasting and growing success in the rich soil of entrepreneurial programs.



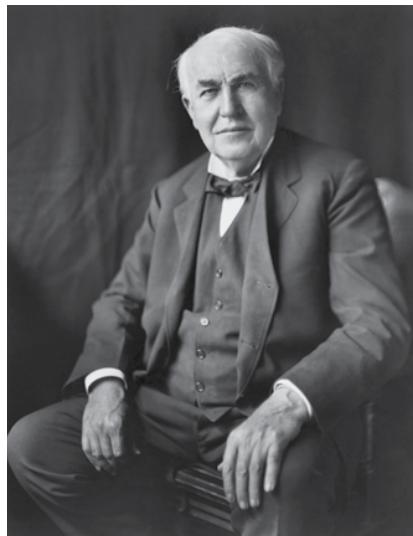
Walt Disney (1901-1966)

"Entrepreneurship is about value creation. It's about extraordinary value creation. But I go a little bit beyond that. I call it 'extraordinary value creation and capture,' capture being 'economic and non-economic value for the person. That is a very important driver because you have to overcome a huge number of obstacles on the way to doing something new."

— Daniel Isenberg, Ph.D.
Author of "How to Start an Entrepreneurial Revolution"

"If you produce successful businesses everything else takes care of itself — they create jobs, they bring in capital; it all works when you focus on that one thing."

— Thomas O'Neal, Ph.D.



"The value of an idea lies in the using of it." — Thomas Edison,
General Electric Co-founder

The Catalysts



*Hoverfly Technologies, Inc.
UCFBIP Client*



"If not us, then who? If not now, then when?" This paraphrase of Hillel the Elder's famous maxim, speaks to all who wish to facilitate transformation. Over a decade ago, UCF began working to build an academic and research environment that became nationally and internationally prominent in key areas. They also worked on developing an ecosystem where entrepreneurial dreams and aspirations could be realized. A setting where the ideas developed in the laboratories and research facilities at the university, could spawn scalable businesses that would bring the kind of high-paying jobs which raise the standard of living of everyone in the area.

Dr. O'Neal put it so simply, "If you produce successful businesses everything else takes care of itself — they create jobs, they bring in capital; it all works when you focus on that one thing." Explaining the concept of moving innovation to a scalable business he continued, "My fundamental notion was that the greatest technology in the world doesn't do anyone any good if it stays in a lab — or gets put on a shelf. This is what could be called a 'Pawn Shop' model, where you hope someone will come along and bring it to market."

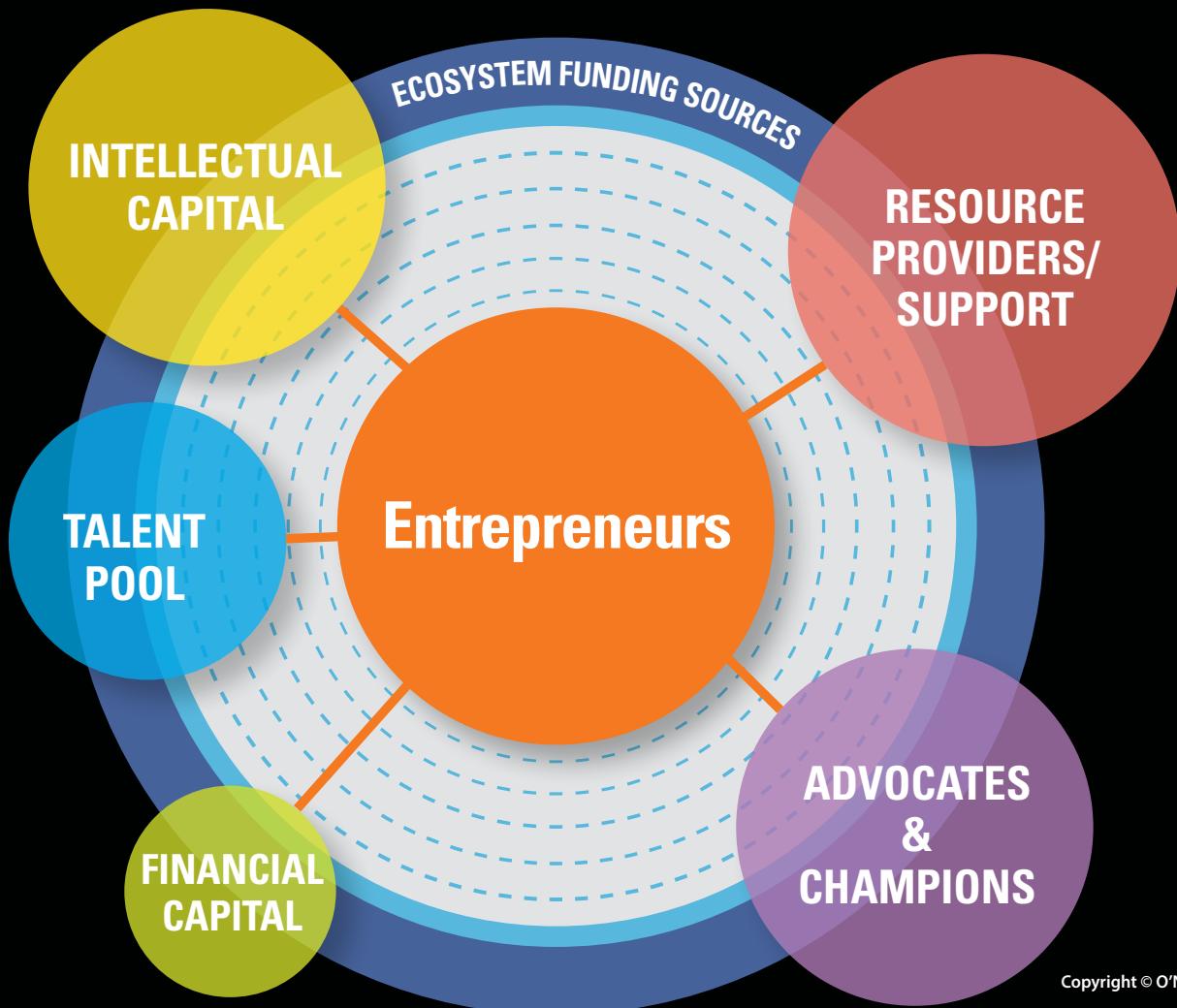
Since 1999, the **UCF Business Incubation Program (UCFBIP)** has worked to bridge this gap by helping hundreds of companies, create thousands of new jobs, which have had an annual economic impact of over a half billion dollars and growing. These are high value jobs with an average salary of \$59,000, which is significantly more than the average wage in the region. "We're working with 140 companies right now and recently graduated our 100th company through our program," Dr. O'Neal said.

UCF's position as a major metropolitan university, a short distance from downtown Orlando and President John Hitt's vision and determination to make UCF "America's Partnership University," by connecting its students, faculty and programs with various stakeholders in the region, works to catalyze many of the components of the Entrepreneurial Ecosystem.

UCF is now the second largest university in the country, with total enrollment of more than 60,000 students. It has achieved the highest ranking, as a tier one research university, by the Carnegie Foundation. UCF has over \$122 million in annual research. This coupled to the city of Orlando, which was recognized by *Entrepreneur* magazine as one of the "10 Best Cities to Start a Business," while *CNN Money* in 2011 rated Florida as one of the ten most entrepreneurial states in the country.

THE CENTRAL FLORIDA ENTREPRENEURIAL ECOSYSTEM

As the name implies an "Ecosystem" is composed of many interdependent systems, linked together in an organic fashion to achieve the outcome, in this case, of successful entrepreneurial enterprises. The diagram below, though comprehensive as possible, doesn't include every individual entity contributing to the whole, nor does it show where one program or institution may overlap into several of the key groupings. The respective size of each principle component is intended to reflect how developed it is in Central Florida.



INTELLECTUAL CAPITAL

- UCF and its Centers & Institutes
- UF/USF/Rollins/State Colleges
- Medical City
- NASA
- Corporations & Industry
- Modeling & Simulation Central
- FL Research Park

ADVOCATES & CHAMPIONS

- Orlando Inc.
- Cen. FL Partnership
- Metro Orlando EDC
- Local Chambers of Commerce
- Local Governments
- Media & PR Firms

RESOURCE PROVIDERS & SUPPORT

- UCF Business Incubation Program
- National Entrepreneur Center
- Regional SBDCs
- UCF Venture Accelerator
- FL Manufacturing Extension Partnership
- Workforce Central FL
- GrowFL

TALENT POOL

- UCF & Rollins Entrepreneurs-In-Residence
- SCORE
- University & College Students
- Early Stage Exec's & C-Level Managers
- Brevard Founders Forum

FINANCIAL CAPITAL

- Banks
- Inflexion Venture Partners
- FL SURCAG Grants
- Arsenal Ventures
- FL Growth Fund
- FL Angel Nexus
- FL Opportunity & Growth Fund

ECOSYSTEM FUNDING SOURCES

- Federal Government
- State Government (OTTED)
- County & City Governments
- Foundations
- FL High Tech Corridor Council
- Corporations & Individuals
- Business Associations

Strands of the Helix I



UCF President John Hitt and Tony Tolentino of the Blackstone Charitable Foundation cut the ribbon at the LaunchPad's grand opening in September 2013.

"Entrepreneurship is the single most effective way to spur economic growth and job creation."

— Stephen A. Schwarzman,
Chairman and Co-Founder of
Blackstone Group

At the ribbon cutting of the **Blackstone LaunchPad** at UCF, President John Hitt said, "As America's leading partnership university, UCF is proud to participate in an exciting new alliance to launch the next generation of Florida's entrepreneurs. This effort will greatly benefit our students and enhance the economic prosperity of our community, which is good news for all of Central Florida." The program was made possible by a \$1.4 million grant by the **Blackstone Charitable Foundation** and is the tenth of its kind in the country. Modeled after a pilot program developed at the University of Miami, it is designed to take a student, regardless of age or field of study, from business concept to business venture under the oversight of university and business leaders.

Blackstone LaunchPad is one of the programs that falls under the auspices of **UCF's Center for Entrepreneurial Leadership (CEL)**. The purpose of **CEL** is to educate, empower and excite the entrepreneurial spirit of the UCF community, leveraging for the community the best educational, experimental and tactical support available to create and realize opportunities throughout their careers. In doing so, the **CEL** connects the **College of Business Administration** to academic disciplines across campus and business interests throughout the Central Florida region.

Cameron Ford, academic director of **CEL** said, "The goal is to improve the university's ability to coordinate between entrepreneurial initiatives. In doing so, it will increase the visibility of the university and ultimately provide more access to additional resources to support community entrepreneurs."

THE OFFICE OF RESEARCH & COMMERCIALIZATION (ORC)

The **ORC** has become the nexus for many of the ecosystem's various components. One of the most significant is the **UCF Business Incubation Program (UCFBIP)**. The **UCFBIP** was created to help diversify the Central Florida economy by nurturing companies with the potential to create high-wage jobs.

According to the U.S. Small Business Administration, only 44 percent of small businesses continue to operate after four years. However, the National Business Incubation Association (NBIA), has found that 87 percent of incubated companies are still in business five years after graduating from their program.

Since its founding in 1999, the **UCFBIP** has helped several hundred emerging companies. From October 2011 to December 2012, the UCF network of current and graduated clients created a regional output resulting in an almost \$6 return for every \$1 invested in the program by the Central Florida community. **UCFBIP** was internationally recognized by the NBIA as the 2013 Incubator Network of the Year.

The 100th company to graduate from the **UCFBIP** was **EDGEFACTORY**, an Orlando-based, award-winning and Emmy nominated creative video production company that specializes in convention and corporate video production services using cutting-edge technology. Dr. O'Neal commented, "EDGEFACTORY and those 99 other graduates came here, took advantage of everything this program has to offer, and leveraged it to streamline and grow their companies."



The UCFBIP recently celebrated the graduation of its 100th client, Edgefactory.



"The goal is to improve the university's ability to coordinate between entrepreneurial initiatives."

— Cameron Ford, Ph.D.

Another noteworthy example of innovation stemming from university research is PLASMONICS, INC., a spin-off company from the UCF College of Optics and Photonics. Founded by David Shelton, Ph.D. and Glenn Boreman, Ph.D., PLASMONICS is currently developing cutting-edge technology associated with infrared systems and nanotechnology involved in thermal management for space systems, primarily for the U.S. Department of Defense.

PLASMONICS currently has a full-time staff that includes four Ph.D. engineers and material scientists and expects to soon pass 14 employees. Shelton credits UCF for playing a critical role in the company's success; in return, PLASMONICS recently announced that they are on pace to contribute \$250,000 in support of UCF research efforts.

The Office of Technology Transfer (OTT) team brings UCF discoveries to the marketplace through intellectual property protection, marketing and licensing processes. The office connects UCF researchers and their innovations with large and small companies and entrepreneurs, which turn discoveries into commercially viable ventures or new product lines. From nanotechnology, to cryogenics, to photonics UCF scientists are developing the "next big things".

One UCF researcher, Richard Blair, developed a proprietary method for making graphene — an element that some have described as the "wonder material" of the century — accessible to industry. Graphene, a material just one atom thick, has incomparable strength and elasticity and is able to conduct electricity as well as copper and heat better than any other material. By adding a small amount of graphene during the production process, makers of plastics, rubber and metal can make their products far lighter and stronger. The technique, which the university recently licensed to UCF spinout GARMOR INC., which worked with UCF's **Office of Technology Transfer (OTT)** to commercialize the technology.

Another company MESDI SYSTEMS, INC. specializes in the production and implementation of advanced spray equipment used to manufacture nano-materials and ultra-thin coatings. The company is moving to position itself to dominate the world market in the manufacture of precision electrospray equipment that is used to coat lithium-ion batteries, solar panels, fuel cells, and other high precision energy products, making them more efficient.

"MESDI is a clear example of the benefits of helping our student entrepreneurs enter the marketplace," said Svetlana Shtrom, director of technology commercialization at UCF.



Anastasia Canavan, Garmor Inc.
President & CEO and Dr. Richard Blair
holding a tray of graphene



Going Public

The journey to develop, protect and commercialize scientific discoveries begins the day researchers and scientists are hired.

RESEARCH



Welcome to UCF

Researcher starts in UCF lab

When new faculty arrive, they begin working with students, collaborating with other researchers and partnering with industry.

Quality Work

Researcher applies for funding

Many researchers hit the ground running and soon reach out to federal, state and industry partners to fund their projects. The competition for funding is fierce.

Avg. Number of Days from Hire to Apply for Funding: 153

Avg. Number of Days from Hire to Receiving Funding: 233

SUCCESS STORIES

These projects are in the commercialization phase and hope to make the world a better place.

Detecting Cancer with Gold

Nano Discovery Inc. is a medical research bioassay company founded by UCF Associate Professor Qun "Treen" Huo. Huo and her team developed a new technique involving gold nanoparticles to help detect cancer. She expects to commercialize this new technology to the biomedical research community in one to two years and to the diagnostic market in three to five years.

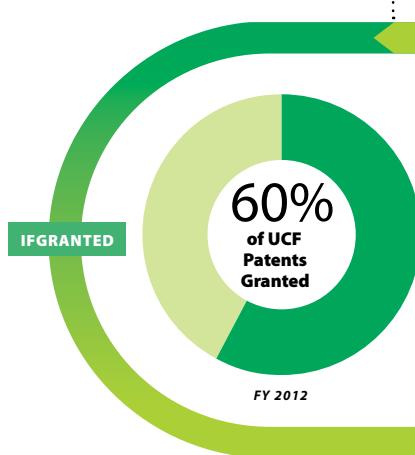
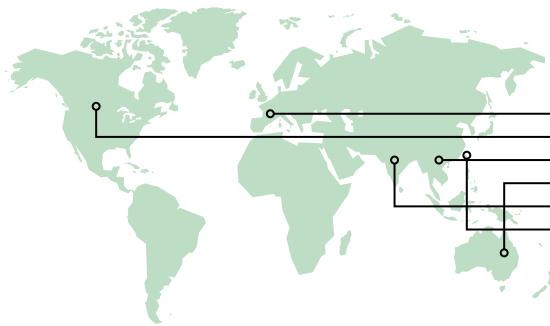
Stronger. Lighter. Cheaper.

Garmor Inc. has developed a costeffective method of producing highquality graphene for use in aircraft automobiles and construction. Common applications for the allotrope of carbon include high-strength plastics used for automotive bumpers and bed liners, boat hauls, bridge components and custom-molded parts. The graphene technology was developed by Richard Blair, assistant chemistry professor at UCF, and Ph.D. student David Restrepo, '08.

Hurry Up and Wait

UCF submits patent application

It may take from 18 to 36 months to apply and receive the patent protection from the U.S. Patent Office or from other national and regional authorities.



Proud Owner

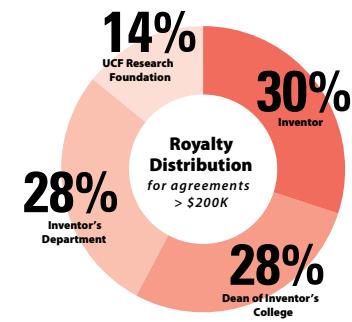
UCF Research Foundation

UCF now owns a U.S. issued patent and possibly, if elected, a patent granted by another national or regional authority. For products or methods that have strong commercial potential, UCF may invest up to \$100,000 to expedite market readiness.

Return on Innovation

Revenue is generated

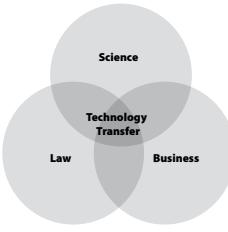
License fees and royalties accrue when the innovation enters the marketplace. Companies grow, hire students, sell products and sponsor research. What started as an idea is now impacting the economy and UCF.



SOLD: 1.8 MILLION ENERGY-EFFICIENT CEILING FANS USING RESEARCHER DANNY PARKER'S INNOVATION

The Office of Technology Transfer (OTT)

The OTT team brings UCF discoveries to the marketplace through intellectual property protection, marketing and licensing processes. The office connects UCF researchers and their innovations with companies and entrepreneurs to take the technology to market.



Types of Technologies Protected

Biofuels	Disease Detection
Bioimaging	Disease Therapies
Clean Technology	Nanotechnology
Computer Vision and Imaging	Optics and Lasers
Defense	Vaccines

Validation!

Research is funded

Because ideas are often evaluated on scientific and commercial value, it's particularly satisfying to receive funding. With funding, intensive research begins. Public and private funding agencies are getting to know UCF and the quality of its research.

Top 5 Funding Agencies

1. National Science Foundation
2. National Institutes of Health
3. Lockheed Martin Corp.
4. Florida Department of Education
5. U.S. Army Research, Development and Engineering Command

Based on amounts awarded during FY 2010-2012

Protect the Goods

Researcher submits invention disclosure

Once a scientist has solidified their hypothesis, made their discovery and is ready to publish their discovery, it's time to record and protect the intellectual property. The invention disclosure is reviewed by a team of experts at the OTT to assess the viability of a patent application and commercial potential.

Avg. Number of Days from Application to Receiving Funding: 86

Top International Patent Protection Filings

- European Union
- Canada
- China
- Australia
- India
- Taiwan

Big-time Patents

UCF works with researcher on utility patent application

The OTT works with the researcher and patent attorneys to fulfill the U.S. nonprovisional patent application requirements. UCF may also file for international protection during this time.

Ticktock

UCF submits provisional patent application

The scientist has one year to the day to further substantiate their innovation's claims and file a nonprovisional patent application.

Invention Disclosures Reviewed by OTT

FY 2010	96
FY 2011	109
FY 2012	127

IF APPROVED

PROTECT

Find a Good Match

UCF promotes new innovation

The OTT reaches out to potential partners to detail how UCF's new product could increase revenue, reduce expenses and/or avoid future costs.

Did You Know?

Life science technologies typically have a longer sales cycle because the discoveries often need to undergo clinical trials.

Faculty are often considered the best salespeople for their own technology.



License to Thrive

A license agreement is reached

UCF authorizes a licensee who may be a research sponsor, an industry partner, a government agency or a venture capital firm to use its intellectual property. Researchers may also launch their own spinout company and execute a license.

COMMERCIALIZE

Built to Last

Product goes to market

The industry partner must now design, develop and deliver the product.



Licenses Executed by Academic Unit

3	College of Engineering and Computer Science
2	College of Optics and Photonics
2	College of Sciences
1	The Burnett School of Biomedical Sciences
1	Florida Solar Energy Center
1	Institute for Simulation and Training
1	NanoScience Technology Center



SOURCE: UCF OFFICE OF RESEARCH AND COMMERCIALIZATION 2013

Strands of the Helix II

“...the need for assistance and coaching doesn’t end when your company is up and growing.”



“Florida PeerSpectives provides something that is sometimes hard to come by when you are trying to grow your business - good advice from those who have been there.”

— Dan Rini, Ph.D.,
CEO RINI Technologies

GROWFL

Just as education doesn’t end when you get your diploma, the need for assistance and coaching doesn’t end when your company is up and growing. Providing strategies, resources and support to second-stage companies (10 employees and \$2 million in annual revenue) **GrowFL** positions these businesses for next level growth. By supporting them with strategic research and peer-to-peer CEO mentoring, **GrowFL** helps budding corporations overcome developmental obstacles and leads them towards prosperity. **GrowFL** is the program of the Florida Economic Gardening Institute at UCF, in association with the Edward Lowe Foundation and is a critical component to the state’s economic development strategy and Florida’s entrepreneurial ecosystem.

Between fiscal years 2009 and 2012, **GrowFL** helped more than 400 companies create more than 4,187 direct and indirect local jobs and contribute more than \$581 million to Florida’s economy. By the end of 2013, that number grew to more than 700 companies supported by **GrowFL**.

One significant program **GrowFL** has developed, in partnership with the Edward Lowe Foundation, is the “Florida Companies to Watch” recognition event. In this event fifty high-performing companies from across Florida are celebrated based on their growth, entrepreneurial leadership, product innovation, social/community responsibility and competitive business practices. Last year it was held at the Hard Rock Live at Universal Studios Orlando.

UCF VENTURE ACCELERATOR

The **UCF Venture Accelerator** offers an array of business advisory services that are geared towards helping students, faculty, and entrepreneurs vet their ideas, conduct market research and gain the business skills needed to commercialize research or launch a technology firm.

The **UCF Venture Accelerator** is staffed with seasoned coaches that have all “been there, done that” in the world of technology startup companies. All of the coaches have held various executive management positions at companies that they founded, and all have hands-on experience in bootstrapping and raising venture capital financing as part of launching and growing their companies.

In addition to general management experience with technology startups, their coaches have specific domains of expertise that include sales and marketing, finance, human resource/team development, and product development.

FLORIDA SMALL BUSINESS DEVELOPMENT CENTER AT UCF (FSBDC)

The **FSBDC** at UCF is located in the National Entrepreneur Center and provides no-cost, expert, one-on-one business consulting and business seminars for entrepreneurs and small business owners. The **FSBDC** at UCF serves an eight-county area that includes Brevard, Flagler, Lake, Orange, Osceola, Seminole, Sumter and Volusia counties, in addition to maintaining six sub-center offices along with the main office in Orlando. The **FSBDC** at UCF is a member of the Florida **FSBDC** Network, a statewide service, funded in part through a cooperative agreement with the U.S. Small Business Administration, providing assistance in accounting, finance, marketing, operations, new venture planning and technical assistance.

The **FSBDC** helps entrepreneurs and small business owners and leaders solve problems, broaden their perspectives and build confidence in their decision-making with a variety of programs. Its Advisory Board Council program provides volunteer board of directors to work with **FSBDC** clients; its **CEO XChange** is an executive roundtable program offering peer-to-peer counseling and sharing of best-practices; its Small Business Institute® brings UCF College of Business Administration MBA students together, with **FSBDC** clients for high level consulting engagements. These and other services, along with its core offerings, have enabled the **FSBDC** at UCF in 2012 to help its client businesses create, retain and save 9,961 jobs, generate sales of \$1.3 billion, acquire government contracts of \$104.6 million, access investment capital of \$50.4 million and start 108 new businesses.

FLORIDA ANGEL NEXUS (FAN)

There are a number of additional programs supported by the Center for Innovation and Commercialization like the **FAN**. The CIE provided leadership and resources to start the **Florida Angel Nexus** in an effort to reduce the funding roadblock startups face while trying to grow in our State. **FAN** works with the UCF Venture Accelerator and other community resources to assist entrepreneurs in launching and growing their companies.

According to a 2012 *MoneyTree* report, Florida was home to less than 1% of the deals and dollars invested nationwide. The largest impact to this lack of funding is felt by our startups. Over the past 4 years, only 6% of all venture capital nationwide has been deployed in financing rounds between \$1-4 million, with 70% of the financings going to only three states — California, Massachusetts and New York. Many of our communities' best startups are gaining funding from these major investment corridors and moving their companies to those regions to develop, hire, and stimulate the economy. The entire Southeast only represented 10.8% of the dollars invested in 2012 (a drop from 2011).

Michael O'Donnell, executive director for the UCF Center for Innovation & Entrepreneurship and founder of **FAN**, claims the initiative not only fills a significant need at UCF, but also has the potential to help bring additional investment into the state.

"This is a new and exciting era for job and wealth creation. The number of growth companies and the amount of available resources are both on the rise," O'Donnell said. "There are many people working to close the known gaps. The resulting opportunities that this creates for everyone involved will be substantial."

In addition, in September of last year, UCF hosted the first **Innovation Concourse of the Southeast** event, combining MegaWatt Ventures, the Florida Cleantech Acceleration Network in partnership with Florida Energy Systems Consortium. This unique event unveiled new energy and environmental technologies and products with the ultimate goal of developing an innovation ecosystem throughout the southeastern United States.



Lieutenant Colonel Gabriel (Gabe) Ruiz retired from the U.S. Army in 2006. A true entrepreneur, Ruiz leveraged his extensive military training in Information Technology (IT) to build his own enterprise — Advanced IT Concepts, Inc. (AITC). AITC, an IT systems integrator, focuses on the more complex, enterprise level requirements where the largest return on investment (ROI) can be achieved. The company has teamed up with key industry leaders to offer design and engineering services and sales, implementation, training and support for over 1,200 respected IT brands.

AITC achieved a phenomenal 107% growth from 2010-2012. Revenues have increased from \$128,803 in 2009 to \$6,609,754 in 2013. AITC has expanded its staff from four in 2011 to 16 in 2013, with an annual payroll close to \$1 million.

"The FSBDC at UCF has been a true and invaluable partner to AITC," explains Ruiz. Growth Acceleration Services consultant Roger Greenwald expressed a caring attitude and exemplified superb business knowledge during our first meeting. Since then, we have received expert advice in areas such as marketing, business development, budgeting and forecasting operational effectiveness."



Florida Angel Nexus Team

"The various university centers and institutes spawn products and technologies that set our region apart..."

Startup To Scale Up

It is the rich soil of intellectual inquiry, research and innovation that feeds the Entrepreneurial Ecosystem and in this regard UCF is second to none. The various university centers and institutes spawn products and technologies that set our region apart and generate those technologies that turn science fiction into daily reality. From photonics and nanoscience, to space, solar energy and lasers, the horizon of discovery is continually expanded.

One area where UCF and its neighbor the Central Florida Research Park has built tremendous momentum is in simulation. The Florida High Tech Corridor now boasts the highest concentration of simulation and training related activities in the nation. UCF's Institute for Simulation & Training is an internationally recognized research institute that focuses on advancing human-centered modeling and simulation technology and increasing our understanding of simulation's role in training and education. In 2012 the Institute celebrated 30 years of Modeling & Simulation research achievement.



OPTIGRATE

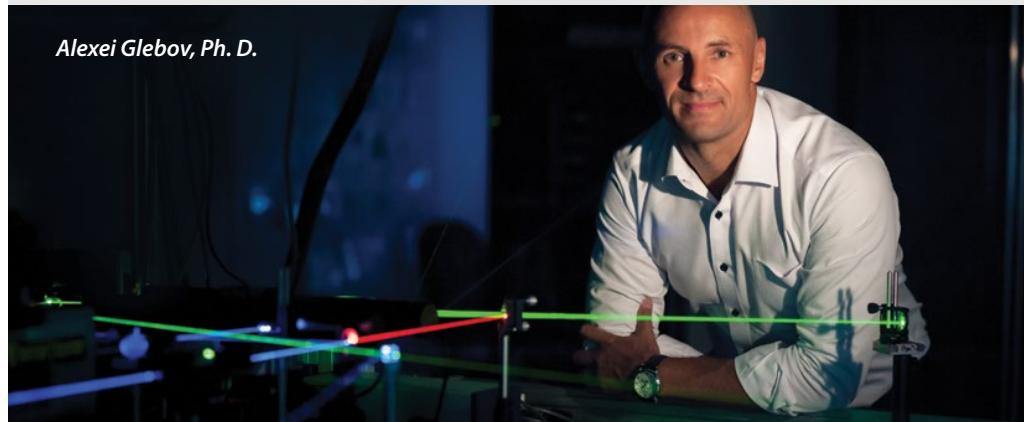
If you work with lasers anywhere in the world, especially Taipei and Munich, you are familiar with OPTIGRATE CORP. M.J. Soileau, Ph.D., UCF's vice president for Research & Commercialization, along with serving as a professor of optics, describes it as "A disruptive technology," that basically provides the foundation for a new line of laser products.

"It's going to give people the ability to make things you didn't know you could make," said Dr. Soileau, "They're first out of the block." Leonid (Leon) Glebov, Ph.D., a Russian scientist who did groundbreaking work in the field in the 1970s met Soileau in St. Petersburg, Russia, forming a fast friendship based on their similar scientific interests.

When the Soviet Union broke up in 1991, Glebov came to the U.S. and Dr. Soileau was able to bring him to UCF in 1995, winning a competition against the likes of Stanford University.

When OPTIGRATE's technology was ready for market, UCF used its highly developed business incubation program to help Glebov create a viable company. Glebov's 44-year-old son, Alexei also an outstanding physicist, was recruited from his job in Silicon Valley to run the company in 2008 and serves as the president and CEO. The senior Glebov has remained on the UCF faculty, regularly drawing more than a million dollars a year in research grants to the institution. "There's nobody else that does Leon Glebov's work," according to Dr. Soileau. "I don't think Leon has a lot of peers."

Alexei Glebov, Ph. D.



"...UCF used its highly developed business incubator system to help Glebov create a viable company."

HOW IT WORKS...OPTICAL PHYSICS FOR DUMMIES

The heart of the technology is a method to produce a piece of glass, in which the molecules are aligned to create a filter for light. Known as a "volume Bragg grating," this glass filter creates a laser of a pure frequency or color.

Silica, with a mixture of additives formed in a special process, creates an image in the glass like a hologram, which filters the laser light. "This opens lots of new applications," Soileau explained. The result is better optical filters, better beam directors and better lasers.

"Photonics is still pretty small," Alexei said. "The company needed leadership with an industrial background. That's why dad brought me here. I've seen the industry from the other side. I am the business guy."

While the U.S. economy has struggled during the past five years, OPTIGRATE has thrived, growing 30 percent per year and doubling its workspace last summer by moving into a new building. "We're expanding in different markets," Glebov said. "We're increasing profits year after year." Though since the company is private, he declined to reveal sales figures.

Laser technology is certain to become more valuable to the U.S. economy, and OPTIGRATE expects to be part of that growth. Laser ranger finders, one developing technology, will be a major component of cars that drive themselves.

"We're working on finding new markets and new applications," Alexei said. "We are still at the very beginning. It can easily grow ten times in the next few years. My expectations are very optimistic."

As a result of the link between companies like OPTIGRATE and the University of Central Florida, Orlando has become known as one of the centers of laser technology.

Startup To Scale Up

"The company got its start winning competitive contracts through the Small Business Innovation Research (SBIR) program."



Dan Rini, Ph.D,
Founder and President,
RINI Technologies

"It always seems impossible, until it's done."

— Nelson Mandela



U.S. Navy/sealswcc.com

RINI TECHNOLOGIES

A little over a mile from the campus of UCF in Oviedo, are the offices and research laboratory of RINI TECHNOLOGIES. Dan Rini, the founder and president of the company, came to UCF from Canada on a waterskiing scholarship and went all the way through to his PhD in mechanical engineering. However, because of his immigration status he couldn't work and was planning to return to Canada to find a position when Thomas O'Neal suggested he start a company. In fact, he applied to the business incubation program the same week he defended his doctoral dissertation.

Dr. O'Neal described Rini's approach, "He concentrated on the back end of the laser problem; everyone wants to work on lasers, but no one was working on how to cool them. That is where he focused; he filled a big gap and is doing very well."

The company got its start winning competitive contracts through the **Small Business Innovation Research (SBIR)** program. With customers like the Army Natick Soldier Center, Air Force Research Laboratory, Office of Naval Research, the Defense Advanced Research Projects Agency, and more, RINI TECHNOLOGIES is well known and respected in the advanced thermal management industry. Their personal cooling technology has been issued two U.S. patents and has five patents pending.

The U.S. Army has awarded the company contracts totaling \$2.1 million to finalize development of its lightweight and compact Micro Climate Cooling System (MCCS). According to RINI TECHNOLOGIES, "The MCCS harnesses patented miniaturization refrigeration and electronics technologies to provide heat stress relief, improve operational performance, and reduce water consumption for soldiers working under hazardous conditions. Additional applications of the compact cooling system include cooling computer systems, lasers, and high-power electronics in medical, first responder, and homeland security environments." The applications extend beyond combat soldiers to Chemical/Bio Suits and Firefighters.

In addition, they won grants and contracts totaling \$1.7 million with the Naval Sea Systems Command (NAVSEA) and the Office of Naval Research for its diver heating and cooling system, which keeps Navy salvage divers and combat swimmers warm in cold water and cool when diving in warm or contaminated water.

"The Navy has searched for many years for a technology that is small, light and energy efficient enough for use by its free-swimming divers, who often work in brutally cold environments," Rini said. "Use of [this system] will significantly improve a diver's ability to function in these extreme conditions."

CREATING THE FUTURE

Comedian Milton Berle once said, "If opportunity doesn't knock, build a door." That is the essence of the entrepreneurial spirit, to not just look for opportunity or a particular future, but to make it. Which is what all of those involved in the UCF Entrepreneurial Ecosystem are striving to do.

It is amazing that one cell can grow into a human being and perhaps equally amazing in each one of those billions of cells, making up various organ systems of that human being, is the same, unique DNA molecule. From conception to maturity that DNA signature is there guiding the development. The DNA of inquiry, replicable processes and innovation are in the UCF entrepreneurial programs and where it will be in the next 20 years we can only speculate. But like the vision of President Kennedy and Walt Disney, the vision of UCF President John Hitt, with the help of Thomas O'Neal and others, has already transformed the region and may well impact the world.

"Entrepreneurship is living a few years of your life like most people won't. So that you can spend the rest of your life like most people can't."

— Unknown



"The DNA of inquiry, replicable processes and innovation are in the UCF entrepreneurial programs..."

As we have seen, often the primary facilitator for the growth of an entrepreneurial ecosystem is a major research university, which has an entrepreneurial focus like UCF. According to a report based on a survey sponsored by Sequoia Capital, regarding Stanford University—an institution with a long history of entrepreneurial nurturing, it was estimated that 39,900 active companies can trace their roots back to Stanford. Extrapolating from survey results, those companies have created an estimated 5.4 million jobs and generate annual world revenues of \$2.7 trillion. These include Google, Nike, Cisco, Hewlett-Packard, Charles Schwab, Yahoo, Netflix and Tesla.

But it all begins with an idea and the courage and perseverance to turn that idea into a scalable enterprise. This along with an environment where those ideas are nurtured, where innovation is celebrated and where entrepreneurial courage is admired, creates a transforming force that raises the quality of life and standard of living for everyone in the region.



Stands For Opportunity

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DNA OF CENTRAL FLORIDA, PART II**



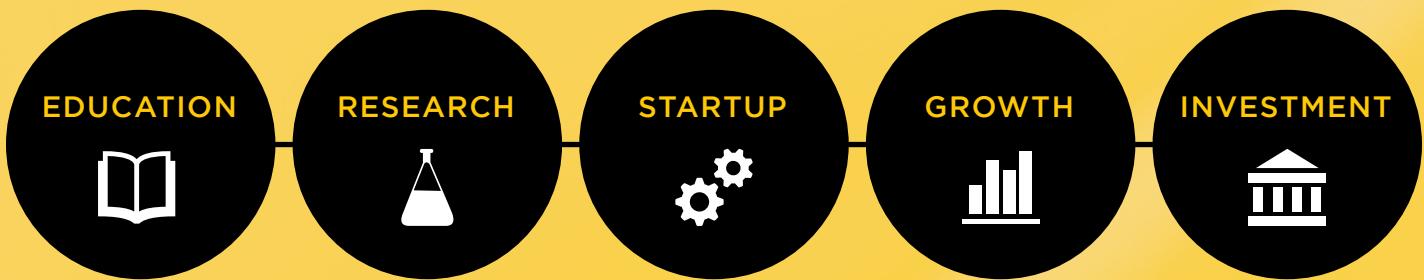
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Tap into the diverse resources available that foster innovation and entrepreneurship at the University of Central Florida to create your opportunity.



Collectively, these efforts have been recognized as one of the most comprehensive and best-integrated collections of entrepreneurship initiatives in the United States. These initiatives contributed to Orlando being recognized by *Entrepreneur Magazine* as having “one of the most highly coordinated entrepreneurial engines in the country.” Come see how you can benefit from UCF’s internationally recognized entrepreneurship programs.

