

2019

OFFICE OF RESEARCH ANNUAL REPORT



UCF

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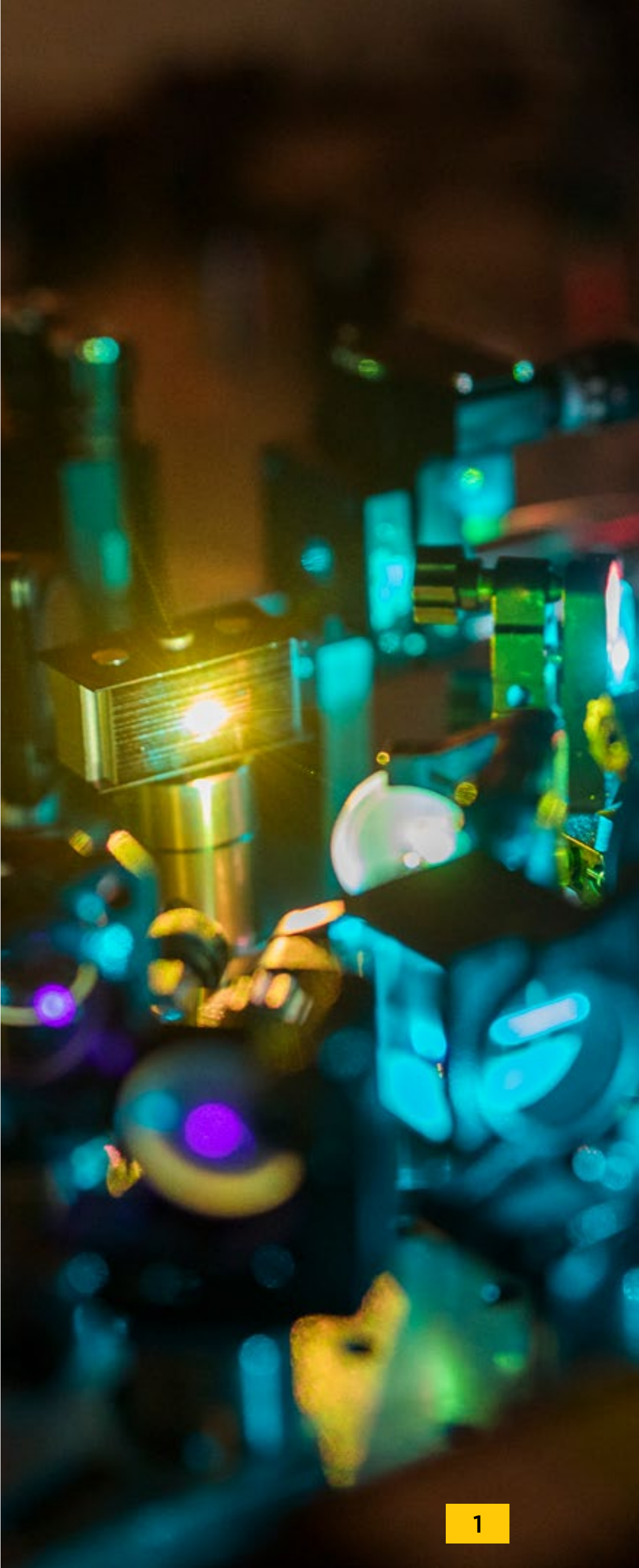
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FROM THE VICE PRESIDENT OF RESEARCH

Dear Colleagues,

You have read and seen in the news and social media that science and research are taking a beating in the public eye. According to the Pew Research Center, more than 60 percent of Americans have no confidence in science. Another 66 percent can't tell you where research is conducted and 81 percent can't name a living scientist. Despite the critical role universities play in improving lives through research, most people don't understand its value.

Here at UCF, we conduct innovative and life-changing research. There are teams racing to find answers to sea level rise that could put Florida's coastline underwater. Others are searching for new energy sources through physics, chemistry, nanotechnology, and optics. Some are exploring space and what it could mean for life on our planet and beyond the solar system. Many researchers are contributing to the public discourse about things that define us, such as what drives us to social media, and how our culture is changing online and in the real world. Others are driving cybersecurity, artificial intelligence, and many more types of research that directly impact our lives.

There are many factors behind why the public questions science and mistrusts research, but one is our inability, reluctance, or lack of resources to tell our stories. That's why this annual report includes not only our facts and figures but also the stories behind the research and the researchers. We need to improve our ability to tell the general public what we are doing. If we can't communicate our research

and why it matters, the general public won't support our work. There is no more important time than right now to help the public understand why university research matters. That means you are being called to do more than sharing your work with fellow academics.

Share your excitement and discovery through personal social media accounts using everyday language. Talk to your neighbors, volunteer to give a talk at a local high school or chamber of commerce meeting. Become an advocate for science and research. Navigating the best approach can be difficult, and our communications team is here to help. Reach out to them!

We've had an outstanding year in 2019, and the stories found in this report are just a small sampling of the breadth of research going on at UCF. You'll notice we also expanded each college section. We had just enough time to sneak in the statistics for fiscal year 2020, and the results reflect a continuing upward trajectory for research funding.

We will continue to work in the coming academic year to support your efforts to land and execute sponsored research and to share your success stories.

Join us in discussing UCF research with the public, and remember, what you do matters each and every day.



Liz

A handwritten signature in blue ink, appearing to read 'Liz Klonoff'.

Elizabeth Klonoff

Vice President for the Office of Research
Dean of the College of Graduate Studies





UCF COLLEGES

Read About Knights' Research



About the College of Arts and Humanities

By: Heather Gibson

How many trifold pamphlets of well-intentioned advice have been tossed aside because they are full of dry information? Or worse, they aren't printed in the language the recipient speaks?

Nemours Children's Hospital had this problem: new parents regularly received a booklet listing the CDC's "Parenting Tips," but the hospital wanted to make their parenting curriculum more proactive, more applicable and accessible to new parents and caregivers. And they needed them to be understood in several languages.

The timing was right. Just as Tyler Fisher, associate professor of Spanish, was learning of this need, he saw a call for interdisciplinary arts and wellness proposals from the Pabst Steinmetz Foundation. The foundation was in its first year of offering UCF faculty the opportunity to compete for two \$25,000 grants, awarded to interdisciplinary teams that include a collaborative faculty team and a community partner.



Fables have transcended geopolitical borders, and with careful craftsmanship, they can be relevant today for purposes such as conveying memorable lessons to new parents.



Fisher contacted Kimberly Renk from the College of Sciences and UCF animator Cheryl Briggs, and a collaboration was born. The team was awarded the funding and answered the hospital's call with a series of short films that animated each of the CDC's parenting tips, with narration and subtitles customized for the three most common languages spoken in central Florida—English, Spanish, and Haitian Creole.

"The project is broadly interdisciplinary, bringing together UCF faculty members' expertise in cross-cultural communication, child psychology, creative writing, translation and digital animation," says Fisher. "That teamwork across vastly different disciplines was only possible through the support of the Pabst Steinmetz Foundation."

The multilingual stories are designed to speak across cultures in highly engaging, memorable ways, about subjects ranging from postpartum depression to the dangers of screen-time for infants and the importance of timely vaccinations.

"The traditional fable, as a narrative vehicle, is one of the most enduring and culturally versatile genres of storytelling," says Fisher. "Fables have transcended geopolitical borders, and with careful craftsmanship, they can be relevant today for purposes such as conveying memorable lessons to new parents."

The interdisciplinary project required a team of people to execute and provided ample learning and research opportunities to students. There was a student team under Fisher's direction that made editorial decisions and wrote the stories, and then a team of digital artists guided by Briggs that turned the stories into animations. Translators then added sound.

One of those students, Zeynep Elshaer, is extending the reach of this project. The honors student who is majoring in biomedical sciences and Spanish has seen firsthand the struggle of her Middle Eastern mother to grasp what exactly a doctor is telling her. It wasn't just a language barrier, either, Elshaer says. It was a lack of cultural understanding that made delivering good healthcare advice a challenge.

After working on the fables project, Elshaer has chosen to conduct her honors thesis research into finding ways to communicate health messages across diverse communities. In her current research, Elshaer seeks to understand the common views regarding infant vaccinations among Haitian, Hispanic and anglophone communities in central Florida. Her research indicates there are many misconceptions, which in some communities have been turned into urban legends. For example, some parents incorrectly believe that vaccines cause autism or diseases. These stories have the potential to shape major decisions, Elshaer says, which is why it's important to get the initial messages right.

"There isn't significant data on whether or not these communities are being equally impacted by the way that we are currently spreading healthcare messages," she says.

Since the original request, Nemours Children's Health Alliance has asked that the fables also be translated into Modern Standard Arabic and Mandarin. The Department of Modern Languages has added Arabic, Chinese, Persian and Kurdish translations of the fable scripts.

In addition to Nemours, four healthcare provider networks in Florida are now disseminating the animated fables in relevant contexts: pediatric waiting rooms, on-line diagnostic applications, and resources such as KidsHealth.org. As digital animations, there are no limits on how far the messaging can reach via online platforms. [Positive Parenting Fables](#) have been viewed on YouTube around the globe.

The Positive Parenting Fables have been named finalists for the Various Artists independent Film Festival (VAiFF), Season 4, October 2020. They also won an overall Award of Merit and Best Animation of the Winter 2020 Southern Shorts Awards. Southern Shorts made specific awards to the Fables: Awards of Merit for Directing, Lighting and Textures, Production Design, and Technical Skill, and Awards of Excellence for Music, Sound Design, and Screenwriting.



► **Top Faculty Sponsored Research**

- Suzette Turner
- Kerry Purmensky
- Florin Mihai
- Amy Giroux
- Beth Young

► **Top Published Faculty**

- Julia Listengarten
- Stephen Fiore
- Luis Favela
- Jonathan Beever

► **Articles and Citations**

807 Articles Published
2,523 Citations

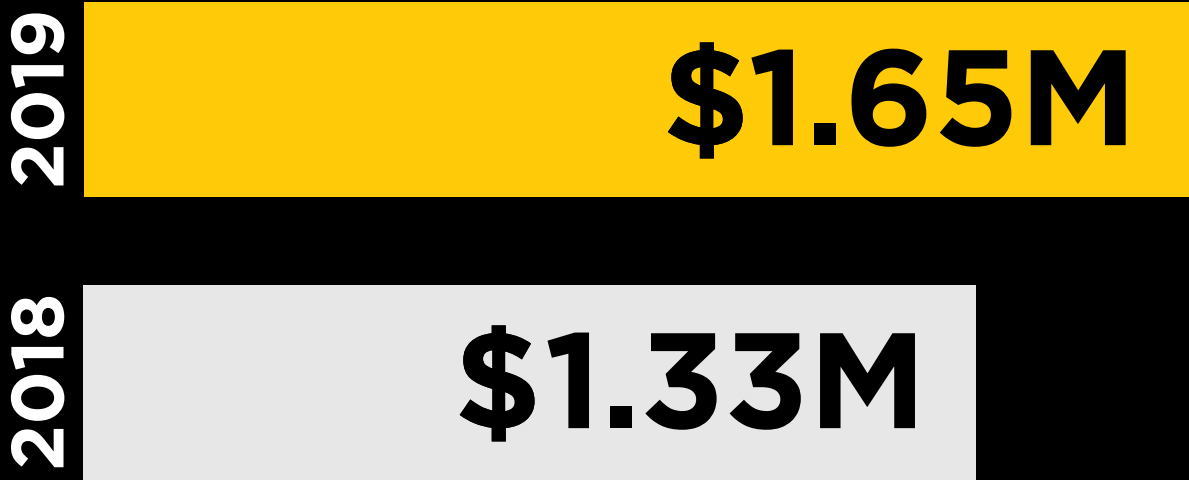
* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.
Publications include books, articles and conference proceedings for calendar year 2019.

\$1.65M

In grant funding awarded to the
College of Arts and Humanities

\$1.42M
Federal

\$230,000
Industry and Other





About the College of Business

By: Erika Hodges

The competition may never rest but you should if you want your business to succeed.

A study by Jeff Gish, an assistant business professor at the University of Central Florida, shows sleep plays a critical role in not only identifying a good business idea, but in evaluating it and believing it is viable.

“There’s this tension in entrepreneurship that your business is so important that how can you sleep when you’ve got to keep things afloat and keep things moving,” says Gish, the study’s lead author. “Entrepreneurs are of this culture that I’ll sleep when I die, or sleep is for weaklings. Entrepreneurs who consistently choose hustle over sleep, thinking that sleep comes after success, may be subverting their efforts to succeed.”

The study, which was published in the *Journal of Business Venturing* last August, was UCF and the [College of Business](#)’ most popular research story of 2019 and garnered more media attention than any other article in the *Journal of Business Venturing*. The paper also ranked in the top one percent of all research across scientific disciplines tracked by Altmetric.

While several studies have found a connection between sleep and job performance, Gish’s found a link between sleep and the cognitive skills needed to identify and evaluate an idea. Entrepreneurs use experience and business knowledge to evaluate ideas that could turn into successful business ventures. A lack of sleep can impair that judgment.

“Everyone needs a good night of sleep, but it is especially important for entrepreneurs,” says Gish, who has founded multiple businesses and now invests in others’ entrepreneurial ventures.

The study surveyed more than 750 entrepreneurs from around the world. The surveys asked about sleep patterns, hours of sleep, and types of sleep.

Business pitches were drafted, and an independent panel of business experts reviewed and ranked the pitches as having the most potential, medium potential, and least potential for success. Then the participants in the study reviewed the three pitches on the same day. Those leaders who had less sleep did not consistently pick the best pitches.



Entrepreneurs who consistently choose hustle over sleep, thinking that sleep comes after success, may be subverting their efforts to succeed.



In the second part of the study, a smaller group of participants evaluated the pitches over several weeks while charting their sleep patterns and checking in with researchers twice a day. Those participants who had at least seven hours of sleep each night consistently selected the best pitches identified by the expert panel. Those who had less sleep or restless sleep did not consistently pick the best pitches.

“The evidence suggests that less sleep leads to less accurate beliefs about the commercial potential of a new venture idea,” Gish says. “Since we compared individual performance over multiple days, we can say that these results are consistent even for entrepreneurs who don’t sleep as much on average as the general population.”

The study was completed at the University of Oregon, where Gish earned a doctorate in philosophy of management. Gish also holds a master’s degree in engineering and technology management. Other collaborators on the study include: David T. Wagner from the University of Oregon, Denis A. Grégoire from HEC Montreal business school in Canada, and Christopher M. Barnes from the University of Washington.



▶ Top Faculty Sponsored Research

- Sevil Sonmez
- Sean Snaith

▶ Top Published Faculty

- Geoffrey Turnbull
- Dana Joseph
- Marshall Schminke
- Maureen Ambrose

▶ Articles and Citations

1,396 Articles Published
31,077 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.

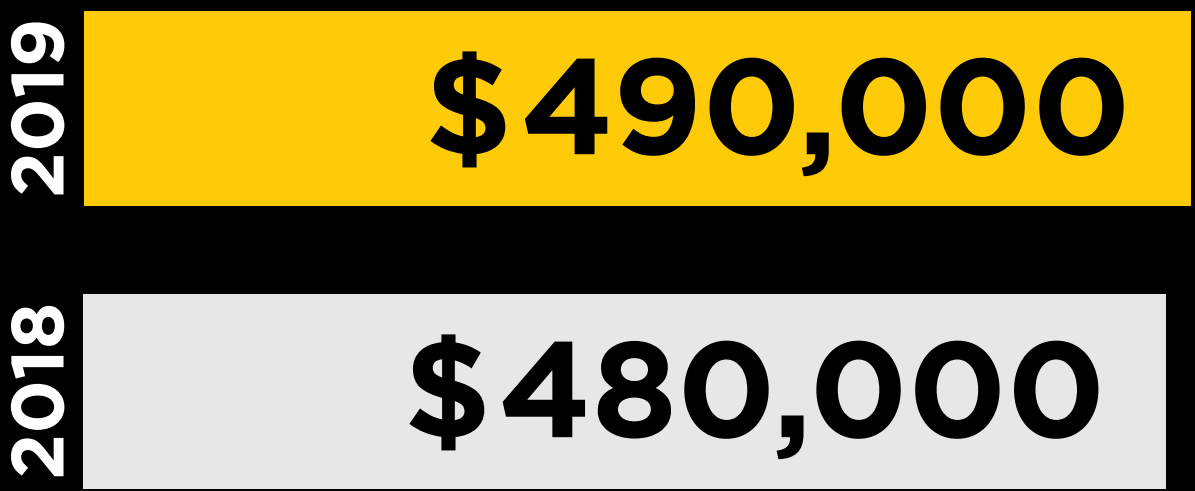
Publications include books, articles and conference proceedings for calendar year 2019.

\$490,000

In grant funding awarded to the
College of Business

\$280,000
Federal

\$210,000
Industry and Other





About the Burnett Honors College

By: Zenaida Gonzalez Kotala

The [Burnett Honors College](#) attracts students – BHC Scholars – who have demonstrated an ability to achieve academic excellence. The college combines the benefits of a small, elite institution with those of a large metropolitan research university, offering two programs: University Honors and the Honors Undergraduate Thesis (HUT).



Our BHC Scholars continue to inspire us with their commitment to developing creative solutions to tomorrow's challenges.



The college dedicates a significant effort to allow scholars to conduct meaningful research. It even has an Office of Honors Research, which provides undergraduate researchers with personalized attention, from providing support groups and workshops to creating tailored solutions to the challenges they face in their thesis journey. The college also hosts an event, Research Match Day, that connects BHC Scholars with active UCF researchers from a variety of fields. In February 2020, 57 faculty members and 138 scholars participated.

“Intellectual inquiry is at the heart of what it means to be a BHC Scholar,” says Dean Sheila Amin Gutiérrez de Piñeres. “Our BHC Scholars continue to inspire us with their commitment to developing creative solutions to tomorrow’s challenges.”

The results speak for themselves. Many of the college’s scholars compete for nationally and internationally recognized research scholarships and fellowships, and present at conferences nationwide. Some highlights from the year include:

- Two BHC Scholars won the Astronaut Scholarship. Emma Shafer is an aerospace engineering major with hopes of working for NASA or Blue Origin. Rishi Basdeo is a mechanical engineering and biomedical sciences major and eventually wants to become a prosthetics engineer. Both have conducted extensive research at UCF.
- Two UCF students – a record – received the Goldwater Scholarship this year, including one BHC Scholar, Gary

Hoppenworth. Hoppenworth, a computer science, and mathematics major, has researched on string algorithms and data structures for UCF, as well as national security work for the Air Force Research Laboratory Directorate. He hopes to conduct theoretical and applied computer sciences research at a national research lab after he graduates.

- UCF students won a record 11 Fulbrights. Five BHC Scholars – Emily Bom (communication sciences and disorders), Rayner Seavey (biology), Zachary Stein (aerospace engineering), Irene Tanner (computer science), and Abigail Weisse (biology) – received a Fulbright grant.
- UCF students received a record 15 National Science Foundation (NSF) Graduate Research Fellowships. That number includes seven BHC Scholars: Carla Garcia (economics and political science), Angelina Leary (psychology), Lindsay Martin (biomedical sciences), Adam Searles (biology), Irene Tanner (computer science), Isaac Valdiviezo (biology), and Bridget Vincent (biology).
- A record 41 BHC Scholars presented at the annual Florida Undergraduate Research Conference, held at Florida Gulf Coast University.

The research work students do also makes a difference in our communities. The BHC Scholars below are all Honors Undergraduate Thesis (HUT) participants:

Zeynep Elshaer is majoring in biomedical sciences and Spanish at UCF. She is an undergraduate teaching assistant and STEM ambassador for the UCF Center for Initiatives in STEM (iSTEM). Her current research seeks to understand infant vaccination misconceptions among the Haitian, Hispanic, and anglophone communities in Central Florida. Working with a multidisciplinary team led by Games and Interactive Media Associate Professor Cheryl Briggs and Modern Languages and Literatures Associate Professor Tyler Fisher, she helped to create animated short fables that communicate Centers for Disease Control and Prevention advice to parents in a clear and entertaining way.

Aliyah Baksh is finishing her undergraduate studies in biology. She is an undergraduate research assistant at the NanoScience

Technology Center under Associate Professor Debashis Chanda, who has joint appointments in the Department of Physics and the College of Optics and Photonics. Baksh’s research with the NanoScience Technology Center focuses on the development of an optical biosensor, which tracks dopamine levels in the bloodstream and could help detect diseases like Parkinson’s and Alzheimer’s in the future.

Andrew Kishuni completed his history degree earlier this year. For his honors thesis under History Associate Professor Connie Lester, he conducted research on the 1918 Spanish flu, teasing out how poverty and race affected the impact of the disease. His work, presented to the Florida Conference of Historians and featured in the Orlando Sentinel, could have implications for understanding the spread of future outbreaks.

Zoe Barbeau, a 2019 Astronaut Scholar and Walker STEM scholarship recipient, just wrapped up her studies in mathematics. While at UCF, she researched the properties of stellar winds under Mathematics Professor Bhimsen Shivamoggi and investigated the application of ceramics in solid oxide fuel cells with Mechanical and Aerospace Engineering Associate Professor Nina Orlovskaya. She also conducted additional research at Lawrence Livermore National Laboratory, where she focused on fusion as a viable energy source, and was part of an NSF Research Experience for Undergraduates at the University of Colorado-Boulder, studying whether the PGE2 hormone could help in the treatment of osteoporosis. She will next be attending Stanford University, where she will pursue a PhD in mechanical engineering.





About the College of Community Innovation and Education

By: D'Ann Rawlinson

An interdisciplinary team of researchers led by Chris Emrich, associate professor of public administration at UCF and a member of UCF's [Sustainable Coastal Systems](#) Cluster, is developing web tools to educate homeowners and renters on reducing property risks from natural disasters and increasing resiliency in cost-effective ways.

When choosing a home and neighborhood, people consider factors such as location, property prices, crime rates, and quality of the local school district.



Our goal is to show people common natural hazards in their area, the average annual occurrence of those hazards and ways to mitigate risks, including estimated costs.



“We know most housing decisions are centered around affordability, but people often don’t account for annualized hazard losses,” says Emrich. “Our goal is to show people common natural hazards in their area, the average annual occurrence of those hazards and ways to mitigate risks, including estimated costs.”

The first line of defense to lessen long term disaster impacts is to live in a home protected from wind and water.

“To understand real risk potentials and mitigation of those risks, we have to provide information in a way that makes sense and drives people toward better decisions,” says Emrich.

Implementing good mitigation practices enables individuals and communities to recover faster by reducing their risk of loss. Living in Florida means hurricanes are a real risk with the question being when not if.

The project, titled The New First Line of Defense, is funded by a \$3.4 million grant from the National Academies of Sciences,

Engineering, and Medicine Gulf Research Program – Thriving Communities Grant. The UCF award was the largest of four projects funded by the program to enhance community resilience in coastal counties located in the U.S. Gulf of Mexico region.

Focusing on 15 hazards common to coastal communities, the UCF-led team plans to identify hazard risk scores for every parcel of land within the Gulf States.

“It comes down to a lot of data gathering on the backend and using that data to develop a complete hazard picture for a particular area,” says Emrich. “We take the most appropriate science and turn it into the best tools and technologies for people to make better decisions.”

The team will develop user-friendly online tools, which homeowners, homebuyers, and renters could use to become more “hazards aware.” To ensure the information is accessible to the public, they are partnering with Redfin, a well-known real estate brokerage company. The team plans to build an application programming interface (API) that allows the software to communicate and share information, enabling real estate and other websites to pull data directly into their platforms. When a person views a house listing, a hazard score will be provided, alerting potential buyers to the hazards that may affect the home and offering ways to mitigate potential threats.

An alpha version of their product will be released by October 2020. The team has identified several stakeholder groups to test the product, including renters, homebuyers, homeowners, and community planners, among others.

“As academics, when we find those nuggets of research that are transferable to society, I think the onus is on us to make sure that society understands. We want to make a difference,” says Emrich.

Emrich says the team hopes to provide these tools to other well-known websites and social networking platforms such as Trulia, Zillow, and Nextdoor. In years two and three of the three-year

project, the researchers want to get their tools into the hands of landlords, realtors, county commissioners, and other community stakeholders. In the future, the team intends to expand their research and tools to the entire country.

Researchers on the project span seven universities and multiple disciplines. In addition to Emrich, UCF’s contributors include engineering Assistant Professor Thomas Wahl, biology Assistant Professor Kristy Lewis, Rosen College of Hospitality Management Assistant Professor Sergio Alvarez, political science Assistant Professor Jacopo Baggio and English Assistant Professor Sonia Stephens.

Emrich is an endowed associate professor of environmental science and public administration in the School of Public Administration and founding member of the National Center for Integrated Coastal Research. He received his doctorate in geography from the University of South Carolina. He worked for the Federal Emergency Management Agency (FEMA) as a geographic information systems specialist in the Hurricane Charley Joint Field Office — Mitigation Division and then as a web transparency liaison in the Gulf Coast Recovery Organization. He’s been with UCF since 2016.



► **Top Faculty Sponsored Research**

- Paula Kohler
- Roger Azevedo
- Amy Ellis
- Marisa Macy
- Sejal Barden

► **Top Published Faculty**

- Glenn Lambie
- James Ray
- Roger Azevedo
- Dalena Taylor

► **Articles and Citations**

2,788 Articles Published
30,239 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.
Publications include books, articles and conference proceedings for calendar year 2019.

\$14.17M

In grant funding awarded to the
College of Community
Innovation and Education

\$7.18M
Federal

\$1.89M
Industry and Other

\$5.10M
State and Local





About the College of Engineering and Computer Science

Reprinted from UCF Today, by Robert Wells

Besting Industry Giants Ford and Uber with Innovative Transportation Data Analytics and Visualization System

UCF has won a national competition to make driving safer, the U.S. Department of Transportation announced in November.

“UCF’s [Smart and Safe Transportation Team](#) and I are honored to be selected by the U.S. DOT for our innovative data analytics and visualization system to help operators and decision makers in their work to make our transportation system safer,” says Mohamed Abdel-Aty, a Pegasus Professor and chair of UCF’s [Department of Civil, Environmental and Construction Engineering](#), who led the research team.

“The system adds many dimensions to state-of-the-art in-road safety research and practice, and changes much of our thinking from being reactive to being proactive in how we deal with traffic safety issues,” he says. “This system will be the start of more innovation and safety solutions in the near future by the SST team at UCF.”

Notice of the win of the Solving for Safety Visualization Challenge came from Elaine L. Chao, secretary of the Department of Transportation, which sponsored the competition.

“Safety is the department’s top priority and the Solving for Safety Visualization Challenge, which the University of Central Florida won impressively, is part of ongoing efforts to save lives and prevent injuries,” Chao says in a news release.

As the winner and also a semi-finalist in the competition, UCF will receive \$220,000 in prize money from the department.

UCF’s entry, Real-Time Crash Visualization Tools for Traffic Safety Management, is a computer program that uses big data to predict — and hopefully prevent — traffic accidents.

Abdel-Aty’s team became a finalist in April, along with Ford Motor Co., after beating three other teams, including one from Uber, during the semifinals.

As the team advanced through the competition, it developed its entry from an idea in stage I, to a prototype for the stage II semifinals, and then created a fully working version for submission in stage III, the final part of the competition.

Using information such as real-time traffic data, weather, history of past accidents and violations, and other data, the UCF Smart and Safe Transportation team’s program predicts if the risk of an accident increases or decreases in a situation and presents the probability in an easy-to-understand visual readout alongside a map overlaid with current traffic-flow conditions.

Safety is the department’s top priority and the Solving for Safety Visualization Challenge, which the University of Central Florida won impressively, is part of ongoing efforts to save lives and prevent injuries.

The idea is that if the risk of an accident rises, then transportation operators could implement measures immediately to reduce the risk, such as reduced speeds, metered ramps and messages warning drivers of perilous conditions ahead, says Abdel-Aty.

“Reducing risk can reduce the possibility or the severity of an accident,” he says.

Abdel-Aty says his team’s tool represents a proactive approach to helping vehicular travel become less dangerous by recognizing dangerous roadways, intersections and conditions before the statistics about their hazards pile up.

“There are about 37,000 traffic fatalities per year in the United States and millions of injuries, which is really unacceptable and a huge burden on our society,” Abdel-Aty says.

He says the Smart and Safe Transportation team’s program is designed to make real-time improvements in traffic safety based on rich data and sophisticated algorithms. Seeing different trends and dynamics will allow operators to make better decisions.

Abdel-Aty received his doctorate in civil engineering from the University of California, Davis, and his master’s and bachelor’s degrees in civil engineering from Alexandria University. He joined UCF in 1995.

The research team was comprised of students and researchers from the [College of Engineering and Computer Science](#), including students Ou Zheng, Cheng Yuan, Morgan Morris, Yaogang Gong, Jacob Lites, Jiajia Dong, Whoibin Chung, Moatz Saad, Lishengsa Yue, Jorge Ugan, Shile Zhang, Pei Li, Zubayer Islam, Md Sharikur Rahman, Md Hasibur Rahman, Ma’en Al-Omari, Ahmed Abdelrahman, Nada Mahmoud, postdoctoral associates Yina Wu and Jinghui Yuan, and professors Samiul Hasan, Jaeyong Lee and Qing Cai.



▶ **Top Faculty Sponsored Research**

- Thomas O'Neal
- Michael Proctor
- Pamela Wisniewski
- Hassan Foroosh

▶ **Top Published Faculty**

- Mohamed Abdel-Aty
- Subith Vasu Sumathi
- Abedelaziz Mohaisen
- Ronald Demara
- Kareem Ahmed

▶ **Articles and Citations**

12,592 Articles Published
170,362 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.
Publications include books, articles and conference proceedings for calendar year 2019.

\$42.71M

In grant funding awarded to the
College of Engineering and
Computer Science

\$16.90M
Federal

\$21.88M
Industry and Other

\$3.93M
State and Local

2019	\$42.71M
2018	\$46.26M



About the College of Health Professions and Sciences

By: Camille Dolan

Researchers in [UCF Aphasia House](#) have partnered with the nation's largest public research funder – the Patient-Centered Outcomes Research Institute (PCORI) – to use patient-centered research methodologies to advance aphasia treatment.

It is a “boots on the ground” approach that not only brings together researchers, clinicians and other healthcare professionals in a collaborative setting, but also welcomes people with aphasia and their families and caregivers to UCF to work toward identifying what supports and interventions work best for patients in the real world.

As one of four aphasia research incubator hubs across the country, Aphasia House will facilitate webinars and other training between researchers and consumers to create research teams that will work together on issues collectively decided by the teams. Participants who complete the webinar and attend meetings will be eligible for travel reimbursement.

UCF Assistant Professor [Lauren Bislick](#) and UCF Instructor [Amy Engelhoven](#) are working with Associate Professor Jackie Hinckley from Nova Southeastern University for this funded project. “We are thrilled to once again partner with Dr. Hinckley,” Engelhoven says. “She has been instrumental in many advances in aphasia therapy and research, and we value her insight into patient-centered outcomes research.”

“We make a great team,” Bislick says. “We are excited about the potential impact this opportunity will have on the aphasia community.” Bislick’s research focuses on the understanding, diagnosis and treatment of apraxia of speech and aphasia, and variables that influence rehabilitation in patients post-stroke. Bislick is also the Director of the Aphasia and Related Conditions Research Lab.

Engelhoven has extensive clinical experience in acquired adult neurogenic communication disorders and voice disorders. She also has research interests in patient-reported outcomes for persons with aphasia and evidence-based treatment of aphasia.

The project, dubbed “BRIDGE 2.0,” is approaching clinical research radically different than past research in the field. Engelhoven says she sees advantages to this new way of collecting data.

Patient-centered research not only takes hard science into account, but it also relies on data from the human experience.

“In the past, [researchers have come up with their] own research questions and then look to the literature to support it,” Engelhoven says. “But as we have found, the research lab is not the real world and does not necessarily account for the human factor. Patient-centered research not only takes hard science into account, but it also relies on data from the human experience.”

Bislick and Engelhoven will ask those with aphasia and their families and caregivers what they perceive as their greatest challenges in receiving care: What does your day-to-day life look like? What would you like to change? What questions do you have? Then, the established research groups will determine next steps to solving the issues.

This project marks an important milestone in moving into both the patient-focused and data-driven research spaces for the UCF Aphasia House, which was established to provide intensive clinical services for individuals with aphasia in 2010.

“Very rarely do aphasia patients and those who care for them have a voice in identifying what can be done better. But if you think about it, it’s an approach that makes the most sense,” says Engelhoven. Patient-centered outcomes research began in 2010 as a direct result of the Affordable Care Act, but Engelhoven says that even before then, parents of children with cancer or other chronic diseases were always asking “Why?” or “Why not?”

Bislick and Engelhoven are coordinating the outreach to other aphasia centers, hospitals, support groups, and rehabilitation centers throughout the southeast to invite stakeholders to participate in the project, Bislick says.

“We want people who are living with aphasia to join us in tackling important questions in aphasia research,” Bislick says. “They know better than us what they need to help improve their quality of life.”

Research produced by previous PCORI teams has been summarized in leading medical journals and presented at major scientific meetings. The healthcare topics tackled by the teams range from childhood obesity and prostate cancer to chronic pain management using nondrug therapies. Bislick and Engelhoven are excited to bring the power of the aphasia community together to focus on improving the lives of the nearly 180,000 individuals nationwide who acquire the disorder each year.



► Top Faculty Sponsored Research

- Teresa Burns
- Jennifer Kent-Walsh
- Kimberley Gryglewicz
- Mary Lou Brunell
- Jacqueline Towson

► Top Published Faculty

- David Fukuda
- William Hanney
- Pak Hin Kong
- Jeanette Garcia

► Articles and Citations

1,981 Articles Published
19,259 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.
Publications include books, articles and conference proceedings for calendar year 2019.

\$3.53M

In grant funding awarded to the
College of Health
Professions and Sciences

\$200,000
Federal

\$1.39M
Industry and Other

\$1.93M
State and Local

2019 **\$3.53M**

2018 **\$6.45M**



About the College of Medicine

*Reprinted from the College of Medicine website,
by Suhtling Wong-Vienneau*

In the lab, UCF scientists found exposing neural stem cells to excessive PPA damages brain cells in several ways.

With the number of children diagnosed with autism on the rise, the need to find what causes the disorder becomes more urgent every day. UCF researchers are now a step closer to showing the link between the food pregnant women consume and the effects on a fetus' developing brain.

Studies have shown a higher level of PPA in stool samples from children with autism and the gut microbiome in autistic children is different.

Saleh Naser, Latifa Abdelli and UCF undergraduate research assistant Aseela Samsam have identified the molecular changes that happen when neuro stem cells are exposed to high levels of an acid commonly found in processed foods. In a study published this week in *Scientific Reports*, a *Nature* journal, the UCF scientists discovered how high levels of Propionic Acid (PPA), used to increase the shelf life of packaged foods and inhibit mold in commercially processed cheese and bread, reduce the development of neurons in fetal brains.

Naser, who specializes in gastroenterology research at the [College of Medicine's Burnett School of Biomedical Sciences](#), began the study after reports showed that autistic children often suffer from gastric issues such as irritable bowel syndrome. He wondered about a possible link between the gut and the brain and began examining how the microbiome — or gut bacteria — differed between people with autism and those who do not have the condition.

“Studies have shown a higher level of PPA in stool samples from children with autism and the gut microbiome in autistic children is different,” Naser says. “I wanted to know what the underlying cause was.”

In the lab, the scientists found exposing neural stem cells to excessive PPA damages brain cells in several ways. First, the acid disrupts the natural balance between brain cells by reducing the number of neurons and over-producing glial cells. While glial cells help develop and protect neuron function, too many glia cells disturb connectivity between neurons. They also cause inflammation, which has been noted in the brains of autistic children.

Excessive amounts of the acid also shorten and damage pathways that neurons use to communicate with the rest of the body. The combination of reduced neurons and damaged pathways impede the brain's ability to communicate, resulting in behaviors that are often found in children with autism, including repetitive behavior, mobility issues and inability to interact with others.

Previous studies have proposed links between autism and environmental and genetic factors, but Drs. Naser and Abdelli say their study is the first to discover the molecular link between elevated levels of PPA, proliferation of glial cells, disturbed neural circuitry and autism. The 18-month study was self-funded by UCF.

PPA occurs naturally in the gut and a mother's microbiome changes during pregnancy and can cause increases in the acid. But Drs. Naser and Abdelli says eating packaged foods containing the acid can further increase PPA in the woman's gut, which then crosses to the fetus.

More research needs to be done before drawing clinical conclusions. Next, the research team will attempt to validate its findings in mice models by seeing if a high PPA maternal diet causes autism in mice genetically predisposed to the condition. There is no cure for autism, which affects about 1 in 59 children, but the scientists hope their findings will advance studies for ways to prevent the disorder.

“This research is only the first step towards better understanding of Autism Spectrum Disorder,” the UCF scientists concluded. “But we have confidence we are on the right track to finally uncovering autism etiology.”

Naser is a professor of Medicine and the Associate Director of Graduate Studies in the UCF [College of Medicine](#). His research program focuses on investigating the genetic links, causes, diagnostics and treatment of Crohn's disease, rheumatoid arthritis, Type I diabetes and autism. Naser came to UCF in 1995 after receiving his bachelor's degree at Yarmouk University in Jordan, his master's at the University of Bridgeport, his PhD at New Mexico State University and his post-doctoral fellowship in gastroenterology at Baylor College of Medicine.

Abdelli is a postdoctoral scholar in Naser's lab and is supported, in part, by the UCF [Preeminent Postdoctoral Program](#). She received her bachelor's degree from University of Science and Technology Houari Boumediene in Algeria and then came to UCF in 2014, where she earned her master's and PhD degrees.



► Top Faculty Sponsored Research

- Cristina Fernandez-Valle
- Dinender Singla
- Yoon-Seong Kim
- Hongxia Zhou
- Xugang Xia

► Top Published Faculty

- Michal Masternak
- Dinender Singla
- Kenneth Teter
- Sampa Parthasarathy
- Kyle Rohde
- Julia Soulakova

► Articles and Citations

3,138 Articles Published
73,213 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.

Publications include books, articles and conference proceedings for calendar year 2019.

\$15.56M

In grant funding awarded to the
College of Medicine

\$10.09M
Federal

\$3.56M
Industry and Other

\$1.91M
State and Local





About the College of Nursing

By: Carolyn Petgano

Using Augmented Reality to Prepare Healthcare Workers for Stressful Scenarios

A train derailment. A tornado. A building collapse. Mass casualty situations such as these cause a large and sudden influx of patients into a hospital, which can stress the system and the healthcare workers providing care.

Research being carried out jointly by faculty in UCF's [College of Nursing](#) and the University of Florida Department of Computer and Information Science and Engineering is examining whether augmented reality (AR) simulations of mass casualty scenarios can trigger stress in trainees, and hence be used to help teach stress management techniques.



Lessons learned from this training can be applied to other situations, including biological mass casualties like the current COVID-19 pandemic.



Initial findings were presented at the Spring 2020 IEEE Conference on Virtual Reality and 3D User Interfaces.

“Mass casualties are totally unexpected situations that involve large groups of citizens,” says Frank Guido-Sanz, a UCF lead nursing researcher on the project. “Lessons learned from this training can be applied to other situations, including biological mass casualties like the current COVID-19 pandemic.”

In addition to Guido-Sanz's academic and research roles, the acute care nurse practitioner has been caring for COVID-19 patients at Jackson Memorial Hospital in Miami. The U.S. Department of Health and Human Services also deployed him following Hurricane Irma and Hurricane Harvey as a lead nurse practitioner volunteer member of the National Disaster Medical System.

“COVID-19 was expected, however, when you exhaust your hospital, which is what is happening across the country, you have to put out provisional hospitals, tents and centers and essentially have to triage and discern symptoms as in a mass casualty situation,” he says.

Creating Stress to Manage Stress

Previous studies have shown that virtual medical training simulations can elicit the same stress levels experienced in real-world crisis management scenarios. Backed by funding in part from the National Science Foundation, the researchers are using a commercial augmented reality head-mounted display system to create the appearance of dynamic 3D virtual trauma patients.

One benefit of using AR is that the simulation can embed rich and flexible computer graphic humans and objects that are realistically embedded in a real place. “There's evidence that increased realism can lead to more effective training,” says Greg Welch, the AdventHealth Endowed Chair in Healthcare Simulation at the College of Nursing and a UCF professor of computer science, modeling and simulation.

“We want students to practice and learn in an environment that is as realistic as possible,” says fellow researcher Mindi Anderson, a Certified Healthcare Simulation Educator-Advanced (CHSE-A) and director of UCF's Healthcare Simulation graduate nursing program. “AR allows us to replicate multiple injury stimuli, such as visual and auditory, and thus, more fully prepare students as providers.”

Desiree Diaz, another CHSE-A and a College of Nursing researcher on the project, explains, “With AR, we can easily simulate a burn victim with seared tissue. Whereas, with other simulation modalities of human-actor patients and manikins (sic), that type of wound would need to be created using makeup, wax and other materials similar to how it's done in the movies. This can be both time-consuming and less realistic.”

Equipping Students for the Real World

The UCF College of Nursing hopes to integrate nursing mass casualty triage in AR simulations as part of future advanced practice nursing classes. Such simulations will allow students to practice stress management techniques and successful triage before they need it in a real-world disaster situation.



▶ Top Faculty Sponsored Research

- Gregory Welch
- Donna Neff
- Susan Chase
- Nora Warshawsky

▶ Top Published Faculty

- Gregory Welch
- Mindi Anderson
- Desiree Diaz
- Victoria Loerzel

▶ Articles and Citations

681 Articles Published
5,838 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.

Publications include books, articles and conference proceedings for calendar year 2019.

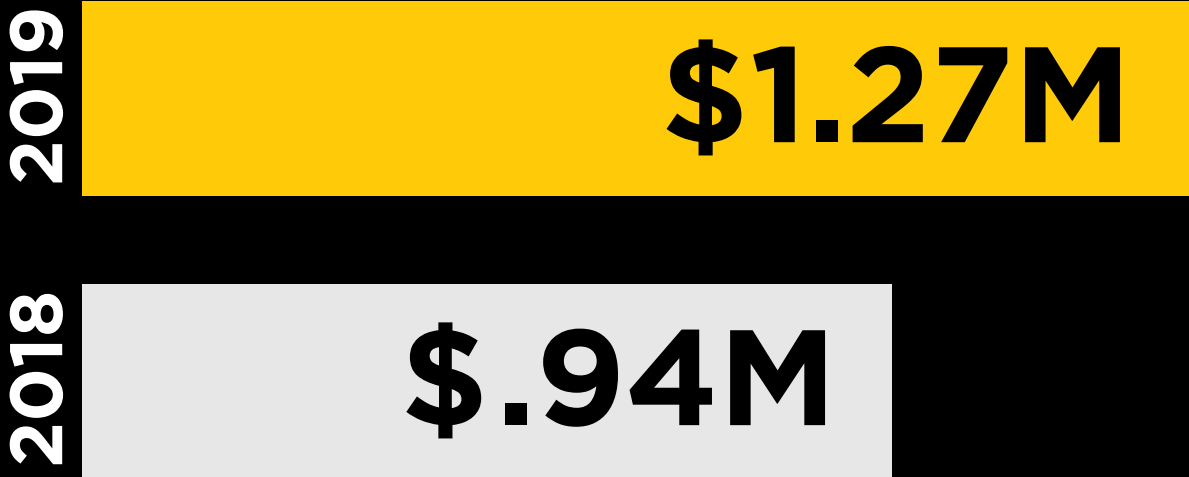
† Top funder has left the university.

\$1.27M

In grant funding awarded to the
College of Nursing

\$1.06M
Federal

\$.21M
Industry and Other





About the College of Optics and Photonics

By: Robert Wells

College of Optics and Photonics Researchers Help Develop Real-Time Blood Monitor

A real-time blood monitor developed by the University of Central Florida's [College of Optics and Photonics](#), UCF's [College of Medicine](#), and Orlando Health may save doctors critical time during life-and-death operations.

The monitor, developed in 2017, has continued to show promise through two experimental trials and is set to enter the third round soon. If the method continues to be effective, the researchers will work toward moving it into FDA-regulated clinical trials, after which the monitor could one day become commercially available.

The device provides instant blood analysis to surgeons to let them know if blood is coagulating during surgery. Blood coagulation during an operation can be deadly, and current tests can take up to 10 minutes to provide results. The tests must be administered every 20 to 30 minutes for procedures that sometimes last four hours. This results in a large time gap where there is a lack of up-to-date information, when every second matters, says the researchers developing the monitor.

The collaboration to create the monitor came about as the result of an Office of Research meeting where College of Medicine professor William DeCampi learned about CREOL professor Aristide Dogariu's work using light scattering from a laser to measure the thickness of various fluids and mixtures.

Dogariu is a Pegasus professor of Optics and Photonics, and Dr. DeCampi is chief of Pediatric Cardiac Surgery at Orlando Health Arnold Palmer Hospital and a professor of surgery in the [Department of Clinical Sciences](#) at the College of Medicine.

"It's extremely exciting to see that something that you have developed and tested in the lab can actually be applied for measurements that could eventually change the strategy in this clinical problem," Dogariu says.

DeCampi says he saw immediate potential in the methodology Dogariu has been researching and says the method could be lifesaving.

"I've been in clinical practice for well over two decades, and quite honestly, I have seen enough patients die of rapid changes in their clotting and coagulation status in various settings, that I could see right away the potential for this technique," Dr. DeCampi says.



It's extremely exciting to see that something that you have developed and tested in the lab can actually be applied for measurements that could eventually change the strategy in this clinical problem



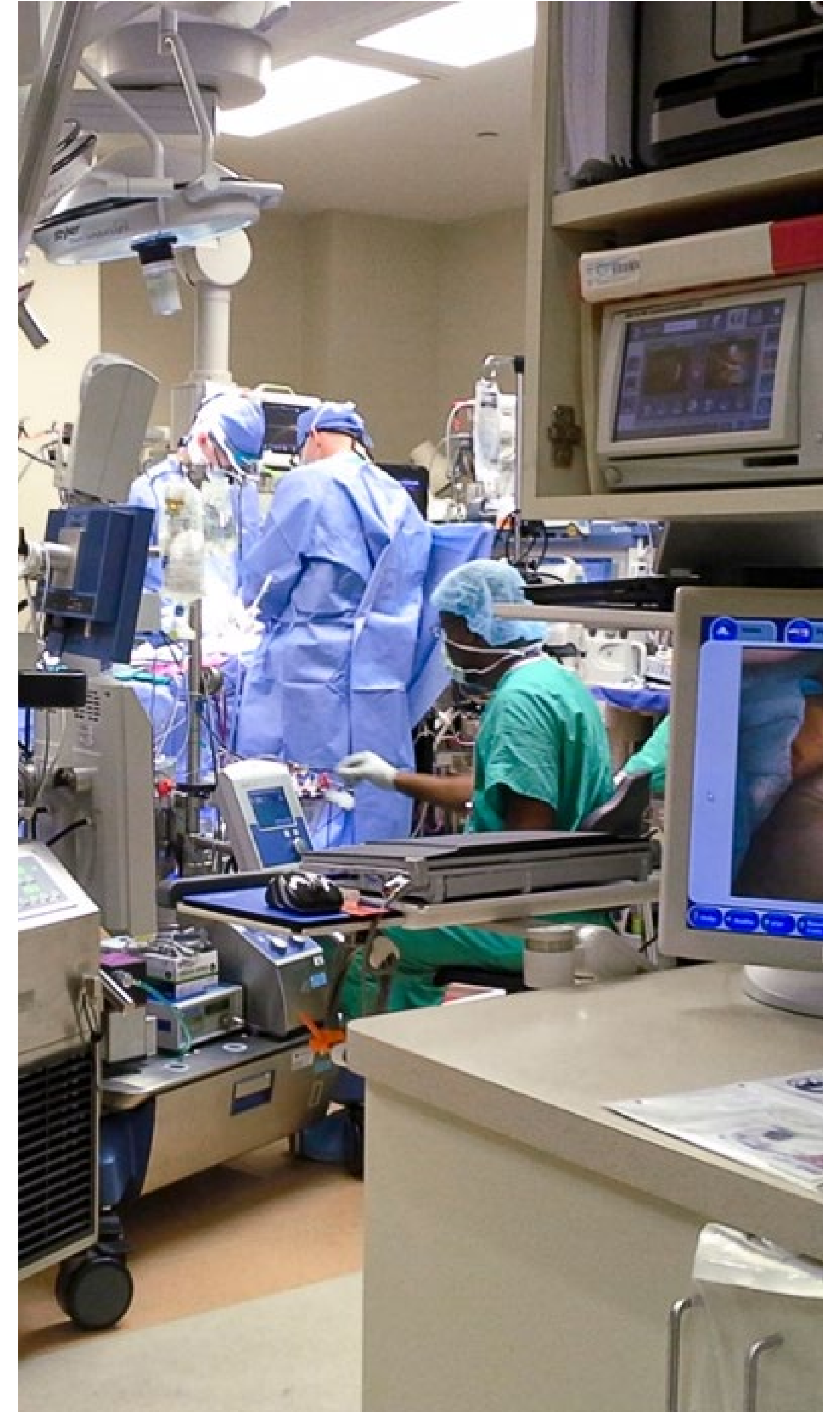
The monitor uses an optical fiber that beams a scattering of laser light at blood to determine how rapidly red blood cells are vibrating based on how the light bounces back. Slow vibration is a sign blood is coagulating and to counter the coagulation, doctors must administer blood-thinning medication.

Clots can lead to life-threatening conditions such as stroke or pulmonary embolism. Coagulation is a particular concern during cardiovascular surgery since a clot can shut down the heart-lung machine used to circulate a patient's blood.

Key to the work has been the research by CREOL graduate students J. R. Guzman-Sepulveda, who graduated with his doctorate from the college in 2019, and current doctoral students in the college, Mahed Batarseh and Ruitao Wu.

In a pilot study of 10 pediatric patients, the researchers found the method to be as effective as the clinical gold standard blood coagulation test known as activated clotting time or ACT.

A second study of 30 pediatric patients also found it as effective as ACT as well as another standard blood test, thromboelastography. The upcoming study will include pediatric and adult patients.



► **Top Faculty Sponsored Research**

- Demetrios Christodoulides
- Ayman Abouraddy
- Robert Crabbs
- Bahaa Saleh

► **Top Published Faculty**

- Shintson Wu
- Demetrios Christodoulides
- Rodrigo Amezcua Correa
- Ayman Abouraddy
- Kathleen Richardson

► **Articles and Citations**

6,062 Articles Published
90,616 Citations

* Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.

Publications include books, articles and conference proceedings for calendar year 2019.

\$15.96M

In grant funding awarded to the
College of Optics and Photonics

\$9.76M
Federal

\$6.20M
Industry and Other

2019	\$15.96M
2018	\$16.86M



About the Rosen College of Hospitality Management

By: Susan Vernon-Devlin and Arthur Huang PhD

The landscape of work is rapidly evolving shaped by technological, social, and economic forces.

The COVID-19 pandemic demonstrated that the workforce and economy must be better prepared to effectively adapt to unforeseen, swiftly developing circumstances. As HOT (Hospitality, Operations, and Transportation) industries have been heavily impacted by the COVID-19, workers need to be more agile and resilient to prepare for the future of work.



Users of this platform will have the opportunity to understand both the positive and negative impacts of AI on future jobs in the hotel and restaurant industry.



Dr. Arthur Huang, Assistant Professor from the [Rosen College of Hospitality Management](#) and his collaborators, are looking for ways to help workers be flexible. The interdisciplinary team is working on developing a technology-enabled platform to support workers' updating of skills, retraining, and career guidance in the context of Artificial Intelligence (AI) and COVID-19.

“In order to investigate the evolutionary path of historical job tasks for various jobs in the HOT industries, we have to begin by asking three questions: (1) how AI technology was gradually incorporated into jobs in the Human Resources industry: (2) how individual workers adapted to this process: and (3) what kinds of support had been provided for workers and how effective was it,” says Huang about the research project.

To ask the questions, Huang and the other researchers, Nan Hua, department chair of Hospitality Management at the Rosen

College, Sevil Sonmez, associate dean for faculty, research and graduate programs at UCF College of Business, and Zhishan Guo, an assistant professor in the Department of Electrical and Computer Engineering, are interviewing hospitality employees, analyzing job tasks and training documents, and determining the potential changes at work.

Why the interdisciplinary research team?

“The myriad entry-level jobs in these industries are often the first stepping stones to success in many other parts of the economy; however, the economic significance has not been sufficiently reflected in the support for their core workforce,” Huang says. “The average hourly wages, benefits, job retention, and career development support are among the lowest of all industries. This complex problem requires a convergent problem-solving approach with the need to draw expertise and experience from different disciplines and various stakeholders.”

In addition to the interviews, the research team has also been collecting secondary data, by searching online websites such as Indeed.com, Monster.com, and others, to determine what skills job postings are identifying as necessary for those hospitality industry jobs. The research team has developed deep learning algorithms to analyze the critical skills at the job task level based on the job postings, which have been further validated by industry experts who want team members who are more familiar with AI when they look at potential hires.

“An AI-powered online platform will be developed from this research project to deliver advice for user reskilling or upskilling needs and improving user choices of career paths. Users of this platform will have the opportunity to understand both the positive and negative impacts of AI on future jobs in the hotel and restaurant industry,” Hua says.

The National Science Foundation provided UCF \$1 million for the project as part of the C-Accel Phase I competition. The research team also received customized training on conducting convergence research provided by the NSF to ensure the success of this project. With the changes in the hospitality industry due to the pandemic coronavirus COVID-19, this research will have an impact on person-to-person contact in the industry moving forward. Based on their initial findings and prototyping, Huang and his research team plan to pursue additional grant funding opportunities to develop a job matching platform for America's vulnerable workers.



► Top Faculty Sponsored Research

- Marissa Orlowski
- Sergio Alvarez
- Manuel Rivera
- Robertico Croes
- Kelly Semrad

► Top Published Faculty

- Fevzi Okumus
- Wei Wei
- Asli Tasci
- Tingting Zhang

► Articles and Citations

1,350 Articles Published
16,128 Citations

*Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.

Publications include books, articles and conference proceedings for calendar year 2019.

\$270,000

In grant funding awarded to
the Rosen College of
Hospitality Management

\$230,000
Industry and Other

\$40,000
State and Local





About the College of Sciences

By: Kyle Martin

UCF biologist William Crampton is attracting global attention for recording the highest-ever voltage generated by an electric eel — or any living creature, for that matter.

Associate Professor Crampton discovered the record-shattering 860-volt eel during an expedition to the Tapajós River in Brazil. The eel belongs to one of two new species described in September 2019 by an international team of scientists in the journal *Nature Communications*.



It's a testament to how important it is to preserve the Amazon's incredible biodiversity.



The eels are the first new species since Carl Linnaeus described the first, *Electrophorus electricus*, more than 250 years ago. The species with the new record voltage is named *Electrophorus voltai* after the Italian scientist Alessandro Volta, inventor of the electric battery.

“When I measured the Tapajós eel I immediately knew something was unusual,” says Crampton, an expert on electric fish and one of the lead authors on the Nature Communications paper.

The voltage of most home and business outlets today is 120 volts.

News of the discovery has spread well outside the science community to media outlets around the world. Shortly after the announcement, Crampton was contacted by the Guinness Book of World Records to confirm the record voltage. The previously reported maximum voltage was about 600 volts.

Electrophorus voltai was officially recognized as both “most electric fish” and “most electric animal” by the organization that same month.

Crampton's record-breaking eel was unexpected. It began while filming an episode of National Geographic's *Monster Fish* with host Zeb Hogan in 2014 when a photographer was shocked by a large eel that had emerged from a hole in the river bank. While shocks from electric eels are unpleasant, they're not deadly. However, this one left the photographer pale and shaky.

The degree of the shock was a clue that the eels in this part of the Amazon jungle are different, and a test proved that suspicion. Crampton began the process of measuring the voltage by stretching out the fish on a non-conductive plastic tarp and placing electrodes on its tail and snout. These electrodes were connected to a voltage-measuring oscilloscope. Because electric eels are air-breathing fish, being out of the water for a few moments does not harm them.

Crampton speculates the unusually high voltage of *Electrophorus voltai* may be related to the low electrolyte content of the rivers it inhabits, but he says that's for future research.

One of the biggest takeaways, Crampton says, is the discovery of the two new species after more than 250 years of scientific discovery and research in the Amazon.

“It's a testament to how important it is to preserve the Amazon's incredible biodiversity,” Crampton says. “We're still in the pioneering phase of uncovering what's out there.”



► Top Faculty Sponsored Research

- Deborah Beidel
- Yan Fernandez
- Amie Newins
- Clint Bowers
- Zenghu Chang

► Top Published Faculty

- Peter Hancock
- Kuppalapalle Vajravelu
- Zenghu Chang
- James Szalma
- Patrick Spence

► Articles and Citations

8,610 Articles Published
163,811 Citations

*Data provided by Institutional Knowledge Management-Academic Analytics for tenured and tenured-earning faculty.

Publications include books, articles and conference proceedings for calendar year 2019.

\$27.38M

In grant funding awarded to the
College of Sciences

\$21.67M
Federal

\$4.57M
Industry and Other

\$1.14M
State and Local

2019	\$27.38M
2018	\$26.14M



About the College of Graduate Studies

By: Zenaida Gonzalez Kotala

The [College of Graduate Studies](#) has many responsibilities when it comes to graduate students. They provide everything from admissions, financial support, academic progress to verifying students have completed all requirements for graduation. On the academic side, the College creates policies and procedures and program and curriculum development, offers guidance to graduate faculty, as well as thesis and dissertation oversight and provides support to a host of administrative units that are essential to the graduate experience.

Research is an important component of the graduate school experience, which is why Graduate Studies supports so many research opportunities for its students.

In 2019-2020, the school enrolled **11,929**, about half of which were members of underrepresented groups. Of the total, **2,548** students are seeking doctorates, and **8,152** are in master's degree programs. The rest are in a variety of advanced graduate certificates. Most of the students (89 percent) came from Florida, and 60.7 percent are women. The average age is 30 years old for master students and 32 for doctoral students.

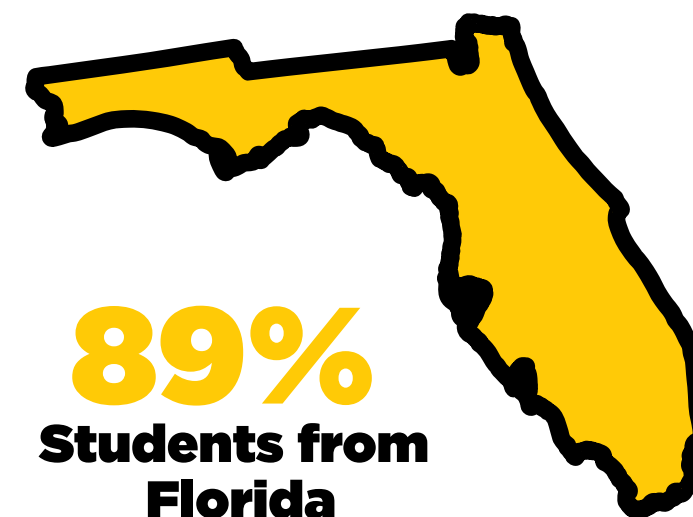


Many of those students took advantage of the numerous research-focused services the College provides. Among the resources it offers:

- [Graduate Research Forum](#)
- UCF's [Annual Student Research Week](#) co-sponsor
- Hosting the [3MT competition](#)
- Providing limited [student presentation grants](#) to attend scientific conferences or conduct field research
- Providing access to online research data management resources
- Facilitating research [workshops and training](#)
- [Graduate Research Assistant funding](#)

The College oversees the [Graduate Student Center](#) where students can study, collaborate, and find resources. The college also manages the [Pathways to Success](#) program that provides students with access to a variety of training, workshops, and guest speakers that regularly assist students with their research ambitions.

Lastly, the college [profiles students and faculty](#) members on its website, often highlighting their research success stories.



GRADUATE STUDENT SPOTLIGHT

Kritika Kedarinath

Doctoral student Kritika Kedarinath earned her Bachelor of Technology Degree in Biotechnology from Vellore Institute of Technology in India, and her [master's degree in biotechnology](#) from the University of Central Florida. During her time as a master's student, she enjoyed the research that she was involved in, which drove her to pursue a doctorate in the same field. Her research is in viral pathogenesis and immunology, specifically the mechanisms that promote and restrict Zika virus growth. Currently, Kedarinath is pursuing her PhD in [Biomedical Sciences](#) at UCF.

In addition, to wanting to study at UCF because of her interest in the research in her field, Kedarinath was also drawn to UCF because of the opportunity to be a teaching assistant, which enabled her to teach a laboratory section of human physiology. She also appreciates the supportive atmosphere at UCF, saying, "Everyone from the students to faculty, to the administrators, are all here to advise and help any way they can."

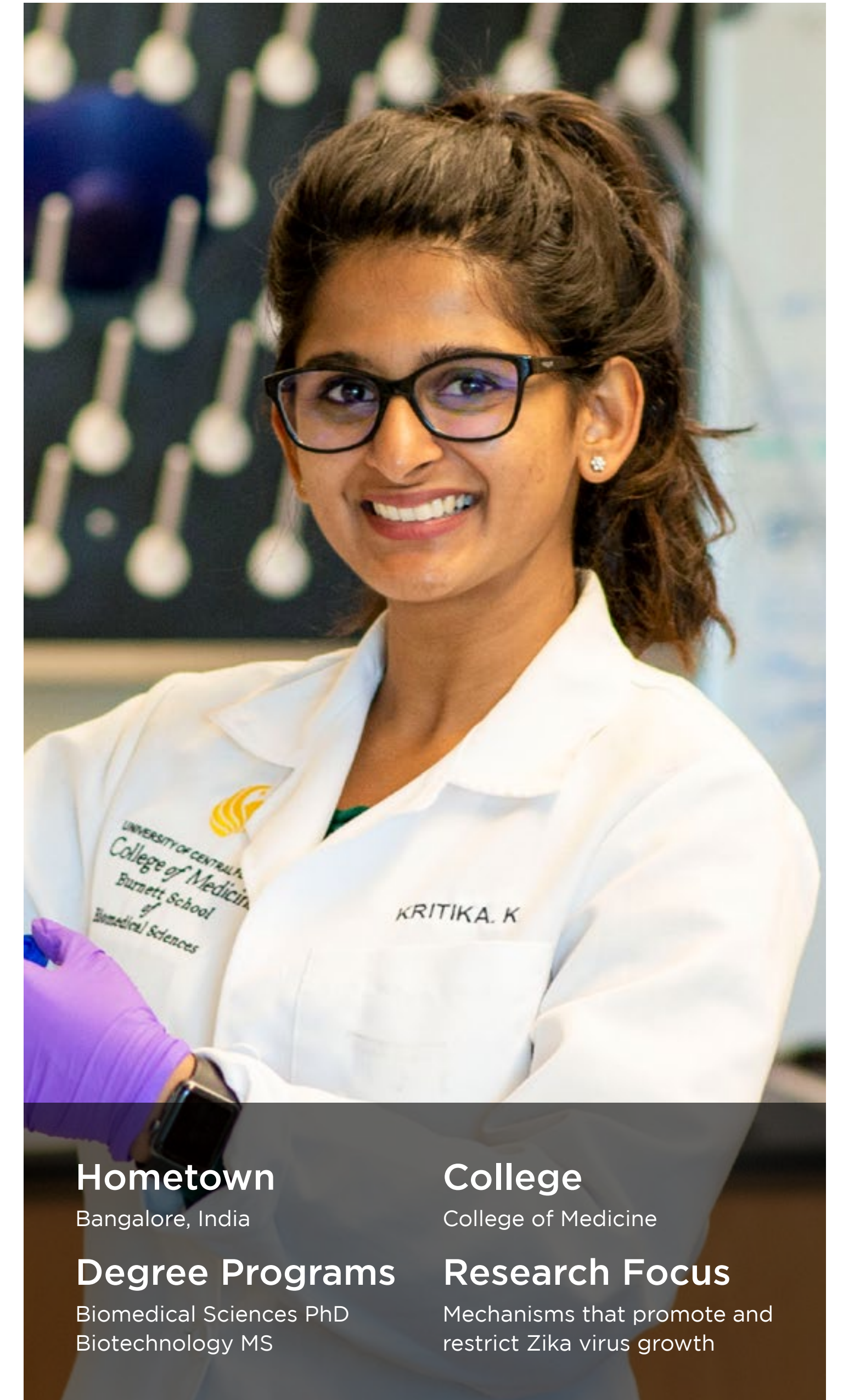
Kedarinath's advice to her fellow students comes from her advisor and is advice that she says has learned to incorporate into her own graduate career – the importance of time management. "If you can manage your time efficiently, it can increase your productivity greatly. It is also very important to try and keep a healthy balance between school and your hobbies or doing whatever makes you happy." Kedarinath takes her own advice by being involved in running, saying that being part of the UCF Half Marathon Training Program at the Recreation and Wellness Center inspired her to get into the sport. She now runs multiple races a year and finds it to be a great way to destress and stay healthy.

If you can manage your time efficiently, it can increase your productivity greatly. It is also very important to try and keep a healthy balance between school and your hobbies or doing whatever makes you happy.

While at UCF, Kedarinath has been the recipient of multiple awards: the Solomon Klotz Excellence in Immunology and Allergy Research Award (2018), the ORC Doctoral Fellowship (2017), and was Secretary of the Biomedical Sciences Graduate Student Association (BSGSA) (2016). After graduation, she would like to pursue research as a postdoctoral fellow at the National Institutes of Health.

Highlights:

- Biomedical Sciences Graduate Student Association
- UCF Half Marathon Training Program Participant
- [2018 Graduate Fellows Symposium Participant](#)



Hometown

Bangalore, India

Degree Programs

Biomedical Sciences PhD
Biotechnology MS

College

College of Medicine

Research Focus

Mechanisms that promote and restrict Zika virus growth



About the School of Modeling Simulation and Training

By: Robert Wells

The [School of Modeling, Simulation and Training](#) (SMST) was established in 2018 to formally recognize the growth and success of the Institute for Simulation and Training (IST) and its Modeling and Simulation Graduate Program. Both are housed in the school. Its mission is to conduct cutting-edge human-centered simulation research and execute a world-class transdisciplinary graduate program to create leaders in modeling, simulation, and training.

IST has been successfully partnering across academia, government, and private industry for more than 40 years. It is one of the nation's leading research centers for modeling, simulation, training, and virtual/mixed reality research for both defense and commercial applications and in FY'20 generated \$13.5 million in external research funding.

The relationships with government and industry also provide students with incredible opportunities to receive hands-on experience and impact the evolution of technology. SMST faculty have appointments in a wide range of academic units, including business, chemistry, computer science, history, industrial engineering, interactive media, medicine, nursing, philosophy, physics, and psychology. Since its inception, the graduate program has awarded 391 master's degrees and 115 doctoral degrees.



Since its founding in 1982, UCF's Institute for Simulation and Training (IST) has become an internationally recognized research institute within UCF's [School of Modeling, Simulation and Training](#).

It conducts basic and applied research in the fields of modeling, simulation, training, and virtual and mixed reality research for both defense and commercial applications.



We want to attract, develop, and retain diverse faculty and staff who are among the best in their fields, generate new knowledge and innovations, and improve the school's cybersecurity posture while disseminating cybersecurity knowledge to our community.



The institute has joint faculty appointments across disciplines at UCF, works with public and private stakeholders, and actively supports the university's modeling and simulation education initiative through the School of Modeling, Simulation and Training's graduate program.

Over the past year, the institute has participated in successful public outreach events, seen its members recognized for their expertise and worked to respond to the COVID-19 pandemic.

IST had a major presence at the national Interservice/Industry Training, Simulation and Education Conference where it shared a booth with the National Center for Simulation. Additionally, David Wells, IST's Deputy Director, hosted the Signature Special Event on Multidomain Battlespace Training, which was one of the top 10 most attended events there.

IST's Cyber Academy Challenge organized by Bruce Caulkins, director for UCF's [Modeling and Simulation of Behavioral Cybersecurity Program](#), included participation from all the military service academies, University of Florida, University of South Florida, and two UCF teams, Hack@UCF and Army ROTC Cyber Platoon. This was the first use of U.S. Cyber Command's Persistent

Cyber Training Environment by students, and Hack@UCF placed first in the competition.

IST also organized the CyberTRAINsitions workshop held at the Orange County Convention Center. The event brought in more than 160 people from regions across Europe and the U.S. to discuss issues surrounding humans in cyberspace. The event hosted Vice Admiral Nancy Norton, director of the Defense Information System Agency, and encompassed four tracks focusing on training and simulation in cybersecurity, cybersecurity strategy, and policy, human aspects of cybersecurity, and promoting women and underrepresented communities in cyber.

IST's Lori Walters and Stephen Fiore were both recipients of UCF's Luminary Award, which recognizes faculty members across all disciplines for being academic leaders in their field and conducting work that has a significant impact on the world. Walters is the director of UCF's [ChronoPoints](#) laser scanning initiative and a research associate professor at IST and UCF's Department of History. Fiore is the director of UCF's Cognitive Sciences Laboratory and a professor in UCF's [Department of Philosophy](#) and School of Modeling, Simulation, and Training.

Walters was also the recipient of UCF's Teaching Incentive Program award from [Faculty Excellence](#), which rewards teaching productivity and excellence.

Peter Hancock was inducted into the National Center for Simulation's Class of 2019 Hall of Fame. Hancock is a Provost Distinguished Research Professor in UCF's [Department of Psychology](#) and IST, as well as at UCF's [Department of Civil and Environmental Engineering](#) and UCF's [Department of Industrial Engineering and Management Systems](#).

Jack Stubbs, director of UCF's [Prototype Development and 3D Printing Lab](#), and his team rose to the challenge to combat the COVID-19 pandemic by working with Orlando Health and 3D printing company Stratasys to provide 3D-printed medical face shields and develop respiratory masks in multiple sizes for healthcare providers.

IST's Deputy Director Wells says the institute's focus for the coming year has three main goals.

"We want to attract, develop, and retain diverse faculty and staff who are among the best in their fields, generate new knowledge and innovations, and improve the school's cybersecurity posture while disseminating cybersecurity knowledge to our community," Wells says.





About the College of Undergraduate Studies

By: Barbara Smith

When Alina Aftab was eight years old, her mother’s sewing machine stopped working and Aftab wanted to understand why. She identified the problem was with the bobbin, took it apart and fixed it. She didn’t realize at the time that she set in motion a plan that would lead her to become an aerospace engineering major at UCF.

Aftab transferred from Broward College in her junior year and last summer was admitted to the [Burnett Honors College](#).

“My interest in aerospace engineering began in an honors physics class at Broward College when I wrote a research paper on asteroid mining,” says Aftab.

Asteroid mining is something scientists and engineers around the world are exploring. It would allow companies to mine potential iron and precious metals from asteroids and spent comets and use the material on Earth, converting them into fuel for spacecraft or using the material to construct on other planets.

“I studied the potential benefits of asteroid mining, and it made me see the possibilities of space exploration,” Aftab says. “For most people, the concept can seem like science fiction. But not anymore. It can happen. It’s exciting research.”

Aftab learned about the many research opportunities at UCF from the [Office of Undergraduate Research](#), which is part of the Division of Student Learning and Academic Success. In 2019, she participated in the Summer Undergraduate Research Fellowship (SURF) program and presented at the Showcase of Undergraduate Research Excellence.

The focus of her first research project was researching materials for solid oxide fuel cells which are efficient and environment-friendly devices that are used to convert chemical energy to electric energy. She saw the opportunity in the Undergraduate Research database that lists available research projects and approached her professor, Nina Orlovskaya of the College of Engineering and Computer Science’s Department of Mechanical, Materials, and Aerospace Engineering.

Aftab began studying sintering behavior, structural properties, and catalytic properties of ytterbia, which is a rare earth oxide that is used in sensors, lasers, and as sintering aids for ceramics. Sintering is the process of densifying a material by compacting and heating it.



Know what you want and go for it. As long as you work hard and have strong relationships with mentors, you will thrive.



“For the sintering study, I looked at the best temperature and conditions to get the ytterbia samples to be 90 percent or more dense,” she says. “I have performed various tests such as Raman spectroscopy and scanning electron microscopy to study the topography, composition, and morphology of ytterbia’s structural properties. Raman spectroscopy is the technique used to obtain information about the vibrational modes of a compound.

Currently, the focus of Aftab’s research is studying the properties of the chemical compound of ytterbia. She works with Physics Researcher Richard Blair to perform catalytic experiments on ytterbia samples

So far, she’s completed two experiments and is now working on analyzing the resulting data. This summer, she also is participating in SURF to publish the results of the research. She has also sent samples to Oak Ridge National Laboratory, where researchers are performing neutron diffraction on the samples.

“Research has been a great experience,” Aftab says. “Dr. Nina has helped me learn how to manage projects, become a better writer, and learn to interact with fellow students and faculty members.”

Aftab plans to graduate in Spring 2021 and hopes to work at an aerospace company.

Professor Orlovskaya believes Aftab should have no trouble landing a job after graduation.

“Alina is a dedicated researcher and has a thirst for knowledge,” Orlovskaya says. “I can see her potentially working at NASA or SpaceX. Hopefully, she’ll pursue a graduate degree in the future.”

Aftab’s advice for students considering a STEM major, “know what you want and go for it. As long as you work hard and have strong relationships with mentors, you will thrive.”



RESEARCH CENTERS



About the Florida Space Institute

By: Zenaida Gonzalez Kotala

The [Florida Space Institute \(FSI\)](#) may not be the biggest group on campus, but it is mighty. The team of 12 researchers secured \$9.13 million in 2019 and were involved in some of the most exciting space news of the year.

Since FSI was created in 1996, the group has supported the development of Florida's space economy through research, education, and commercial efforts. The team's research ranges from studying the Earth's upper atmosphere to the origin of the planets and from the workings of asteroids to propulsion technologies for high-Mach aerospace vehicles. FSI administratively houses the Florida Space Grant Consortium (FSGC) for NASA, and the group operates the Space Research Initiative (SRI) for the State of Florida.

FSI is involved in space missions as diverse as high-altitude rocket launches, next-gen suborbital flights, the NASA Cassini mission to Saturn, and NASA's Explorer program. FSI members are also the lead investigators who helped UCF get a multi-million grant to operate the [Arecibo Observatory](#) in Puerto Rico.

Among FSI's biggest successes in 2019:

- Enhancing operations at the Arecibo Observatory, which received big grants that helped it make repairs from hurricane damage, install new equipment, and continue its NASA program, which characterizes near-earth asteroids.
- FSI received a grant to run workshops to help investigators prepare proposals to get time on the James Webb Space Telescope, which is scheduled to launch in October 2021. It's anticipated the telescope will open the door to many discoveries. The selection process was highly competitive and FSI was one of only 28 sites selected nationwide.

"We had a pretty good year," says FSI Director Ray Lugo.

"Becoming what I call a James Webb school, that's a pretty big deal. There were so many successes. I couldn't be prouder of our researchers. They are involved in so many areas critical to space exploration. They are simply amazing."

For example, Phil Metzger was part of several grants that are funding work about moon dust. It's critical that scientists better understand the nature of lunar dust so that its potentially damaging effects to people, equipment, and spacecraft during lunar landings can be minimized. Metzger, Julie Brisset, and others at FSI are working on various projects looking at dust and its impact on equipment, while FSI's Esther Beltran, a medical doctor, works with other university partners on protecting people.



**There were so many successes. I couldn't be prouder of our researchers.
They are involved in so many areas critical to space exploration.
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Others at FSI continue to produce research about other objects in the solar system and beyond. For example, Maria Womack was part of the team that published a study that may fundamentally alter our understanding of how comets arrive from the outskirts of the solar system and are funneled to the inner solar system coming closer to Earth.

In 2020, FSI expects to grow its relationship with the Arecibo Observatory, which UCF manages through an agreement with the National Science Foundation, Lugo says. It also plans to finalize naming a center in honor of astrophysicist Stephen Hawking and establish a center focused on exoplanets at Arecibo.





About the Florida Solar Energy Center

By: Simone Rousseau

The [Florida Solar Energy Center](#) (FSEC), located on UCF's regional campus in Cocoa, was created by the Florida Legislature in 1975 to serve as the state's solar energy research institute. FSEC has grown beyond its initial focus and now includes all aspects of renewable energy, including solar technologies, energy storage, electric vehicles, building science, energy efficiency technologies, education, and policy analysis.

FSEC research demonstrates that you can heat water for as little as a dime a day using PV-assisted heat pump water heaters. FSEC researchers have a patent pending on a cloud-based control strategy for integrating two types of space conditioning systems, which provide improved savings and reliability. FSEC has a total of 47 active patents (since 2003) and four patents pending, two of which were filed in 2019.

The center had a stellar 2019, landing several national projects, including leading a study on "floating" solar to evaluate the performance and durability of waterborne solar photovoltaic (PV) systems and how they affect water ecosystems. Another project monitors the performance of large-scale, commercial PV systems. Researchers are using machine-learning techniques to detect any performance losses in the field at an early stage. FSEC is also a key partner on a groundbreaking national project to demonstrate how hydrogen storage can be used as a backup energy source to solar, which would make the electrical grid a more reliable, affordable and sustainable resource.

On the local front, the center helped two cities work toward their renewable energy goals. The city of New Smyrna Beach called on the center to evaluate 18 municipal buildings, identify energy-saving solutions, and determine if solar was feasible. The city of Orlando partnered with the center to help develop their roadmap to achieve 100 percent Renewable Energy by 2050.

On the education front, the center focuses on programs that help students throughout Florida get excited about energy research and that help the general public learn how to become more energy efficient. The center held its 19th Annual EnergyWhiz for students in grades 4th-12th. With a focus on sustainability and renewable energy, EnergyWhiz provides students with a forum to demonstrate their STEM capabilities through project-based learning activities. The education team also supports several expos throughout the year, such as the Junior Solar Sprint and Solar Cooking competition to give students hands-on experience at a local level. More than 1,000 students from across the state participated in the EnergyWhiz activities. The center is also moving to a virtual learning platform for energy practitioners and has developed an online Certified Energy Modelers program.

The center had a stellar 2019, landing several national projects, including leading a study on "floating" solar to evaluate the performance and durability of waterborne solar photovoltaic (PV) systems and how they affect water ecosystems.

FSEC has rebranded as the FSEC Energy Research Center to better reflect its extensive research capabilities resulting in nationally and internationally recognized programs. The center's robust training programs provide state-of-the-art energy education to the state's teachers and energy industry workforce. FSEC's multidisciplinary and diverse faculty and staff are leading the country in the transition to a clean renewable energy future.





About the NanoScience Technology Center

By: Robert Wells

UCF's [NanoScience Technology Center](#) was established in 2004 to develop a cutting-edge research program in materials and nanotechnology, provide high-quality training for students, and facilitate the advancement of innovations to solve real-world technology challenges.

Since then, the center's faculty has graduated more than 100 master's and doctoral students, published more than 1,000 scientific articles, secured dozens of patents, and initiated six startup companies. The multidisciplinary center has 22 faculty members with joint appointments in five colleges. Many of the scientists are the leading researchers in nanoscale materials and engineering and are making a major impact on nanotechnology in society and industry. The center has received nearly \$7 million in research grants from federal agencies and industry each year for the past two years.



The NanoScience Technology Center contributes significantly to UCF's effort in becoming a prominent university in growing research and graduate programs, increasing community impact through partnerships, strengthening the center's faculty and staff, and leading innovation in higher education.



The center continued to excel in 2019 with faculty promotions, awards, and new capabilities. Ellen Kang, an assistant professor in the center with joint appointments in UCF's [Department of Physics Graduate Faculty](#) and [Burnett School of Biomedical Sciences](#), received the National Science Foundation CAREER Award that is given to early-career faculty who serve as academic role models in research and education and lead advances in their organization.

Jayan Thomas and Qun Huo were promoted to professor, and Arkadiy Lyakh and Yajie Dong were promoted to associate professor with tenure. Thomas' research involves developing nanoarchitecture energy conversion and storage devices and photorefractive polymers with improved efficiency. Huo's research involves developing new diagnostic and screening tests for infectious diseases and early cancer detection. Lyakh researches the physics of intersubband transitions and carrier transport through multi-layered semiconductor structures, low dimensional semiconductor devices, monolithic sensors, and infrared spectroscopy. Dong's research focus is semiconductor nanomaterials for information and energy applications, quantum dot light-emitting devices, and organic-inorganic hybrid solar cells.

The center also now has access to new cutting-edge instruments, including a Raman microscope that was acquired through an award from the Major Research Instrumentation Program at the National Science Foundation. The microscope allows users to characterize the chemical composition of materials and specimens.

"The NanoScience Technology Center contributes significantly to UCF's effort in becoming a prominent university in growing research and graduate programs, increasing community impact through partnerships, strengthening the center's faculty and staff, and leading innovation in higher education," says Lei Zhai, the center's director and a professor in UCF's [Department of Chemistry](#).





About the Center for Research in Computer Vision

By: Robert Wells

UCF's [Center for Research in Computer Vision](#) is top-ranked, placing No. 5 in the U.S. and 11th in the world in the area of Computer Vision based on publications from 2010 to 2020, according to national metrics-based ranking system CSRankings.org.

The center's goal is to promote basic research in computer vision for applications in national defense and intelligence, homeland security, environment monitoring, life sciences, and biotechnology and robotics.

The center received more than \$3.61 million in funding this past year including Ulas Bagci's research in biomedical image analysis. Bagci, an assistant professor in UCF's Department of Computer Science, received \$2.5 and \$1.11 million from the National Institutes of Health and the Florida Department of Health, respectively, to further this line of work.

Several members of the center were also recognized throughout the year for their contributions to the field.

Mubarak Shah, a UCF Trustee Chair Professor in the [Department of Computer Science](#) and director of the center, received multiple awards in 2019. He was recognized by AMiner, an online service for academic social network analysis and mining, as the Most Influential Scholar Honorable Mention for his outstanding and vibrant contributions to the field of computer vision between 2009 and 2019. He was named a fellow of the National Academy of Inventors and also won the 2019 Association of Computing Machinery Special Interest Group on Multimedia (SIGMM) award for Outstanding Technical Contributions to Multimedia Computing, Communications, and Applications. Over the past year, he was also inducted as a member of the Academy of Science Engineering and Medicine of Florida.

Mubarak Shah and Dong Zhang, a graduate of UCF's computer science doctoral program, received a patent for their System and Method for Human Pose Estimation in Unconstrained Video.

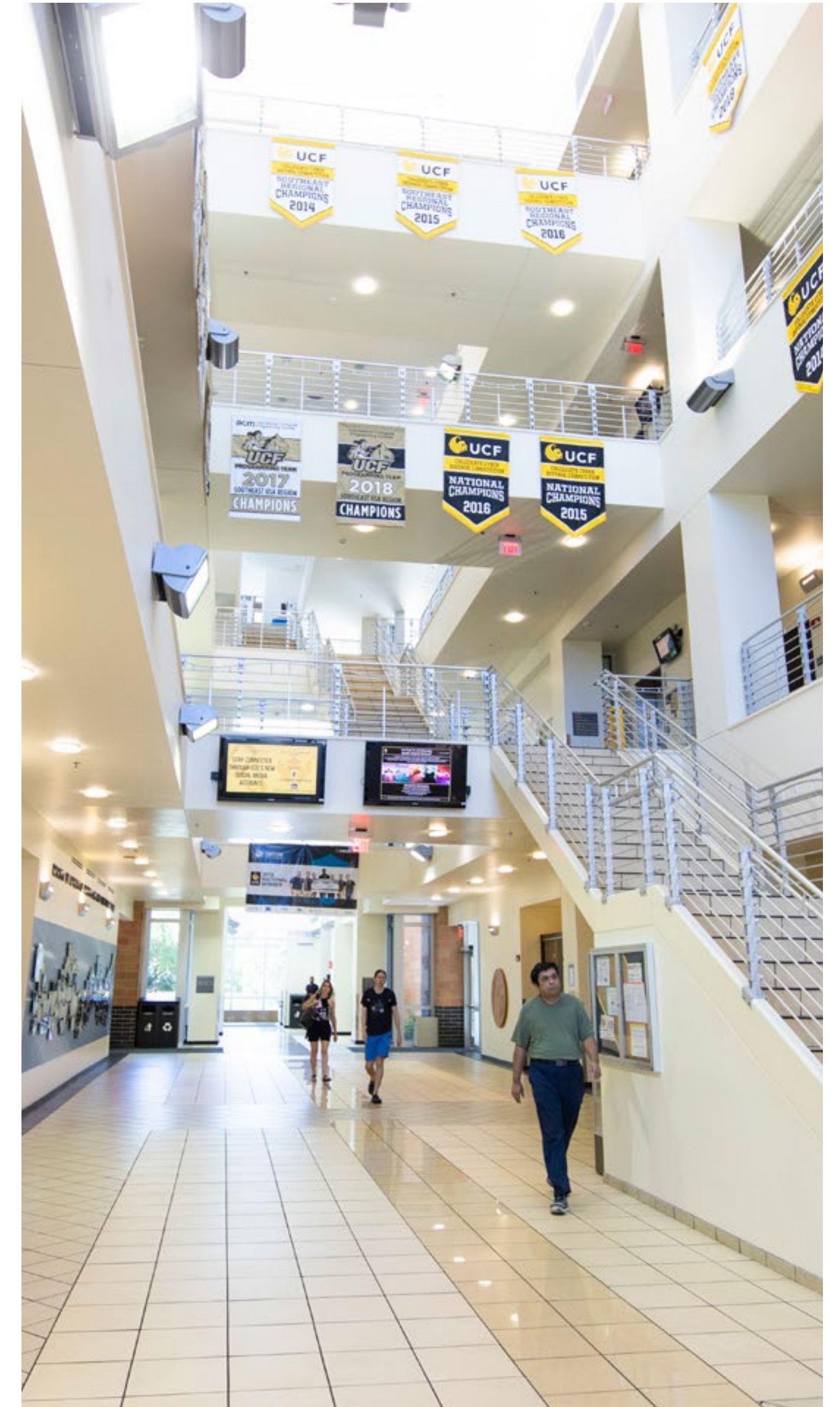
Abhijit Mahalanobis, an assistant professor in UCF's Department of Computer Science, was selected as a DARPA Young Faculty Award recipient. Irene Tanner, a graduate of UCF's computer science department, was awarded an Honors Undergraduate Thesis scholarship from UCF's [Burnett Honors College](#) in October 2019.

We want to provide the highest quality education and research experience in computer vision to develop a highly-skilled workforce for Florida's economic development.

The center also saw four students earn their doctoral degrees: Naji Khosravan and Aliasghar Mortazi in fall 2019 with advisor Bagci; Aidean Sharghi in fall 2019 with Shah and Niels da Vitoria Lobo, an associate professor in the Department of Computer Science, advising; and Rui Hou in summer 2019 with Shah advising. Furthermore, the UCF's Board of Trustees approved a Master of Science in Computer Vision degree program this past year.

Shah says the center's mission is to be the world-class leader in research, commercialization, scholarship, and education in computer vision.

"We want to provide the highest quality education and research experience in computer vision to develop a highly-skilled workforce for Florida's economic development," Shah says.





About Limbitless Solutions

By: Zenaida Gonzalez Kotala

Limbitless Solutions has three key strengths that have guided it to success: academic excellence, the ability to respond to community needs, and the founders' desire to do the right thing.

These strengths launched the small UCF-based non-profit in 2014, which started with students sitting around a kitchen table designing a 3-D printed arm for a local boy. Today those handful of students have morphed into graduates. They have grown their lab to an average of 30 students per semester in addition to five staff members and four affiliated faculty. The team's laundry list of success includes the creation of inexpensive bionic arms for children around the world (now in clinical testing), a hands-free wheelchair device that gives people with limited mobility freedom, a thriving STEM education program for undergraduates at UCF and a popular K-12 outreach program.

"This year saw our program break through with cutting edge clinical research and establishing strong undergraduate student programs" says Albert Manero '12 '14MS '16PhD. "These impact moments highlight the importance of collaboration across academic majors and with external industry partners. We could not be prouder of our students for their resilience and accomplishments."



The academic year included a list of achievements that many groups would envy. Among them are:

- Two presentations at the United Nations
- Adobe CEO Shantanu Narayen spotlighting Limbitless during the Adobe Max global conference
- New collaborations with the Mayo Clinic and other hospitals to conduct research
- A patent awarded
- Two research journal articles
- Presentations at three national conferences
- New Halo video game themed arm sleeve designs thanks to a new collaboration with Microsoft' 343 Industries
- Awarded global top 6 finalist in the Goldman Sachs Analyst Impact Fund competition
- New and extended corporate partnerships with Autodesk, Adobe and Stratasys
- Launched new mobile app to help arm recipients train their muscles as part of a clinical study
- New STEM focused scholar program for UCF undergraduate students
- New grant to College of Arts collaborators for its video game training program
- New approved field trip destination site for Osceola County high schoolers to see STEM in action

And when COVID-19 hit, the team didn't hesitate. To reduce the risk to its clinical study participants - children ages 6 to 17 - the team worked with its clinical study partner Oregon Health and Science University (OHSU) to transition the study to telemedicine visits. Then the team shifted production to help the Orlando community fighting against the virus.

Limbitless moved under the Office of Research in 2019, and it was one of the first groups to seek authorization to continue to operate its lab after the university went to remote operations in March 2020 so it could produce face shield components to help protect health care providers on the front line.

**Our heart is to build technology that empower others
and share hope with our community.**

Co-founders John Sparkman '13 '15MS and Dominique Courbin '18 pivoted the 3D printers in the lab to produce the different components. Working with corporate partner Stratasys, the men produced 600+ visors and 400+ earsavers by June 15. These components were delivered to support healthcare workers at Orlando Health.

Before Limbitless knew it, its clinical partner at OHSU reached out for support with their own COVID-19 project. Limbitless was able to support the manufacturing for a new OHSU designed 3D printed ventilator that is now awaiting FDA approval.

The work of the group has not gone unnoticed. Media outlets have featured Limbitless' work dozens of times throughout the year and representatives from the group and a bionic arm recipient were featured on NPR's popular Marketplace radio show in January 2020.

"Our heart is to build technology that empowers others and share hope with our community."



About The National Center for Integrated Coastal Research

By: Zenaida Gonzalez Kotala

The National Center for Integrated Coastal Research, also known as UCF Coastal, had a spectacular 2019-2020. From a first-of-its-kind agreement to dozens of research awards and published studies to community outreach and new partnerships, the Center is making good on its promise to find solutions to some of the biggest threats to our coastlines.

Pegasus Professor and Department of Biology Chair Dr. Graham Worthy leads the Center, which now has 23 core faculty members and another 26 affiliated members. The goal of UCF Coastal is to work across disciplines as diverse as biology and coastal engineering to hospitality management for a whole-community approach to addressing complex environmental, economic, and social challenges. UCF Coastal brings together experts across multiple fields of study to address coastline vulnerabilities ranging from extreme weather and public health to tourism and urban planning. The center is also invaluable to students because it provides them hands-on opportunities to conduct field research, which includes the community.

Together center members published almost 30 journal articles during the academic year. They also generated more than \$4 million in grants and communicated their work to the public through research publications, TedXOrlando talks and media interviews about climate change, sea rise and red tide's impact on the Florida economy. The group also created new partnerships and participating in public speaker series.

"This past year was a good one for UCF Coastal in spite of the numerous challenges which none of us could have forecast," Worthy said. "I think that if we all work together as we move past these crises that we can continue to focus on resolving the issues that threaten all of our coastal communities and move forward into a brighter future."

Among the new partnerships forged was one with [Conservation Florida](#), which focuses on land protection, advocacy, and landowner education. Another [partnership with Embry-Riddle's unmanned](#) aircraft systems program also opened the door for the center to use aerial power to amplify their research into Florida's coastline.

The work we will be able to accomplish with these unique research sites will help us better understand the threats to coastlines that so many states and nations face.

Members of the center also secured millions in funding including a [\\$3.4 million National Academies of Sciences, Engineering and Medicine Gulf Research Program grant](#) to a team led by Chris Emrich to design a program to help people make smarter housing decisions based on hazard risks and possible mitigation of those risks.

One of the most important moments came in December 2019 [when UCF entered into a first-of-its-kind agreement between UCF and the Florida Park Service](#). This partnership is based in Econfina River State Park in rural Taylor County, about an hour southeast of Tallahassee. UCF Coastal acquired a former restaurant, which will be renovated in 2020 to serve as a research station for UCF faculty and graduate students to explore the surrounding ecosystem. It will also provide a base for several new undergraduate field courses under development and is expected to begin in 2021.

Econfina's ecosystem, which encompasses coastal seagrasses to upland pine forest, is relatively pristine and free of pollution thanks to state and federal environmental protections along with the remote location. Its low-lying ground is also an excellent model for coastlines around the world threatened by rising sea levels. Apart from biology students studying Econfina's natural habitats, anthropology students can dig into historic sites dating back to pre-colonization; civil engineering students can research storm surge, and chemistry students can chart the long-term environmental impact of the area's paper mills.

UCF Coastal has also developed a working relationship with Fury Watersports and the NOAA Florida Keys Marine Sanctuary to begin collaborative research and outreach projects in the Florida Keys. This unique partnership between UCF, a for-profit company, and a federal agency reflects the philosophy of UCF Coastal in working with everyone to try to tackle our coastal threats.

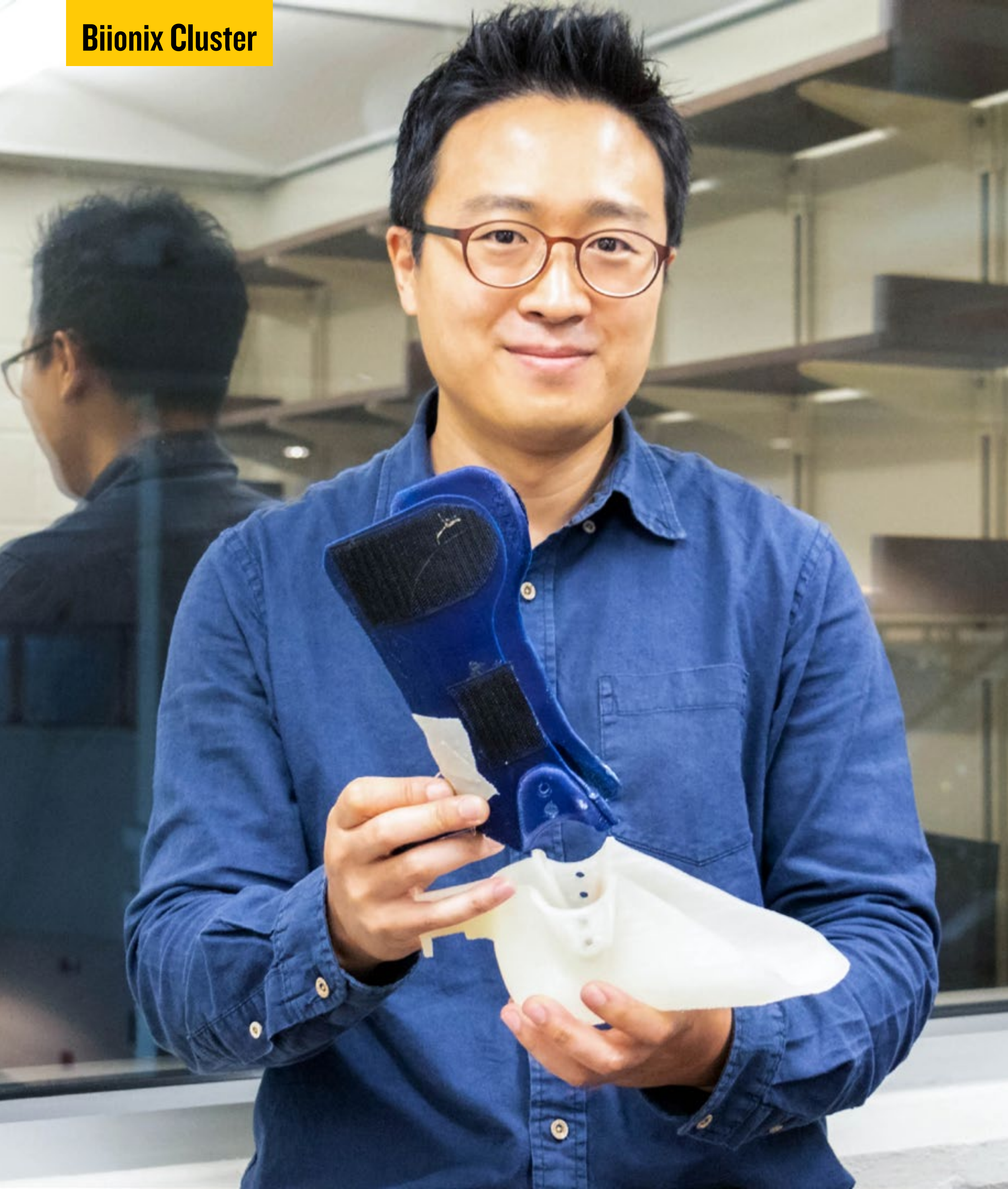
"The work we will be able to accomplish with these unique research sites will help us better understand the threats to coastlines that so many states and nations face," Worthy says. "This field research site, and it's research potential, will help bring UCF Coastal national prominence as we help solve some of the biggest challenges to our coasts."



A group of diverse professionals, including men and women of various ethnicities, are walking outdoors on a grassy area. They are dressed in business casual attire. A semi-transparent yellow rectangular box is overlaid on the center of the image, containing the main title and subtitle. The background is slightly blurred, emphasizing the people in the foreground.

FACULTY CLUSTERS

Collaboration Meets Innovation



About the Biionix Cluster

By: Simone Rousseau

As modern patient care turns toward novel technologies for answers, the [Biionix Cluster](#) at UCF aims to apply various disciplines to enhance medical technology. With a focus on research regarding artificial limbs, implantable devices, biomaterials, and wearable bioelectronics, Biionix focuses on biomedical engineering disciplines to steadily improve technology and the evolving medical solutions they offer. Overall, the cluster aims to address disease, trauma, pain, and aging by the application of modern technology.



We will continue to bring about innovation in the name of other's well-being.



Team members from the Biionix cluster continued research on the clotting and infection that can occur when medical devices are used in the body and discovered the infection-fighting qualities of nitric oxide. This breakthrough was published by the Institute of Orthopedics and Musculoskeletal Science.

In 2019 another big research initiative by Quishi Fu, an Assistant Professor of Mechanical and Aerospace Engineering, was published by the Institute of Electrical and Electronics Engineers. His research looked at the recovery of upper limbs after an event like limb loss or a stroke. Through disciplines of robotics, virtual reality and neuroimaging, his team is tackling the medical aspects of sensorimotor learning, a type of learning which involves the body relearning how to interact with the surrounding stimuli. Specifically, this research evaluated sensorimotor learning as it pertained to implantable devices like a prosthetic hand.

Growth was the theme for the Biionix Cluster in 2019. The cluster saw its team grow from five to 17 members.

“All growth is in the name of research, teaching, and service,” says Coathup. As a result, eighteen research publications have come out of the cluster this year, with two of the eighteen publications receiving media attention.

Biionix will continue to tackle the intentional integration of disciplines and member's research through the development of several organized clubs within the team during the 2020 calendar year.

The cluster will continue its research in the following areas:

- Designing safe orthopedic implants
- Polymer and sensor application
- Cell and tissue regeneration

“All of our teaching or research or getting published are all shaped by our mission,” says Coathup. “We will continue to bring about innovation in the name of other's well-being.”





About the Disability, Aging and Technology Cluster

By: Simone Rousseau

The Disability, Aging and Technology (DAT) Cluster is dedicated to helping people live longer and more productive lives through research, which enhances and positively impacts patient care outcomes. Bringing together faculty from a broad range of disciplines from nursing and mechanical engineering to hospitality and social work, the cluster reinforces the notion that technology should play a major role in how health professionals respond to illness and disability.

Several cluster team members spent 2019 working to expand the breadth of the cluster's education programs. For example, cluster members were involved in the Rosen College of Hospitality's development of its new bachelor's degree focused on senior living. The [Senior Living Management](#) program is designed to adapt the culture and philosophy of hospitality to the senior living industry, meeting a call from industry leaders that understand that a culture of hospitality presents a strategic advantage for senior living communities by enhancing the overall experience of the residents. The program launches in the fall of 2020.

Under the joint interim leadership of Norma Conner, the Associate Dean for Academic Excellence and Associate Professor within the [College of Nursing](#), and Denise Gammonley, Professor in the [School of Social Work, within the College of Health Professions and Sciences](#), the team also continued to strengthen some of its community involvement. Senior Gaming, for example, introduces video games and robotics kits to improve seniors' quality of life. The cluster continues to have a strong relationship with LIFE@UCF, the lifelong learning community of older adults at UCF. Cluster members have received research grant funding and a student scholarship from LIFE@UCF.

Several of the cluster's members saw their research published in national journals. For example, The Journal of Aging and Health published research from Samuel Towne, an assistant professor in Health Management and Informatics. His study combined established clinical data from a hospital in Texas and GIS, and applied big data tools to help improve how healthcare providers address pressing issues regarding older adults.

“

COVID-19 has disproportionately affected both older adults and those with select, pre-existing chronic conditions. This requires our cluster to consider new research directions, and I know we are ready for the challenge.

”

The cluster also added a new member to its team in 2019. Joon-Hyuk Park an assistant professor in the UCF Mechanical and Aerospace Engineering Department, joined the cluster. His area of research focuses on the use of robotics for medical treatment.

In 2020, Conner hopes to increase the number of students working in the cluster and to designate a permanent cluster lead.

“The DAT Cluster remains energized by the exceptional talent joining our team, and the research and teaching synergy these new partnerships create,” Conner says. “COVID-19 has disproportionately affected both older adults and those with select, pre-existing chronic conditions. This requires our cluster to consider new research directions, and I know we are ready for the challenge.”





About the Violence Against Women Cluster

By: Simone Rousseau

The [Violence Against Women](#) (VAW) cluster at UCF is dedicated to the research and deep understanding of violence enacted on women to increase awareness and bring about lasting changes in public policy and beyond. Through partnerships with community agencies, the VAW cluster takes an interdisciplinary approach to understanding; this fusion of disciplines transcends a narrow understanding of this type of violence.

The cluster spent 2019 publishing research, participating in training to expand its collective knowledge, and facilitating panel discussions to help the UCF community become better aware of violence against women, how to recognize it and what individuals can do about it. The group also added new members, which expanded the interdisciplinary nature of the cluster.

The team both began new collaborative efforts and continued existing efforts, with a heavy emphasis on visiting the intersection of interdisciplinary approaches. The merging of health, social welfare, and social justice perspectives continued to be important to the cluster's overall growth.

The cluster also participated in several training opportunities and panel discussions. Team members underwent Green Dot training, which disseminates information regarding sexual harassment and violence specific to women on college campuses. The cluster also increased its visibility through its meetings with UCF's Title IX advisory committee. And during Women's History Month, the team conducted a panel discussion open to the campus community about historical moments of violence against women.

The cluster added three new members and three affiliate faculty in 2019 including Bethany Backes, Assistant Professor in Criminal Justice and Social Work; Julia O'Connor, Assistant Professor of Social Work; Jacqueline Woerner, Assistant Professor of Sociology and Psychology; and Alison Cares, Associate Professor of Sociology. Their areas of expertise range from domestic and sexual violence to health risk behaviors and victim help-seeking.



Violence against women is a worldwide public health problem with both individual and community impacts. Without work addressing this injustice we will never be able to ensure women are safe in their homes or fully engaged citizens.



The cluster plans to add more members in 2020 – 2021 to further enrich its diversity and approach to studying this area.

“Violence against women is a worldwide public health problem with both individual and community impacts. Without work addressing this injustice we will never be able to ensure women are safe in their homes or fully engaged citizens,” says Jana Jasinski, Sociology Professor and Vice Provost of Faculty Excellence.





About the Cyber Security and Privacy Cluster

By: Robert Wells

UCF's [Cyber Security and Privacy Cluster](#) works to keep people's computer systems and data secure through cutting-edge research and the development of new forms of security and privacy protection. The cluster also researches the social implications that new technology and the Internet of Things can have on our daily lives.

The past year was a record year for the cluster for funding and publishing, as it received millions of dollars in research funds and published in some of the top computer science and cybersecurity venues in the world.

The Cyber Security and Privacy Cluster received more than \$10 million in research funds in the past year. This includes grants coming from the National Science Foundation; DARPA; the U.S. Army's Program Executive Office for Simulation, Training, and Instrumentation; the Office of Naval Research; Cyber Florida, industry, and more.

Cluster members also published in the best venues in the field. In the area of computer science, for example, the cluster had 11 publications in some of the top computer science conferences in the world, according to computer science ranking site, csrankings.org.

These included the International Symposium on Computer Architecture, the Design Automation Conference, the International Conference on Software Engineering, and more.

They also published in other major conferences, including the International Conference on Distributed Computing Systems and the International Conference on Computer Communications.

"The cluster has improved its visibility substantially," says Yan Solihin, the cluster's lead and a professor in UCF's [Department of Computer Science](#). "Compared to 18 months ago, the number of times our research has been cited has increased by 22 percent, and the measure of the impact of our scientists in the field has increased by 38 percent."



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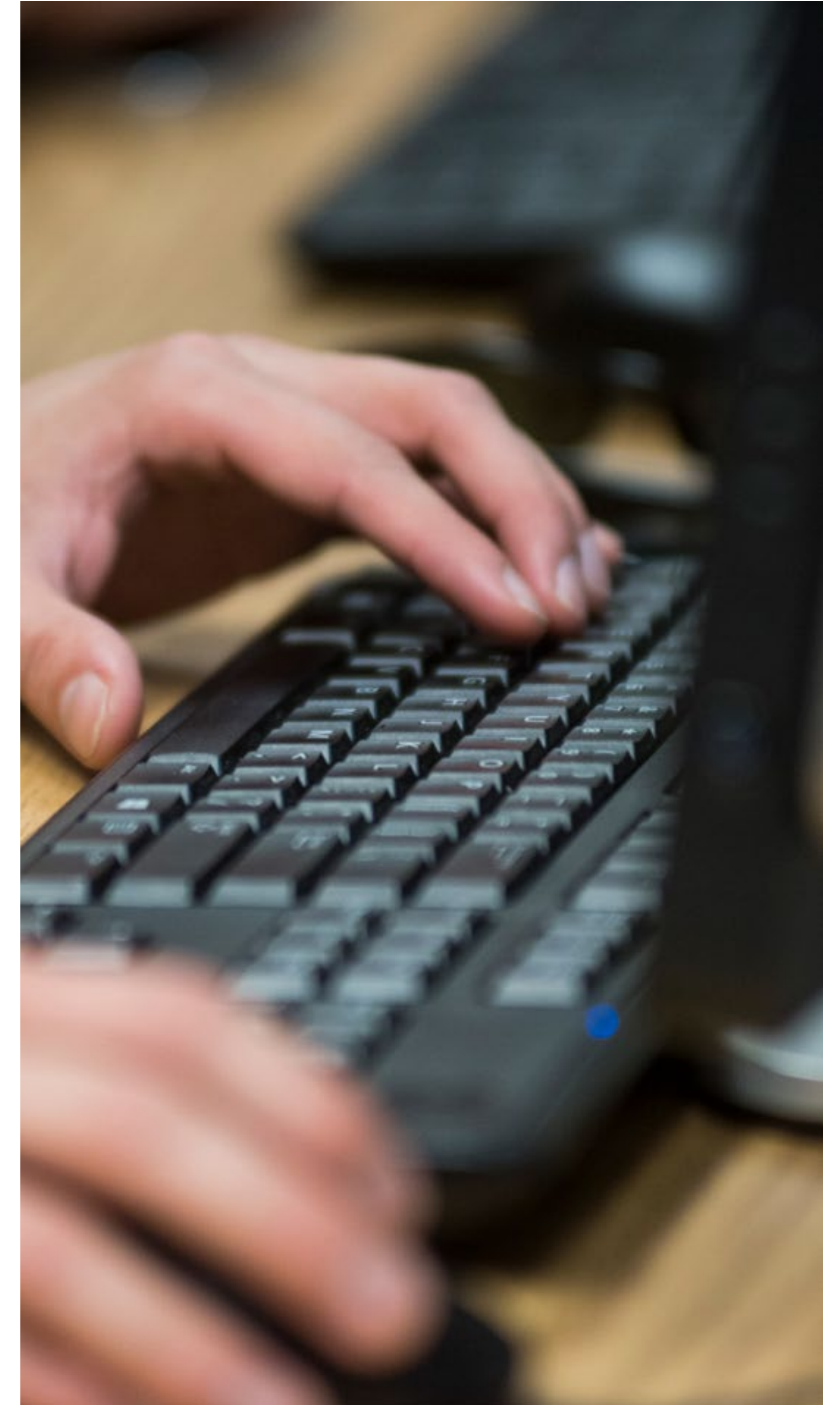
In the past year, the cluster also had the grand opening of their new lab in the Health and Public Affairs I building. The lab, which has the capacity to house 30 doctoral students, fosters communication and gives the students a peaceful and spacious environment to study and work.

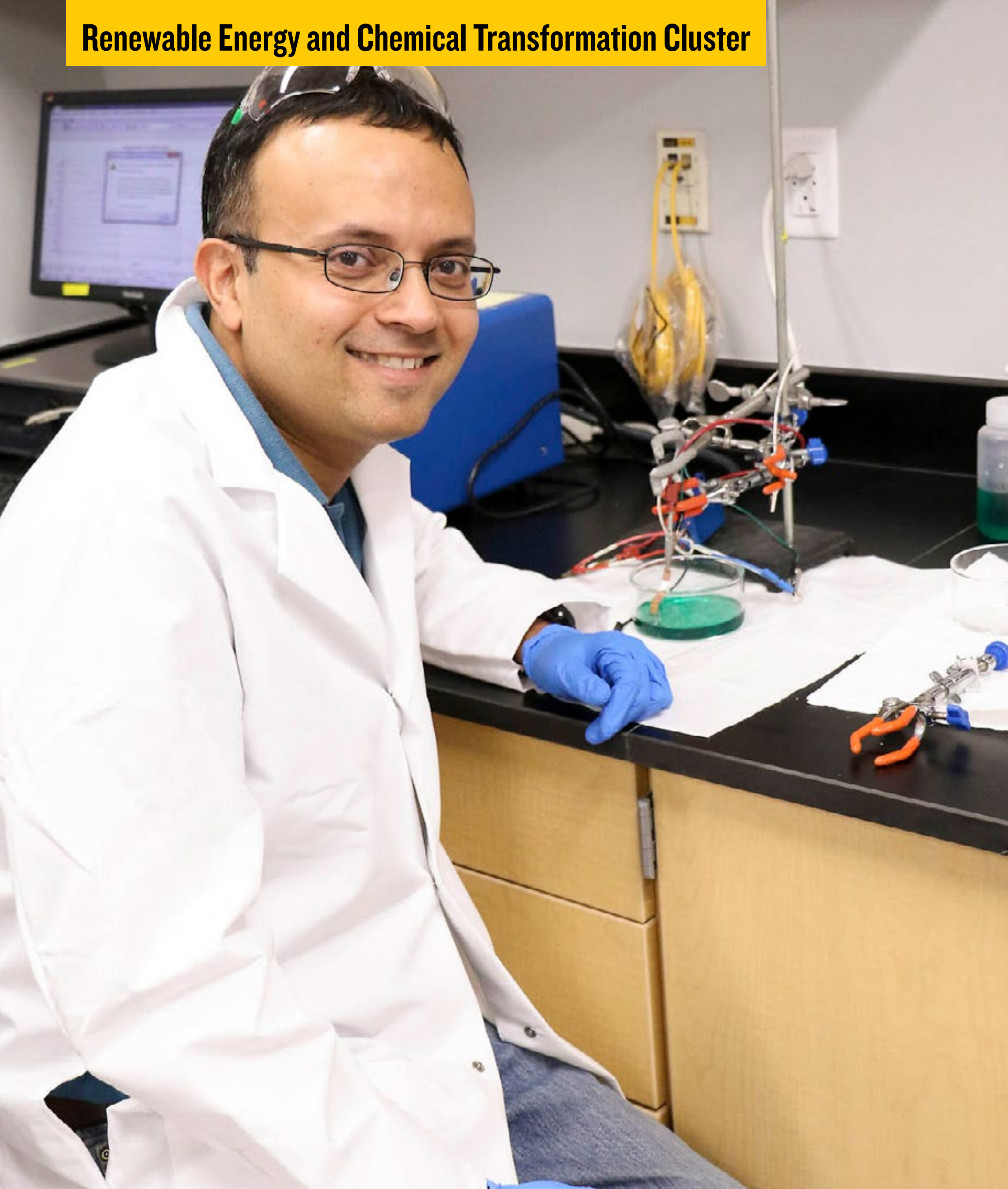
The cluster hired a new member this year, Guoxing Chen, a research scientist with Facebook. He received his doctorate in computer science and engineering from The Ohio State University and has published at some of the top computer security conferences in the world. His area of expertise is a trusted execution environment.

Specific research areas the cluster continues to focus on include:

- Trustworthy Cloud — secure enclave, side channels
- Blockchain — smart contract, cryptojacking, scalability
- Secure Machine Learning — adversarial machine learning, integrity protection, recovery
- Organizational Security — insider threat, behavioral
- Privacy — online privacy, privacy-oriented architecture, data enclave
- Malware — analysis
- Digital forensics — fraud detection and forensics
- Software Security — formal methods, software engineering
- Internet of Things — security

"Our cluster has nine faculty members who are dynamic and active in research," Solihin says. "We would like to invite faculty members who are working, or interested in working, in cybersecurity or privacy to be involved in our cluster. Our door is open."





About the Renewable Energy and Chemical Transformation Cluster

By: Robert Wells

UCF's [Renewable Energy and Chemical Transformation Cluster](#), or REACT, is developing new, alternative materials for catalysis for tech and chemical processes that are safe for people and the environment.

The production of electricity from renewable sources, like solar, is a cost-competitive alternative to fossil-fuel-generated electricity, and alternatively powered forms of transportation are rapidly gaining acceptance.



While we are very engaged researchers, we are also interested in sharpening our teaching skills, in pedagogical enhancements, and in being involved in the community at large and professional societies as such, locally, regionally and worldwide.



The REACT Cluster's research into the materials needed to produce and store alternative energy is essential to harnessing the energy. The cluster has been successful in the past year with earning awards, securing funds, and hosting conferences.

Mihai Vaida, an assistant professor in UCF's [Department of Physics](#), received an NSF CAREER award to study ultrafast electron and molecular dynamics investigations on 2D nanostructured photocatalytic materials for the generation of fuels from renewable sources.

Xiaofeng Feng, an assistant professor in UCF's Department of Physics with a joint appointment in the Departments of [Chemistry](#) and [Materials Science and Engineering](#), received an NSF CAREER award to research understanding and tuning the electrohydrogenation mechanisms for ambient nitrogen fixation.

Feng also received the 2019 Alfred P. Sloan Research Fellowship, which is a first for UCF, and an American Chemical Society Petroleum Research Fund for researching ambient electrocatalytic activation of methane towards C2 Oxygenates.

Fudong Liu, an assistant professor in UCF's [Department of Civil, Environmental, and Construction Engineering](#) received a grant from BASF Corporation to study property tuning of metal oxides to achieve high NO_x removal efficiency in NH₃-SCR Reaction for diesel emission control.

Talat Rahman, a Pegasus and Distinguished Professor in UCF's Department of Physics, Fudong Liu and Sampyo Hong, a courtesy professor in the physics department, received a collaborative grant from NSF to research understanding and predicting reactivity and selectivity of single atom catalyst.

The cluster hosted the 79th Physical Electronic Conference last summer, which was attended by 120 participants from the U.S. and abroad. About 25 students and postdocs participated in the poster competition. Sonali Joshi, a UCF physics major, received the best poster award at the conference.

The cluster also hosted the annual Florida American Vacuum Society Conference in March 2020 that was attended by about 80 participants from around Florida.

Md Afjal K. Pathan, a doctoral student in Vaida's group, was awarded third place at the AVS Short Course on Catalysis and Catalytic Materials Student Competition.

The ongoing event allows students and junior scientists from Florida universities to present their work and interact with experts in the field, REACT cluster lead Rahman says.

Additionally, [Nusaiba Zaman](#), a doctoral student in UCF physics professor Abdelkader Kara's group won the popular vote of the best [3-Minutes Thesis](#) presentation in 2019 for the presentation: ["Reactivity of bi-metallic clusters for lithium-air batteries."](#)

William Kaden, an assistant professor in UCF's Department of Physics, has led a grass-roots effort to develop the Physics Research Exchange Program or PREP. Working in partnership with faculty and administrators at several Direct Connect partnering institutions, PREP provides otherwise inaccessible research experiences to students likely to transfer into UCF undergraduate

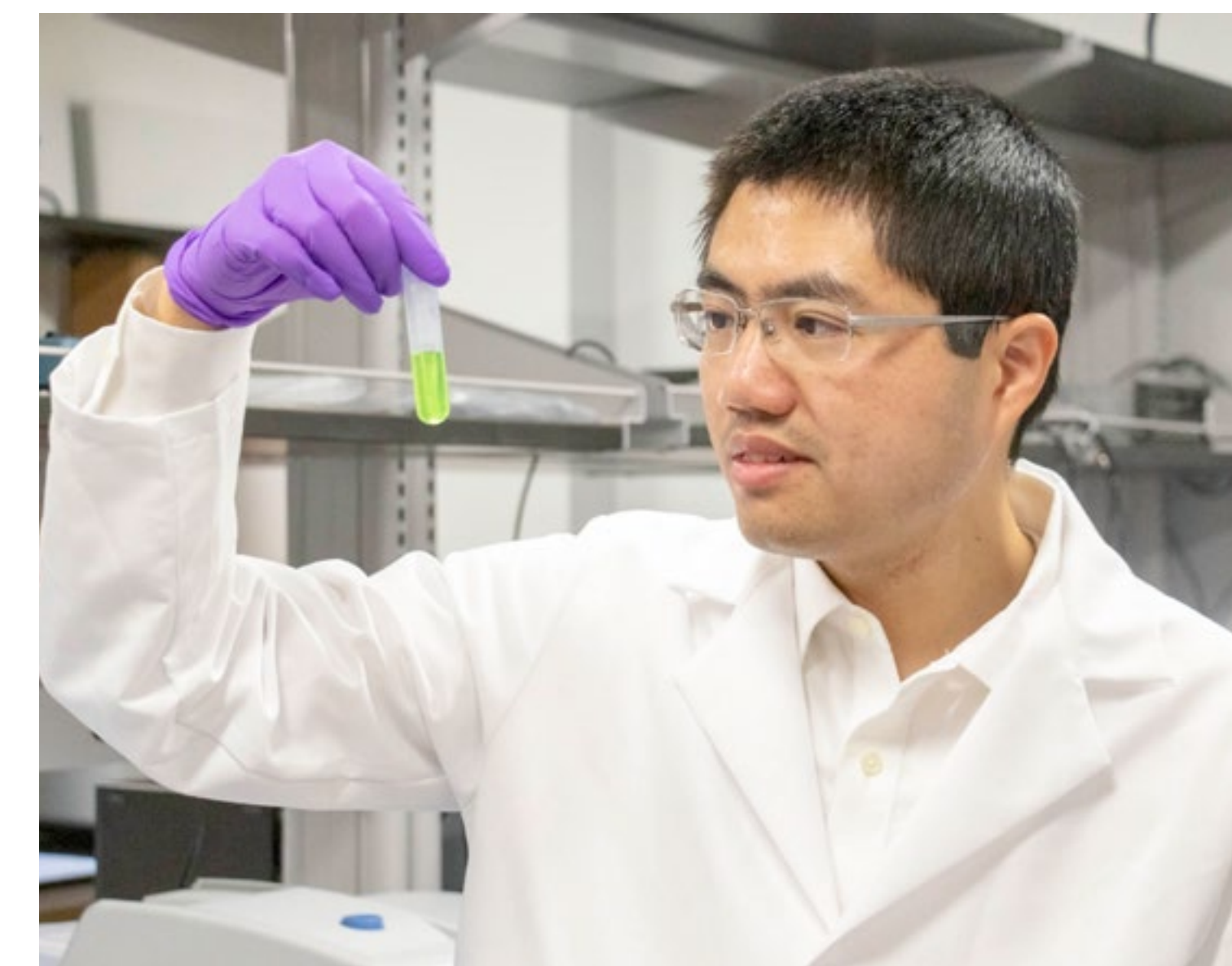
programs before they formally enroll in coursework.

The program has grown to currently include 6 REACT faculty hosts (out of 13 total participating UCF faculty) and has hosted a total of 11 students since its first iteration in 2018.

The program has provided an excellent platform for increasing the exposure of underrepresented groups in STEM opportunities at the early stages of academic development, Rahman says. The program has an internet presence in the form of a UCF-hosted website that can be found sciences.ucf.edu/physics/prep.

Rahman says REACT is a vibrant, interdisciplinary group of researchers who are always looking for new ideas, new collaborations, and new discoveries.

"While we are very engaged researchers, we are also interested in sharpening our teaching skills, in pedagogical enhancements, and in being involved in the community at large and professional societies as such, locally, regionally and worldwide," she says. "We are also committed to creating a workplace that is diverse, inclusive, and safe for all."





About the Genomics and Bioinformatics Cluster

By: Robert Wells

The goals of UCF's [Genomics and Bioinformatics Cluster](#) are to develop a strong, interdisciplinary research program that addresses important challenges in the life sciences and to develop the next generation of workers who can research life sciences disciplines for industry, government, and academia.



The Genomics and Bioinformatics Cluster is a diverse group of researchers with expertise spanning a broad range of areas in genomics, computational biology, and bioinformatics.



The cluster does this by combining expertise from the fields of genomics, computation, and data science.

In 2019, the cluster had all their principal investigators' labs fully set up and made operational, completed the infrastructure it needed to enable next generation DNA sequencing, and hired a new faculty member.

The cluster's new infrastructure includes resources to enable library construction from RNA and DNA samples, an Illumina MiSeq sequencer, and a long-read Oxford Nanopore Technology sequencer. The cluster's sequencing resources are available to the wider UCF research community as well.

Projects the cluster is currently working on include studying the origin and transmission of pathogens; deep-sea fishes; diversity and conservation related to studies of purple martins and scrub jays; bioinformatics approaches to predict disease outcomes and drug responses; and microbiome studies in the context of health and disease for various hosts including humans and sea turtles.

The projects are funded by a variety of sources, including the National Institutes of Health, the National Science Foundation, the Florida Department of Transportation, the Florida Institute of Oceanography, and the Moffitt Cancer Center Foundation.

The cluster's new hire, Robert Fitak, is an assistant professor in UCF's [Department of Biology](#) who uses genomic, statistical, behavioral, and experimental techniques to understand biodiversity and unique species adaptations. He received his doctorate in genetics from the University of Arizona and his bachelor's in molecular genetics from The Ohio State University.

"The Genomics and Bioinformatics Cluster is a diverse group of researchers with expertise spanning a broad range of areas in genomics, computational biology, and bioinformatics," says Shibu Yooseph, a professor in UCF's [Department of Computer Science](#) and the cluster's lead. "In addition to their own research programs and collaborations within the cluster, the team members are also on the lookout for other interesting collaborations."





About the Resilient, Intelligent and Sustainable Energy Systems (RISES) Cluster

By: Robert Wells

UCF's Resilient, Intelligent and Sustainable Energy Systems, or [RISES](#), Cluster works to develop sustainable and resilient energy systems and storage to make sure we have power and stay connected when disasters strike.

The 17-member cluster includes researchers from a variety of fields, including electrical and computer engineering; materials engineering; civil, environmental and construction engineering; public administration; optics and photonics, and computer science. Over the last five years, the cluster has established and enhanced nine state-of-the-art laboratories with funding from industrial donors and partners:

- Connected and Autonomous Vehicle Research Lab (Ford, Toyota)
- Cyber-Physical Control Systems Lab (Ruggedcom)
- Microgrid Control Lab (General Electric, Florida Power and Light, Duke Energy)
- PV Module Fabrication and Characterization Lab
- Siemens Digital Grid Lab (Siemens DG)
- Smart Grid Control and Resilience Laboratory
- Smart Infrastructure Data Analytics Lab (Siemens BT, Orlando Utilities Commission)
- Smart Protection and Control Lab
- Unmanned Autonomous Systems (L3Harris)

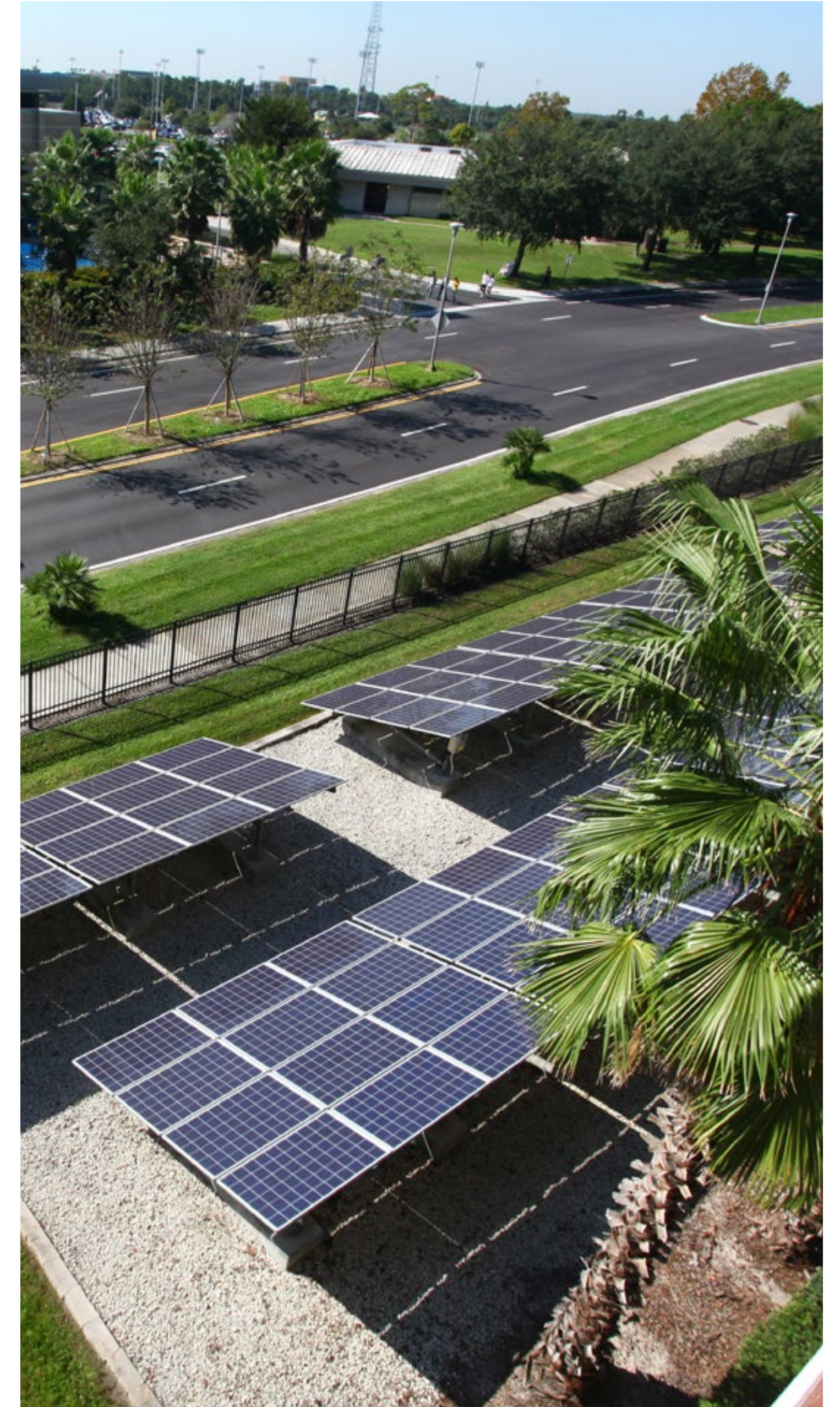
The past year, the cluster saw their graduate certificate on resilient energy systems approved and their research funding reach new heights. Projects contributing to the increased funding include three new Department of Energy projects led by UCF worth \$3.75 million, \$3.75 million, and \$300,00 each; one Duke-funded project, one Orlando Utilities Commission-funded project, one Siemens-funded project, and one NSF CAREER award worth \$500,000.

Cluster lead Zhihua Qu, a Pegasus Professor of Electrical and Computer Engineering, says as the cluster's faculty continue to increase in productivity, the challenges the cluster faces are an increased need for graduate student recruitment and technical support.

The RISES cluster develops advanced technology that makes our energy systems sustainable, greener, and more secure

Qu says the cluster's focus for the upcoming year is to implement the graduate certificate program and continue their research to improving the country's energy systems.

"The RISES cluster develops advanced technology that makes our energy systems sustainable, greener, and more secure," he says.





About the Learning Sciences Cluster

By: Robert Wells

UCF's [Learning Sciences Cluster](#) develops new technologies to improve performance and learning outcomes while also exploring how people use and interact with technology when learning.

The cluster does this by drawing from their faculty's wide range of expertise in fields including educational psychology, cognitive psychology, computer science, engineering, artificial intelligence, measurement and statistics, philosophy, and graphic design.



Learning can happen anywhere, and we heavily stress the interdisciplinary nature of our cluster, which is evident from looking at faculty members' collaborations. We are always looking to form new collaboration across the university.



The cluster's focus is on researching how people and machines learn across their lifespan in formal and informal settings to help people unlock their learning potential and improve society.

And with the need to adapt to new learning technologies increasing, sometimes rapidly as in the case of the COVID-19 pandemic, the Learning Sciences Clusters' mission becomes even more important, says Roger Azevedo, the cluster's lead and a professor in UCF's [College of Community Innovation and Education](#).

Over the past year, the Learning Sciences Cluster has been working on multiple projects funded by the National Science Foundation and it hired its fourth faculty member, Jonathan Mell.

The projects include:

- Using a virtual reality game to teach middle schoolers chemistry
- Creating a math game for students with disabilities to understand fractions
- Testing the effectiveness of serious games and intelligent tutoring systems to augment adolescents' and college students' STEM learning
- Using data visualizations of students' real-time learning processes to provide classroom teachers with actionable data
- Understanding social interaction's impact on urban vibrancy

Additionally, the cluster is working on a Disney-funded project to prepare their cast mentors to use deep learning algorithms, an approach to artificial intelligence that seeks to understand high-level information from large quantities of low-level data. The goal is to provide these cast members with the tools and skills to use data extracted from park and resort activities to inform the development of products and processes that improve guest experiences.

Mell, the cluster's newest hire, focuses on designing more human-like artificial agents. He earned his doctorate and master's degrees in computer science from the University of Southern California, and his bachelor's in economics and computer engineering from the University of Pennsylvania.

The cluster has also received three patents, graduated multiple master's students and will be welcoming the first three Learning Sciences Education Track doctoral students in Fall 2020.

"It is important for people to know that learning is not limited to the classroom," says cluster member Michelle Taub, an assistant professor in UCF's College of Community Innovation and Education. "Learning can happen anywhere, and we heavily stress the interdisciplinary nature of our cluster, which is evident from looking at faculty members' collaborations. We are always looking to form new collaboration across the university."



FACTS AND STATISTICS

Success By the Numbers

1,706

Active Projects



The College of Engineering and Computer Science earned the most new research awards

TOP
50

UCF is one of the top 50 public research universities in the nation, according to the Top American Research Universities Annual Report.

691

Active Researchers

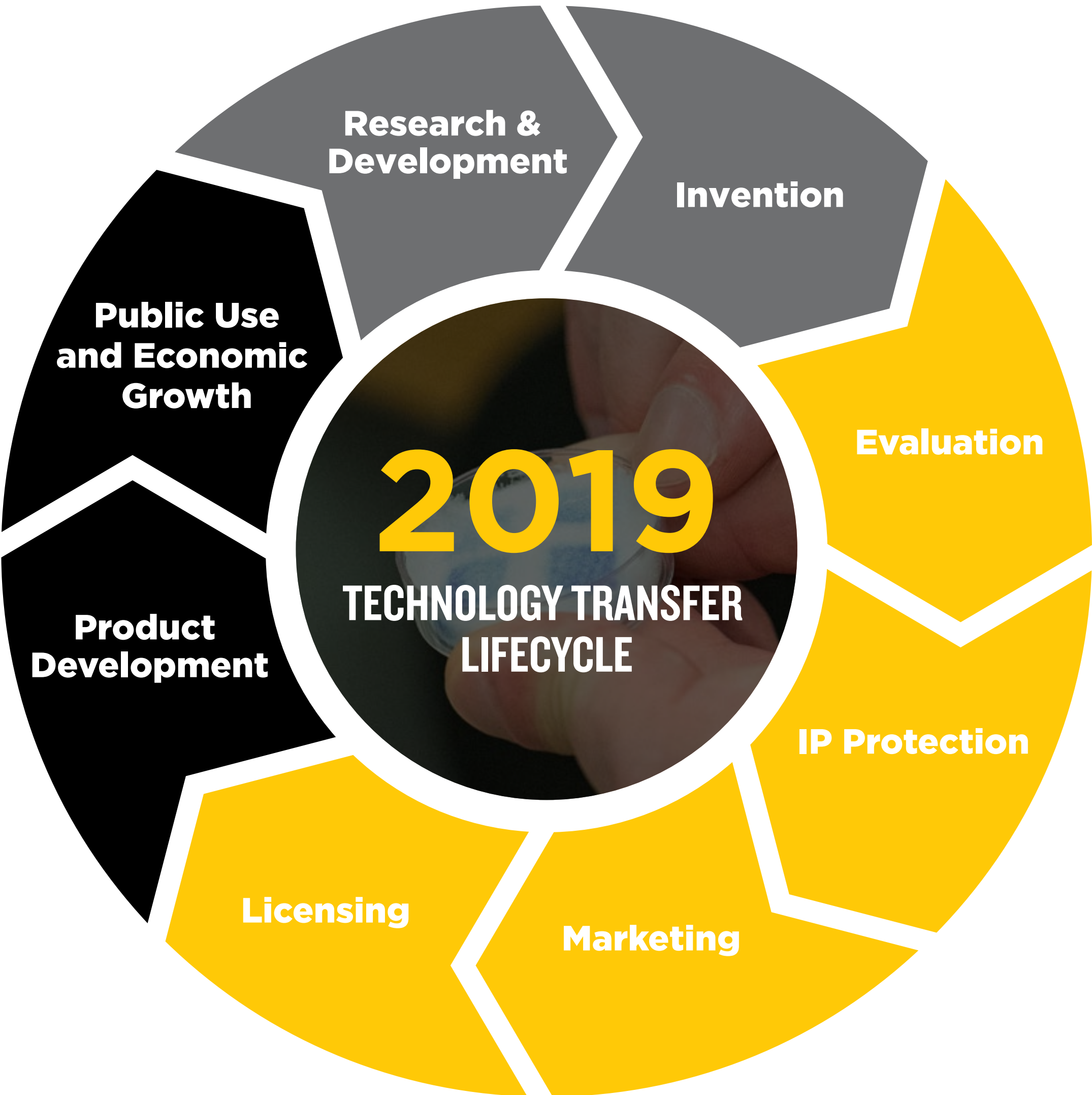
485

Active Sponsors



271 students participated in the Graduate Research Forum as part of Student Research Week.

TECHNOLOGY TRANSFER



\$192M
Research Funding



121
Invention Disclosures



21
Start-ups Still
Operational as
of FY19

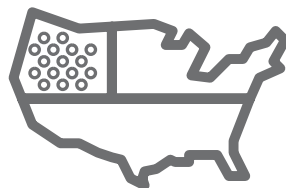
25
Products on the
market

28
Licenses and
Options Executed

45
U.S. Patents Issued
in 2019



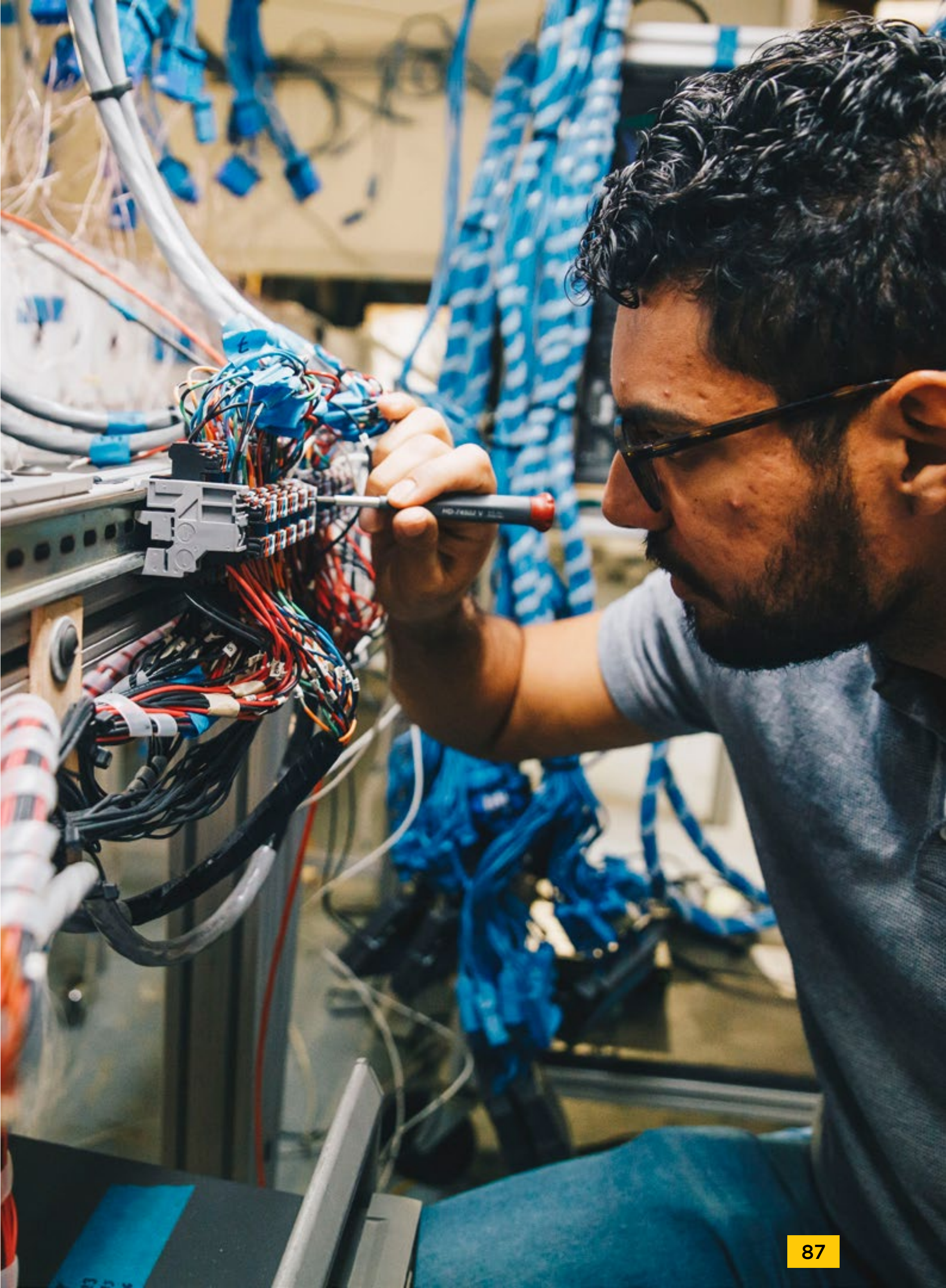
146
Total U.S. Patent
Applications Filed



AWARDS BY UNIT

ACADEMIC UNITS	2018	2019
Administration and Finance	\$150,000	\$210,000
Advanced Materials Processing and Analysis Center	\$2,009,000	\$2,900,000
Center for Innovation and Entrepreneurship	-	\$200,000
Center for Research in Computer Vision	\$1,430,000	\$1,940,000
College of Arts and Humanities	\$1,330,000	\$1,650,000
College of Business Administration	\$480,000	\$490,000
College of Community Innovation and Education	-	\$14,170,000
College of Engineering and Computer Science	\$46,260,000	\$42,710,000
College of Graduate Studies	\$510,000	\$560,000
College of Health Professions and Sciences	-	\$3,530,000
College of Medicine	\$9,430,000	\$15,560,000
College of Nursing	\$940,000	\$1,270,000
College of Optics and Photonics	\$16,860,000	\$15,960,000
College of Sciences	\$26,140,000	\$27,380,000
Division of Strategy, Marketing, Communications, and Admissions	\$4,940,000	\$1,680,000
Faculty Clusters	\$30,000	\$50,000
Florida Solar Energy Center	\$3,570,000	\$6,010,000
Florida Space Institute	\$12,007,000	\$9,130,000
Institute for Simulation and Training	\$17,320,000	\$17,520,000
NanoScience Technology Center	\$3,400,000	\$6,980,000
Office of Research	\$10,470,000	\$8,750,000
Office of Undergraduate Studies	\$560,000	\$250,000
President's Office	\$350,000	\$450,000
Provost's Office	\$420,000	\$130,000
Rosen College of Hospitality Management	\$40,000	\$270,000
Student Development and Enrollment Services	\$9,790,000	\$12,380,000
Other	\$10,000	-
TOTALS	\$183,120,000	\$192,140,000

Totals are in United States Dollars (USD)

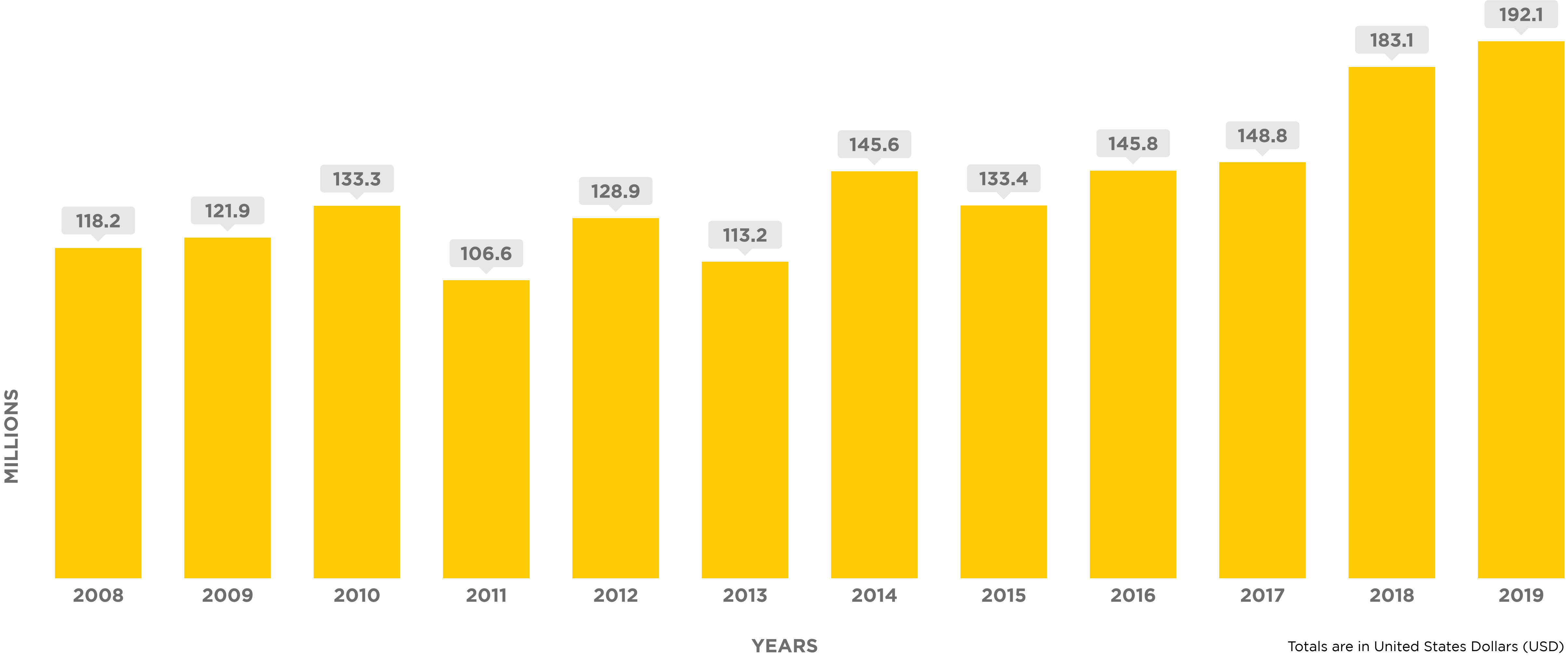


A blue-tinted photograph of three scientists in a laboratory. A woman in the background is using a pipette. A man in the middle is looking at a laptop screen. A woman in the foreground is also looking at the laptop. The image has a dark blue overlay.

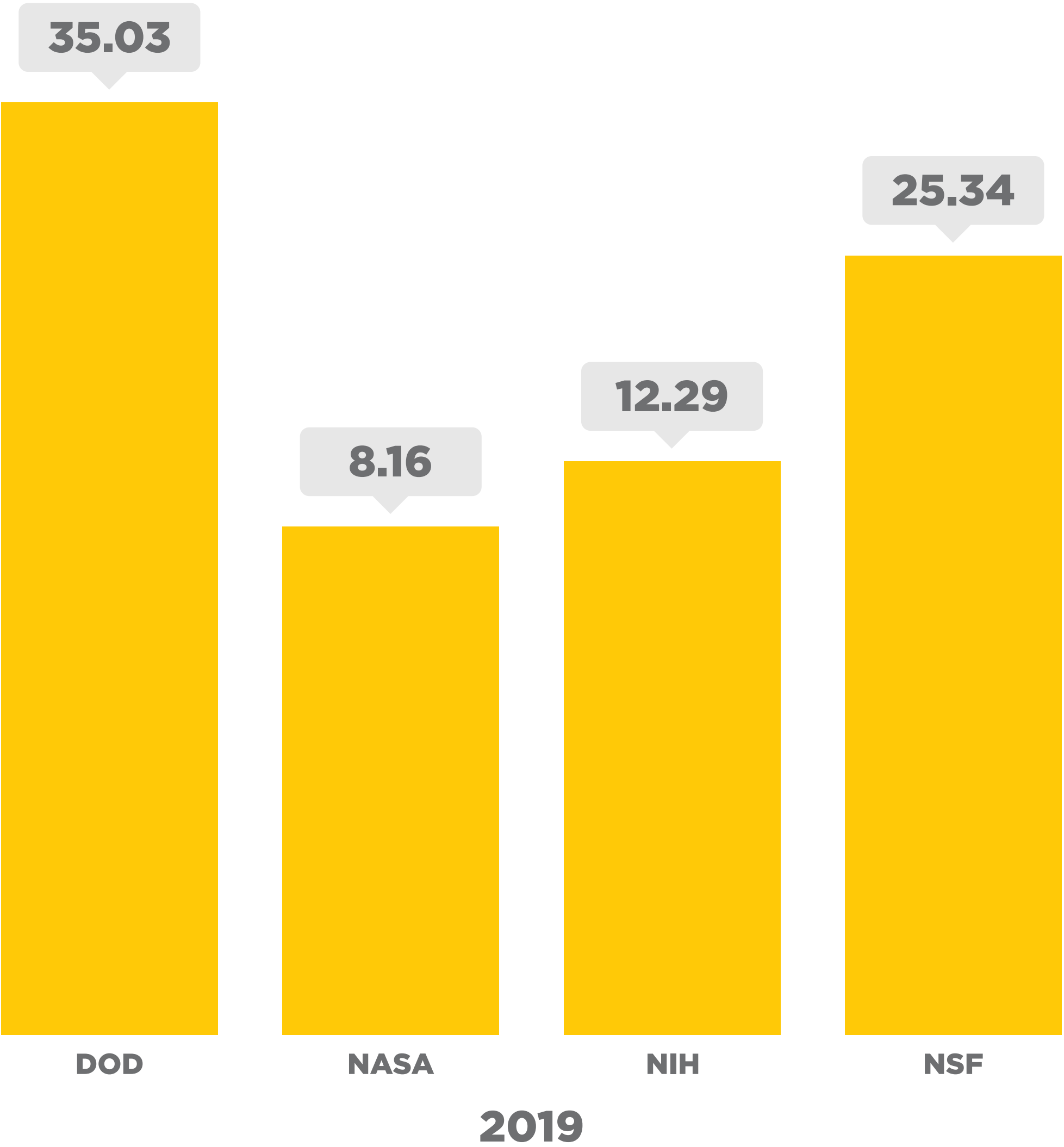
\$192.14

Million dollars of sponsored
research generated in 2019

RESEARCH FUNDING OVER TIME



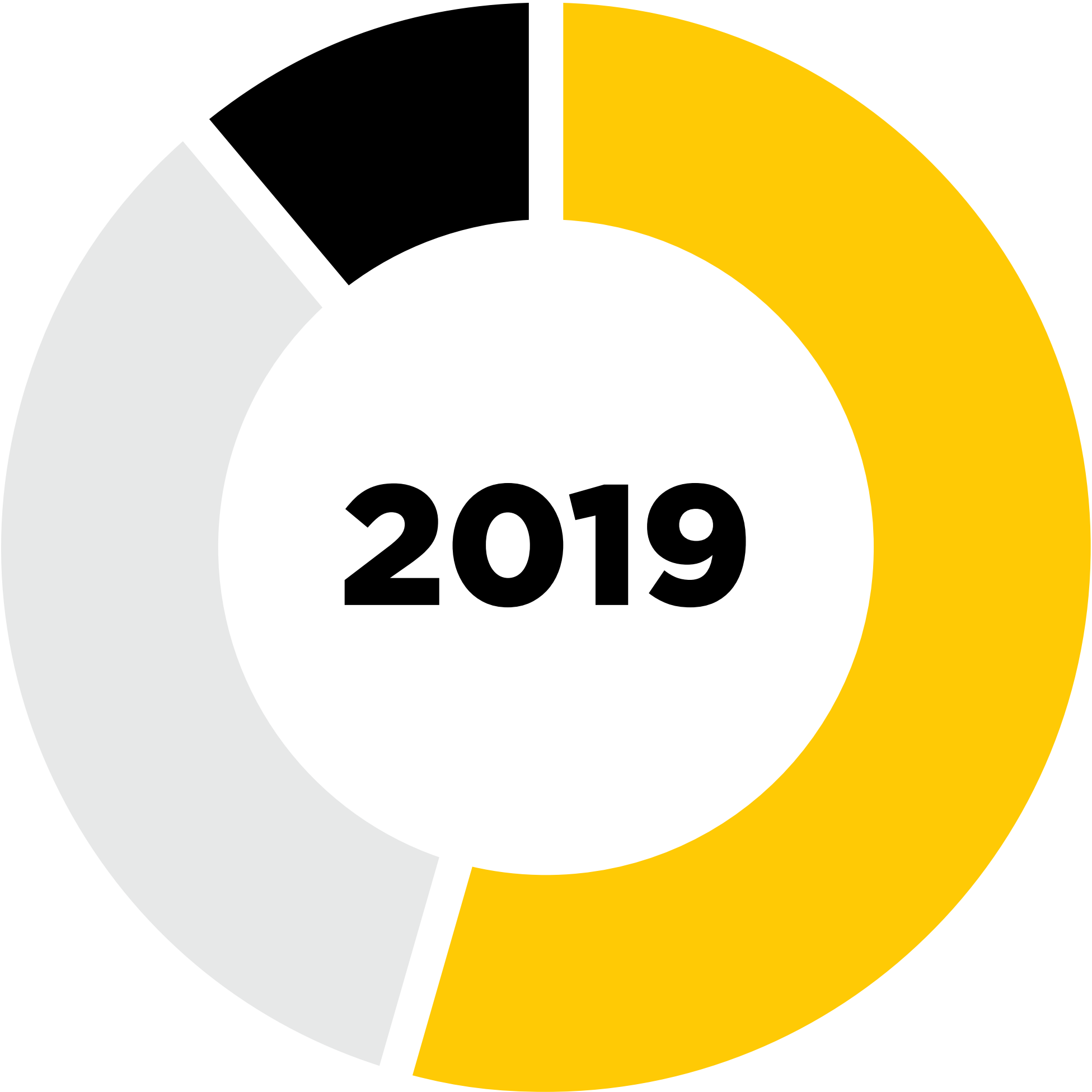
KEY FUNDING SOURCES



	2018	2019
Department of Defense	34.19M	35.03M
National Aeronautics and Space Administration	9.56M	8.16M
National Institutes of Health	7.35M	12.29M
National Science Foundation	22.85M	25.34M

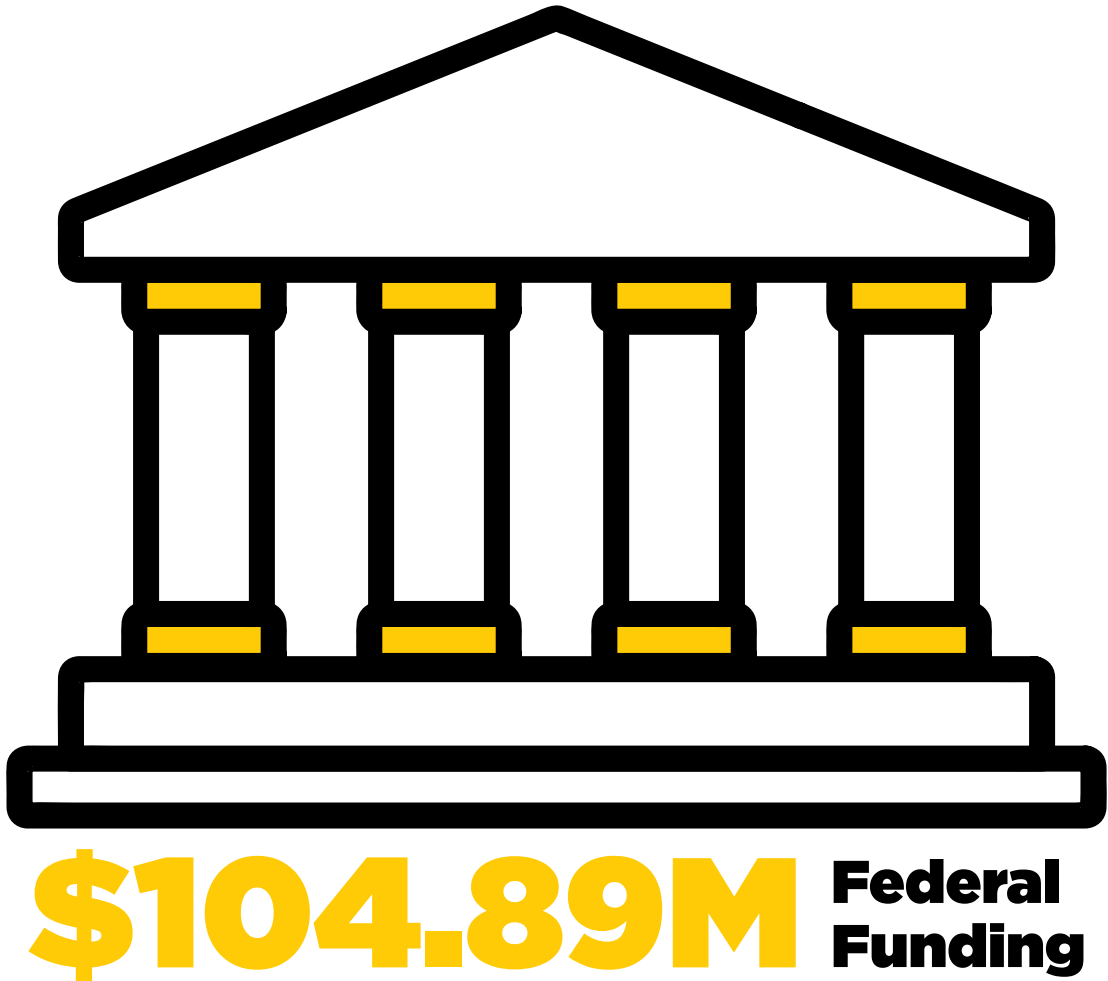
Totals are in United States Dollars (USD)

TYPES OF FUNDING



Key

- Federal
- Industry and Other
- State and Local



	2018	2019
Federal	97.60M	104.89M
Industry and Other	62.07M	66.04M
State and Local	23.45M	21.22M

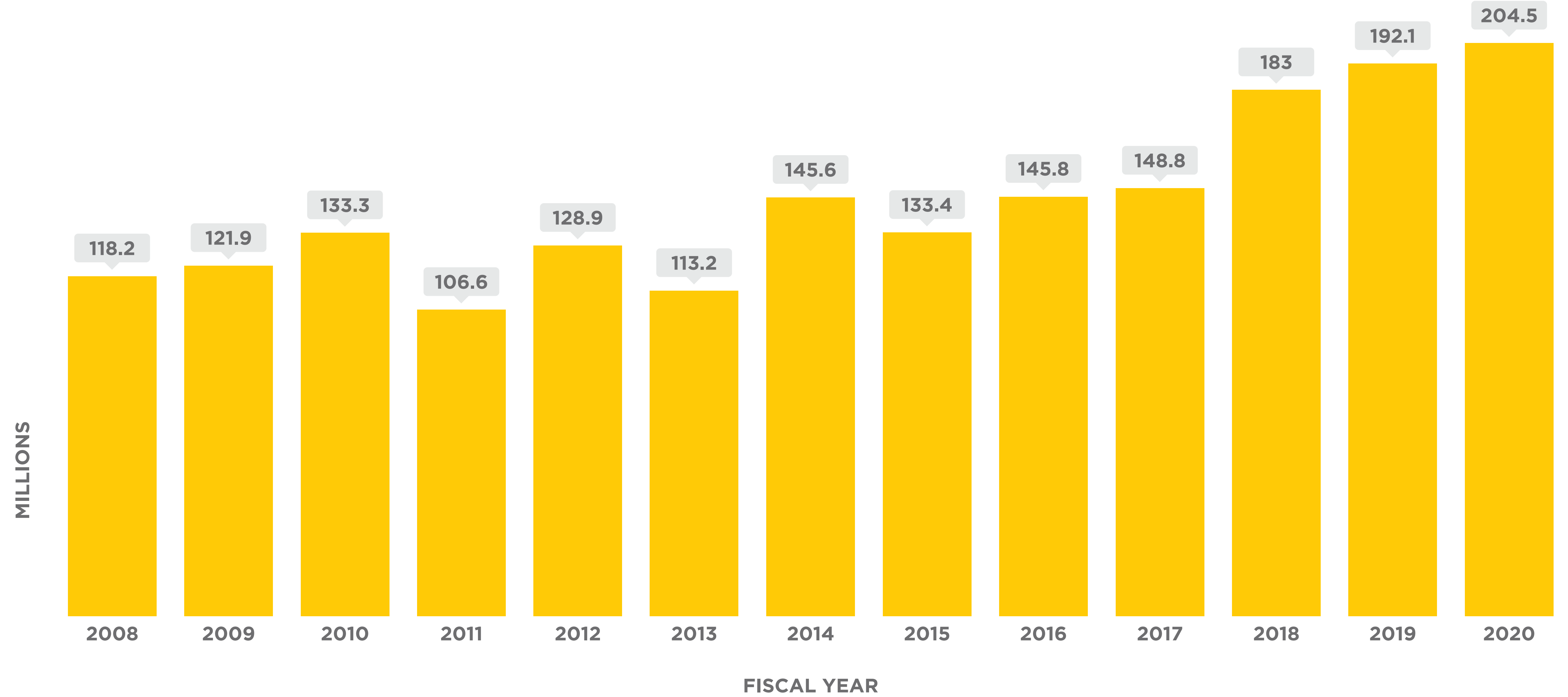
Totals are in United States Dollars (USD)

BREAKING NEWS

\$204.54

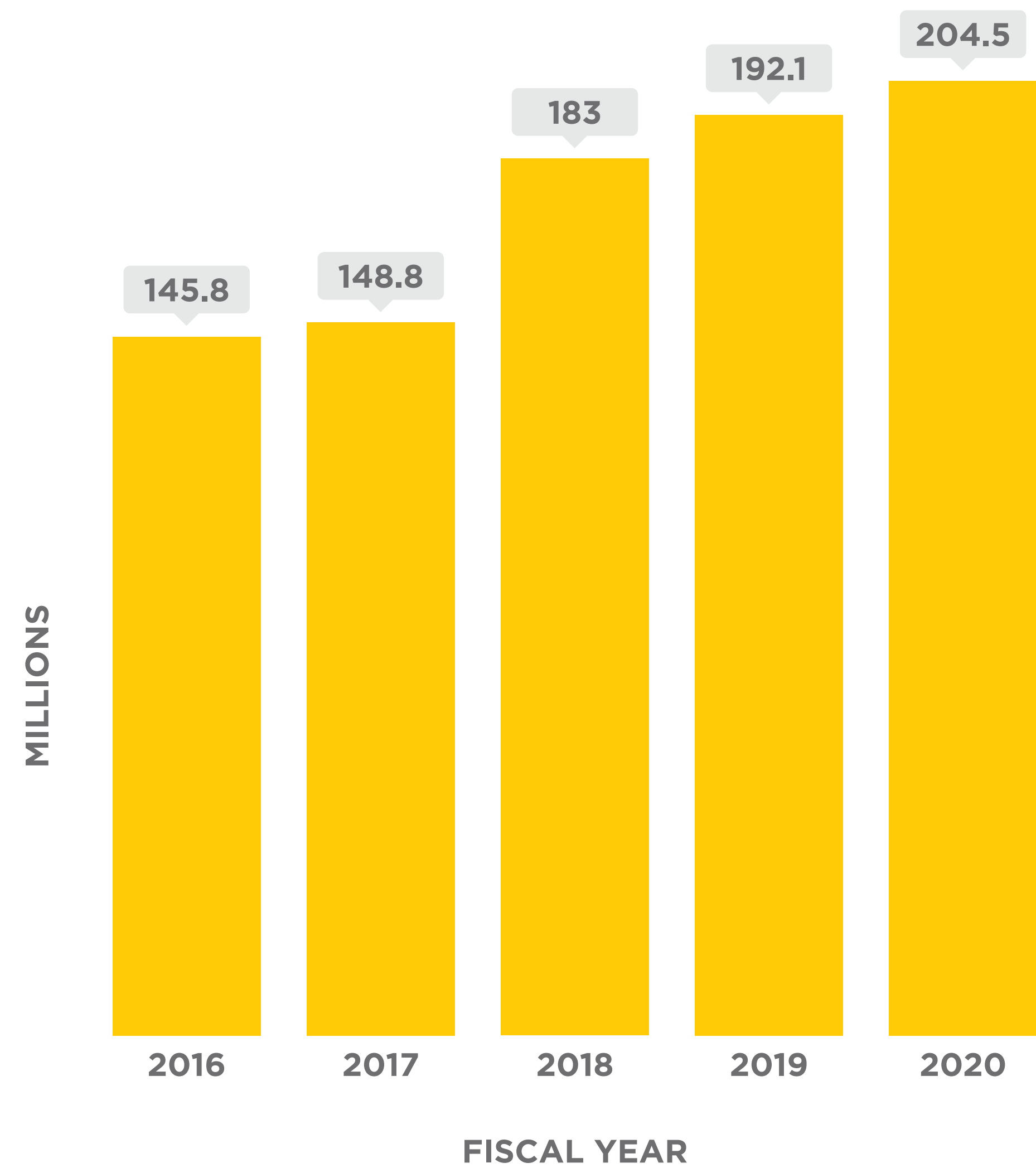
Million dollars of sponsored
research generated in 2020

FISCAL YEAR 2020 RESEARCH ACTIVITY



*FY 2020 Data Released in August 2020; Totals are in United States Dollars (USD)

FISCAL YEAR 2020 RESEARCH ACTIVITY



FIVE YEAR TREND					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
UCF	148.92M	148.79M	183.12M	192.14M	204.52M
Federal	84.12M	74.09M	97.42M	105.29M	110.77M
Industry & Other	30.64M	25.90M	44.11M	47.52M	46.45M
State & Local	21.45M	36.64M	30.97M	35.47M	47.30M

KEY FEDERAL					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
DOD	29.84M	23.41M	34.89M	35.84M	26.17M
NASA	17.71M	12.79M	9.49M	8.00M	10.30M
NIH	7.51M	9.19M	7.35M	12.29M	18.27M
NSF	10.09M	13.07M	23.09M	25.69M	31.60M

*FY 2020 Data Released in August 2020; Totals are in United States Dollars (USD)

Top Performers in 2019

College of Engineering
and Computer Science

42.71M

College of Sciences

27.38M

Institute for Simulation
and Training

17.52M

Totals are in United States Dollars (USD)

MEDIA HIGHLIGHTS



Examples of Media Placements

National	CNN, USA Today, Forbes, NBC News, Wired, New Yorker, Time, CNET, NPR
Local	WMFE, Orlando Sentinel, Orlando Business Journal, WFTV, WESH, WKMG, Fox 35, Spectrum News, Florida Today, Daytona News Journal, Tampa Bay Times
Science	Science Daily, Phys.org, Space.com, Astronomy Magazine, Discover Magazine Blogs, Science Times, National Park Service
International	Daily Mail, Mirror, several publications in Puerto Rico, Colombia, Ecuador, China and Germany

*Does not include media pitches or stories written with a UCF internal audience in mind



ACKNOWLEDGMENTS

The Office of Research and the College of Graduate Studies Communication Team compiled the 2019 Annual Research Report.

The team works directly with researchers across campus and college communicators to share stories with our campus community and to the outside world through the press.

Your 2019 ORGS Team

Zenaida Gonzalez Kotala
Carreen Krapf
Gerri Levitson
Karen Norum
Micaela Reyes
Elitza Rodriguez
Simone Rousseau
Andres Torres
Thalia Torres
Robert Wells

We want to thank all the faculty, student researchers, and support staff who reached out to us with great story tips this year. If you have a story tip, please send it to Research@ucf.edu.

A special thanks to our colleagues across campus for helping us share our collective research success throughout the year.

College of Arts and Humanities

Heather Gibson

College of Business

Erika Hodges
Joshua Miranda

College of Community Innovation and Education

D’Ann Rawlinson

College of Engineering and Computer Science

Kimberly Lewis

College of Graduate Studies

Carreen Krapf

College of Health Professionals and Sciences

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Camille Dolan
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College of Medicine

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Suhtling Wong-Vienneau
Christian Senior

College of Nursing

Carolyn Petagno

College of Sciences

Judy Froehlich
Kyle Martin

College of Undergraduate Studies

Barbara Smith

Rosen College of Hospitality

Susan Vernon-Devlin

UCF Marketing and Communications

Heather Smith

UCF Today

Thomas Bell
Laura Cole
Nichole Dudenhoefer
Jenna Lee
Gene Kruckmeyer