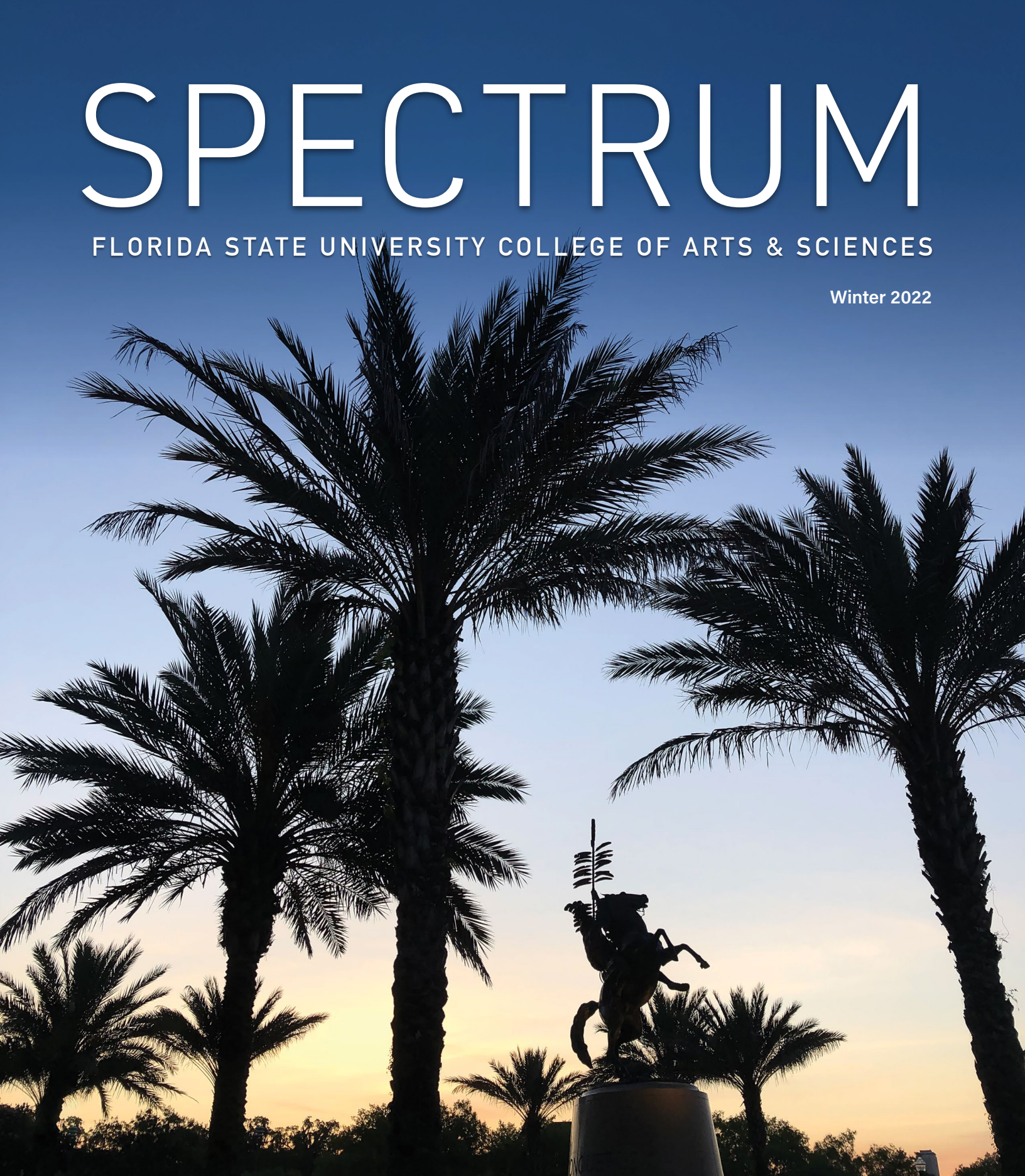
SPECTRUM

FLORIDA STATE UNIVERSITY COLLEGE OF ARTS & SCIENCES

Winter 2022



From the Dean

Welcome to the Winter 2022 edition of Spectrum magazine, the alumni publication of Florida State University's College of Arts and Sciences. This fall has been transformational at FSU with the arrival of new leadership, the debut of new academic programs, and the return of familiar, live activities across campus.

In late August, FSU welcomed Richard McCullough, former Harvard vice provost for research, as its 16th president. As an entrepreneur and polymer chemist with a deep academic background, broad fundraising experience, and an impressive overall portfolio, McCullough brings an interdisciplinary focus that aligns well with ours in the college. We are delighted to welcome him as our new leader and with a tenured professorship in the Department of Chemistry and Biochemistry.

FSU is also set to welcome new leadership in key university roles in the coming months. One of these is a result of Provost and Executive Vice President Sally McRorie's decision to return to the faculty in the College of Fine Arts. In January, Jim Clark, previously dean of the College of Social Work, succeeded McRorie as provost. Other executive vacancies include the vice president for research and the vice president for development at the FSU Foundation.

All of these roles are crucial to the college's mission, and we look forward to participating in the searches and welcoming those who fill the positions.

In August, the college launched its newest academic offering, the Interdisciplinary Data Science Master's Degree Program, drawing on the academic strengths of the departments of computer science, scientific computing, mathematics, and statistics to create a truly unique experience that will prepare graduates to step into careers in one of the fastest growing fields in the U.S. — data science. In this issue, you'll learn more about this program, its inaugural class, and the aspects that make it stand out from other programs in Florida and across the country.

The college has also ramped up its recruiting of the brightest faculty to educate tomorrow's leaders. While the COVID-19 pandemic dampened hiring over the last 18 months, we expect to add nearly 40 new faculty members across the college in the coming year to fill existing vacancies and expand in growth areas.

As the new year begins, our campus is full of vibrant energy and optimism. Through the pandemic, faculty members, students, and staff have been resilient and unwavering in their efforts, resulting in another stellar year of productivity for the college. It is my great pleasure and honor to serve as its academic leader.

I hope the stories within this issue underline the value of your connection to Florida State. We are so thankful you are part of our College of Arts and Sciences family.

Sam Huckaba
Dean, College of Arts & Sciences

SPECTRUM
FLORIDA STATE UNIVERSITY COLLEGE OF ARTS & SCIENCES

FEATURES

Corporate Caring

As Florida State University's research hub, the College of Arts and Sciences has a vested interest in enhancing its relationships with corporations and philanthropic foundations. Whether recruiting students, funding specific research or connecting philanthropically, the college is a gateway for companies interested in engaging with one of U.S. News and World Report's Top 20 Public Universities.

If your corporation is involved in specific research and you are interested in funding a faculty member's work, the college's development team can help guide you through establishing graduate assistantships and fellowships that may positively affect your bottom line. The college can also elevate your talent pipeline by helping you recruit outstanding and fully prepared FSU students or alumni. In addition to their academic excellence, these individuals possess problem-solving skills, hands-on experience and a wide variety of technical knowledge, and are ready to succeed on day one.

The most popular type of corporate participation is giving to FSU through employee gift-matching programs. If your company participates, corporate matching gifts allow you to double your impact when you invest in FSU's research excellence and student success.

For more information, or to make a gift, contact Nancy Smilowitz, the college's assistant dean for development, at 850.294.1034 or nsmilowitz@fsu.edu.

On the cover
The sun rises over the "Unconquered" statue on Langford Green outside Doak Campbell Stadium. The bronze sculpture, completed in 2003 by Fritz White, reaches three stories in height and celebrates the indomitable human spirit. The decade-long campaign to bring the project to life was spearheaded by FSU alumnus Stephen Reilly. Photo by FSU English alumna Stephanie Vivirito. Photo editing by Tom Morgan.

Nole Notes

The top news from around the college

Student success powers FSU's Top 20 ranking by U.S. News & World Report

Florida State University continued its impressive run as a Top 20 national public university and was also recognized as one of the country's best values in the latest U.S. News & World Report rankings.

FSU reaffirmed its place in the Top 20 among public universities for the third consecutive year, retaining its No. 19 spot. The university also climbed three spots to No. 55 among all national universities, both public and private. The rankings appear in U.S. News & World Report's "Best Colleges 2022" guidebook.

"As a Top 20 public university, our continued upward trajectory in the overall rankings of all universities is gratifying and encouraging," said FSU President Richard McCullough. "These rankings solidify our position as a top university, and in many ways, we lead the nation when it comes to student success. Florida State has a fantastic academic reputation and that will continue to rise as people see all the gains the university has made over the past five years."

MagLab chief scientist appointed to President's Council of Advisors on Science and Technology

Laura Greene, chief scientist at the Florida State University-headquartered National High Magnetic Field Laboratory, has been appointed to serve on the President's Council of Advisors on Science and Technology. Greene, who is also the Marie Krafft Professor of Physics in the FSU College of Arts and Sciences, was part of President Joe Biden's first group of appointees to the council in September.

"I am humbled and honored to be selected to advise the president on science and technology policy," Greene said. "I feel like this is my opportunity to serve my country in a way where I can make a real contribution and help ensure that America remains a global leader in both foundational and applied research."

Greene is a widely respected researcher on quantum materials and the mechanisms of unconventional superconductivity. She has held leadership roles in the nation's most prestigious science organizations, including president of the American Physical Society and a member of the Board of Directors for the American Association for the Advancement of Science. Greene is also a member of the National Academy of Sciences, the American Academy of Arts and Sciences, the Institute of Physics (U.K.), and the APS. She has been awarded the E.O. Lawrence Award for Materials Research from the U.S. Department of Energy, the APS Maria Goeppert-Mayer Award and the Bellcore Award of Excellence.

Laura Greene

PCAST advises on matters involving science, technology and innovation policy, as well as on matters involving scientific and technological information that is needed to inform public policy relating to the economy, worker empowerment, education, energy, the environment, public health, national and homeland security, racial equity and other topics. Although similar science advisory committees date to 1933 under President Franklin D. Roosevelt, the first PCAST was appointed by President George H.W. Bush in 1990.

Left: Igor Alabugin

Chemist wins prestigious Markovnikov Medal, honorable professorship

Igor Alabugin, a professor in FSU's Department of Chemistry and Biochemistry, was awarded the Markovnikov Medal from Moscow State University, Russia's largest and highest ranked university, in recognition of his outstanding achievement in the field of organic chemistry. He also received an Honorable Professorship from St. Petersburg State University, one of the top and largest universities in Russia.

Both honors were presented at ceremonies in Russia this fall, and the awards recognize Alabugin's career contributions to the field of organic chemistry: He has authored nearly 200 papers and, in 2016, published "Stereoelectronic Effects: A Bridge Between Structure and Reactivity."

Alabugin has been with FSU since 2000 and specializes in organic synthesis and catalysis, computational chemistry, nanoscience and photochemistry.

FSU receives $12.8M from National Institutes of Health to foster faculty diversity in health sciences research

A team of Florida State University researchers has received a $12.8 million National Institutes of Health grant to build a diverse community of early career researchers committed to improving mental health and chronic disease prevention and management.

Frankie Wong, McKenzie Endowed Professor in Health Equity Research in the College of Nursing and founding director of the Center for Population Sciences and Health Equity, will lead the project along with Sylvie Naar, Distinguished Endowed Professor in the College of Medicine and founding director of the Center for Translational Behavioral Science, and Pamela Keel, Distinguished Research Professor in the Department of Psychology in the College of Arts and Sciences. The project is supported by co-investigators in the FSU College of Nursing (Associate Professor Eugenia Millender) and the University of Hawai`i at Mānoa (Professor Jack Barile).

The university will use the funding to create the FLORIDA-FIRST BRIGADE, a program designed to support new tenure-track assistant professors and build a research community committed to diversity and inclusive excellence.

FSU was one of six universities chosen by the NIH to receive the funding and will use the dollars to recruit a cohort of six early-career, underrepresented minority biomedical researchers who have demonstrated strong commitment to promoting diversity and inclusive excellence. The grant comes on the heels of another NIH award worth $3.1 million to investigate and address racism in the health care system.

Arts and Sciences students, alumni earn Fulbright Awards

An FSU grad student and two recent alumni are recipients of research scholarships through the Fulbright U.S. Student Program that will provide funding for each recipient to conduct research projects abroad in 2022.

Beatrice Dain, who graduated in May with a double-major in anthropology and international affairs, will work toward her master's in global security and borders at Queens University in Belfast, Northern Ireland, starting in September.

Michael Rivera, a two-time graduate, earned his undergraduate degrees in biology and music in 2017 and will teach English in Abidjan, a city of 4.2 million people in the West African nation Cote d'Ivoire, beginning in September.

Marah Litchford is pursuing a doctorate in history and ethnography of religion at FSU. Specifically, she studies the role of Buddhism in Tibetan political protest, including self-immolation. Litchford's work will go toward her dissertation, and she'll be conducting it in Dharamsala, India, on the edge of the Himalayas.


Beatrice Dain


Michael Rivera


Marah Litchford

Chemists create new system to build compound critical to drug development

Assistant professor of chemistry and biochemistry Joel M. Smith, along with doctoral student Thiago Grigolo and undergraduate Ariana Subhit, published a paper in the journal Organic Letters outlining the process for a faster way to synthesize a class of compounds commonly used in the development of new medications.


From left: Thiago Grigolo, Joel Smith, Ariana Subhit

Researchers often make synthetic versions of naturally occurring organic compounds and turn them into therapeutics. Commonly, chemists typically use a piperidine ring as the starting scaffolding to build upon to forge new medicines. Substituted versions of piperidine rings can be difficult to synthesize, especially when substitution patterns and molecular space become more and more demanding to access.

This new reaction uses readily available materials and merges them with alkynyl building blocks with exquisite selectivity to synthesize dihydropyridines and piperidines, important rings that contain carbon, hydrogen and nitrogen. Using this simpler, faster process, chemists could produce piperidine rings more quickly and thus speed pharmaceutical development.

Smith said the team's ultimate goal is to make a variety of processes that are easily accessible to other researchers who are working to develop drugs for any manner of conditions.

Nole Notes

Aaron Rodriguez

English doctoral candidate receives NEH grant to improve visual accessibility

Aaron Rodriguez, doctoral candidate in FSU's History of Text Technologies Program, was awarded a $99,915 Digital Humanities Advancement Grant from the National Endowment for the Humanities to develop and release a beta-level app for blind and low-vision readers to enhance their accessibility to graphic and visual narratives.

Rodriguez shares the grant with Wichita State University Professor of English Darren DeFrain, and the two will continue work on the Vizling App that was initiated when Rodriguez was a master's student at Wichita State.

The app offers a touch-screen option for the blind and visually impaired to explore comics in three ways: global narrative or audiobook, narrative-grammar or panel-to-panel reading, and free exploration mode. Audio descriptions of page content are activated by dragging a finger across the screen and stopping on a panel, a speech bubble or an object on the page.

Rodriguez's is one of 20 NEH Digital Humanities Advancement Grants, totaling $2.3 million, awarded to support implementation of innovative digital humanities projects that have successfully completed a start-up phase and demonstrated their value to the field.

Wave wash-over threatens endangered sea turtle nests and hatchlings

Researchers from FSU's Department of Earth, Ocean and Atmospheric Science have found that wave wash-over can pose a significant threat to sea turtle nests, with wave exposure

Matt Ware

potentially impacting egg incubation and hatchling productivity.

Sustained exposure to waves may impact an embryo's viability as well as a hatchling's locomotive function, size, and sex – key elements that dictate whether the turtle will make its crucial first trip to the sea and indicators that it will survive into adulthood, said Matt Ware, a coastal ecologist and FSU postdoctoral fellow.

Mariana Fuentes

Ware, who earned his doctorate in biological oceanography at FSU, worked with associate professor of oceanography Mariana Fuentes, head of the Marine Turtle Research, Ecology and Conservation Group, on the study, which was published in Remote Sensing.

"This study was motivated by the significant number of nests along the northern Gulf of Mexico, and nesting beaches around the world, lost each year as a result of wave exposure, inundation and erosion during storms and high tides," Ware said.

Nesting beaches along the 200-mile-long Panhandle coast most at-risk from wave exposure include St. Joseph Peninsula, St. Joseph Peninsula State Park, St. George Island, Cape St. George Island and Cape San Blas. Combined, these beaches represent 60 percent of loggerhead sea turtle nesting in the Panhandle and around 300 at-risk nests each year.

Social psychologist awarded U.S. Army grant to study military couples

Jim McNulty, a Department of Psychology professor and director of the department's social psychology program, has been awarded an $869,000 grant from the U.S. Army to determine whether a computer application-based intervention technique can protect married couples dealing with relational threats such as physical separation and increased stress, which have been linked to notable marital disruption for military couples. Associate professor of psychology Andrea Meltzer will serve as a co-investigator for the research.

The project points to large bodies of research documenting the benefits of healthy, long-term close relationships, such as marriage, to meeting health and job performance goals. These parallels suggest that servicemembers' marital well-being should have significant impacts on their mental and physical health and their career performance.

Jim McNulty

Andrea Meltzer

"Maintaining a satisfying marriage can be tough for anyone, and many of the duties involved with serving, such as prolonged physical separations, can make marriage even tougher for military personnel," McNulty said. "Family functioning is critical to mental and physical health, and members of our military face challenges that threaten family functioning. I'm hoping we learn something that will allow us to make things easier for them."

Eric Sharkey

Nathan Crock

Alumni develop AI program to train emergency phone operators, save lives

FSU scientific computing alumni Eric Sharkey and Nathan Crock have developed a speech-to-speech artificial intelligence program used to help train phone operators who dispatch emergency services. Through a partnership with Priority Dispatch, the call-simulator software produced by NewSci — an artificial intelligence software development company based in Tallahassee — has been adopted by 911 call centers across the nation and around the globe.

"The call simulator is an AI-powered training program we've developed over the past few years that simulates a caller in an emergency situation," said Sharkey, two-time FSU alumnus and NewSci engineer. "Emergency call center operators need the necessary training to respond appropriately to a large variety of situations, and our simulator allows them to practice various emergency calls without risk to the public."

The speech-to-speech AI tool is a system that accepts speech input from the user and responds with AI-generated synthesized speech output. The system uses a speech-to-text model to transcribe user input into text, then natural language understanding algorithms are applied to distinguish meaning in the text.

In addition to lowering the cost of training, dispatch trainees can focus on practicing challenging protocols such as helping children callers and training for low-frequency, high-acuity situations like plane crashes. The augmented-training software reduces the need for human role-playing and the overall cost of training dispatchers. It also decreases operator training time and helps operators start saving lives sooner.

FSU, FAMU researchers receive grant to form new Gulf Scholars Program

Researchers from Florida State University and Florida A&M University have received a $1 million grant from the National Academies of Sciences, Engineering, and Medicine to form a new program to support students at both institutions who are interested in tackling challenges facing the Gulf of Mexico region.

The grant facilitates the launch of the FAMU-FSU Gulf Scholars Program, which will provide unique learning and research opportunities for undergraduates at both universities to become future leaders who will build more equitable, sustainable, and resilient Gulf Coast communities. Students in the program will learn about relevant regional issues affecting Gulf Coast communities and how they can leverage their research interests to address the area's longstanding social, economic, environmental, and justice-related challenges.

Faculty members from the FAMU-FSU College of Engineering, the FAMU College of Science and Technology, the FAMU-FSU Resilient Infrastructure and Disaster Response Center, as well as FSU's Office of Research and Development, Department of Anthropology, Center for the Advancement of Teaching, Center for Leadership and Social Change, and the FSU-headquartered National High Magnetic Field Laboratory round out the Gulf Scholars Program's leadership team.

Jayur Mehta

Jayur Mehta, an assistant professor of anthropology at FSU specializing in the study of Native Americans and applied environmental archaeology, is the curriculum development faculty lead for the program. He will assist FAMU and FSU faculty in developing proposals for improving their courses, or developing new courses, that support the program's overall mission.

Neuroscientist collaborates on international obesity research

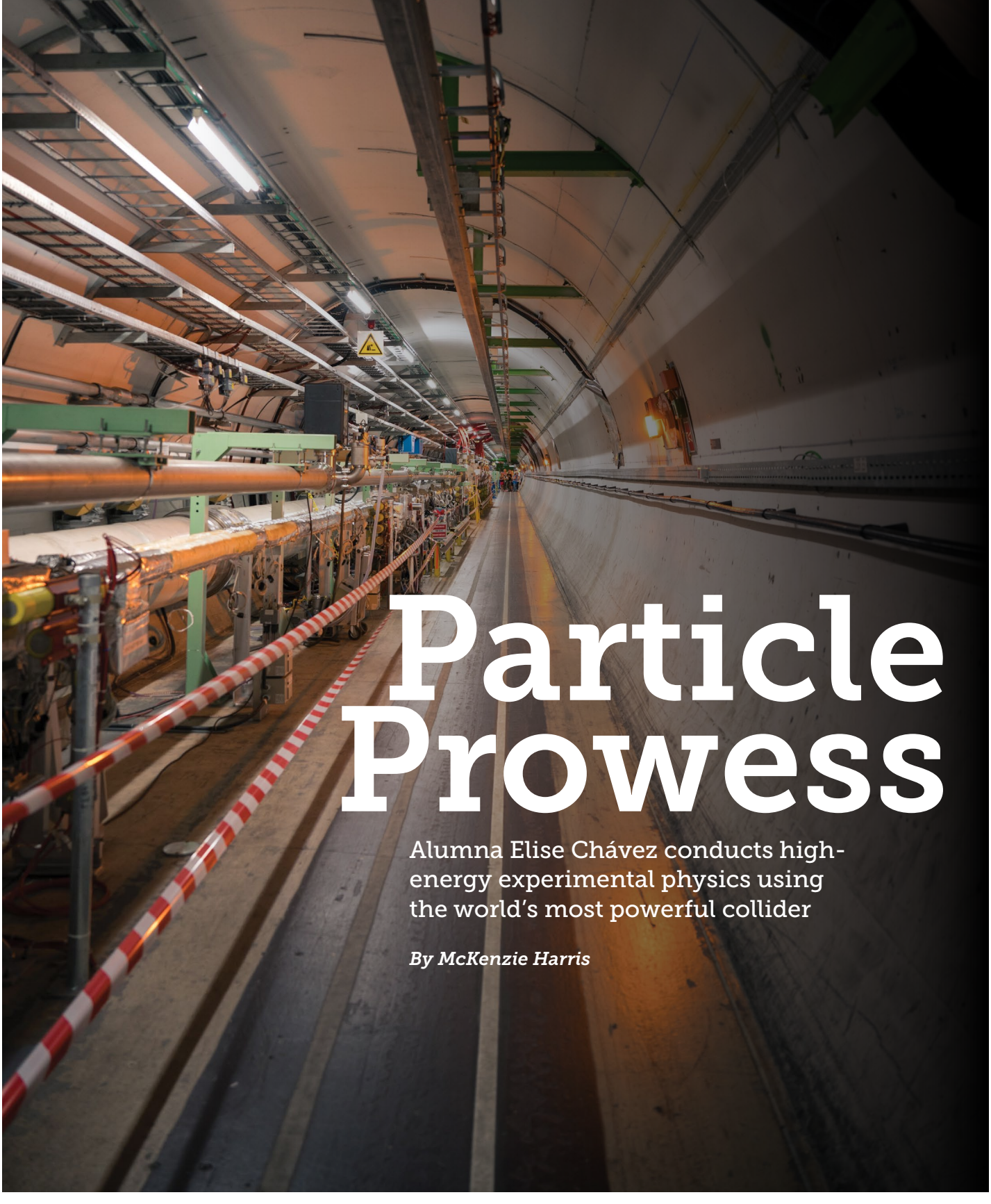
Alan Spector, a distinguished research professor with the FSU Program in Neuroscience and the Department of Psychology, is participating in a project made possible through the U.S.-Ireland R&D Partnership, an international research collaboration initiative between the United States, Ireland and Northern Ireland. The project comes with $1.68 million in funding from the National Institutes of Health.

Alan Spector

Spector studies the neural basis of gustation, sensory processes, regulation of ingestive behavior, and taste preferences and aversions. For this project, he is working closely with researchers from University College Dublin and Ulster University, Coleraine, to study in what ways gastric bypass, one of the most effective treatments for severe obesity, affects eating and drinking in patients before and after the surgery.

The global obesity rate comes at a high cost to healthcare, with the WHO designating raised body mass index as a major risk factor for cardiovascular disease, diabetes, musculoskeletal disorders and some cancers. The team's work contributes to an ongoing global scientific effort to understand the beneficial effects of gastric bypass in the hopes that effective non-surgical interventions to combat obesity can eventually be developed, Spector said.

Launched in 2006, the US-Ireland R&D Partnership is a tri-jurisdictional alliance formed to promote collaborative innovative research projects that create value above and beyond individual efforts. As of June 2021, the U.S.-Ireland R&D Partnership has funded 67 projects and raised over $130.7 million.



Particle Prowess

Alumna Elise Chávez conducts high-energy experimental physics using the world's most powerful collider

By McKenzie Harris

The Large Hadron Collider in Geneva, Switzerland. Photo by Erwan Martin.

While we're often encouraged to look at the big picture, Elise Chávez thinks small.

Chávez, a Florida State Department of Physics alumna, is a particle physicist, working at the nano level to examine and experiment with subatomic particles — electrons, protons, neutrons — the smallest building blocks of the universe.

Although she initially wanted to follow in her father's military footsteps and pursue a career as a Navy fighter pilot, Chávez's high school chemistry class clarified her future focus.

"When learning about atoms, I was more interested in electrons, protons and neutrons. I learned about more particles, which sparked an interest in particle physics," Chávez said. "I also enjoyed explaining the world around me through math, which I was quite good at, so I chose to major in physics."

Once at FSU, she reveled in coursework and became fascinated by the subatomic world and the Large Hadron Collider, the world's largest and highest-energy particle collider. The LHC lives more than 300 feet underground at CERN, the European Organization for Nuclear Research, in Geneva, Switzerland, and was built in collaboration with over 10,000 scientists, hundreds of universities and laboratories, and more than 100 countries. Its mission is to use the world's largest and most complex scientific instruments to probe the fundamental structure of particles that make up the universe and everything within it.

"Early on, students heard from a panel of professors discussing their research. One panelist was Andrew Askew, a member of FSU's High Energy Physics group, an amazing educator and an incredible adviser. He worked on the Compact Muon Solenoid, part of the LHC, and hearing his experience seemed like fate, given my interests," Chávez said. "I began working with him at the semester's end and completed two projects before conducting my thesis for the FSU Honors Program."

These projects included researching remotely on the LHC collider so Chávez could gain experience conducting complex analyses. Her first project included characterizing dead spots in the first layer of the CMS, the electromagnetic calorimeter. Dead spots can skew calculations, as energy is detected by only one of the CMS trackers, and the identification of these zones is crucial for correct data. The second project involved determining the mass distribution of photons produced in a collision, a tricky task for undergraduates.

"Many undergrads in particle physics feel dwarfed by the scope of things, especially by the five story-high detector and highest-energy collider in the world. Elise was never intimidated by the scale, and that's pretty unique," said associate professor of physics Andrew Askew. "She appreciated the scale, worked hard to understand the research and had a quiet confidence."

Chávez's research — then and now — is similar to that of a data scientist. The LHC is turned on, particles are shot at each other at exponential speeds, collisions happen, and data is recorded via advanced detectors. Data is filtered down and physicists write programs to calculate properties of the collision, such as what particles were seen, particles' specific masses, and if dark matter was observed. Because her work is data-driven, Chávez can conduct research on the LHC from anywhere in the world.

Before graduating in 2020, Chávez participated in Sigma Pi Sigma, the Society of Physics Students, and earned the Clara Kibler Davis Scholarship in Mathematics, a scholarship awarded to increase diversity in STEM, which ignited a passion for increasing representation in the field. She also interned for three summers at the Fermi National Accelerator Laboratory, located near Chicago. Fermilab, funded by the U.S. Department of Energy, is America's national accelerator laboratory specializing in high-energy particle physics.

"I've always wanted to work at Fermilab," she said. "I first interned through the lab's Summer Internship in Science and Technology in 2019,

Elise Chávez. Courtesy photo.

which is designed to increase opportunities for underrepresented minority groups in science and engineering. I was assigned a Fermilab physicist supervisor who created a project for me to work on throughout the summer. I also wrote papers, gave presentations, and made posters for each internship."

She then learned about the Graduate Degrees for Minorities in Engineering and Science fellowship program providing similar opportunities in advanced education. After earning the fellowship, Chávez continued working for Fermilab throughout Summer 2020 before starting graduate studies at the University of Wisconsin – Madison, where she earned an Advanced Opportunity Fellowship.

Chávez's passion for improving diversity in STEM fields has grown alongside her research on the CMS, as she interned for Fermilab again in Summer 2021. After graduation, she hopes to become a staff scientist at Fermilab or CERN, and she envisions a field composed of individuals who represent every different way one can be a physicist.

"I've become an advocate for women and minorities in my department. FSU's physics program is quite diverse, and I hope to make this a reality elsewhere," Chávez said.

McKenzie Harris is pursuing a master's in media/communication studies. She earned a bachelor's in English with a concentration in editing, writing and media in 2020.

John Wilcox. Courtesy photo. Photo illustration by Marc Thomas.

Balancing Act

Alumnus and researcher John Wilcox works to improve lives of diabetes patients

By Kendall Cooper

Training for a marathon is already a brutal, months long endeavor, but for John Wilcox, logging 40 to 60 miles per week in his preparation for the 2021 Boston Marathon posed an additional challenge. Beyond tackling training runs and balancing mileage increases and rest days, the Florida State University alumnus, and Type 1 diabetic, was also carefully monitoring his daily food intake, blood sugar and insulin dosages.

Approximately 100 years after the discovery of insulin, which turned a once terminal diagnosis into a manageable condition, Wilcox crossed the Boston Marathon's finish line this October.

"It is something I can barely describe in words," Wilcox said. "Running towards the finish line, with thousands cheering at the top of their lungs, was magical."

During his time in Tallahassee studying biological science, Wilcox grew to love running as a goal-driven means to manage his blood sugar. While a Type 1 diabetic can certainly be as

active as someone without the disease, many patients have to take extra steps before, during and after exercise. Wilcox checks his blood sugar before he runs and, if it's low, he has to eat and wait until it rebounds before he can head out. He also runs with medical identification and plans routes around places to buy food to boost his blood sugar, if needed.

Wilcox was diagnosed as a Type 1 diabetic on his 9th birthday and spent the following week in the hospital as doctors worked to stabilize his blood sugar and develop a treatment plan. Having ample support available to make it through that experience quickly showed Wilcox the importance of community for both new and established diabetes patients.

"They can provide you a sense of belonging, a source of education and inspiration," he said. "I was never self-conscious about being a patient with diabetes. Instead, I learned to use it as an opportunity to relate and empathize with people."

Wilcox also found community with the nonprofit Juvenile Diabetes Research Foundation. He and his family participated in fundraisers and awareness walks in the years following his diagnosis and, when Wilcox ran Boston, he ran in association with JDRF with the goal of raising $10,000 for the organization.

Community Commitment

As an undergrad studying biological science, Wilcox knew he wanted to participate in diabetes-related research and find a way to improve the lives of others who live with this condition. What he didn't anticipate was that he would co-found the diabetes research company Diatech Diabetes before his 2018 graduation.

Wilcox focused his efforts on insulin pumps, a common medical device used to help stabilize a patient's blood sugar — they mimic a functioning pancreas and serve as a lower maintenance alternative to frequent insulin injections. Unfortunately, the pumps often fail to work properly, which means patients may experience more sugar instability.

Diatech's origin story began as part of Wilcox's senior thesis, which focused on ways to reduce insulin delivery failure. He joined forces with biomedical engineering students Luis Blanco, Nick Cooper, and John Clark Gray, and the group quickly realized this research had major potential.

"Anyone who's interested in pursuing their passion, whether that's enacting change or starting a business, should go for it if they're dedicated and can really put the time and energy into it," said Wilcox, who graduated with a bachelor's in biological science and a chemistry minor.

The team pitched its prototype developments to the Jim Moran College of Entrepreneurship's 2018 InNOLEvation Challenge, but in order to accept the prize money from winning the competition's Most Innovative project award, they needed to actually create a company. And so, Diatech was born.

Innovation and Invention

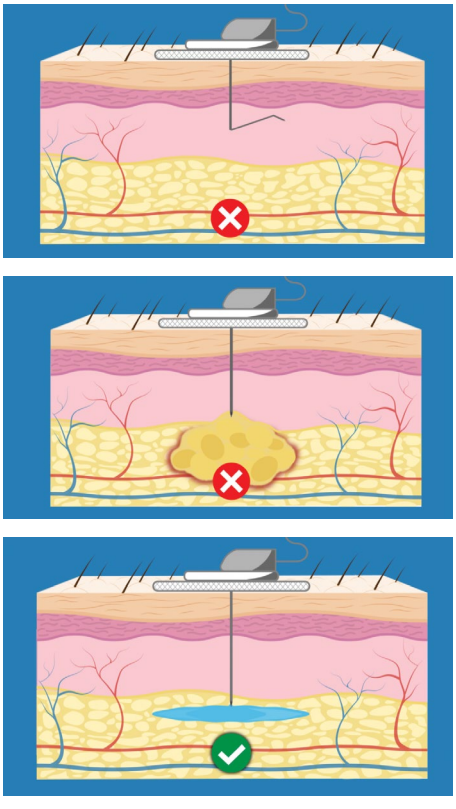
The research company develops medical devices and products. Right now, its focus remains on solving insulin pump delivery failure. Among its solutions is Diatech's SmartFusion system, which uses an algorithm that detects insulin delivery failure more successfully and quickly than the standard pump software.

Diatech's initial team of four has doubled in size with the addition of four advisers, including data scientist adviser Marzia Cescon. Cescon has been a part of the team for over a year and is responsible for the system's algorithmic developments.

"John possesses the ability of pragmatically describing the various day-to-day issues that patients encounter, as well as scientifically formalizing the perspective of patients," Cescon said. "This is an extremely valuable asset to Diatech's mission."

Since relocating to Memphis, Tenn., in 2019, the company has received awards and funding including a $300,000 Small Business Innovation Research grant from the National Institutes of Health and a medical device accelerator from ZeroTo510, a program granting access to mentorship and funding. Even in a new city, Wilcox still finds the connection to community to be among the most fulfilling aspects of his work.

Top down: Diatech Diabetes graphics depict a damaged insulin infusion site, a blocked insulin infusion site, and a successful insulin infusion site.



"One of the most impactful things that has ever happened in my life was directly talking to patients about the problems that they were having," he said. "To ultimately bring it full circle with discussions about ways in which that issue can be solved is incredible."

Kendall Cooper is pursuing a double major in media/communication studies and English with a concentration in editing, writing and media. She is set to graduate in May 2023.

Maj. Gen. Tracy Norris flies over Egypt's Sinai Peninsula during a battlefield circulation of Texas Army National Guard soldiers serving on the federal Multinational Force and Observers mission. Photo courtesy Texas Military Department Public Affairs.

Modern **Major General**

As the state's top military leader, alumna ***Tracy Norris*** guides the Texas Guard to meet today's missions

By Rodney Campbell

Being a leader is nothing new for Tracy Norris. In her long military career, the Army Major General has served in combat zones and worked her way through the ranks, earning increasing positions of responsibility.

When Texas Governor Greg Abbott needed someone uniquely qualified to serve as adjutant general of the state's National Guard, Norris was both a natural and unconventional choice. Norris, a 1984 Florida State University graduate, would be the first woman to serve in the role.

Abbott made history by promoting Norris, putting her at the top of the Texas Guard's organization chart. It sent a signal that critical military roles should be filled by the best people, regardless of gender.

"Being the first can obviously be scary, but it's a role I have embraced," Norris said. "As a force, we need the best people put in the right positions. If we are excluding the 50 percent of the population who are women from the talent pool, we can't do that. While it's an honor to be the first, my real sense of pride comes as I see young female leaders come up behind me."

Norris oversees Texas' Air National Guard, Army National Guard and State Guard. The state has the most National Guard troops in the country, with approximately 22,000. Its yearly budget checks in at around half a billion dollars.

The Guard is constantly at work in the state. It serves along the Mexican border, reacts to natural disasters and, since March 2020, has been key to Texas' response to COVID-19.

"General Norris has faithfully served the people of Texas and continues to make great strides in the modernization of the Army and Air Force, while increasing the capacities of the Texas State Guard," Abbott said when he reappointed Norris to the position in 2020. "Her dedication and expertise has guided Texas' response to challenges ranging from natural disasters to cybersecurity threats."

The ongoing pandemic and devastating winter storm of February 2021 presented unexpected and daunting challenges for Norris' team. Fulfilling its mission of serving its neighbors and communities, the Guard stepped up during and after the storm by staffing shelters, pulling vehicles out of ditches, and delivering supplies to some of the millions without power.

"You have to keep in mind that the Texas National Guard is primarily made up of part-time soldiers and airmen who have civilian jobs, are attending school or taking care of their families," Norris said. "These men and women have responded to three years of no-notice missions that required them to pause their personal lives as they were called to serve."

Norris' interest in service began when she attended FSU on an ROTC scholarship. FSU was already high on her list even before earning the scholarship.

Norris, who grew up in Atlanta, was introduced to the university by her uncle, Bill Bolton, who was an assistant men's basketball coach at FSU in the 1970s. As a youngster, she became hooked on the Seminoles when they made the NCAA Tournament title game in 1972.

A few years later, a campus visit made her choice easy: FSU was it.

"I wanted to get far enough away from home, but close enough to get back if needed," Norris said. "I fell in love with Florida State and Tallahassee. It's such a beautiful city and the FSU campus is just as beautiful. After my first visit, my mind was made up and I made the decision to go to Florida State. The rest is history."

She earned a bachelor's in anthropology and master's in urban and regional planning. She joined the service afterward and added a master's in business administration from the University of Texas.

"In college, you get your confidence and, along the way, I decided to join the ROTC program with a plan to go into the military," Norris said. "Those college years, meeting different people and joining the ROTC, definitely prepared me for military service and helped me mature really quickly so I could go on that adventure."

Her most recent visit to Tallahassee was in 2019 when she spoke to the FSU Army ROTC cadets. She was especially impressed with the cadets and their questions about being a woman in the service. It showed her that the next generation of Army officers didn't see gender as an obstacle.

"It made me feel confident in the future. It was a diverse group and they weren't shy and did not hesitate to ask questions," Norris said. "This group seemed confident, and they asked hard questions about being a woman in my position. My biggest piece of advice was, 'Be the best you can be at what you do."

Norris visits with Texas National Guard members serving near the Texas-Mexico border in support of Operation Lone Star, a state active-duty mission alongside the Texas Department of Public Safety to deter transnational criminal activities. Photo courtesy Texas Military Department Public Affairs.

Scenes from Angel Purganan's time at Florida State. Courtesy photos. Marching Chiefs photo by Melina Myers.

Ethical Considerations

Alumna Angel Purganan highlights how humanistic skills support data analysis, tech success

By Chase Clough

Saying Angel Purganan has a broad range of interests is a bit of an understatement.

When the Tampa, Fla., native graduated from Florida State University this spring, it was with dual degrees in philosophy and political science and minors in Middle Eastern studies and history. The 2020 Social Science Scholar also spent four years as a member of the FSU Marching Chief's clarinet section and later served as president of the Alpha Omega chapter of Tau Beta Sigma music sorority. And, she volunteered for four years with FSU's New Student and Family Programs, helping the newest Noles find their place in the campus community.

Purganan has always been drawn to the intersections of culture, knowledge and the human experience. After earning an international baccalaureate degree in high

school, she was ready for an immersive cultural and community experience during college. It was the dynamic range of academic options and the vibrant Marching Chiefs that drew her to FSU, although she chose not to major in music. She also tutored migrant and refugee students in English at Leon High School.

"Interacting with so many different people from so many different walks of life gave me a sense of diversity and community I never would have experienced otherwise," she said.

In the classroom, Purganan chose her fields to build a strong social and humanitarian understanding of the world that would be applicable to a variety of careers. The skills she possessed as a humanities major aided her in developing the communication styles needed when interacting with a variety of students, parents, and organizations about their unique issues.

"Being able to communicate one's ideas effectively is a necessity in any field," Purganan said. "While concentrating my studies in these areas, I also developed other skills, like data analysis and language learning, through the extracurriculars."

It is precisely Purganan's ability to make connections across groups and disciplines — and her Olympic-level time-management skills — that make her a keen analyst.

Purganan interned as a research assistant with the DeVoe L. Moore Center, a public-policy think tank involved in examining market-oriented solutions to pressing social problems at both state and local levels in Florida, compiling data for the Florida Open Government website using Tableau, a data visualization software. The position was recommended to her specifically because of her background in the humanities: Beyond reviewing the pure data, Purganan was able to interpret and present it in ways that humans understand.

Samuel Staley, the current director at the DeVoe L. Moore Center, believes the value of any team member lies within their diversity of insight and the experience they can bring to projects. To him, leaders must have the ability to think across disciplines and use multiple lenses to solve problems.

"The key is to go from multi-disciplinary — where you develop separate skills from different traditions — to interdisciplinary, where these perspectives are integrated and work off of each other," Staley said. "Angel is a great example of these skills, both in her major and the plethora of on-campus activities and organizations she has pursued."

Purganan and Staley are united in the belief that there must be a necessary connection between the humanities and data science. Purganan authored an op-ed in the Tallahassee Democrat last March about the subject.

At the time, a bill proposed cuts to lottery-funded scholarships for high-achieving Florida high school graduates, known as Bright Futures, for those pursuing humanities degrees in college. In the article, Purganan highlighted her experience as a dual major and her ability to easily acquire a job geared toward science, technology, engineering, and math majors because of the unique perspective and specialties she gained in the humanities.

"From sociologists working on today's popular dating apps, to anthropologists working at Nissan, successful data analysis requires both humanistic and technical skills," she wrote. "Those with backgrounds in philosophy, ethics, anthropology, and humanities-related disciplines are contributing to innovation and product development for cutting-edge businesses such as robotics. They provide the frameworks and programming designs for how technology can and should be used."

As the emphasis on humanistic skills continues to rise in the labor market, educational institutions will need to shift their focus and prepare their students for these interdisciplinary environments. Collaborative environments where students are encouraged to integrate with one another lead to new perspectives and deeper understandings of those around them, she explained.

For the near future, Purganan is putting her published perspective into career action. She's slated to travel to South Korea in early 2022 to teach English as a second language to local students. Following this opportunity, Purganan plans to pursue a master's degree that will allow her to secure a position as an ethics researcher in the video game industry in the Asia Pacific region.

"I missed out on the chance to study abroad due to COVID-19, so this move will let me engage with an entirely new culture and be inspired by the diverse experiences I can't wait to have," she said.

Chase Clough graduated in December 2021 with a double major in advertising and English with a concentration in editing, writing and media.

"Those with backgrounds in philosophy, ethics, anthropology, and humanities-related disciplines are contributing to innovation and product development for cutting-edge businesses such as robotics. They provide the frameworks and programming designs for how technology can and should be used."

— Angel Purganan

A Defense POW/MIA Accounting Agency life support investigator cleans evidence during a recovery mission in Belgium in May 2021. U.S. Air Force photo by Staff Sgt. Apryl Hall
Inset: Sarah Patterson. Courtesy photo..

Unfinished Histories

Alumna Sarah Patterson uses research expertise to help identify missing World War II personnel

By Rodney Campbell

The past has always been part of Sarah Patterson's future.

"I think there are several motivations that drive me to focus on history," said the two-time Florida State history alumna. "In part, I'm very curious. Doing historical research allows me to ask questions and then go look for answers. It's an unending process of learning."

Patterson's curiosity about the past drew her to graduate studies at FSU. She first entered the field while earning a bachelor's in anthropology at the University of Tennessee in 2006 and a master's in the subject from the University of West Florida in 2013. She also holds a bachelor's in English from Tennessee.

"I think history really became my passion when I started to understand that it was more than just a collection of facts that happened to people a long time ago," Patterson said. "The choices people made in the past are still impacting the present. Studying history allows us to understand ourselves as well as our ancestors."

When she arrived in Tallahassee, Patterson's work focused on the intersection of gender and military history. She quickly developed an interest about the experiences of women in the U.S. military, and her dissertation covered the impact of gender on the Marine Corps and its servicemembers from World War I through the Korean War.

"The further I delved into my research, the broader my interest in military history became, and my current research has branched off in a number of other directions as a result," she said.

The education Patterson received at FSU gave her the chance to pursue a career that incorporated her interests. Today, her research is done for SNA International, which provides scientific expertise and the ability to manage all elements of forensic science operations, biometric programs, and mass fatality response planning programs. Patterson got her job with SNA after earning her doctorate from FSU in May 2019.

SNA is a contractor for the Defense POW/MIA Accounting Agency, DPAA, which helps account for missing U.S. military personnel around the world. Patterson is a subject-matter expert and disinterment historian who concentrates on identifying soldiers and other personnel from the World War II era.

U.S. Air Force and Defense POW/MIA Accounting Agency personnel meet with local media during a tour of an excavation site in Brandenburg, Germany, in August 2021. U.S. Air Force photo by Staff Sgt. James Thompson.

"My time at FSU gave me a strong background in research and writing that has served me well in my current position," Patterson said.

Patterson's post-graduation path wasn't one she pictured, but her love of research, American history and helping people made the SNA position an unexpected fit. That service aspect underpins important job duties including answering questions from families at DPAA meetings, providing updates on the agency's work, and letting people know the status of their loved one's case.

"One of the most satisfying parts of my job is getting to speak with these people and hear about the servicemembers we're looking for," Patterson said. "While I don't do traditional teaching in my current role, I do have the opportunity to flex those skills working with families and the public."

Her research sometimes involves resources most people don't even know exist. One example is the American Graves Registration Service, or AGRS, the agency in charge of recovery and repatriation of remains of service members killed during and immediately after World War II. Knowing where to start and what assets are available are skills she honed at FSU.

"Research may sound pretty straightforward on the surface, but it takes creative problem-solving to locate new sources that pertain to your topic," Patterson said. "My FSU education taught me where and how to look, as well as how to analyze the sources I found."

Suzanne Sinke, director of graduate studies in FSU's Department of History, served as Patterson's dissertation chair. She saw Patterson at work on her way to earning her Ph.D. and was impressed with her ability to accomplish goals with peers and on her own.

"Her friendly demeanor, ability to get things done, and capacity for bringing people together meant that, to complement her research and writing prowess, she had a tremendous set of personal skills," Sinke said. "She embraced what our graduate program offered, excelled, and walked from the graduation stage into an excellent position that recognized and valued what she had to offer."

While many think of historians mainly as educators focused on past events, for Patterson, history is future focused: Historians serve the public, whether through recovery research, historic preservation, or by placing the past in context to facilitate understanding of the present.

"It's our job as historians to help people understand the origins of the social issues we face today so that we can better move forward with trying to address and fix them," she said.

Sister Sister

Doctoral candidates **Ashley and Caitlyn Edwards** share a passion for psychology and neuroscience

By Amy Robinson

When Caitlyn Edwards checked her email in July and learned she received a prestigious award, her first thought was to call her sister, Ashley. But, she wasn't so much hoping her sister would offer congratulations, as she was eager for Ashley to check her own email.

The pair, both Ph.D. candidates in Florida State University's Department of Psychology, were among just seven students from the state to receive the Philanthropic Education Organization's 2021 P.E.O. Scholar Awards, which recognize and encourage academic excellence and achievement by women in doctoral-level programs. The awards also include up to $20,000 to support study and research.

"I told her to check her email because I knew she would have a congratulatory email waiting for her. I wasn't surprised that Ashley won. She is one of the smartest, most talented researchers I know," said Caitlyn, a doctoral candidate in the Interdisciplinary Program in Neuroscience.

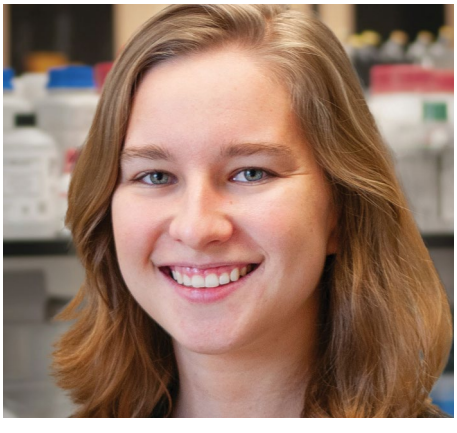
The Edwards sisters were drawn to the research opportunities offered at FSU's Graduate School after both completed bachelor's degrees at the State University of New York College at Geneseo and Caitlyn began her doctoral studies at the University of Pittsburgh. They first learned about the P.E.O. Scholar Awards opportunity via email from the psychology department and FSU's Office of Graduate Fellowships and Awards.

"It is great to be recognized as one of the top scholars who applied for this award, and it feels even better that my sister was also recognized," said Ashley, the younger sister, who is pursuing a Ph.D. in FSU's Developmental Psychology program. "To win this award together means so much more than if I had won alone."

Ashley's work focuses on dyslexia and reading development with specific emphasis on reading fluency. Her personal experience struggling with reading from an early age and later being diagnosed with dyslexia inspired her to pursue research on the topic through the lens of developmental psychology.

"I was not officially diagnosed with dyslexia until the summer before my junior year of college when I sought out testing after learning about dyslexia in an undergraduate cognitive psychology course. Since that moment, I have been driven to learn more about it and to help others with dyslexia as well," Ashley said.

Ashley became interested in applying to FSU for graduate school after studying the work of various professors in the field of reading research with affiliations to the Florida Center for Reading Research at FSU. Chris Schatschneider, psychology professor and associate director of FCRR, is one of Ashley's mentors.



Top: Ashley Edwards. Above: Caitlyn Edwards. Courtesy photos.

"Ashley is a rising star in the field of reading research," Schatschneider said. "She is also a great methodologist and is skilled with research designs and data analysis. Her future is very bright."

Caitlyn's area of neuroscience research centers on exploring the brain circuitry that underlies anxiety and avoidance. She hopes to provide insight into the neural mechanisms behind maladaptive and excessive avoidance behaviors that characterize stress-related mental health disorders, including post-traumatic stress disorder and anxiety.

"My interest in studying the brain started after taking neuroscience-related courses in undergrad and diving into a bunch of neuroscience and neurology books, especially by British neurologist Oliver Sacks. I was — and still am — in awe just thinking about how this incredibly complex network of neural connections generates all of our thoughts and behavior," Caitlyn said.

Caitlyn's graduate mentor, neuroscience and psychology professor Linda Rinaman, has been an outstanding source of support and encouragement. In the Rinaman Lab, Caitlyn has published several research papers on passive avoidance memory and the role of specific neurons in the consolidation and expression of learned avoidance behaviors.

"It's been wonderful having Caitlyn as part of our research group at FSU," Rinaman said. "She's a very creative scientist with huge potential for future contributions in neuroscience research and teaching."

When they aren't in the lab or presenting their research at events around campus, the sisters make time to grab lunch together or go hiking with their dogs. As for life after graduate school, they have similar goals in mind — Ashley hopes to become a professor at a research university with a lab studying dyslexia, while Caitlyn has her sights set on becoming a professor at a liberal arts college and inspiring undergraduates to engage in research.

"Caitlyn is the one who first introduced me to the idea of research which led me to the path I am on. I owe a lot of my success to her for that, as well as her continued support," Ashley said.

That support, Caitlyn adds, has been mutual.

"Ashley is one of my closest friends, so getting to celebrate our successes together is really special," Caitlyn said.

Tech Talk

*FSU computer science doctoral candidate **Daniel Bis** is teaching computers to interpret human language*

By Tom Morgan

Language is a fundamental part of the human experience. It's what separates humans from other animals. But since the 1950s, computer scientists have been trying to make computers capable of understanding language as well. A series of breakthroughs using machine learning, many over the last decade, have helped computers leap forward in the dissection of human text and speech. Now, a major question for technology researchers is the extent to which they can teach machines to truly understand language as well as humans – and take action.

Florida State University computer science doctoral candidate Daniel Bis is among those imbuing computers with the power to recognize, process, and respond to human speech and text. Bis, who also has an internship working on Amazon's virtual assistant, Alexa, said it takes teams of people with a variety of backgrounds, working in a field called natural language processing, or NLP, to make that happen.

Daniel Bis. Courtesy photo.

Language Processing

"The field is very broad but, in general, it's about making computers more adept at human language," Bis said. "There's a lot of people with backgrounds in linguistics who focus on grammar and formal structures of language whereas we, as computer scientists, are focused on more data-driven approaches."

Bis is largely concerned with a core component of NLP known as language representation, which involves developing mathematical models that help computers predict the meaning of one word using context gleaned from other information. Google searches, suggestions to auto-complete sentences in emails, and dictation software that turns speech into text are common applications of language models.

NLP, of course, applies to his work on Amazon's Alexa, which is considered to have the broadest range of capabilities among the virtual assistants at the top of the market. With more than 100,000 skills, Alexa has the capacity to control lights, cameras, speakers, garage doors, smart locks, security systems, and home appliances and is compatible with about 7,400 household brands.

Hey Alexa

Bis and his teammates work to help "disambiguate" user responses — for example, if two people were to say, "play the song 'Hello,'" that could mean either the song by Lionel Richie and the other by Adele.

"What we do is work under the hood to try to figure out which artist you meant," Bis said.

The team also works on fixing errors in the speech recognition system. Maybe there was background noise, and the word wasn't transcribed correctly. But based on the context of the interaction, the system could conceivably adjust, without needing the user to repeat the request.

Bis said he's applying principles he learned as an undergraduate and now a graduate student at Florida State to the Alexa project. His interest in the field began when he discovered IDEA Grants from the Center for Undergraduate Research and Academic Engagement, or CRE, which fund student research and creative projects during the summer.

Big Idea

"IDEA Grants allow students to be the drivers of their research experience, crafting their own questions, managing their timeline, and forming their own conclusions," said Latika Young, CRE director. "Of course, as undergraduate researchers, these students are still guided by faculty mentors, but the IDEA Grants enable students to transition from acting as a research assistant to a proper researcher in their own right."

Bis asked Xiuwen Liu, chair of the Department of Computer Science and now his doctoral adviser, to help oversee the IDEA Grant. Liu steered him toward language processing as a growing field with interesting problems for the proposal. Bis won the 2018 Nancy Casper Hillis and Mark Hillis Undergraduate Research Award and received $4,000 to conduct his research.

"I worked on a text summarization tool, which would take a longer news article and automatically generate a summary. Our approach belonged to a family of abstractive summarizers, which are designed to generate novel sentences. It worked out pretty well, but had some shortcomings, such as occasional factual inconsistency, a widely studied issue in the field currently," he said.

Solid Foundation

Liu said, more importantly, the grant supporting Bis' work on summarization laid the foundation for his focus on helping computers find meaning through context.

Bis started working on helping computers disambiguate, or correctly define a word with multiple meanings, while he wrote two papers as an undergraduate. For those papers, he focused on biomedical information, in collaboration with the FSU College of Communication and Information's School of Information, which offers training in health informatics.

As applied to health informatics, disambiguation could make searching research documents easier for health professionals, as the word "cold" may mean just a common cold or be the acronym for chronic obstructive lung disease.

"Most of human knowledge exists only in text form. Whether it's the law or medical research, it's in documents, the trove of which is only growing as more is published," Liu said. "It's not possible for a single human to read it all, let alone actually understand it. One way to overcome that problem is to use language models to help us."

Bis said he likes having the ability to directly impact customers, being involved with engineering, and solving practical problems. He's leaning toward taking research positions in the technology industry or in applied science after completing his doctorate at FSU.

"Most of human knowledge exists only in text form. Whether it's the law or medical research, it's in documents, the trove of which is only growing as more is published. It's not possible for a single human to read it all, let alone actually understand it."

— Xiuwen Liu, Chair, FSU Department of Computer Science

Helpful Hands

Senior Alexis Cox combines science and volunteerism to improve the lives of others

By Amy Robinson

Alexis Cox. Photo by FSU photography services.

Actress and philanthropist Audrey Hepburn made famous the quote, "As you grow older, you will discover that you have two hands. One for helping yourself, the other for helping others." When it comes to Florida State University biology major Alexis Cox, her extensive list of volunteer work suggests she has about a dozen extra hands at the ready.

Cox, a Florida native, loved science from an early age and spent much of her childhood exploring the woods of Calhoun County and collecting animal bones, bug exoskeletons, and mosses to proudly display in her own do-it-yourself museum. She excelled in high school AP classes and found a perfect fit for her bachelor's degree in FSU's Department of Biological Science.

Just over a month into Fall 2018, Cox's freshman year, a late-season storm set its sights on the Florida Panhandle. She hunkered down with her family at their home in Panama City as Hurricane Michael made landfall in neighboring Mexico Beach as a powerful Category 5 storm.

"My grandparents refused to evacuate so my family decided to stay as well," Cox said. "I remember watching the awning being ripped off the back of the house and running around with buckets to prevent the water dripping from the ceiling from ruining things."

While Cox and her family weathered the storm safely, Michael proved devastating for Bay County. She returned to FSU a few days later with twin sister Jacqueline, a budding neuroscience major, and younger sister, Morgan, in tow, quickly making plans to juggle schoolwork with weekend trips back home to help churches and residents pick up the pieces.

"I helped host a camp to get kids out of their damaged homes and have some fun playing volleyball, and we helped feed families who were in a tough financial situation after the hurricane," Cox said. "It was nice to be able to bring joy to these kids who were very stressed and confused about the difficulty everyone in the area was facing."

Helping in the storm's aftermath was just the start. Cox brought her passion for helping others back to Tallahassee and, when COVID-19 escalated into a global pandemic, she volunteered as a patient screener at Care Point Wellness Center to help protect health care staff from exposure to the virus. She also took on volunteer roles at Tallahassee Memorial Hospital's Internal Medicine Unit and Covenant Care, assisting hospice patients and their caretakers.

Cox brings that altruism into the lab, where her undergraduate research was inspired by learning of several friends diagnosed with celiac disease or gluten intolerance. The project, which earned her team an IDEA grant from FSU's Center for Undergraduate Research and Academic Engagement, examines the connection between the gut microbiome and celiac disease by determining if the former is casually or causally associated with intestinal inflammation in vitro.

"Alexis loves reaching out and helping others when it comes to science and research," said Ravinder Nagpal, an assistant professor in the Department of Nutrition and Integrative Physiology in the FSU College of Health and Human Sciences and the principal investigator for Cox's celiac research. "She is always kind, respectful, and dependable and that, along with her energetic personality, inspires others."

When she's not working on research or volunteering, the honors student spends her time with the Academic Recruitment Organization, the National Society for Leadership and Success and the North Florida Student Fellowship. In 2019, Cox was one of only 18 students nationwide to be selected for the Summer Anatomy Institute hosted by Johns Hopkins. There, she worked in a cadaver lab and shadowed physicians at Johns Hopkins Hospital.

For the past two years, Cox also served on the executive board of the Connecting Experimental Lab and Life Sciences, CELLS, group at FSU. Elizabeth Foster, associate dean of Interdisciplinary Medical Sciences at the FSU College of Medicine and Cox's CELLS adviser, said

Scenes from Cox's community service work. Courtesy photos.

her genuine love of research and the process of discovery motivated fellow group members to find what interested them through reading faculty publications.

"When I think of Alexis, I am reminded of that spark we all want to tap into — that joy of trying your hardest to achieve something, and the sense of accomplishment because you reached your goal," Foster said.

As she looks toward graduation, Cox is enthusiastic about the versatility of her biological science degree and plans to attend graduate school to pursue a Ph.D. in cellular and molecular biology. She hopes to conduct research on bone metabolism and inflammatory diseases, continuing her overarching mission to help make a difference in the lives of others.

"I have been so blessed in my life with relatively good health, a strong support system, and a great community," Cox said. "I want to bless and help other people."

Key Insights

Students in FSU College of Arts and Sciences' new master's degree program learn to use Big Data to answer big questions

By Tom Morgan and Heather Athey

For the past decade, digital data has experienced exponential growth as technology has changed how information is created, captured and consumed. The amount can easily double from year to year, and Statista projects 181 zetabytes — that's 181 billion terabytes — will be produced in 2025.

As this new information age has reshaped our lives, from how we make purchases and connect to work and learn, to how we search for answers, companies are clamoring for employees who can understand, analyze and generate meaning from data. For these individuals and the companies that employ them, Big Data has also meant a paradigm shift in decision-making and business operations, and the emergence of one of the fastest-growing fields in the U.S. and the world — data science.

This fall, Florida State University's College of Arts and Sciences launched a new interdisciplinary graduate program to train students to step seamlessly into careers in this digital era. The FSU Interdisciplinary Data Science Master's Degree Program, or IDS, leverages FSU's strengths in computer science, mathematics, scientific computing, and statistics to prepare students for contemporary careers in data science.

Opportunity Knocks

"The FSU IDS program is innovative and timely, and will help address the nation's demand for data science experts," said Sam Huckaba, the college's dean. "Those involved with building the curriculum have done an outstanding job identifying essential material that will help provide graduates with analytical tools and necessary skills."

The new self-pay program is delivered exclusively at FSU's Tallahassee campus. Students complete a series of core courses providing a solid starting point in mathematics, machine learning, statistics, data ethics, and databases, along with electives that support a specific major area of study — computer science, mathematics, scientific computing, or statistics. Nineteen faculty members from across the program's major disciplines guide students through coursework and major selections that meet their individual needs and goals.

Graduates of the program will fill a growing demand for a workforce trained in data science and possess sought-after skills to read, analyze, explore, model, and draw conclusions from the highly complex, multi-dimensional, rapidly expanding and diverse data universe.

"The data science market is projected to be worth $103 billion by 2023, and the U.S. Bureau of Labor Statistics projects that jobs for computer and information research scientists, and data scientists, will experience 14 percent growth through 2028," said IDS program director and chair of scientific computing Gordon Erlebacher. "Learning how to responsibly collect, analyze, and apply data to a variety of fields will be key to success for FSU students now and into the future."

Several alumni from IDS' affiliated programs have already landed jobs in the data science industry. Still, the ability to earn a degree in data science at FSU will cement future graduates' preparation and marketability to employers. Sectors where data science skills will prove indispensable include cybersecurity, data information processing, financial services, epidemiology, public health, survey research, airline and auto industries, real estate, online retail, and more.

Gordon Erlebacher. Courtesy photo.

> *"The program will appeal to any student holding a degree in a mathematical sciences discipline, but will also be of interest to students from other disciplines, such as the physical sciences and engineering, or in fact any discipline, who have satisfied baseline prerequisites. Further, the IDS platform is designed to eventually accommodate major tracks all across campus."*
>
> *— Sam Huckaba*
> *Dean, FSU College of Arts and Sciences*

Interdisciplinary Intent

FSU's IDS program was designed with students from a wide range of undergraduate backgrounds in mind.

"The program will appeal to any student holding a degree in a mathematical sciences discipline, but will also be of interest to students from other disciplines, such as the physical sciences and engineering, or in fact any discipline, who have satisfied baseline prerequisites," Huckaba said. "Further, the IDS platform is designed to eventually accommodate major tracks all across campus."

Jamie Quinn, research faculty at FSU's Florida Center for Reading Research, joined the IDS computer science program as a part-time student in Fall 2021 to acquire new data management skills. Quinn is a three-time FSU alumna with a doctorate in developmental psychology who conducts analytical research on early education.

Part of her work involves serving as the data manager and analyst for Reach Every Reader, a joint project between Florida State, Harvard, and MIT, funded by the Chan Zuckerberg Initiative, to study improving early identification of struggling readers. The group is building playful apps for kids that researchers and teachers can use to screen children for early language and literacy skills.

"[The application] is measuring every single time the iPad is touched in some way. After a few months of testing, the data file includes hundreds of thousands of data points in long-format," Quinn said. "The question over the last three years of the project has been what can we do with all the data. The data science aspect seems to be a perfect fit. I'm already learning so many ways to think about that in my Introduction to Data Science class."

Samuel Mirtil, who has a bachelor's in statistics and a minor in mathematics from Florida International University, joined the IDS statistics program this fall. He's spent the last few years in related coding and analyst positions for an insurance company and is continuing to work part-time while he is a full-time student.

Mirtil said he's gaining skills he can apply in the insurance industry but also sees a variety of opportunities.

"I'm learning that data science is very diverse and includes specializations in subjects like machine learning, artificial intelligence, or data visualization," Mirtil said. "I'm already acquiring skills applicable to multiple areas."

Ethical Considerations

The IDS program's structure makes it different from programs currently in existence at FSU, and its interdisciplinary strategy distinguishes it from similar data science programs at other institutions, which are typically housed within a specific subject, said Tom Needham, assistant professor in FSU's Department of Mathematics and an IDS program faculty member.

While there are other data science education programs in Florida's State University System and the U.S., the FSU IDS program is also unique in its inclusion of ethics and communication as part of the core curriculum.

"Spending time educating our students on the ethics related to data mining and data extraction, and communication skills and strategies, will strengthen their sense of responsibility and increase the value they bring to potential employers after graduation," Erlebacher said.

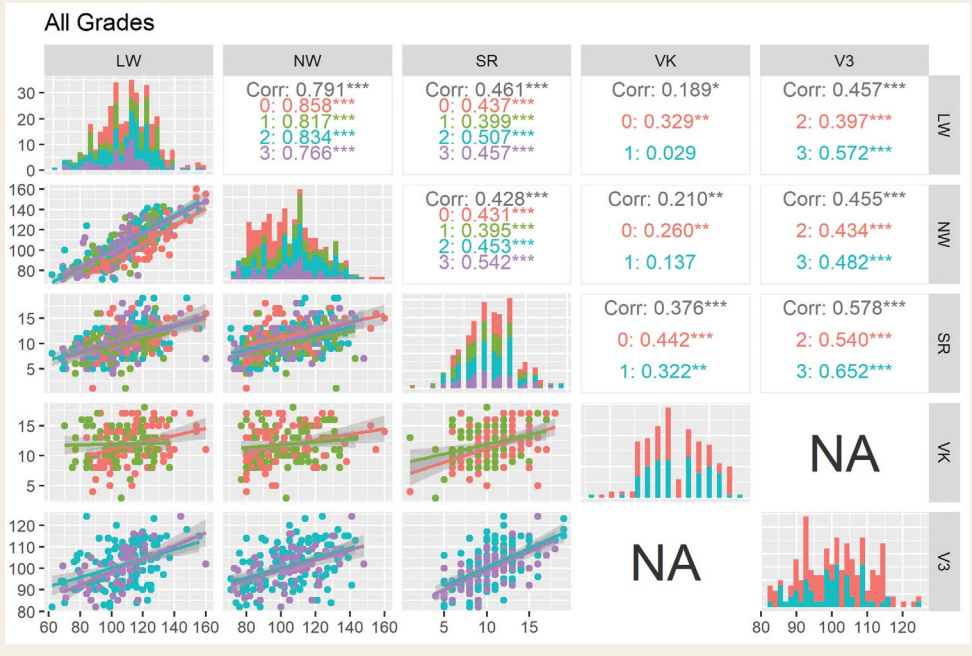
Samuel Mirtil. Courtesy photo.

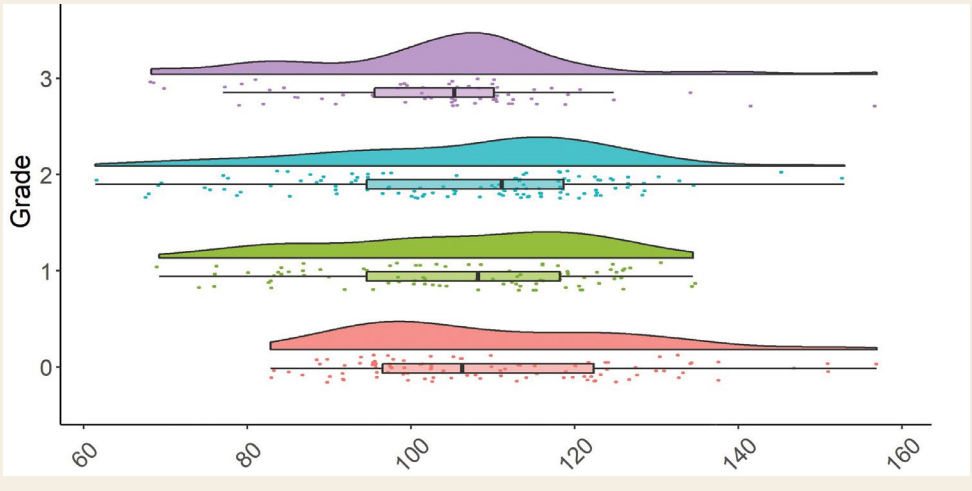
Data visualizations by Jamie Quinn

Right: A figure showing the correlations (top right), distributions (diagonal), and scatterplots (lower left) for standardized reading and language measures, separated by grade level. Asterisks indicate level of statistical significance: *** = p<.001; ** = p<.01; * = p<.05.

Below: A rain cloud plot showing the distributions, central tendencies, and density of scores on a standardized reading measure separated by grade level.

Jamie Quinn. Courtesy photo.





Zina Ward, assistant professor of philosophy in the FSU Department of Philosophy, works with IDS students on important ethical questions about how data should be collected, stored and analyzed.

Such considerations include protecting patient privacy in large medical datasets and how machine learning algorithms may be used to decide who to release on bail or which job candidates to interview.

"Philosophers have been talking about privacy and fairness for a long time, so philosophical work can consider these questions in a careful, systematic way," she said.

Quinn's work often requires handling sensitive data involving children. A priority for her was learning more about cleaning data so researchers could use it without tying a specific child to a specific data point. She's found the program flexible based on her existing skills and her goals.

"It is very apparent they've been thinking about how to structure this program for years. As a researcher from a separate field, the class structure can accommodate what I want to learn and get out of the program," she said. "I'm really excited to continue learning with these amazing scholars over the next couple of semesters."

To learn more or submit an application, visit datascience.fsu.edu.

Allison Wing. Photo by Amy Robinson.

Atmospheric **Aptitude**

Climate scientist and assistant professor Allison Wing is a force in the field of atmospheric science

By McKenzie Harris

Like superheroes, most meteorologists have an origin story. A lifelong passion for weather often starts with a single moment when Mother Nature's fury leaps off the television screen and into real life.

For Allison Wing, a climate scientist and assistant professor of meteorology in Florida State University's Department of Earth, Ocean and Atmospheric Science, Hurricane Bob's 1991 landfall in Rhode Island started it all. Wing, aged 5, and her family were vacationing on Cape Cod, Mass., when the Category 2 storm roared ashore with sustained 100 mile-per-hour winds. The family had to evacuate their rental and take shelter in a nearby high school gymnasium.

"I remember finding the whole experience very exciting — the strong winds, having to evacuate. This is one of my

earliest memories, and it sparked my interest in hurricanes," Wing said. "I remained interested in weather throughout my childhood; I watched The Weather Channel every day in middle school."

After earning a bachelor's in atmospheric science from Cornell University in 2008, the White Plains, N.Y. native completed a doctorate in atmospheric science at the Massachusetts Institute of Technology in 2014. Wing conducted postdoctoral studies at Columbia University's Lamont-Doherty Earth Observatory before joining the faculty at Florida State in 2017.

"Allison was a joy to work with," said renowned atmospheric scientist and professor of atmospheric science Kerry Emanuel, Wing's doctoral adviser at MIT. "She quickly caught on to exotic ideas and pursued these ideas enthusiastically. Before long, she created her own ideas and developed into an independent researcher."

Today, Wing's research has a global impact on scientists' understanding of climate change. Cloud response to warming is the biggest uncertainty in future climate projections, and her research on the role of cloud clusters in climate, including leadership of an international intercomparison of idealized models, hopes to narrow down that uncertainty.

Wing's work focuses on the most significant questions in atmospheric and climate science, such as what controls the number of tropical cyclones around the world in a given climate.

"While about 90 tropical cyclones form per year, scientists don't know why it isn't instead nine, or 900, and tropical cyclone intensification remains difficult to forecast," Wing said. "Such exploration is crucial in creating more accurate forecasts of individual storms and considering long-term climate projections."

She also teaches undergraduate courses in meteorology and mentors graduate students in tropical meteorology and climate science.

"Working with Dr. Wing was the best decision I've made in my academic career," said Jake Carstens, a meteorology doctoral candidate and two-time alumnus of FSU's Department of Earth, Ocean and Atmospheric Science. "While her knowledge and research touch on some of the most pressing issues in our field, what she puts into teaching and mentorship on top of her research resonates with me the most."

Since arriving at FSU, Wing has received funding from the National Science Foundation, NASA and the National Oceanic and Atmospheric Administration. In 2021, she was awarded a New (Early Career) Investigator Award from NASA and an Outstanding Early Career Award from the American Meteorological Society's Committee on Tropical Meteorology and Tropical Cyclones.

"Dr. Wing is an energetic talent who has quickly established a lofty reputation, and her work deserves the accolades it is receiving," said Sam Huckaba, dean of FSU's College of Arts and Sciences. "We're pleased to have her as a faculty member in EOAS, where her cutting-edge climate research and teaching prowess fit perfectly."

In September, Popular Science magazine named Wing to its Brilliant 10 list of groundbreaking early career researchers in recognition of her work on the organization of tropical convection, or clustering of clouds and thunderstorms. Wing was selected from among hundreds of scientists across varied disciplines researching creative solutions to the world's most pressing problems.

"I'm honored to be listed alongside incredible young scientists and engineers, and I'm grateful the importance of my research is recognized," Wing said. "I'm passionate about my work because understanding how our natural world works is fascinating and intellectually stimulating but also due to its vital importance to society."

Wing's research has been published in scholarly journals including the Journal of Advances in Modeling Earth Systems, Proceedings of the National Academy of Sciences, Geophysical Research Letters, Journal of Climate, and Journal of the Atmospheric Sciences, among others. She's also appeared in local and national media outlets, discussing scientific details in an accessible way. In October, she joined FSU alumnus and international climate and meteorology expert J. Marshall Shepherd on his Weather Geeks podcast.

"I couldn't make these contributions without outstanding and supportive collaborators from around the world and my dedicated students at FSU. I'm proud to be part of an incredible community of scientists who collectively achieve and enable great innovations and leaps in science," Wing said.

Left: Wing and her students. Right: Wing preps to board a Hurricane Hunter aircraft. Courtesy photos.

Cheyenne Tempest. Courtesy photo.

Gifting Greatness

Donors enhance available opportunities, research conducted in the Florida State University College of Arts and Sciences

By McKenzie Harris

For Department of Classics alumna Cheyenne Tempest, conducting research abroad seemed like an impossible dream. Thanks to gifts from generous Florida State University College of Arts and Sciences donors, Tempest has excavated at archaeological sites in Italy as well as designed and mounted museum-level exhibitions in one of the world's most culturally rich cities.

"This funding allowed me to put years of education into practice and achieve a lifelong dream and goal: I got to be an archaeologist," Tempest said. "The experience I gained at Cetamura greatly prepared me for my work in archaeology and, without this gift, my participation wouldn't have been possible."

Donor support of the college can help students achieve scholastic and career goals. Through the Bucher-Loewenstein scholarship, now the Bucher-Loewenstein Museum Internship Award, Tempest learned invaluable lessons from her experience excavating at the Cetamura del Chianti research site in Italy. The award is made possible through contributions by Suzanne Bucher in honor of her late husband, Bob Loewenstein.

"These funds make a significant difference for undergrads, graduate students and faculty," said Nancy Smilowitz, College of Arts and Sciences assistant dean of advancement and alumni affairs. "Graduate students are provided support that allows them to focus their time on research instead of working outside jobs, and undergraduates have more research opportunities such as working in a professor's lab over the summer.

"When alumni visit campus, many comment on their relationships with faculty mentors as well as the financial aid they received through scholarships and say they wouldn't be where they are today without the support from faculty and scholarships," she continued.

Such gifts, managed through the FSU Foundation, include those made through annual giving, estate gifts, endowments, gifts of stock, planned gifts, and major gifts. Alongside legislative funding, this private support is essential to ensuring Arts and Sciences faculty and programs have the resources they need.

> *"This funding allowed me to put years of education into practice and achieve a lifelong dream and goal: I got to be an archaeologist. The experience I gained at Cetamura greatly prepared me for my work in archaeology and, without this gift, my participation wouldn't have been possible."*
>
> *– Cheyenne Tempest*

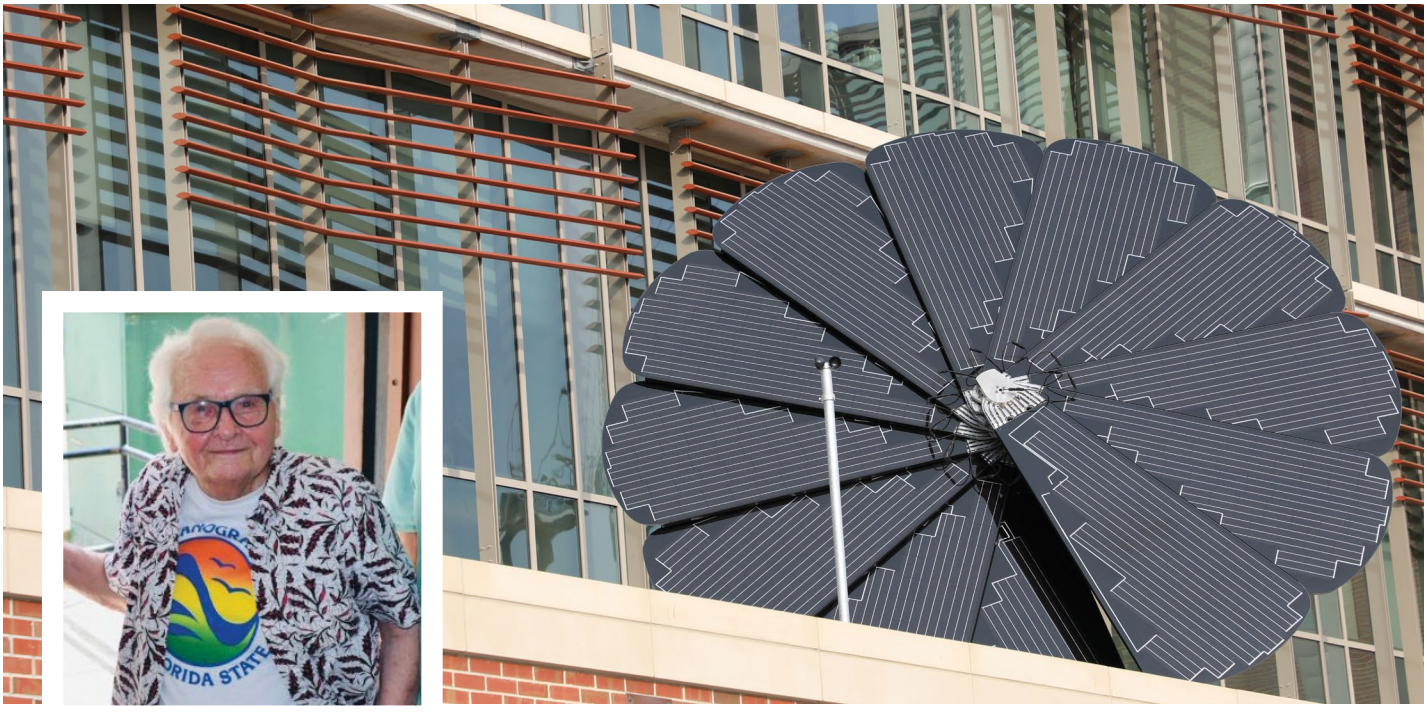
Giving Back

Alumni and faculty members who make gifts, Smilowitz said, are a testament to the importance of support given to the college. The Rodney Reeves Ph.D. Scholarship Award in Classics was established by Rodney Reeves, an FSU alumnus and former FSU College of Medicine and College of Education researcher now on a courtesy appointment with the Department of Classics. The award, similar to the Bucher-Loewenstein Museum Internship Award, allows classics students majoring in classical archaeology to attend FSU's Florence Program in Italy for five weeks. The $7,000 scholarship gives students the opportunity to assist in the creation and presentation of museum exhibitions on archaeology and art.

"I always dreamed of studying abroad in Italy, but the financial aspect of it was always a barrier," said Nina Perdomo, a recipient of the Reeves scholarship. "I'm incredibly grateful, and I know this will be an experience I will look back on during my future career."

Nina Perdomo. Courtesy photo.

Jack Winchester, a former professor emeritus in the Department of Earth, Ocean and Atmospheric Science who spent 33 years at FSU, gave much of his time as well as major gifts.



The Smartflower solar flower installed at the Earth, Ocean, and Atmospheric Science building. Inset, Jack Winchester. Courtesy photos.

In addition to establishing the John and Ellen Winchester Fund, Winchester facilitated the establishment of the Smartflower solar flower, a ground-mounted solar energy system with solar panel "petals" and a tracker that follows the sun and generates electricity, as part of the recently completed EOAS building.

Upon his death, Winchester's daughter, Kathleen Sullivan, established an endowment in her parents' names through a gifts of estate: his Tallahassee residence and coastal property in Carrabelle, Fla., valued at $340,000.

EOAS alumnus Mark Powell is an atmospheric scientist and vice president of model development at Risk Management Solutions-Moody's, the global leader in climate and natural disaster risk modeling and analytics for the insurance and financial sectors. Powell, a former National Oceanic and Atmospheric Administration scientist whose research focused on hurricanes, is giving $200,000 to establish the Mark D. Powell Weather Observatory to invest in the critical climate research conducted in EOAS.

"I was a student in the Department of Meteorology back in the 1970s. The skills I learned prepared me for successful careers in science, and I hope my sponsorship will provide resources to maintain the observatory as a state-of-the-art facility, one of the most advanced in the U.S." Powell said. "It's a gathering place for students and faculty to observe, appreciate and discuss weather and forecasting, and the sponsorship will also help facilitate exchanges between scientists at FSU and at NOAA's Hurricane Research Division in Miami, advancing our understanding of tropical cyclones."

Annual gifts are also important. Physics alumnus Price Kagey transferred $750 in stock to the Physics General Fund in honor of late professor of physics Mael A. Melvin to support innovative physics students.

Looking Forward

In some cases, gifts are made by friends of the university with no ties to FSU other than wanting to contribute to an excellent research institution. The Tatelbaum Ocean Research

> *"I was a student in the Department of Meteorology back in the 1970s. The skills I learned prepared me for successful careers in science, and I hope my sponsorship will provide resources to maintain the observatory as a state-of-the-art facility, one of the most advanced in the U.S."*
>
> *– Mark Powell, EOAS alumnus*

Fund, established by consultant Joe Tatelbaum, is a $300,000 gift to be used over three years by ecologist and assistant professor in the Department of Biological Science Sophie McCoy in important marine research.

"Mr. Tatelbaum's motivation was to enable discovery and innovation, and innovation happens when you're able to be flexible," McCoy said. "He didn't want to tie the funds to any specific project; instead, it's for marine research. Gifts like these are essential catalysts for new scientific projects."

Journalist Bob Hosmon plans to gift the Department of English a collection of literature, art books, and more from England's Victorian period, worth $40,000. He will provide an additional $100,000 to properly display, maintain, and store the collection through his estate gift.

"I wanted to offer this collection to a university that would use it well. Given [Robert O. Lawton Distinguished Professor] Gary Taylor's work on this era, I knew FSU would do the best with it. I hope the collection will help students explore more of England's history, literature and art," Hosmon said. "Hopefully, it helps them learn from their history while looking to the future."

Honoring History

Gifts are also made to honor the outstanding contributions of alumni and faculty. In tribute to fallen 2nd Lt. Justin Sisson, an Army ROTC graduate who was killed in action in Afghanistan in 2013, the FSU Military Science Program hosts the annual Justin Sisson Run/Walk for the Fallen to benefit the Justin Sisson Outstanding Cadet Scholarship. The scholarship helps FSU ROTC cadets and student veterans, who embody Sisson's commitment to family, country, and duty, complete their education.

The Dr. Jean Victoria Marani Endowed Scholarship was established by an anonymous donor and funds undergraduates in the Department of History who plan to pursue history education. After graduating from Florida State College for Women in 1946, Marani earned educational accolades, including Florida's Teacher of the Year award in 1962, and was a finalist for National Teacher of the Year.

Mart Hill, a 1942 Florida State College for Women graduate and member of the College of Arts and Sciences Leadership Council, recently gave $10,000 to the David Kirby Graduate Fellowship within Creative Writing designed to support aspiring poets enrolled in FSU's renowned creative writing program. Hill has made gifts to FSU every year for over 40 years. Kirby, a Robert O. Lawton Distinguished Professor in the Department of English, has established a legacy at FSU over the past 50 years.

"Our deep appreciation of gifts, big or small, is matched by their high impact on the education and research opportunities provided to our students, postdoctoral scholars, and faculty," said Sam Huckaba, the college's dean. "Giving to an area of your choice speaks to your interests and passions, while providing a meaningful way to make a lasting difference."

Consider making a gift to departments and programs in the College of Arts and Sciences by visiting the Ways to Give page on our website, or by contacting Nancy Smilowitz, assistant dean of advancement and alumni affairs, at nsmilowitz@fsu.edu.

FSU students, ROTC cadets, and members of the community participate the 2020 Justin Sisson Run/Walk for the Fallen. Photo by Tom Morgan.

Members of the first class to study at Florida State University's London Study Centre arrive in the U.K. in 1971. Courtesy photo.

Cheers to 50 years

Florida State University's London Study Centre celebrates its golden jubilee

By Amy Robinson

In the heart of London in 1971, the Beatles were just embarking on their new solo careers, bell-bottom jeans were all the rage, and the United Kingdom was still adjusting to the introduction of decimal currency. That year, Florida State University welcomed its first students to its new study abroad program in London.

The world has changed a great deal since 1971 and the FSU London Program has evolved and grown right along with it. As the FSU London Study Centre marks its milestone 50th anniversary, the students, faculty, and staff who have been part of the program's story look back with fond memories.

Since the program's inception, the number of FSU students enrolled has increased ten-fold. Course offerings on British literature and history are now joined by STEM classes and a wide range of major-specific programs, and the operation has upgraded from rented hotel space to permanent residence in a row of 17th-century townhouses in the heart of London's historic Bloomsbury district.

Kathleen Paul, director of the FSU London Study Centre, said, "Through it all, FSU London's core values have remained constant: academic integrity and attainment; experiential learning; the strength of the Seminole community; and students' readiness to immerse themselves in their new home, to become Londoners not just for a semester, but as an integral part of who they are."

In addition to offering classes in everything from chemistry and biology to archaeology and philosophy, the program also presents students with opportunities for internships suited to a broad range of majors, including marketing, business, logistics, media, government, arts and many more.

Included within all of the programs are opportunities to explore sites like the Tower of London, Westminster Abbey, Shakespeare's Globe, and Kensington Palace before taking a boat ride down the River Thames or enjoying a spot of afternoon tea. Recent program additions, such as day trips to the studios where the Harry Potter books were brought to life on film, have quickly become student favorites.

Beyond the city, students have taken group trips to numerous historical and cultural sites, including Edinburgh, St. Andrews, Bruges, Ypres, Bath, Stonehenge, Liverpool, North Wales, Oxford, Cambridge, Brighton, the Lake District, Yorkshire and Cornwall.

"This experience enables students to gain an understanding of another culture and the global community in which they live," said James Pitts, who has served since 1995 as the director of FSU International Programs, which oversees the FSU London Program. "This anniversary validates the wisdom of Florida State University's leadership 50 years ago in establishing a study center in the heart of a cultural and financial center of Europe. Tens of thousands of students in the past 50 years have benefited from this decision."

Among those students is Caitlyn Bergman, who jumped at the opportunity to study abroad in London during her sophomore year in 2016. Bergman, a two-time FSU alumna who earned her bachelor's in psychology in 2018 and master's in social work in 2021, remembers being overcome with emotion during her first visit to Parliament Square.

"This was the moment it really hit me that I had traveled 15 hours to go to school for a semester in an entirely new part of the world I had never seen before. I couldn't have been more excited," Bergman said.

Bergman made unforgettable memories both in her courses and venturing out with classmates, including waving to Leonardo DiCaprio on the red carpet at the London premiere of "The Revenant," and traveling to Paris to practice the French she'd learned in her classes at Diffenbaugh under the sparkling lights of the Eiffel Tower.

"The FSU London Program gave me the opportunity to explore things I never would have been part of. I got to travel the world with my best friend and make friends from other parts of the world who I never would have met otherwise. Friends I'll keep forever," Bergman said.

Bergman, now a social worker and community engagement specialist with the Fifteenth Judicial Circuit of Florida, said the experience taught her to live outside of her comfort zone and continues to inspire her every day.

"It helped me to take risks I would have been afraid to take before, and led me to a master's degree and a wonderful job in government," she said.

As the FSU London Study Centre celebrates its golden jubilee and prepares to welcome in another new class of students from the arts and sciences and beyond, Paul is already looking forward to working with the students who will take the program forward to future milestone anniversaries. The heart and soul of the program, Paul adds, its true purpose, has remained unchanged through the years.

Students and faculty sample the experiences available through the FSU London Study Centre over the years. Courtesy photos.

"Perhaps most significant of all is that studying abroad is one practical step towards transforming our world from an impersonal sphere of strangers into a global community of interconnected individuals," Paul said. "Make a difference: study abroad."

Hannah Meister contributed to this story.

FLORIDA STATE UNIVERSITY
COLLEGE OF ARTS & SCIENCES

Richard McCullough dives in as Florida State's 16th president

From a first day marked by the arrival of Tropical Storm Fred, to the return of the homecoming parade, President Richard McCullough's first few months at Florida State have been memorable. Since August, McCullough has managed a juggernaut schedule aimed at building on FSU's efforts to invest in student success, elevate the university's academic reputation, grow its research and development enterprise, and advance its commitment to diversity, equity and inclusion. In addition to his presidential role, McCullough also holds a tenured professorship in FSU's Department of Chemistry and Biochemistry.

McCullough previously served as vice provost for research and professor of materials science and engineering at Harvard University since 2012. Prior to that role, he spent 22 years at Carnegie Mellon University in Pittsburgh, where he began his academic career as an assistant professor of chemistry in 1990. McCullough has a rich background in entrepreneurship and innovation — he holds multiple patents and is the founder of two companies.

Visit president.fsu.edu and follow **@PresMcCullough** on Twitter for the latest on presidential news and initiatives.

Photo courtesy FSU photography services.

SPECTRUM
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