SPECTRUM

FLORIDA STATE UNIVERSITY COLLEGE OF ARTS & SCIENCES

Winter 2023



elcome to the Winter 2023 edition of Spectrum magazine, the alumni publication of Florida State University's College of Arts and Sciences. The past calendar year was filled with campus activities and continued academic successes, including the formal opening of the new student union, positive progress on establishing FSU-Health, the awarding of a fresh round of funding (\$195.5 million) for the National High Magnetic Field Laboratory, the onboarding of a wealth of new faculty members, and another year of soaring graduation rates for the university.

Our successes continue to draw significant interest from students and faculty. Florida State University received a staggering 80,000 undergraduate applications for the current academic year, and 6,200 new undergraduates emerged from the process to enroll for the fall semester. The cohort includes individuals from all 50 states and 42 countries and is well prepared to succeed. Our graduation rates of 74 percent (four-year) and 85 percent (six-year) rank highly among the nation's top public institutions, helping make Florida State a destination for thousands of college-ready freshmen.

From the Dean

We enjoyed a spectacular year of faculty recruitment across the college and welcomed 36 new members, all academicians and researchers of the highest quality. Nearly every department recruited faculty last year and the additions are acclimating to new surroundings and responsibilities. Their energy has been inspiring as they have strapped in to launch their own contributions to our relentless pursuit of instructional and research excellence.

Several university-level leadership vacancies were filled during the fall, including the vice president for research (Stacey Patterson, who joined FSU from the University of Tennessee System), and the vice president for advancement and president of the FSU Foundation (Marla Vickers, an A&S alumna from the history department, most recently from Emory University). Both started in October, and I look forward to sharing more about the college's engagements with these leaders in future issues.

As Florida State continues to rise in all areas, I am so pleased to express my admiration and pride for the central role played by the faculty, students, and staff of the College of Arts and Sciences. And to our alumni base, now exceeding 100,000, I hope you enjoy this issue and its digital companion available online (artsandsciences.fsu.edu/spectrum), and I wish you the best in 2023.

Ankel

Sam Huckaba Dean, College of Arts & Sciences



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Faculty Forays Researchers from the sciences and humanities reveal hidden histories, change how we will experience tomorrow.

One gift, a multitude of benefits

When you're looking for ways to help Florida State University with its mission, it may feel like you're choosing between pursuing your philanthropic goals and achieving financial security. However, setting up a charitable gift annuity allows you to make a gift that supports the academic program of your choice while receiving financial and tax advantages from your investment.

A charitable gift annuity is an innovative giving vehicle that delivers benefits to the donor including income generation for the donor or a loved one, a federal income tax charitable deduction when you itemize, tax-favored payments that last a lifetime, and a reduction in capital gains taxes. Donors may also choose a start date for income payouts.

Establishment of a charitable gift annuity is one of the most popular ways to fund an endowment at FSU, and named endowments fund professorships, graduate fellowships, and lectureships and provide travel funds for students and faculty to present scholarly activity at professional conferences. These endowments also fund the needs of the college in perpetuity while honoring the donor's philanthropic wishes and can provide a lasting tribute to an individual of the donor's choosing.

At FSU, you can establish a charitable gift annuity with a gift of \$25,000 or more, and you can also use the annuity to establish a non-endowed fund. For more information, or if you have general questions about giving to FSU, contact Nancy Smilowitz, the college's assistant dean for development, at 850.294.1034 or nsmilowitz@fsu.edu.

* The information in this article is not intended as legal or tax advice. For such advice, consult an attorney or tax adviser.



On the cover

A crisp winter day dawns over the Westcott Building plaza, and sun rays frame the moment of calm before students, faculty, and staff converge from all directions and the flurry of another day begins. Photo by Bruce Palmer, FSU Photography Services, 2019.

Notes

The top news from around the college



Academic excellence fuels FSU's recognition as Top 20 public university

Florida State University continued its reign as a Top 20 national public university, according to U.S. News and World Report's "Best Colleges 2022-2023" guidebook released this fall.

The university maintained its Top 20 ranking in graduation rate performance at No. 19 among public universities. This measure compares actual graduation rate and predicted rate, which U.S. News calculates based on the university's resources and student profile.

U.S. News also recognized the university for providing a top-quality education at an affordable price, ranking FSU the No. 8 Best Value College in the nation among public universities and the highest among state universities in Florida.

FSU researchers among most cited worldwide for their academic work

Several Florida State University researchers are among the most cited academics



Alan Lemmon Thomas Joiner Jessica Ribeiro

worldwide, according to the annual Highly Cited Researchers 2022 list from Clarivate, a data and analytics company.

The annual list identifies researchers who demonstrated significant influence in their chosen field or fields through the publication of multiple highly cited papers during the last decade. Their names are drawn from the publications that rank in the top 1 percent by citations for field and publication year in the Web of Science™ citation index.

This year's list features College of Arts and Sciences faculty including professor of scientific computing Alan Lemmon; associate professor of biological science Emily Moriarty Lemmon; professor of psychology Thomas Joiner; and assistant professor of psychology Jessica Ribeiro.

The methodology that determines the "who's who" of influential researchers draws on the data and analysis performed by bibliometric experts and data scientists at the Institute for Scientific Information™ at Clarivate. It also uses the tallies to identify the countries and research institutions where these individuals are based.

Alumna named vice president for University Advancement

History alumna Marla Vickers returned to her alma mater this fall as FSU's new vice president for University Advancement and president of the FSU Foundation.



Marla Vickers

In this role, Vickers leads Florida State's fundraising, alumni relations, advancement services and real estate giving and works closely with the Seminole Boosters while laying the groundwork for FSU's next comprehensive campaign.

Vickers earned a bachelor's degree from the University of Georgia in 1998, a master's degree in public history and historic administration from FSU in 2000, and an MBA from George Washington University in 2014. She is currently pursuing a Doctor of Education degree at Vanderbilt University, where her studies are focused on leadership and learning in organizations. She is a Certified Fund Raising Executive, CFRE, a voluntary credential recognized globally among philanthropic fundraising professionals.

Microbiologist joins FSU as next vice president for research

Stacey Patterson, who previously served as the vice president for research, outreach

and economic development in the University of Tennessee system and as president of the UT Research Foundation since 2017, began her work at FSU this fall.

Patterson leads FSU's Division of Research, which has more than \$320 million annually in research expenditures, and works closely with the provost and university president to promote FSU's overall academic mission, while specifically building the university's research and creative activity. She oversees the Office of Research, which includes several administrative units such as Federal Relations, the Office of Commercialization and the Council on Research and Creativity.



Stacey Patterson

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Psychologist tapped for membership in Academy of Science, Engineering and Medicine of Florida

Thomas Joiner, the Robert O. Lawton Distinguished Professor in the Department of Psychology, is one of two FSU trailblazers selected for membership in the Academy of Science, Engineering and Medicine of Florida this fall.

As director of the Laboratory for the Study and Prevention of Suicide-Related Conditions and Behaviors, Joiner leads a team in pursuit of any scientific project that could advance suicide prevention.

Joiner and Sylvie Naar, a distinguished endowed professor in the FSU Department of Behavioral Sciences and Social Medicine, join 13 other researchers this year, bumping the Florida academy's membership to more than 200. Membership is widely viewed as a step toward admission into the National Academy of Sciences.

Scientist wins early career award from Swiss Chemical society

Assistant professor of chemistry and biochemistry Lea Nienhaus will receive the Grammaticakis-Neumann Prize from the Swiss Chemical Society for her work on light-matter



Lea Nienhaus

interactions in hybrid semiconductors. The prize is awarded to a promising young scientist for outstanding work in the field of experimental or theoretical photochemistry. The candidate must be under 40 years old and may not be a tenured professor or hold a managerial position in industry.

"It's very humbling, but it's great to be supported by the community, especially the senior scientists who took the time to write letters to nominate me," Nienhaus said.

Nienhaus was nominated for the award by FSU Department of Chemistry and Biochemistry Chair Geoff Strouse, as well as by Felix Castellano from North Carolina State University and Prashant Kamat from the University of Notre Dame.

She received her doctorate from University of Illinois Urbana-Champaign in 2015 and then completed postdoctoral work at the Massachusetts Institute of Technology. She moved to FSU as an assistant professor in 2018 and has focused her work on understanding the optoelectronic processes that occur in hybrid organic/inorganic semiconductors.

Nienhaus has been named a rising star by the journal Advanced Optical Materials and ACS Materials Au and was recently highlighted by ACS Energy Letters in the special edition on "Women Scientists at the Forefront of Energy Research."



Jerrilyn McGregory

English scholar wins prestigious Chicago Folklore Prize

"One Grand Noise," professor of English Jerrilyn McGregory's comprehensive monograph chronicling the origins and modern evolution of Boxing Day, was recognized this fall with the prestigious 2022 Chicago Folklore Prize. The award, presented by the American Folklore Society to the author of the best book-length work of folklore scholarship for the year, was first presented in 1904 and is the oldest international award recognizing excellence in folklore scholarship. Most know Boxing Day as a British holiday celebrated annually on Dec. 26 with traditions similar to Black Friday in the U.S. However, Boxing Day holds its greatest significance in the Anglicized Caribbean world, or ACW, which encompasses the Bahamas, Belize, Bermuda, St. Croix and St. Kitts. ACW Boxing Day traditions vary from region to region, but they usually involve parades and gatherings where people wear ornate traditional festival clothing, dance and create music.

"One Grand Noise" chronicles ACW Boxing Day festivals and performative events that have been under-documented and places them in historical context. McGregory's book centers itself around investigating and exploring what celebrating traditions rooted in past colonization means to people living in formerly colonized, now independent, places.

The title marks the 15th publication of McGregory's career, which has spanned nearly 30 years at FSU.

Biomathematics program director earns prestigious fellowship

Richard Bertram, a two-time FSU alumnus and director of the FSU biomathematics program, has been named a fellow of the Society for Mathematical Biology. This international honor was granted in recognition of his career as a pioneer in math and biology research.

The society, founded in 1973, promotes the development and dissemination of research and education at the intersection of mathematics



Richard Bertram

Nole Notes

and biological sciences. Fellows are selected biannually from a wide pool of high-profile nominations.

Bertram earned his doctorate in 1993 and completed his postdoctoral fellowship at the National Institutes of Health. He has served as a faculty member at FSU since 2001 and has received several university awards, including the Graduate Faculty Mentor Award in 2017 and the Distinguished Research Professor Award in 2019, among many others.

The SMB Fellows program began in 2017, and the past presidents and managing editors of the society's journal formed the inaugural class. Since then, two society presidents and six scholars, including Bertram, have been chosen as fellows.



Sara Hart and Callie Little

Reading researchers explore pandemic impacts on children's reading skills

Sara Hart, W. Russell and Eugenia Morcom Professor of Psychology and Florida Center for Reading Research faculty member, and Callie Little, research faculty in the Quantitative Methodology and Innovation division of FCRR, have received a \$2.9 million grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development to conduct a five-year study to uncover the mechanisms through which COVID-19 has and will continue to have impacts on children's reading skills. Hart and Little will quantify the short- and long-term effects that losing social resources, related physical and mental health changes, and economic stressors have on reading skills, and evaluate the effects of the digital-divide on reading skills during the COVID-19 pandemic.

COVID-19 represents an extreme mediating factor that disrupted children's resilience factors. The recently awarded grant will allow Hart and Little to shed light on how the COVID-19 pandemic is affecting children, as well as add to our general knowledge about how trauma affects children.

Biological scientist named president-elect of Animal Behavior Society

Professor of biological science Emily DuVal has been named president-elect of the Animal Behavior Society, a prominent professional

organization that advances research and education in the field of animal behavior.

DuVal is an animal ecology and evolution expert who specializes in the evolution of complex



Emily DuVal

social behavior in wild birds, such as their courtship and mating processes. The DuVal Lab studies cooperation and mate choice of lancetailed manakins in the tropical forests of Panama as well as nuthatches in the longleaf forests of the Tallahassee area.

Archaeologist uses grant to research ancient peoples' adaption to environmental change

An underwater archaeologist might conjure up the image of a deep-sea diver looking for buried treasure. But for Florida State University assistant professor of anthropology Jessi Halligan, the spear tip she discovered during her field work this past summer is as good as gold.



Jessi Halligan

Halligan spent much of her summer conducting field work thanks to a nearly \$250,000 grant from the National Science Foundation, which supports exploration into how ancient peoples adapted to climate change at the end of Earth's last ice age, 11,500 years ago.

She and a team of graduate and undergraduate student researchers are collecting sediment samples from sinkholes in the Aucilla River basin, located southeast of Tallahassee. These samples provide more accurate and detailed evidence of the climate in those years in comparison to those taken from dry land.

Biologists receive \$5M NIH grant to build cryo-electron microscopy center

Researchers from FSU's Department of Biological Science have received more than \$5 million from the National Institutes of Health that will be used to construct the Southeastern Center for Microscopy of



Scott Stagg

MacroMolecular Machines, or the SECM4, at Florida State University.

Professors of biological science Scott Stagg and Kenneth Taylor will lead the service center in offering remote and in-person cryo-EM sample preparation and imaging, making expensive cryo-EM instrumentation available to many more scientists who would otherwise not have access to this equipment.





A close up view of a 3D reconstruction of a molecule known as apoferritin. Image courtesy Scott Stagg.

Some online services are accessible now, and the list of available services is projected to grow as the SECM4 facility proceeds.



Michael Deck

Chemistry doctoral student receives Department of Energy research award to build safer, better batteries

Michael Deck has worked since 2018 to develop highly conductive, solid-state materials for lithium-ion batteries that demonstrate potential in electric vehicles, global satellites and reliable energy storage. With the Office of Science Graduate Student Research Award, he will head to Richland, Washington, this spring to spend five months working at the DOE's Pacific Northwest National Laboratory, PNNL.

At PNNL, Deck will try to craft a new kind of battery using solid inorganic materials instead of the flammable liquid materials that compose the current industry standard for lithium-ion batteries.

Deck built on his childhood interest in science by engaging with talented chemistry and physics teachers in high school. During his undergraduate studies at Binghamton University in New York, he worked with Stanley Whittingham, who won the Nobel Prize in Chemistry in 2019 for his development of lithium-ion batteries.

Deck is planning for a career working on energy storage applications for aerospace use, such as in satellites, planetary rovers and electric airplanes. The DOE award will give him the opportunity to network and collaborate with scientists and students conducting similar work.

Earth scientist wins inaugural early career award from Geological Society of America

When assistant professor of geology Richard Bono was deciding what part



Richard Bono

of geology to focus on, he learned about the field of geophysics and geodynamics — the science of how the Earth changes over time.

For his work helping to arrange that manypieced, time-shifting puzzle, the Geological Society of America has named him as the 2022 recipient of the Seth and Carol Stein Early Career Award in Geophysics and Geodynamics. Bono is the first person to receive the award. Ancient rocks help contemporary geologists find billion-year-old answers. Researchers like Bono sift through the data to discern the signal showing the ancient pattern of the magnetic field. Do that over and over across the planet, and you begin to build up a robust picture of the history of the planet's magnetism.

As scientists learn more about the planet's geological and biological history, they are gaining a better understanding of the role the magnetic field played in the story of life and evolution on Earth and how changes to the field could have impacts in the future.

Department of Computer Science receives \$4.2M NSF grant to bolster number, diversity of national cybersecurity workers

The U.S. Bureau of Labor Statistics reports that job openings for information security analysts are projected to increase 33 percent from 2020 to 2030, much faster than the average rate for all occupations. To help meet this growing demand, FSU's Department of Computer Science has received a five-year, \$4.2 million renewal grant from the National Science Foundation's CyberCorps Scholarship for Service program to support students pursuing careers in cybersecurity.

The department's grant-winning project, "Defending the National Cyber Infrastructure," aims to address the shortage of cybersecurity workers and improve diversity within the cybersecurity work force. The project will provide scholarships, tuition waivers, and professional development funding to support 32 graduate and undergraduate students in FSU's cybersecurity degree program.

In addition to scholarships and academic stipends, students in the cybersecurity program will be presented with opportunities to explore internships with qualifying agencies over the summer to gain real-world work experience. <

Dependency Detective

Two-time clinical psychology alumnus Keanan Joyner looks to the brain for answers in understanding, preventing substance addiction

By McKenzie Harris

Keanan Joyner. Courtesy photo.

Tug and alcohol misuse and addiction are not unique to any one person many people know someone who has overdosed or they may have a person who has battled dependency in their friend group or family. In the U.S., compounding stressors such as the COVID-19 pandemic saw substance use disorders skyrocket and resulted in nearly 100,000 overdose deaths in 2020, an almost 30 percent jump from 2019. That number went still higher in 2021, with nearly 107,000 overdose deaths.

Is there something about an individual's brain chemistry that leads them to make these deadly decisions?

Keanan Joyner, a recent graduate of Florida State University's doctoral program in clinical psychology who is now an assistant professor of psychology and clinical science at the University of California — Berkeley, has always been drawn to work that aims to reduce overall suffering. He currently investigates risk and maintaining factors of the mental illness of drug and alcohol addiction in the Clinical Research on Externalizing and Addiction Mechanisms Laboratory.

Whereas legacy drug-use prevention programs such as D.A.R.E. center on the idea that drugs themselves are the problem, Joyner questioned the scientific causes of dependency after witnessing peers have vastly different experiences when it came to alcohol and drug use.

"I had a tough time reconciling some of the things I was taught as a child through drug prevention programs in school with what I witnessed as an adult. It bothered me from a scientific curiosity standpoint," Joyner said. "If the drug is the only problem, how do such similar people have opposite reactions? How can people drink the same amount and have completely different experiences with alcoholism?"

To answer these questions, Joyner, who graduated from FSU with a master's degree in 2018 and doctorate in 2021, seeks to understand Keanan has made innovative and significant contributions to our understanding of addictive behaviors, and he is well-positioned to become a world leading scholar in the scientific study of addictive behaviors."

- Christopher Patrick, Professor of Psychology

preexisting risk factors for psychopathology, or why some people are more prone to develop substance use disorders. Making an earlier identification of risk factors in individuals can allow preventative interventions to be provided to those at highest risk before casual use becomes dependency. So far, Joyner has investigated dependency on alcohol, marijuana, and illicit drugs.

"I research the neurophysiological and neurobiological processes implicated in this mental illness through different methods including behavioral performance, event-related potentials, functional magnetic resonance imaging, or fMRI, and electroencephalography, which allows us to make important observations about the way people's brains respond to photos of substance paraphernalia or other triggers," Joyner said.

Differentiating the brain's responsivity to substance-related versus substance-free stimuli is the premise on which much of Joyner's research rests: It's not just about how someone responds to drugs but rather their differential response to drugs versus other available alternatives.

"I want to gain a better understanding of addiction through a lens that connects research on basic neurobehavioral dispositions with behavioral economic concepts of substance-free rewards to decrease the burden of addiction on society, such as the high costs of mortality, health care, criminal justice, family assistance and productivity loss," he said. "I'm looking at how risk factors — the environment, behavioral genetics, and more — coalesce in a comprehensive account of risk for addiction, from where addiction stems, its characterizations, and perhaps where we can intervene before it spirals out of control."

Through the years, Joyner's work has earned him nearly 20 highly competitive research grants and awards, including a graduate dissertation grant from the National Institute on Drug Abuse, a fellowship award from the Society for Psychophysiological Research, and a travel award from the National Institute on Alcohol Abuse and Alcoholism. In 2019, Joyner became the first FSU student in a decade to earn a prestigious Ford Foundation Predoctoral Fellowship, awarded by the National Academies of Sciences, Engineering, and Medicine, and he earned the Glee Ross Hollander Dissertation Award from FSU's Department of Psychology in 2021.

"Keanan has a brilliant mind and quickly established himself as an invaluable member of my lab. During his time with us, he was a strong ongoing source of positive inspiration for others in the lab and department," said Christopher Patrick, distinguished research professor of psychology, director of clinical training, and Joyner's adviser. "Keanan has made innovative and significant contributions to our understanding of addictive behaviors, and he is well-positioned to become a world leading scholar in the scientific study of addictive behaviors." <



Payment Purpose

Alumna Jessica Washington focuses on the human aspect of monetary transactions at the Federal Reserve

By Devin Bittner

or Department of English alumna Jessica Washington, working in the payments industry is more than securely processing the transfer of money.

"It's an opportunity to help real people with real problems," Washington said of the industry she's worked in for nearly 16 years.

While the concept of monetary payments may seem simple and robotic, Washington is interested in how different types of transactions affect different groups in society, especially how the shift to online payments for many crucial everyday activities — such as utilities, rent and other bills — impact and even exclude those with limited internet access due to economic disadvantages.

Washington works at the Federal Reserve Bank of Atlanta, one of 12 Federal Reserve Banks of the United States central banking system that creates monetary policy, handles payment services, supervises and regulates banks, monitors financial system stability and protects consumers. The Atlanta Fed covers the Sixth Federal Reserve District, which includes Alabama, Florida, and Georgia, and parts of Louisiana, Mississippi, and Tennessee. It is among the foremost financial institutions in the United States.

In her role as assistant vice president for the Retail Payments Risk Forum at the Atlanta Fed, Washington works with financial institutions and industry participants, regulators, and law enforcement officials to research and promote the mitigation of risks in checks, credit and debit cards, and online payments, which in turn promotes the stability, efficiency, and inclusivity of U.S. financial systems.

Long before she started at the Federal Reserve Bank of Atlanta, Washington was a teen from New England looking to explore the country. She applied to several schools up and down the East Coast but was most attracted to Florida State University, the furthest from home and most distinguished. At FSU, Washington found herself passionate about writing and the prospect of teaching, discovering a perfect harmony with a major in creative writing and minor in childhood development.

"After graduating in 2004, I applied to be a member services coordinator at a regional payments association in Atlanta focused on Automated Clearing House network rules and payments compliance. I became an expert in the rules and laws around payments and teaching them to banks," Washington said. "I created my own curriculum, and we represented our members in the rule-making process. I moved up the ladder of this small group over the years, performing audits and risk assessments, writing payments-related workbooks and speaking all over the country."



Jessica Washington. Courtesy photo.

Automated Clearing House, or ACH, is the primary system used by institutions for electronic funds transfer and a major component of Washington's industry. She finds that though the payments industry is rather small, it is one where she can make a big difference in people's lives.

"Being an expert on the payment rules and compliance allows me to take time to educate people and help solve their problems," Washington said.

Washington obtained her Accredited ACH Professional Certification in 2007 and worked at Georgia Automated Clearing House Association, or GACHA, facilitating the merger between GACHA and four other payments associations, which formed the company PaymentsFirst. After eight years in the industry, Washington landed a role at the Atlanta Fed.

"Working at the Federal Reserve Bank of Atlanta gives me the opportunity to scale up my expertise and ability to help people. There's a high level of integrity, excellence, and respect among the people I work with, as well as a public-service aspect and business perspective. We work to create a foundation upon which all individuals, communities, and businesses can thrive by promoting the stability, integrity, and efficiency of the U.S. monetary, financial and payment system," she said.

Washington also actively gives back to her alma mater. She was elected to the FSU Alumni Association National Board of Directors in 2020 where she's made a difference in the lives of students, faculty and alumni.

"Being elected to the Alumni Board has been a humbling experience. I get to see first-hand how hard the staff at the association and the university works to create and sustain a globally important and valuable ecosystem for our entire FSU family," Washington said. "Being on the board allows me to use my unique experiences to provide support and make connections so others can reach their full potential."

Washington's undergraduate roommate Sarah Carpenter, a friend since their time as classmates at FSU, knows her work ethic and passion for payments very well.

"Jessica was always 200 percent focused on her goals in college. Not only did she put herself through school, but she worked multiple jobs simultaneously to help support her cost of living," Carpenter said. "She constantly looks for the chance to face a challenge head-on, and if you're lucky enough to have her as a colleague or friend, you know that she rarely backs down. I expect to see more success for her as she thrives in the payments and banking world." <

Clear for Liftoff

FSU meteorology alumnus Jason King leads weather team supporting launch operations

By Devin Bittner

hey call it the lightning capital of the U.S. The corridor from Tampa to Titusville in Florida, known as "Lightning Alley," experiences almost 60 lightning strikes each year for every square mile. And just beyond Titusville sits Cape Canaveral Space Force Station and Kennedy Space Center, a sprawling complex of facilities and launch sites serving as home base for U.S. military and civilian space operations.



NASA's Space Launch System rocket with the Orion spacecraft aboard sits atop the mobile launcher at Launch Pad 39B at Kennedy Space Center, Florida, in preparation for NASA's Artemis I flight test. NASA photo by Joel Kowsky. NASA's SLS rocket with the Orion spacecraft atop as seen from the International Space Station. NASA photo by Mark Garcia.

Opposite page, clockwise: Artemis launch photo courtesy NASA/ Christina Cuttita. Visitors to Patrick Space Force Base, photo by Senior Airman Dakota Raub. Air Force Col. Jason King, courtesy photo. A U.S. Navy submarine in the waters of the Eastern Range, photo by Petty Officer 2nd Class Christine Montgomery.



"Lightning, computers, and satellites on rockets don't mix well, so that's why we're here," said Air Force Col. Jason King, commander of the 45th Weather Squadron located at Cape Canaveral who oversees the military unit generating meteorological data that informs decision-making about flight, test, and space launch conditions out of the station. "We keep the range, rockets, payloads, and satellites safe, and we advise when there are go or no-go conditions at the launch sites."

The 45th, which King, a Panama City native and Florida State University meteorology alumnus, has commanded since 2019, also provides forecasts and advisories for the Eastern Range, a 15-million-square-mile Department of Defense testing area off the coast of Cape Canaveral. During his assignment, King has managed nearly 100 launches, and he expects both his and the squadron's roles to increase in complexity in coming years.

"The launch mission is changing rapidly. We're seeing the beginning of the new space race, and it's going to change the way we live," King said. "Over the past decade, we've had about 19 launches per year from Cape Canaveral. This year, we'll have approximately 60 launches, and in six or seven years, we'll be approaching 150 annually. Going from 19 launches per year to 150 per year within a decade is just phenomenal."

Changing conditions are nothing new for King. The teenager who started planning a future as a forecaster when his family first got cable, and with it, The Weather Channel, initially had his eye on a career with the National Weather Service. He started a bachelor's degree in meteorology at Gulf Coast State College before transferring to Florida State University in 1993. During his three years in Tallahassee, King enjoyed his coursework and participated in weekly forecasting contests among students, anticipating graduation. But by the time graduation arrived, NWS had implemented a hiring freeze.

"A good friend's brother at Tyndall Air Force Base connected me with his boss, a meteorologist. As soon as she explained what meteorologists do in the Air Force, I wanted to pursue that track," he said.

Following that meeting, King applied and was accepted into the U.S. Air Force Officer Training Program, from which he was commissioned



 $\langle \hspace{0.1cm} \rangle \hspace{0.1cm$

as a second lieutenant in 1998. While officer trainings brought King up to speed on the mission and duties of an Air Force officer, it was his FSU experience that gave him an advantage.

"The meteorology department offered a class every semester called current weather and discussions, which taught us how to properly forecast. I loved forecasting, and when I commissioned, I was able to do just that," King said. "I was informing pilots on weather conditions and forecasting for different locations. The foundational forecasting training I received at FSU was extremely beneficial for my career in the Air Force."

Though his time at FSU has passed, the university and Department of Earth, Ocean and Atmospheric Science, of which meteorology



is now part, are still supporting King's current work. The 45th has been working with professor of meteorology Henry Fuelberg, whose research on cumulus cloud top temperature will help the Space Force to decide go or no-go conditions at the Eastern Range.

"In college, I had study partners and professors giving guidance and support. Once commissioned, I had peers and supervisors providing honest feedback and coaching along the way," King said. "Even today, as commander, I rely on my team — I can't do it by myself."

Before coming home to Florida, King, who went on to earn a Master of Science in analysis and forecasting from the Naval Postgraduate School in Monterey Bay, California, in 2007, used his forecasting knowledge to inform pilots on how



and when it was safe to fly. He served as deputy commander of the 2nd Weather Group, part of the 557th Weather Wing stationed at Offutt Air Force Base, Nebraska, where he directed operations of a 515-member organization responsible for providing global weather, space, and climatological services to the Defense Department, Intelligence Community, and NATO.

Friend and former colleague James "Chris" Weaver, current technical director at 2nd Weather Group, considers King's leadership a key contributor to his team's success.

"He's one of the top senior leaders in Air Force weather, and I always knew he was headed that way. He's incredibly smart and great with people, and his team does whatever they need to make sure the mission is successful," Weaver said. <

Practicing Humanity

Religion, philosophy alumna Laura Guidry-Grimes brings context, ethics to medical settings

By Rodney Campbell

aura Guidry-Grimes' job might not be the easiest to understand, but the difference her work makes for patients and families going through some of the toughest times of their lives is crystal clear.

The 2008 Florida State University graduate, who earned dual bachelor's degrees in religion and philosophy, works as a bioethicist for the Cleveland Clinic's Center for Bioethics. This role aligns with the medical humanities, an interdisciplinary field that seeks to holistically address medical education, professional development and patient care by uniting elements of ethics, literature, history, the arts, psychology and social sciences.

For Guidry-Grimes, her duties include clinical work, research, consult review and quality control, teaching, and collaboration with providers — all aimed at ensuring health care organizations promote an ethical climate.

"Common ethics consults involve incapacitated patients without anyone to make decisions on their behalf, ambiguities or conflicts regarding how to respect a patient's values, patients with no safe place to go to after hospitalization, and families requesting treatments that may be medically inappropriate," Guidry-Grimes said. "My clinical work also includes doing rounds with health care teams, leading educational didactics or case discussions, and contributing to multidisciplinary committees and organizational ethics."

She also holds an academic appointment as a clinical assistant professor at the Cleveland Clinic Lerner College of Medicine, part of the Case Western Reserve University School of Medicine.

"I have opportunities to teach trainees and health care professionals from many disciplines, as well as students," she said. "I recently gave presentations on bias in chart noting, ethical issues in communicating a malnutrition diagnosis, and methodologies behind disability bioethics and feminist bioethics. My clinical work inspires much of my scholarship, which focuses on disability bioethics, psychiatric ethics, and vulnerability in clinical settings." Before moving to Cleveland last June, Guidry-Grimes spent five years at the University of Arkansas for Medical Sciences as an assistant professor of medical humanities and bioethics and clinical ethicist for the UAMS Health System and Arkansas Children's Hospital, a job she landed after completing her master's and doctoral degrees in philosophy at Georgetown University.

D. Micah Hester, her boss and chair of the department of medical humanities and bioethics and clinical ethicist at the UAMS and Arkansas Children's Hospital, said Guidry-Grimes' dedication to her job made her an invaluable member of the team.



Left: Laura Guidry-Grimes. Above: Guidry-Grimes and partner Jamie Watson. Courtesy photos.

"Laura loves her work. She is fully invested in trying to help patients in their most vulnerable moments," Hester said. "Further still, she is also invested in making health care and the profession of bioethics better. She cares deeply about the kinds of policies institutions implement, scrutinizing their details with ethical reasoning to champion fairness."

The past several decades have seen the formalization of bioethics as a field and a growing emphasis on the value of having ethicists on staff in hospital and health care settings. This period has paralleled Guidry-Grimes' career progression. "I came into the profession in the 1990s when it was still young enough as a discipline that many of us fell into it without any initial intentions to be bioethicists," Hester said. "Laura is part of the first generation of professionals who could even begin to imagine working in this field back when they were coming out of high school into undergraduate settings like FSU."

Guidry-Grimes' ultimate path began with research that led her to FSU. As a teenager with varied interests, she declared a theater major before deciding to major in philosophy and religion and pursue minors in English, history and philosophy of science, and women's studies.

"When I was in high school, I feared I would lose interest in whatever major I chose, though I was intensely interested in dozens of subjects," she said. "I bought a book that indexed universities and colleges according to the degrees they offered, and FSU had more majors that interested me than any place else."

Attending FSU also provided Guidry-Grimes with a glance into her future.

"I learned about the Center for Bioethics at Cleveland Clinic when I was at FSU," she said. "For years, I admired their trailblazing clinical ethics work, and I knew many of the people at the institution, even collaborating on projects at times."

Her undergraduate experience made her graduate degree goals and career plans more certain thanks to helpful faculty, including David McNaughton, John Roberts, Michael Bishop and Michael Ruse from philosophy and Aline Kalbian from religion.

"I had supportive mentors who helped me find new challenges, whether through independent studies, graduate seminars or honors in the major," Guidry-Grimes said. "My honors theses for philosophy and for religion focused on topics in bioethics. All of this convinced me I wanted to pursue graduate degrees in this field and professionally dedicate myself to bioethics." <

Research Ready

Junior Andrea Emmanuelli is making the most of her Florida State experience on campus, underwater, and on top of the world

By Kendall Cooper

fter weeks on the water, Andrea Emmanuelli developed the sea legs necessary to remain surefooted while conducting experiments aboard the R/V Rachel Carson in the Gulf of Alaska, but one thing remained a daily surprise.

Each time she peered through a pair of binoculars, she was enchanted by the creatures, ranging from puffins to humpback whales, frolicking across Glacier Bay National Park's breathtaking vistas.

For Emmanuelli, a Florida State University junior double majoring in geology and environmental chemistry through the Department of Earth, Ocean and Atmospheric Science and Department of Chemistry and Biochemistry, the sightseeing was the cherry on top of last summer's three-week Alaska research cruise where she took samples to record changes in water chemistry. Glacier Bay is home to tidewater glaciers, or glaciers terminating in the ocean, which are rapidly receding; they may disappear in our lifetimes, which heavily impacts the surrounding ecosystems.

"I learned how important the Gulf of Alaska is to its coastal and Native communities and how imperative it is to study climate change's effects on natural resources, like fish and fishing exports, that these communities rely on for their economies," Emmanuelli said.

Onboard the research cruise, a joint effort of the National Oceanic and Atmospheric Administration and the University of Alaska Fairbanks Ocean Acidification Research Center, the crew studied the water's properties with conductivity-temperature-depth, or CTD, sensors.

As the device descends into the water column, a vertical expanse of water stretching between the surface and seafloor, its sensors capture and relay information including temperature, oxygen saturation, temperature, salinity, pH, fluorescence and density.



I learned how important the Gulf of Alaska is to its coastal and Native communities and how imperative it is to study climate change's effects on natural resources, like fish and fishing exports, that these communities rely on for their economies."

— Andrea Emmanuelli



"Analyzing a CTD sensor cast is an insightful experience because it shows how geology, biology, physics and chemistry work together in real time," said Emmanuelli, who transported her collected samples more than 3,000 miles to Tallahassee for nitrate isotope and concentrations analysis.

It's widely understood that increasing carbon dioxide levels contribute to climate change; however, nitrogen levels are also rising due to human activities like fertilizer overuse and fossil fuel consumption. The ocean absorbs excess terrestrial nitrogen, and it can cause algae to grow faster than marine ecosystems can support. Overgrowth of algae — which consumes oxygen — can produce dead zones with so little oxygen that other life cannot survive.

Emmanuelli was introduced to nitrogen's effects on the ocean as a freshman in associate professor of oceanography and environmental science Angela Knapp's lab. The two met during a lab tour arranged by Women in Math, Science and Engineering, Emmanuelli's living-learning community, or LLC. Emmanuelli was able to conduct research with Knapp through acceptance into WiMSE's Research Experience Program.

"Andrea is uniquely focused on taking advantage of opportunities at FSU, both in coursework and research," Knapp said. "She's not afraid to challenge herself, and she stands out because she works hard to set herself up for success."

As an incoming freshman, Emmanuelli discovered LLCs, small groups of students who live together, share academic interests, and take classes together. The WiMSE LLC hosts an annual research symposium, guiding WiMSE students to become more comfortable with research presentations. Emmanuelli has presented at this symposium twice and is looking forward to presenting again this year. Her most recent presentation investigated foreign nutrients' impact on Tampa Bay's nutrient cycling following the Piney Point Leak.



"I can trace almost every impactful experience I've had back to WiMSE," Emmanuelli said. "I don't think I would have sought out as many early opportunities without it."

In addition to conducting research, Emmanuelli is involved in several environmentally focused extracurriculars — she's treasurer of the Climbing Club at FSU and a trip leader for Campus Rec Outdoor Pursuits.

"The more I learn about the environment, the more I want to share that experience and knowledge with people," Emmanuelli said. "Environmental education connects people to their surroundings and eventually leads them to think about their impact on Earth." <



A Light in the Dark

Doctoral candidate Courtney Whitcher is illuminating a new field of biological research

By Hannah Fulk

hich aspects of life go unnoticed, escaping our view because they are too small, too quiet, or cloaked in a color we cannot see, thus disconnected from human senses? During a night-hike in the Costa Rican rain forest, on a high school Spanish trip, I was lured by secret signals hidden in the dark," said Courtney Whitcher.

Since then, Whitcher, a doctoral candidate in the Florida State University Department of Biological Science, has worked to trace those signals and found a glowing world of biofluorescent organisms usually hidden from sight by the limits of human light and color perception.



Courtney Whitcher. Photo by Hannah Fulk.

A pioneer in her field of study, Whitcher works in the Moriarty Lemmon Lab to discover and describe biofluorescence that exists in the amphibian world.

Unlike bioluminescence, when an organism like a lightning bug or jellyfish emits light as a response to attract prey or defend itself from predators, biofluorescence occurs as a chemical or biological reaction inside an organism's body. The result of that reaction makes biofluorescent animals radiate a steady light in a new color, like a glow stick.

"My research focuses on biofluorescent tree frogs and aims to discover how the trait has evolved within and influenced evolution of one of the world's most diverse frog populations, from how these amphibians communicate to how they make mating decisions to how they survive predation," Whitcher said.

Both human and frog eyes contain rods and cones that allow light to be converted into electrical signals we recognize as colors. However, a frog's eyes contain an additional rod that allows them to see a broader range of colors imperceptible to the human eye in dim light.

Her work has wide implications, not only for researchers to gain understanding about the survival skills and reproductive aspects of frogs but to develop better approaches toward amphibian conservation efforts and environmental protections. The most exciting aspect, Whitcher says, is her research's potential for human medical applications. "The more we know about frog ecology and behavior, the better we can understand the environment we share with them," she said. "Additionally, because fluorescent proteins are used to image and track biological processes at the molecular level, my work could allow for a more refined understanding of human molecular processes and advancement in medical research."

Whitcher, a Michigan native, first became interested in frogs while working at the University of Michigan's Museum of Zoology Amphibian and Reptile Division. She completed an undergraduate thesis on the Amazonian frog community and earned her bachelor's degree in Ann Arbor. As the first biofluorescent frog was discovered in 2017, Whitcher was applying to graduate programs. That combined passion led her to pursue a doctorate in one of North America's five richest biodiversity hotspots: the Florida Panhandle.

"Courtney boldly pushes forward not only on the frontiers of research but also on what is logistically and humanly possible," said Emily Lemmon, FSU biology professor and head of the Moriarty Lemmon Lab. "I find this research exciting because just when we thought we had figured out how frogs communicate, we discover a secret conduit through which they have been sending and receiving information all along."

On her Spring 2022 research trip to South America, Whitcher gathered primary data on 165 amphibian species that showcase signs of biofluorescence as a potential variable impacting mate choice and predation. This research is among the first of its kind — substantial developments in the study of biofluorescent phenomena only began in the early 1990s.

"Working with dedicated people like Courtney helps to create a supportive, dynamic and enthusiastic environment in the Lemmon Lab and the Department," Lemmon said.

Sharing her knowledge and expertise extends beyond Whitcher's work in the lab. Since Fall 2019, she has stoked public curiosity and interest in biofluorescence via her Twitter account and website, sharing pictures from her own research excursions and amplifying work by fellow scientists. She has also introduced the local community to biofluorescence phenomena through the Tallahassee Museum's Night Prowl events where she enjoyed watching community members ranging from ages four to 70 light up as they witnessed glowing changes in plants and other organisms.

"Science and discovery are great but most useful when you share that information with others. Humans innately want to learn, and seeing an organism glow in front of your own eyes is a great way to spark that curiosity," Whitcher said. "Biofluorescence integrates biology, chemistry, and physics in fun, hands-on ways. It is a great avenue to get people interested in three crucial topics of science simultaneously by understanding the excitation of atoms and the biological processes that cause frogs to glow." <

Honorine Rouiller contributed to this story.



Glow for it

Ready to experience biofluorescence in your own backyard? All you need is a pair of filter glasses and a black light. In the same way that some frogs' biology enables them to glow under black light, chlorophyll — the molecule that makes plants green and allows them to photosynthesize — also fluoresces. Shine a black light on a green plant and it will glow bright red!

Legislative Light

Middle Eastern studies, economics undergrad Rawan Abhari is planning for a career that will change the world

— By Dena Reddick -

Rawan Abhari. Photo by Amy Walden.

R awan Abhari darts between topics with the confidence of a seasoned public speaker. She interrupts herself to take a breath before jumping back into the conversation — international law, economics, climate science. Weaving together a broad tapestry of themes, she navigates complex issues with ease.

Abhari has been a force of nature since arriving at Florida State University in 2019. She's ascended to leadership roles on and off campus, even helping secure \$5.4 million in funding from the Florida Legislature. While she's already making a difference in these roles, her true passion lies in supporting legislation in response to climate change.

The FSU senior is presently laying the foundation for a legal career by pursuing dual degrees in Middle Eastern studies, through the College of Arts and Sciences, and economics, via the College of Social Sciences and Public Policy. Ideally, she'll incorporate economic frameworks into public interest law to tackle climate injustice domestically and abroad.

With her busy schedule, it's no surprise the Missouri native covers ground quickly in conversation. Outside the classroom, Abhari devotes ample time to public-service organizations within the FSU Student Government Association like the Freshman Leadership Institute and Noles Engaged in Politics. In 2022, Abhari was named a John Robert Lewis Scholar, one of 10 students selected nationally by the Faith & Politics Institute, which aims to strengthen leadership to advance democracy and bridge differences for the common good.

"When I think of an ideal 'Nole, I think of Rawan," said Zeina Schlenoff, professor of Arabic studies in the Department of Modern Languages and Linguistics and director of the FSU Middle East Center. "I can't wait to see how far she'll go and how many glass ceilings she'll break."

Abhari confidently calls herself a lifelong learner. Rather than creating strict boundaries between work and life, she energentically intermingles the classes and extracurriculars she says come together to prepare her for a career and shape her as a person.

At FSU's Middle East Center, which administers the Middle Eastern Studies and Arabic degree programs, Abhari explores foreign policy interests while pursuing Arabic fluency. Though her Palestinian-Jordanian parents spoke Arabic and English at home, she didn't regularly speak Arabic back. These days, with five semesters of study under her belt, Abhari is confident in her fluency, if not her pronunciation.

"Being able to speak Arabic to my parents is a source of pride for them now but also a little comedic as I definitely speak with an English accent," she said.

Abhari has also sought opportunities to enhance her fluency in politics, including legislative internships at the Florida Senate, Florida House and on Capitol Hill where she worked as a policy intern with the U.S. House Foreign Affairs Committee.

"Being located next to the Florida Legislature has provided me with real-world experience alongside my educational experience, something you can't do unless your university is in the state capital," Abhari said. "I think Florida State is lucky to have this close relationship with our state government."

As executive director of the Student Government Association's Office of Governmental Affairs, Abhari's team supported the Open Educational Resources Initiative, a state-wide database for free and open-license educational materials. Although ultimately vetoed, the Florida Legislature passed this initiative with \$5.4 million in funding to expand textbook affordability across the State University System of Florida.

"Rawan is determined to make a difference in this world," Schlenoff said. "I'm continually impressed by her devotion to the ideals of human rights, peace and social justice. We feel lucky to have her as a student and with the Middle East Center."

Abhari draws inspiration from her family's experience with climate change in Palestine and Jordan, which are among the many nations worldwide considering how climate challenges like increasing extreme weather events will shape their fiscal, diplomatic and national security policy.

International climate agreements can make a difference for these countries, and that's where Abhari sees herself. After graduation, she's planning a gap year to gain experience in the legislative or executive branches of government or public interest law firms before applying to graduate programs. Her objectives include earning a master's in economics and a Juris Doctor, and she's targeting Harvard and New York University for their competitive programs in international and climate law.

"My ultimate career goal is to work in climate justice," Abhari said. "I've wanted to be a lawyer for a long time, and I want to defend the climate and climate crisis victims... For me, it's not simply that I want a career — I want a career rooted in something important." <

Being located next to the Florida Legislature has provided me with real-world experience alongside my educational experience, something you can't do unless your university is in the state capital. I think Florida State is lucky to have this close relationship with our state government." — Rawan Abhari



Iorida State University Distinguished Research Professor Igor Alabugin is always on the go. While it's easy to spot him in the halls of the Chemical Sciences Laboratory building, keeping pace with his purposeful stride – and his travel calendar – requires stamina.

When he isn't attending a research conference in Brazil, Canada, or Japan, conducting experiments, or writing grant applications, you might find Alabugin embarking on a boat tour at Wakulla Springs with his graduate students, hoping to help them catch their very first glimpse of a manatee or alligator.

Calendars and schedules notwithstanding, Alabugin consistently makes time to mentor and help his students feel at home in Tallahassee. He knows something about the importance of finding one's place while carving out a professional foothold, and about how mentorship can ignite a groundbreaking career.

Alabugin grew up a world away, in Siberia, and earned his Ph.D. from Moscow State University before coming to the U.S. in 1996. He was working as a postdoctoral research associate at the University of Wisconsin-Madison when he heard about an assistant professorship opening at FSU.

Chemistry professor Jack Saltiel chaired FSU's search committee for the position and contacted prominent academic chemists in physical organic chemistry, asking their assistance in finding the perfect candidate. Soon after, he received a response from renowned chemist Howard Zimmerman, one of the fathers of modern molecular photochemistry, bringing Alabugin's name to his attention.

"It is not frequently that I have a candidate with the potential of my best former students who have been successful," Saltiel reads from Zimmerman's 24-year-old email. "At present I do. This is Dr. Igor Alabugin. His abilities fit your request of being creative, energetic, and enthusiastic with great potential in research and teaching (your words). He is brilliant."

To fully appreciate that glowing recommendation, Saltiel said, one must note the late Zimmerman's spectacular record of former students and postdoctoral fellows who are pursuing distinguished independent careers — they are a who's who of today's leaders in the field.

"I had the pleasure of serving as Igor's mentor during his early years in our department and watching him fulfill and surpass all that was promised in Zimmerman's initial communication," Saltiel said.

When Alabugin arrived at FSU in 2000, he found himself surrounded by internationally famous scientists, who, to his delight, were kind and quickly made him feel welcome.



If you need a metaphor for the roles of professor and graduate student in research projects, here you are: students collect the fruits (make discoveries) while professors hold the ladder (by writing grant proposals...).

P.S. And, yes, you CAN pick up oranges near @ChemistryFsu!



"I recall fondly the traditional morning coffee with Harry Kroto, Jack Saltiel, Michael Kasha, Ed Hilinski, and many other colleagues who became first mentors and later friends. Suddenly, a boy born in the middle of Siberia was having scientific discussions with colleagues who had met Albert Einstein, Linus Pauling and the Queen of England," Alabugin said.

Alabugin's research in organic and materials chemistry focuses on discovering new connections between structure and reactivity. His research group at FSU combines experiments and computations to develop new reactions and design challenging molecules with unusual properties. Reactions discovered in Alabugin's lab have been used for efficient light-activated cleavage of double-stranded DNA in cancer cells and for preparing complex polycyclic structures with possible applications in molecular electronics.

The international chemistry community has taken note of Alabugin's contributions to the field, as reflected by an impressive list of awards and honors. After receiving the American Chemical Society's prestigious Arthur C. Cope Scholar Award in 2020 and FSU's 2021-2022 Distinguished Research Professor Award, Alabugin was selected by the ACS's Florida chapter to receive the 2022 Florida Award, presented annually to one chemist in the southeastern U.S. for significant contributions to teaching, research, publications or service in chemistry.

Saltiel says Alabugin's ability to translate complicated theoretical concepts into language understandable to organic chemists — a skill he had in common with Zimmerman — is exceptional.

"The review of his recent highly regarded book on organic reactions in Angewandte Chemie, a foremost chemistry journal, calls Alabugin a 'widely acknowledged expert in this field' who gives an 'up-to-date and comprehensive overview of this topic with a strong focus on organic chemistry. The review goes on to highly recommend the book to every chemist and particularly to every student. It is no wonder Igor is a sought-after speaker at conferences and universities all over the world," Saltiel said.

For Alabugin, the globe-trotting is fun, but the real prize is watching his students forge their own paths in the field.

"Over the years, more than 200 students have gotten a taste of the open-ended research inquiry in my lab. Many continued in chemistry, but others became medical professionals, engineers, Food and Drug Administration experts and patent specialists. This illustrates the broad impact of research opportunities created by FSU for society," Alabugin said. "My students' success is one of the most rewarding aspects of my career, and I am glad that the list of awards they have received is much longer than mine will ever be." <

Community Service

FSU's Children's Learning Clinic conducts groundbreaking research alongside compassionate, no-cost treatment

By McKenzie Harris

M illions of children each year are diagnosed with attention-deficit/hyperactivity disorder, or ADHD, due to difficulties with executive functions, neurological activities supported by the prefrontal and frontal area of the brain. These functions help plan and guide behavior — children with ADHD face challenges focusing, managing time, and practicing self-control, which can persist into adulthood.

Florida State University's Children's Learning Clinic, founded by associate professor of psychology and licensed psychologist Michael Kofler, supports local Tallahassee families through no-cost evaluation, diagnosis, and treatment of children's disorders, like ADHD, all while pursuing cutting-edge research to facilitate positive youth development.

"I used to work as a clinical case manager, and a recurring challenge was finding accessible treatments for everyone," Kofler said. "We're fortunate to have received continuous funding from the National Institute of Mental Health over the past nine years, allowing us to help families and provide our services at no cost, and being able to expand our offered treatments is fantastic."

For April Knill, Truist Professor of Finance in FSU's College of Business, the clinic has made a world of difference to her family.

"Working with the clinic completely changed the trajectory of my daughter's education," Knill said. "Before going to the clinic, she would often say she felt stupid. Years later, she remembers Dr. Kofler calling her brilliant and explaining how it's only her ADHD holding her back, meaning they had to understand how her brain works and then work alongside it. That changed her self-image, and after completing the programs, she's an almost 4.0 student in high school."

Kofler, CLC's former director of research services, and his team have provided more than 300 evaluations and diagnoses of children's disorders for local families since opening its doors in 2015. The clinic's affiliation with FSU's doctoral program in clinical psychology supports a research focus on understanding the relationship among cognitive, behavioral, and educational outcomes for children with ADHD and related difficulties, and developing innovative treatments.

Current treatments developed by the clinic use arcade-style video games that target different brain functions associated with working memory, deficits in which are present in 70-85 percent of children with ADHD and have been linked to impairments and ADHD symptoms. As children play central executive training games, working memory deficits are alleviated, and they show improvements in learning, impulse control, planning, organizing and emotion regulation.



Michael Kofler. Photo by McKenzie Harris.

"This training is a promising nonmedication treatment; previous studies showed that it worked as well as or better than behavior-based parent training. It also improved academic outcomes for children with ADHD, which were maintained months after treatment," said Leah Singh, CLC director and licensed psychologist. "This indicates that benefits from central executive training generalize and are long-lasting, which isn't the case with current ADHD treatments such as medication, parent behavior training and cognitive behavioral therapy."

In late 2021, this central executive training platform, developed by Kofler, was patented to improve working memory deficits in children with ADHD. In 2022, Kofler received two grants totaling \$9 million to redevelop current trainings for children ages 8-13 into trainings for children as young as age 4 to serve as a preventative approach to ADHD and combine trainings with parent-based behavior training to understand how treatments working in tandem manifest in improved executive functions.

The clinic also equips parents with tools to understand how their children's diagnoses affect everyday behaviors, how to advocate for their children, and to understand companion conditions that can exist alongside ADHD such as anxiety, depression, autism and learning disabilities or disorders.

"In addition to the central executive trainings, the clinic is an incredible resource for better language to use when speaking to our children's educators for advocacy," said another Tallahassee community member who wished not to be identified. "I can't speak enough about how understanding, communicative, and supportive Dr. Singh is in giving us language to bridge gaps that exist as my son with several companion conditions interacts with adults in the community who may not know a lot about these conditions."

With undergraduate and graduate students, post-doctoral researchers, and licensed clinicians all collaborating to investigate root causes of children's disorders and serve their community, the clinic's researchers are having a significant impact on the field: They have published more than 100 peer-reviewed scientific studies on children's ADHD and related disorders and look forward to developing more trailblazing treatments.

"It means the world to provide these services to our community. The goal of treatment should be making families' lives easier and treating the underlying conditions rather than just symptoms, so families can get on with their busy lives," Singh said. "With this work, we're able to support families through the diagnosis and immediate treatment of ADHD while simultaneously developing a treatment to provide longterm benefits for families and their children." <



Vandana Tripathi. Photo by Amy Walden.

A Matter of Acceleration

Vandana Tripathi brings Florida State's nuclear physics prowess to the international stage

By Amy Walden

ave you seen our newest addition to the lab?" assistant professor of physics Vandana Tripathi asks.

Tripathi knows the equipment inside Florida State University's John D. Fox Superconducting Linear Accelerator Laboratory as intimately as the lines of her hand.

Weaving her way through a control room that rivals the bridge on the Star Trek Enterprise, she emerges from an adjoining maze of rooms a-hum with the sounds of scientific discovery.

"This is a brand-new detector — it's an infant!" Tripathi enthuses, showing off a component of the Fox Lab's gamma ray spectroscopy system. For generations of researchers and students, the Fox Lab, housed in FSU's Collins Research Building on the aptly named Atomic Way, has been a force driving new frontiers in nuclear physics and attracting scientists from all over the world. It exerted its pull on Tripathi, who has called the lab a second home since 2003.

Physics Fascination

Growing up in Agra, India, Tripathi was interested in all forms of science but found a deeper interest in physics as she planned for college. She began her studies there, in the city known by many as the site of the Taj Mahal, before moving to New Delhi to pursue a doctorate.

Tripathi conducted her doctoral thesis research at New Delhi's Nuclear Science Centre, measuring fusion and transfer reactions. After earning her Ph.D. in experimental nuclear physics from Jawahar Lal Nehru University in 2000, she accepted a position in the nuclear physics division of Mumbai's Bhabha Atomic Research Center.

"I got a job in India after finishing my doctorate but eventually came to FSU as a postdoctoral fellow due to family commitments. The excellent nuclear physics faculty at FSU made that switch easy, and in hindsight, it was the best professional decision for me," she said.

FSU Future

Tripathi immersed herself in research at FSU, using the Fox Lab's series of detector arrays, a superconducting linear accelerator, and the 9 million-volt Tandem Van-de-Graaf accelerator. She also enjoyed and benefitted from working with a globally-oriented team at the physics department.

"Our department is very international, bringing together people from different cultures and backgrounds with different research interests," said assistant professor of physics Mark Spieker, who earned his doctorate from the University of Cologne, Germany. "This is a great environment for personal growth for young faculty, staff, and our undergraduate and graduate students."

Tripathi's research focuses on the structure of subatomic nuclei, especially those that are not

naturally occurring and are unstable but are fundamental to our understanding of nucleosynthesis in the early stages of the universe.

"We study some rare isotopes not found in nature — for example, the common oxygen isotope is 16, but ²⁰O would be a rare isotope. We care about rare isotopes because what we see today is not how our universe formed in the beginning — rare isotopes eventually became the stable isotopes we see," she said.

Beyond her impressive research portfolio, Tripathi is a key player in the department's ability to acquire new, cutting-edge tools.

"At FSU, she helped our group a lot by bringing the CLARION-2 gamma-ray array to the laboratory through a collaboration she established with Oak Ridge National Laboratory. Many exciting experiments will be possible with this array in the future and lead to new possibilities for our graduate students and for our laboratory in general," Spieker said.

New Horizons

Tripathi's universal perspective of physics has made inter-institutional collaboration a hallmark of her work. In May 2022, she participated in a historic moment for the international low-energy nuclear physics community — the opening of the Facility for Rare Isotope Beams, FRIB, on the campus of Michigan State University. The facility, which is helmed by FSU physics alumnus Thomas Glasmacher, replaces the MSU-sited National Superconducting Cyclotron Laboratory.

"The FRIB is the U.S. flagship facility for radioactive beams and has been in the making for about two decades. We have been excited and preparing to utilize it for a long time," Tripathi said.

Tripathi was a co-spokesperson for the very first user experiment to run after commissioning of the FRIB accelerator and fragment separator. Ten institutes participated in the inaugural experiment, which allowed scientists to measure the half-lives for four new isotopes of phosphorous, magnesium, aluminum and silicon. The team's findings were published in Physical Review Letters in November.

But Tripathi says this is just the beginning, with the team planning to return to FRIB for additional experimental research in 2023.

"To quote Carl Sagan, 'We are made of star stuff.' In trying to understand how this universe came about, it is crucial we understand rare isotopes," she said. "It is an exciting time for experimental nuclear physics." <





Uncovering Italy

Celebrating 50 years of archaeological excavations by FSU students in Cetamura del Chianti

By McKenzie Harris

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As Florida State University alumnus Gregg Anderson dug into the rich soil of the Italian region of Tuscany in 1979, he had a vision that one day, artifacts he and his fellow student archaeologists uncovered would be illuminated under museum lights. That dream is coming to fruition this year with the establishment of the new Civic Museum at the Origins of Chianti in Gaiole, Italy, which will feature spectacular archaeological discoveries from 50 years of excavations at Cetamura.

FSU's Department of Classics first began archaeological excavation and research at Cetamura — which since the 7th century B.C.E. was home to Etruscans and later Romans, and Italians of the Middle Ages — in 1973 as coursework at the FSU Study Center in Florence. Organizers will celebrate the 50th anniversary of the dig in June 2023 alongside the inauguration of the new museum.

"It's incredible to share the thrill of finding something that belonged to someone thousands of years ago with students and watching them figure out what it means to us today or how what they found changes what we know about the past," said Nancy de Grummond, M. Lynette Thompson Professor of Classics and director of excavations for Cetamura, Archaeology in Tuscany for the past 40 years.

The Cetamura program, supported by FSU International Programs and the FSU Study Center in Florence, has provided hundreds of students with exclusive opportunities to participate in excavation, preservation work and the construction of exhibitions.

"In 1979, Cetamura had just switched from a class to a program, and I jumped at the opportunity," said Anderson, who at the time had just started studying in the graduate program in industrial design and development and now serves as the chair of the 50th Anniversary Committee. "We lived in an elementary school in the little town of Gaiole and would bus out to the dig site to begin excavating by 7 a.m. At that time in the '70s, exploration was happening all over Italy, and getting to be part of those discoveries was so exciting. We were finding different artifacts every day — you really can't ask for more than that!"

The thrill of the find is a sentiment that has been shared among those who have dug at Cetamura throughout the years, and more recent digs have provided students the unique opportunity to hone their skills in museum studies. For the last decade, students have helped in presenting their discoveries in exhibitions, such as a treasure trove of 194 ancient Roman silver coins unearthed in 2015 that was displayed at the Museum of Santa Maria della Scala in Siena, Italy.

"That discovery was one of the most significant in the region of Chianti; it firmly documents the moment of Romanization of Cetamura, previously Etruscan, and is so far without parallel in Chianti," de Grummond said. "Perhaps our greatest discovery yet was when we were digging wells and found more than 4,500 ancient waterlogged grape seeds."

While grape seeds have often been uncovered at ancient sites in Italy, they are usually carbonized — their flesh has dried out. When organic material is waterlogged, it is well-preserved. Here, the waterlogging preserved the flesh of the grapes, and therefore, protected the information stored in the grapes' DNA. These samples provide more accurate and detailed evidence that informs knowledge about the environment at the time and even who was in power. Using carbon-dating techniques, researchers estimate some of the discovered grape seeds were from as early as 300 B.C. and others were from 300 A.D., indicating there was a period of at least 600 years of continuous management of grapevines in the Chianti region.

"This program has been very successful in training students to become professors, field archaeologists and other professionals," de Grummond said. "They have an extra arrow in their quiver with which they can enter the job market and have a very fruitful career."

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- Nancy de Grummond, Director of Excavations for Cetamura, Archaeology

Cetamura Timeline

1973

Cetamura program is established as a class

1979

Cetamura program switched from a class to a program

2007

Red jasper, milky quartz, and green limestone game pieces are discovered near areas where Etruscans made offerings

2012

First of 4,500 waterlogged grape seeds discovered with viable DNA

2015

194 ancient Roman silver coins discovered

2017

Remains of a castle owned by powerful noble clan of the Firidolfi dating back to 12th century A.D. are uncovered

2023

50th anniversary of the Cetamura dig and opening of Civic Museum at the Origins of Chianti in Gaiole















Facing page and above: Scenes from excavations at Cetamura since the beginning. Photos courtesy Cetamura del Chianti Excavations and Research.

Such is the case for many Arts and Sciences students who have received training in field archaeology at the Cetamura site, including alumna Nina Perdomo, whose dreams would still be just that if not for generous contributions by longtime donors like alumnus and former professor Rodney Reeves, Suzanne Bucher and the late Robert Loewenstein.

"My experience working as a program assistant for the Cetamura del Chianti Field School in 2022 was incredible and helped me refine my leadership abilities while getting to conduct field and laboratory work," Perdomo said. "I especially enjoyed the laboratory identification and processing work, and because of that, I am now pursuing a master's degree in museum studies at the George Washington University in Washington, D.C., with a concentration in collections management."

Perdomo had the opportunity to assemble and present a museum display thanks to the Rodney Reeves Scholarship Award in Classics, which is awarded to outstanding undergraduates interested in museum career fields that include robust coursework in art, anthropology, classics, languages or history. She planned and mounted an exhibition based on FSU excavations at Cetamura called "Of Coins, Pots and a Castle." "I'm extremely grateful for the funding that facilitated my experience, as I would not have been able to participate in the project otherwise. Working with Dr. de Grummond and having this on my résumé is an extreme privilege and has helped me stand out in my graduate studies and post-graduation work — I currently serve as a museum assistant at the Phillips Collection," Perdomo said. "I could not be happier with my experience at Cetamura and hope to continue contributing to this incredible project in the future."

As the Cetamura community prepares for the 50th anniversary celebration, de Grummond invites college alumni to take part in planned events including lectures, exhibitions, an open house at the site of Cetamura, tours of the site and research lab at Badia a Coltibuono, and the official inauguration of the new museum.

These opportunities, including a six-day adventure June 4-10, 2023, give alumni the chance to explore Florence and the Chianti region under the leadership of two-time Cetamura program alumna Jessica Rassau and are available for reservation. To learn more, visit **cetamuradel chianti.com/50th-anniversary-celebration.** <

Leave your mark at Cetamura

Join the Cetamura community and secure the future of the critical archaeological work done by FSU students, staff and faculty. Your gift to Cetamura funds unrivaled archaeological opportunities and cements the ability of Cetamura participants to develop innovative museum exhibitions and events and begin conceptual planning to provide access to Cetamura as an archaeological park.

Visit **spark.fsu.edu/Cetamura** to learn more and make a gift.

For details about this year's celebration and opportunities to participate, email **ndegrummond@fsu.edu**.



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> Sam Huckaba Dean

Heather Athey Editor-in-chief

McKenzie Harris Assistant Editor

> Marc Thomas Design

Contributors Devin Bittner Mark Blackwell Thomas Rodney Campbell Kendall Cooper Amy Farnum-Patronis Hannah Fulk Kathleen Haughney Jon Manson Rebekah Moseley Dena Reddick Amy Walden William Wellock

Photographers Devin Bittner Hannah Fulk Bill Lax Bruce Palmer Amy Walden

Letters to the editor spectrum@fsu.edu

Visit the college online artsandsciences.fsu.edu

