

Re:Search

Graduate Studies & Research at Salisbury University
2020 Edition

10 Years of *Re:Search* ...
Bridging the Gap Between
Research and Real World





SU's Summer Scholars keep research going year-round. • page 17

Volume 10 • 2020

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On the Cover: Find out what SU's Fulbright Scholars have been up to – including Brittany Bursa's '17 experiences in Brazil • page 7

Salisbury University is a proud member of the University System of Maryland.



“The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.”
– Marcel Proust

‘Seeing with new eyes’ captures the spirit of research and creative scholarship at Salisbury University. Not only do our students engage in authentic research across the disciplines, they learn to view the world and themselves differently with the skills and knowledge developed in these experiences. Similarly, research and creative scholarship are important points of focus for SU faculty, allowing them to not only pursue the discovery of new knowledge but to also build an engaging learning environment for their students.

This volume of *Re:Search* is the 10th edition of our annual publication and provides an exciting overview of faculty and student research activities at SU. You can see the extent to which research permeates our daily work at SU and how the diversity of projects, support and national recognition has increased over the past decade.

Research and externally funded projects range from more traditional laboratory studies to community-based projects to international experiences across the globe. Within these pages, you can read how SU faculty and students are supporting educational experiences for local youth; studying environmental concerns ranging from beach erosion to green energy to human/wildlife conflict; and conducting discovery research on novel medicines, human health and mechanisms of genetic expression.

Support for faculty and student research has grown substantially in the past 10 years, whether through external grants and contracts (over \$8.5 million in 2019), internal awards (nearly \$250,000 in Faculty Mini-Grants since 2011), or fellowships from the Environmental Protection Agency, National Science Foundation, U.S. Department of State, Ford Foundation and Whiting Foundation. SU recently was presented with the prestigious Carnegie Community Engagement Classification, recognizing the University’s commitment to community-engaged learning. Through partnerships with local institutions, our students and faculty have a long history of contributing to critical needs in the area. This classification confirms their good works do not go unnoticed.

An important aspect of research and creative scholarship is sharing results or created works. This can be achieved through publications in research journals, presentations at professional conferences or community meetings, performances and gallery exhibits. Over the last 10 years, SU’s Office of Graduate Studies and Research has collaborated with faculty and staff across campus to establish a research celebration at Maryland’s General Assembly (Posters on the Bay), to support SU’s long-running Student Research Conference (SUSRC, now in its 19th year), to establish the Office of Undergraduate Research and Creative Activity (OURCA), and to provide funding for graduate students (Research and Presentation [RAP] Grants). Most recently, SU launched *Laridae*, a student-driven publication of undergraduate research and creative work.

The stories in this volume are just a sampling of the research and impact of our faculty, staff and students. They underscore the important role of research and scholarly activity in student success at SU. I hope you enjoy reading them as much as I have.

Sincerely,



Charles A. Wight, Ph.D.
President • Salisbury University



Faculty Mini-Grants: A First Step on the Research Path

In 2011, the University Research Council at Salisbury University awarded more than \$23,000 during its inaugural round of the Faculty Mini-Grant Program. The program encouraged SU faculty to develop research, scholarly or creative programs that provide potential for sustained professional development and extramural support. Faculty are awarded up to \$2,500 to fund their research.

Now, nearly 10 years later, those first Faculty Mini-Grant recipients are still dedicated to furthering their work and providing an environment where students can learn from the research process to develop their own career paths.

AWARD UP TO
\$3,000
ANNUALLY

OVER
\$23,000
AWARDED IN
FIRST YEAR

NEARLY
\$250,000
AWARDED TO DATE

Community Media as a Voice for Change

Vinita Agarwal

Associate Professor
of Communication

The voice of community traditions can be powerful. One Salisbury University professor used that voice for an expansive research project in India that now, 10 years later, brings a unique perspective to approaches in health and wellness.

Dr. Vinita Agarwal in the Communication Department received a Faculty Mini-Grant to help her understand the role of community voices in articulation of women's local health traditions. The funds were used for travel to New Delhi, India, where Agarwal visited urban resettlement neighborhoods – or slums – to meet with the women there.

“My intent going into the field was to observe women's traditional health practices,” Agarwal said. “I wanted to understand how women's negotiations of their practices could help design community media programs and public service messages that positively impact women's health.”

While establishing contact with the women and identifying a site, Agarwal realized that the women's local health traditions were influenced by the women's own collective decision-making as they made sense of messages in mainstream media. The study goals were modified to examine how women negotiated their maternal health practices alongside sociocultural and biomedical practices presented in mainstream media. Agarwal's research was presented at several conferences and published in the



Dr. Agrawal during her research at the basti in 2011.

top-tier disciplinary journal, *Health Communication*. It won the Eastern Communication Association's top two paper award in the Health Communication Division.

Agarwal's research has since evolved to focus on patient-centered care, provider-patient communication in the therapeutic relationship, and complementary and alternative medicine (CAM) approaches in chronic illness and pain management. She has explored approaches to long-term pain management that have the potential to reduce provider burnout and

support self-management in chronic illness and long-term cancer survivorship domains.

This body of research has resulted in many presentations at communication, integrative medicine and yoga conferences and publication in peer-reviewed journals in medicine, nursing and communication. Her presentation on embodied provider care recently won the top paper award at the National Communication Association's Applied Communication Division.

Agarwal is currently engaged in examining data exploring CAM provider approaches to breast cancer survivorship care. Her book, *An Ecology of Wholeness: Medical Humanism, Chronic Disease, and the Fractured Body*, stemming from prior research, observations of Ayurvedic physician's chronic pain management protocols in India, and meditation training experiences from her recent travel to Nasik, Pune and New Delhi is in the final stages of revisions for the publisher.

The research also has supported curriculum development at the Fulton School of Liberal Arts. Agarwal created a new Health Communication course she offered for the first time during the fall 2019 semester. She participated as a member of the Health Humanities Faculty Learning Community in establishing the new interdisciplinary health humanities minor approved last fall.

“The research brings a unique point of view to understanding healing and wholeness in the domain of chronic illness and pain management,” Agarwal said. “By examining patient and provider practices and experiences, this body of research goes beyond mainstream approaches to health outcomes to envisage healing and wholeness in integrative ways.”

Learning Is In Our DNA

By Patti Erickson

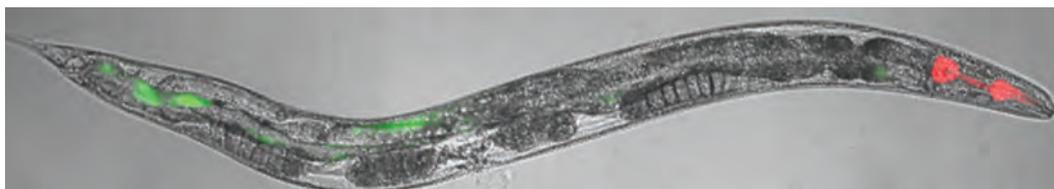
Associate Professor
of Biological Sciences

Genomes contain the code for life, carrying all the information necessary for living things to function and create offspring. Which genetic information codes for which traits? The question has existed since the discovery of DNA as the genetic material, but the tools for addressing it improve constantly. Bringing modern molecular genetic approaches into my laboratory and classroom has been one of my persistent goals. Although my research focus has changed over time – including plants, animals and microbes – what has remained consistent is using model organisms and cutting-edge technologies to answer fundamental questions about genetic relationships.

The goal of my first Faculty Mini-Grant project was to identify mutant plants with altered sensitivity to an antioxidant with reported medicinal values. Finding a target in plants, which were quick and easy to grow, might provide insights into human therapeutic responses. After screening thousands of mutagenized seedlings, I found a potential mutant – in the laboratory of my colleague Les Erickson.

Serendipitously, mutations in a gene he was studying in yeast caused cells to become more sensitive to this specific antioxidant. He even had some plants with mutations in this very same gene. Although the genetic mutation in these plants was known, the physiological effects had not been characterized. My second Faculty Mini-Grant focused on determining the physical consequences of this genetic mutation throughout plant development.

Meanwhile, my research students and I also were exploring the effects of antioxidants on a microscopic nematode worm, renowned for its use in genetic studies. Excessive oxidative stress is linked to age-related disorders, such as chronic heart, lung, neurodegenerative and kidney diseases. We analyzed genetically engineered worm strains expressing green fluorescent protein (GFP), which served as an indicator of oxidative stress levels. Needing a specialized instrument to measure production of GFP led to a successful National Science Foundation proposal and the acquisition of an extremely versatile instrument, which is often used at capacity.



Since altering expression levels of specific genes in worms by feeding them sequences of genetic material was simple, I incorporated it into both my research and teaching laboratory projects. Soon an even better technique was developed, but it required a more sophisticated delivery system. Taking advantage of my sabbatical leave and a third Faculty Mini-Grant, I learned how to inject DNA directly into these worms, permanently altering their genetic composition.

During this sabbatical, I also spent time mastering genetic manipulation on an entirely different scale by using yeast to capture and modify huge stretches of DNA. This technique facilitates modification and characterization of genomes previously intractable to genetic studies. The potential capacity for this method to explore the relationship between genes and traits, including bacterial pathogenicity, is immense. My desire to share this technology with SU students led to Building Research Excellence funding and a pending National Institutes of Health proposal.

While my path has been anything but straight-forward, multiple genetic approaches using three different organisms has led to collaborations at four different institutions and more than a dozen independent student research projects and presentations over the past 10 years. As new technologies, like direct DNA sequencing, become accessible, I will continue introducing them to students, hoping to share my excitement for further genetic discoveries.



Moving Medicine Forward, One Molecule at a Time

By **Stephen Habay**
Professor of Chemistry

Ten years ago, as an assistant professor, I received an award from the Salisbury University Faculty Mini-Grant Program in its inaugural year. Admittedly, my research group was in desperate need of funding to finish our project at the time, and the grant proved vital in keeping the project going. My previous external grant had just ended, and we were very close to finishing critical experiments needed to publish our results.

Two years earlier, my students had discovered a previously unknown chemical reaction that allowed access to important alkaloid compounds known as octahydroindoles (OHIs). Alkaloids are naturally occurring molecules found in plants and microorganisms that have valuable medicinal properties important to human health and disease treatment. Unfortunately, extracting sufficient quantities of OHI alkaloids from natural sources is very difficult, if not impossible. It was important to design affordable and efficient methods of synthesizing them in the lab.

Our newly discovered reaction would allow us to produce OHIs on a larger scale in the lab with just a few days of work. Funds from the grant allowed my undergraduate research students and I to purchase the necessary materials to finish up our study and publish the results in the *Journal of Organic Chemistry*, one of the premier journals in my field.

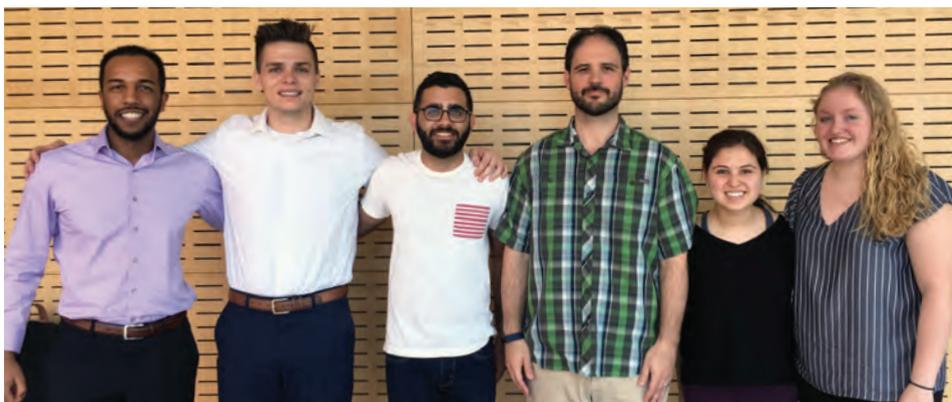
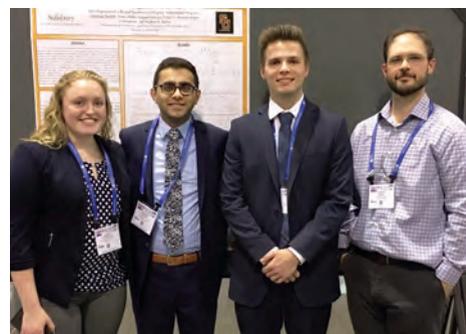
Publishing that research paper had many positive and long-lasting effects. First and foremost, of the three student coauthors on the paper, two were accepted into Ph.D. programs in chemistry and one was accepted into medical school. It has been very rewarding to follow their careers and witness their success over the last decade. The paper also had a major impact on my own career, helping me to achieve tenure and promotion to associate professor at SU in 2013. Our paper also was cited multiple times by other researchers in the



field, an indication of the scientific merit and impact of our work.

Perhaps the biggest effect this paper had on my research program was to serve as the foundation for expanding our work in alkaloid synthesis into a successful grant proposal to the National Institutes of Health. In 2015, I was awarded an Academic Research Enhancement Award for more than \$290,000. This was the first competitive NIH grant ever received by a researcher at SU, and it completely transformed my research program. We were able to grow my lab through the training of additional students, acquire new equipment and supplies, fund paid summer research positions for students, and purchase state-of-the-art scientific instruments to enhance the research capabilities for all students and faculty in the Chemistry Department. The award also funded travel so my students and I could present our work at multiple national and international conferences.

It was always my goal to build a world-class undergraduate research lab at SU. Looking back over the last decade, with the bolstering effect of the SU Faculty Mini-Grant program and funding from NIH, I believe I have achieved my goal. I hope the program continues well into the future, because it was essential to my success and the success of my students.



Making Gains in Weight Loss Studies

Scott Mazzetti

Professor of Exercise Science

Anyone who has tried and struggled to lose weight often faces the question eventually: “What am I doing wrong?” Weight loss and developing healthy exercise habits are often a long journey. This was also the case for one project funded by the Faculty Mini Grant Program.

Dr. Scott Mazzetti of the Exercise Science Program received an award to fund his study to examine exercise energy expenditure following different resistance training programs. The study was designed to evaluate whether weight training using different contraction intensities was advantageous to the total calories a person could expend.

The study involved testing subjects for six weeks, training them for 12 weeks and testing them again over five weeks. It required more than half of the fall and spring semesters, and all of winter, with a short break for holidays.

“It was a very lengthy study,” Mazzetti said. “We calculated we were putting in almost 300 student contact hours per subject.”

The goal was to optimize exercise programs for weight management. They found training explosively would make exercise sessions a little more effective, but the difference was somewhat minimal.

Mazzetti had planned to apply for a grant to continue this study, but through thoughtful mentoring from a dean at SU, he realized that it was not a realistic study design for undergraduate research.

Recognizing his students needed experience with all parts of the scientific method and would not get to see the presentation and publication stages at the rate the study was going, Mazzetti moved from long-term training studies to acute designs. However, he said they learned a lot about exercise and calories that has dramatically influenced the way they conduct studies now.

“We’re probably working on the best studies we’ve ever done in my lab,” Mazzetti said. “It’s all a function of the support the grant gave to help us run well thought-out studies.”

Mazzetti now has three students doing Honors theses related to his current research, which involves training subjects for two weeks, with testing before and after. Two of his former students also are working with him on publications involving studies completed at SU.

“We’ve come farther, and the studies are



more manageable,” Mazzetti said. “I can’t put into words the effect it’s had on our lab. We’re extremely efficient. We learned so much from that initial experiment, because the University gave us the chance to work through it.”

In a society where obesity is a growing problem and everyone is confused about how to exercise for weight loss, Mazzetti said their work is making gains.

“What I teach in my classes is eating healthier is a missile launcher for weight loss, while exercise is an air gun,” Mazzetti said. He explained changing dietary habits, while very difficult, is a much more efficient weapon, whereas exercise is not nearly as effective as many believe.

“Exercise is still valuable to improving your health,” Mazzetti said. “But knowing that, we can attack life and weight management in a meaningful way. It changes the disappointment I might get when I exercise and don’t see results right away. I’m smart enough to keep exercising, but I emphasize dietary habit changes, because I know that exercise isn’t the driving factor. We can enjoy life, with a goal to be healthier.” ❖



SU's Fulbright Scholars Reach for Their Full Potential



Martina Maya-Callen '19

Salisbury University has been named among the nation's top producers of Fulbright Students by the U.S. Department of State's Bureau of Educational and Cultural Affairs. When students earn the honor, they share their plans, but they often graduate soon after and the campus community never hears about their Fulbright experience. To illuminate this life-changing opportunity, some recent recipients share their Fulbright stories here.

Brittany Bursa: Giving Back 110%

After being awarded a Fulbright English Teaching Assistantship (ETA) to Brazil, Brittany Bursa '17 prepared for one of the most challenging chapters of her life. Leaving her home in the United States to pursue new opportunities abroad didn't come without its struggles. Arriving in a foreign country where she didn't speak the language well was a scary thought, and there were many days where she felt isolated.

However, she said one of the most important lessons she learned was being able to face things without the fear of being wrong and being willing to try something and fail, but still give it "110%."

Bursa had heard stories of Brazil before she set foot in the country herself. Her grandfather was in the U.S. Army and lived in Brazil when Bursa's mother was in elementary school. She originally applied for a Fulbright to Spain because her family had experience speaking Spanish, so having little knowledge of Portuguese was intimidating. Even so, she said the Brazilian people welcomed her with open arms – literally.

"The Brazilian people were so kindhearted," Bursa said. "The community there is incredible. Some towns may not have plenty of resources, but seeing them all come together to accept someone like me anyway was a fantastic feeling."

Bursa worked with students ranging from age 17 to older than 55, who all wanted to be English teachers. She helped many students with their thesis projects, from creating research questions to writing methodology – something she was very familiar with from her education at SU, where she won the John and Mary Claire Roth Thesis Prize for best senior thesis from the Honors College.

Her work went above and beyond the classroom. She helped run an Instagram account where she would post English idioms, synonyms and slang. She hosted conversation clubs that featured pop culture topics such as comparing Brazilian and American dancing types, superheroes and holidays. Her students even got to take part in an "American Halloween" party where they bobbed for apples and carved pumpkins. For many, it was the first time they engaged in American culture and could do the things they had only seen on TV.

Bursa was nervous at first because many of the students she taught were her age or even older, but she soon learned that all



were so willing to learn that they weren't afraid of making mistakes.

"It was a very cool exchange of cultures," Bursa said. "People are always willing to help one another out."

Bursa was in Brazil when the Brazilian President Jair Bolsonaro enacted a 30% cut to the public education budget. She said watching universities shut down or not be able to maintain educational programs was a shock to her. She realized there were many things about her education in the U.S. that she took for granted, so she participated in protests with other professors.

"I saw how quickly students' education slipped through their fingers. It was scary, but it inspired me," Bursa said. "I realized one of my goals for my future was to fight for education for all students, no matter what their level or where they're from."

After being granted a renewal for her Fulbright in Brazil – a very rare opportunity – Bursa is now back in the United States. She recently was accepted into the University of Cambridge in England to pursue a master's degree to promote educational equality for migrants and refugees in communities. She also has applied to the University of Sussex for its master's International Education and Development Program. She is still waiting to see if she can get funded, but if all works out, she will leave in fall.

Bursa said her Fulbright opportunity was important in shaping the path her career in education is taking.

"I want to help people educationally and inspire them," Bursa said. "Now, I'm not just trying to volunteer but gauge who in the community needs help and give back as much as I can."



SU's Fulbright Scholars 2019

■ David Basom '19

Basom received a Fulbright English Teaching Assistantship (ETA) to India and is teaching at the Sri Vidhyalakshmi Matriculation Higher Secondary School in Chennangkuppam. He said the Fulbright will help him gain experience that no textbook or internship can provide and is excited to work in a school system different from the U.S.

■ Noah Cline '19

Cline received a Fulbright Academic Award to study at National Chengchi University in Taiwan. A conflict analysis and dispute resolution graduate and member of ROTC, Cline hopes the opportunity will help him explore paths for his extended education and conduct research that has "real national security implications."

■ Lauren Delong '19

See feature story on page 9.

■ Danesha Owens-Harrell '15 & M'18

Owens-Harrell, a two-time graduate of SU who received her Master of Social Work, is the first Fulbright scholar of SU's College of Health and Human Services. She received a Fulbright ETA to the Netherlands and hopes to learn about Dutch social programs working with teens and young adults.

■ Rachel Rolle '18

Rolle received a Fulbright ETA to South Korea. She was born in South Korea and later studied on a Global Korea Scholarship during her junior year at SU. She said she is looking forward to immersing herself in the culture and language to further connect with her biracial identity. She hopes her Fulbright experience will give her insight in her professional career.

2018

■ Martina Maya-Callen '19

See feature story on page 10.

■ Danielle Walker '18

Walker received a Fulbright ETA to Moldova in 2018 to study how burgeoning democracy in Eastern Europe would build political involvement among students. She worked with U.S. Representative Anthony G. Brown of Maryland and is now a development associate for the U.S. Capitol Historical Society.

■ Caroline Deschak '14

Deschak earned a two-year Fulbright Academic Graduate Degree Program Award in 2018 to pursue a master's in public health nutrition at Instituto Nacional de Salud Pública in Mexico. She remains in Mexico, where in 2020, she will complete her degree with a capstone project measuring food insecurity in migrants in transit for Mexico.

2017

■ Hannah Ennerfelt '17

Ennerfelt earned a Fulbright Academic Award to Sweden in 2017, where she participated in a project investigating a cytokine-dependent role in glioma maintenance. She is a Swedish citizen, and her family still participates in Swedish traditions. She is currently pursuing a Ph.D. in neuroscience at the University of Virginia.

■ Katherine Potvin '17

Potvin earned a Fulbright ETA to Mongolia in 2017. Last fall, she moved to the Ukraine, where she is serving as a Teaching English as a Foreign Language Peace Corps volunteer. She recently was interviewed by local TV in Ukraine to discuss the Peace Corps mission and how they plan to help develop students' and teachers' language and technical skills.

■ Matthew Jones '17

Jones earned a Fulbright ETA to Thailand in 2017. He hoped his experience would help him create a diverse learning environment for his future students. He is now back home in Salisbury and teaches the fourth and fifth grades at North Salisbury Elementary.

■ Brittany Bursa '17

See feature story on page 8.



Lauren DeLong '19

Lauren DeLong: Opening New Doors with Each Step

With every experience comes opportunities that can open up new paths in life. Fulbright scholar Lauren DeLong '19 knows to take each step in stride and look forward to the possibilities for the future.

DeLong earned a Fulbright Academic Award to Germany in 2019. The summer prior, she completed a research internship in Germany through the German Academic Exchange Service (DAAD) and also was offered a DAAD Graduate Study Award.

When she first arrived in Germany, DeLong found the country to be very open to its international community. She said many immigrants come to work there, and the country accepts many refugees as well as people like her, who just want to study and grow there. She said she was surprised that the people are not only welcoming of foreigners but like to celebrate them, too. She even joined an international choir that sings songs from around the world. She said foreigners don't need to be scared or ashamed in the country, because German people are willing to share so much of their culture and traditions.

Now, DeLong works at the University of Bonn in bioinformatics software engineering.

"It's completely different from what I had planned to do," DeLong said. "But I like it a lot. I've always loved math and biology, so this lets me put the two together."

Instead of working in a lab, DeLong spends her time on the computer coding. Her knowledge as a biology major is necessary, but now she adds her coding skills

to write software for the lab to use. She has to think of her own algorithms for processing data and develop her own processes in the context of biology data. She said she finds combining molecular genetic skills with math skills to be really fun.

DeLong sometimes starts her day with classes on machine learning and Python programming. After classes, she'll head to the Fraunhofer campus to work a full day. Recently, she worked on developing software that contains data possibilities for single nucleotide mutations, making it easier for users to search for specific mutations. Now that she's into the computational side of things, she said she may want to be a translational developer in the future.

"I feel like with every experience I have, I'm always changing what I want to do," DeLong said. "But that's what experiences help you do. They help you develop where you want to go."

DeLong will be working hard in Germany until the end of July. She has applied for Ph.D. positions in the United States, but she's also considering working in translational medicine and is keeping her options open. More than anything, she hopes she can continue with her graduate education, no matter where in the world it takes her.

"I think SU opened some of those doors for me," DeLong said. "You may think you know what you want, but experiences like a Fulbright can open up so many opportunities."

Martina Maya-Callen: Always On the Journey to Self-Love

Martina Maya-Callen's journey of self-love has taken her across the world to share her message.

In 2018-19, the conflict analysis and dispute resolution and fine arts double major earned a Fulbright ETA to Argentina. Her interest in the country was special: Argentina has one of the highest documented rates of eating disorders in the world. She wanted to experience what was happening in the country's society that made the number so high and ultimately promote body acceptance and self-love there.

That journey started at SU in March 2017, during National Eating Disorders Awareness Week. Maya-Callen, a partner with the National Eating Disorders Association at the time, created a performative art installation piece on campus titled "The Hidden Secret of Eating Disorders." The piece went viral and gained national and international attention, helping her launch a worldwide movement for spreading eating disorder awareness over the last three years. From there, Maya-Callen continued her love for advocating and giving people the resources they need to seek help.

"I've been extremely passionate about spreading awareness of eating disorders and breaking the standards of beauty," Maya-Callen said. "I feel really honored that SU put the right tools in my tool belt to achieve this."

Maya-Callen said she first fell in love with Argentina when she attended a music open mic event there. She plays guitar and sings, and she said she was inspired by the way people would play music and others would jump onto the stage to dance along.

"I saw how the people there are so open to collaborating and engaging with others," Maya-Callen said. "It's such an energized culture of tango and music and delicious food – and very warm people."

Every week, she taught at four or more different schools through her Fulbright experience, working with more than 3,000 different students during her time there.

"In the morning, I could be working with a 5-year-old playing patty cake, and at night, I would be talking about global economic equality with older students," Maya-Callen said. "Every moment was very dynamic and different."

In addition to teaching English, she was constantly thinking about ways to spread her message of body positivity. As part of her



Martina
Maya-Callen '19

Love Your Vessel social movement, she coordinated an overnight retreat in Argentina called BeYOUtiful. During the day, attendees participated in workshops and meditative experiences such as music and yoga. In the afternoon, they coordinated a photoshoot to support body acceptance. Maya-Callen said her theory was that the ripple effect caused by such efforts would ultimately help fight eating disorders in the country and beyond.

Maya-Callen is back in the United States now, but her drive for advocating for issues important to her hasn't stopped. She recently earned a Running Start Congressional Fellowship and is working on Capitol Hill, where she interns under Representative Pramila Jayapal of Washington State's 7th congressional district. She also is a crisis counselor and helps Get Out the Vote in Maryland. She said she is thankful for how the opportunity to live and work abroad helped propel her career and keep her on the path to encouraging self-love.

"Fulbright offered me a deep love for other cultures and people, and also ignited my desire to always be curious," Maya-Callen said. "Everything that has happened in the past few years has been truly phenomenal."



2016

■ Payge Jennings '14

Jennings earned a Fulbright ETA to South Korea in 2016. She is a 2018 graduate of American University and has maintained her interests in international education. She is currently the national fellowships coordinator at the University of South Carolina, where she advises on competitive awards, including Fulbright. She is an active member of the National Association of Fellowships Advisors and presented at its most recent conference on diversity and inclusion in the field.

2014

■ Emily Lembo '14

Lembo earned a Fulbright ETA to South Korea in 2014. She was SU's first Fulbright ETA recipient and the first undergraduate student at SU to earn a Fulbright. She received a job offer last summer to teach ESL at Montgomery County Schools and also taught at SU's English Language Institute last summer. She will graduate from University of Maryland Baltimore County in May 2020 with a master's in TESOL.

2012

■ Charles Overholt '11 & M'18

Overholt, a two-time graduate of SU who received his Master of Arts in history, earned a Fulbright Fellowship to Germany in 2012. He was the first SU student to earn a Fulbright. He is now the assistant director of freshman admissions at SU and teaches German 101.

Alumni Fulbright Leader

■ Stephen Reilly '95

SU alumnus Stephen Reilly '95 earned a Fulbright three years after his graduation to study international relations in Sweden. He later founded Global Experiences, Inc. and is now executive director of the Fulbright Association.

SU Earns \$2.1 Million Federal College Assistance Migrant Program Award

With nearly 10 million acres of farmland in Maryland, Delaware and Virginia, the region attracts thousands of seasonal migrant farm workers each year. Thanks to Salisbury University and the U.S. Department of Education, some may have an incentive to stay in the area – and teach.

SU received a five-year, \$2.1 million College Assistance Migrant Program (CAMP) award from the Department of Education. The Initializing Migrant/Minority/Marginalized Power through Opportunities and Widening Educational Representatives (I'M³ POWER) grant assists first-year, full-time students who are engaged, or whose parents are engaged, in migrant and other seasonal farm work.

Drs. Amber Meyer, Claudia Burgess and Vincent Genareo of SU's Early and Elementary Education Department applied for the grant, designed to enhance educational opportunities for those who qualify and aspire to be elementary or early childhood educators.

"With a national, state and local shortage of teachers, particularly those who are culturally and linguistically diverse, this grant

will provide communities with highly qualified teachers who can impact all children in meaningful ways," said Meyer.

Instruction for those receiving the CAMP scholarship will focus on high-impact practices, STEM (science, technology, engineering and mathematics) learning and teaching, and connections between school, culture and family.

"This program not only assists first-time students, but it also helps SU and the surrounding area," said Burgess. "Those accepted through this program will help increase the diversity of our campus and do the same for our school systems, which are seeking teachers from underrepresented groups."

The first program of its kind in the region, CAMP is expecting its inaugural cohort to begin in spring 2020. Successful applicants receive tuition assistance and financial assistance for textbooks and other educational supplies, as well as assistance with childcare, nourishment subsidies and more.

For more information, visit www.salisbury.edu/CAMPGrant



Initializing Migrant, Minority, & Marginalized Power through Opportunities & Widening Educational Representativeness



SU Signs Research Agreements for Maryland Hemp Growing Pilot Program

An agricultural probiotic developed at Salisbury University to enhance the growth of soybeans, peanuts, corn and other crops soon will be tested on a new resource: hemp.

SU is believed to be the first institution in Maryland to sign research agreements with local farmers through a new Department of Agriculture pilot program allowing the growth and processing of industrial hemp in the state. Under the program's guidelines, participating farmers must partner with a higher education institution for research as part of the application process for inclusion.

"These aren't drug plants," said Dr. Mark Holland, Biological Sciences Department, noting that though hemp is the same



species as marijuana, levels of tetrahydrocannabinol (THC) – the active ingredient in cannabis – are greatly reduced. Federal guidelines provide a maximum level of THC that plants in the program legally may contain.

Holland hopes to have student interns in place for the summer to spend the season testing the effect of SU's probiotic on germination and crop yield, and its impact on the production of cannabidiol (CBD oil), used for applications including pain relief.

About a dozen potential growers have reached out to SU for information on partnering, Holland said. He hopes to work with about six farmers, mostly on the Eastern Shore, if they are accepted for the program. The diversity of partners and their growing methods should allow tests to be conducted under many different conditions at once, including various soil types and outdoor growing vs. greenhouse-raised hemp.

For now, growth in the state is permitted for research purposes only, though farmers may sell their crop yields at the end of the season. Holland said these restrictions may not be permanent if the pilot program is found to be beneficial. That makes the opportunity to partner for research now even more valuable, he added.



The mission of Horizons Salisbury is to provide low-income public school students in Wicomico County, MD, with an intensive academic Summer Enrichment Program and year-round support to transform the lives of students caught in the achievement gap.

Pennerman Earns Grant to Benefit Horizons Salisbury

SU's Dr. Althea Pennerman says it's in her DNA to help underrepresented children – and she has earned a grant to do just that, benefiting Horizons Salisbury and making a difference in the lives of Wicomico County elementary and high school students.

The Maryland State Department of Education (MSDE) grant secured by Pennerman, associate professor in the Teacher Education Department, is valued at \$248,321 per year over the next three years. The funds will help expand the enrollment of Horizons Salisbury to approximately 165 students this year and also allow the program to reconnect with former graduates.

Horizons Salisbury benefits public school students from low-income families in Wicomico County by offering an intensive

six-week summer educational program as well as some year-round academic assistance. The program started at The Salisbury School in 2003 and in 2015 expanded to SU, where rising students in sixth, seventh, eighth, and ninth grades participate in summer activities that are designed to meet both academic and affective needs of the program participants.

Pennerman received the grant from the MSDE's 21st Century Community Learning Centers program to further her work with the organization which she has been associated with since 2015.

The financial support allowed for the addition of more than 30 students into the 2019 summer program. With the grant funding, 13 Horizons graduates (those who have moved on to high school) returned as

interns for the program, shadowing the teachers, assisting with the younger children and, perhaps most importantly, developing an interest in the teaching profession.

"There is an urgent need for locally trained teachers in Maryland right now – especially teachers of color. High schoolers are beginning to think about a future career. As educators, we want to instill in them the idea of becoming a teacher," Pennerman said.

She recounted the response from one of the prospective interns who, when asked why she wanted to be a part of the new initiative, said she felt like she needed to give back.

"That's a message that we want to get across to them," Pennerman said. "You give back when you get a chance to do that." ❖

Holland: Then and Now

Groundbreaking research is nothing new to Dr. Mark Holland; he was featured in the inaugural issue of *Re:Search*. In 2011, he was in the beginning stages of his probiotic research. His work with *Methylobacterium*, a genus of bacteria also called PPFM, garnered several patents and demonstrated that these bacteria enhance seed germination, stimulate root and plant growth, and can be used to boost yield in some crop plants – and soon we'll know its effect on hemp.



Holland in the first issue of *Re:Search* with the bacteria that still informs his research.

EPA Fellowships: A Turning Point for Students — Even 10 Years Later



In 2011, environmental studies major Emily Thorpe was featured on the cover of the very first *Re:Search* magazine. Both Thorpe and classmate Jonne (Woodard) Hicks (who was pictured on the table of contents of the same issue) were the first SU recipients of the Environmental Protection Agency's 2010 Greater Research Opportunity fellowships, allowing them to study among some of the most knowledgeable environmental scientists in the nation through internships at EPA research facilities. The fellowships, worth \$42,700 each, provided invaluable opportunities to both students at the time. Nearly 10 years later, both Thorpe and Hicks had a lot to say about their lives, but both agreed the EPA fellowship was an important turning point.

Jonne Woodard: Over Time, Growth Never Stops

"With every challenge comes the greater opportunity to grow," Jonne (Woodard) Hicks said in the original story.

Ten years later, she's still right.

Hicks spent her EPA internship at the Mid-Continent Ecology Division Laboratory in Duluth, MN, where she studied the effects of pharmaceuticals in the environment. She hoped her EPA experience would help her decide which environmental path to choose in her career. Not knowing where her life would take her after she graduated in 2012, she kept her options open.

Her EPA fellowship opportunity led to a varied career and numerous accomplishments. She was part of a team recognized by the EPA with the Scientific and Technology Achievement Award in 2015, and one of the publications she worked on for her EPA research earned the *Environmental Toxicology and Chemistry* journal's Best Paper Award.

After graduating from SU, Hicks continued the path she started, working for the EPA in cancer research at the National Health and Environmental Effects Laboratory in Research Triangle Park, NC.

She also worked in the Clinical Research Branch of EPA's Environmental Public Health Division in Chapel Hill, NC, for a year. She later graduated with a master's degree in biomedical sciences from North Carolina Central University, then worked as a research analyst at Duke University Medical Center in the Cardiology Division. When she gave birth to her son in 2018, she decided it was time to get out of the lab. She now writes and coordinates grants and contracts in the Clinical Research Department of Cone Health.

Hicks has gained a lot of experience to add to her ever-growing resume over the past decade. She also credits Dr. Lewis with helping her get the most out of her education and obtaining the fellowship that ultimately shaped her career path. She said while she started in environmental health, she has moved more toward a career in biological and clinical research and even switched her major to biology after her fellowship project. She said practicing the hard sciences at her EPA internship also encouraged her to pursue other opportunities.

However, she believes the one thing that stayed consistent was exploring human nature through science.



Hicks isn't sure exactly where her life path will go next, but she welcomes the challenge looking at the years ahead.

"I'm starting a new path, but I can see pursuing a doctorate in public health," Hicks said. "It's an open door."



(Woodard) Hicks in the lab from the first issue of *Re:Search*.

Emily Thorpe: Education Comes Full Circle

Emily Thorpe still remembers putting on her maroon SU T-shirt and stepping into the river for the photo that would end up on the magazine's first cover.

Thorpe interned at the EPA's Atlantic Ecology Division in Narragansett, RI, working with a team of researchers to investigate the impacts of climate change and sea-level rise on coastal wetland systems. After graduating from SU in 2012, she thought about attending graduate school, where she wanted to pursue her interests in wetlands protection, sea-level rise and the impact of development on waterways. Ultimately, she wanted to earn her Ph.D. and become a college professor.

"I really believe education is essential to preserving and protecting the environment," Thorpe said in the 2011 story.

This is a belief she still holds nearly a decade later.

Most recently, Thorpe had been working as the student leadership coordinator at the Chesapeake Bay Foundation in Pennsylvania. And, it looks like her goal of graduate studies will be realized soon, as she has accepted a master's research position at Virginia Tech. She will travel to national parks and nature centers across the nation to study which practices in environmental education are the most effective in engaging diverse audiences.

Thorpe spent much of her time working with high school students. She has known some of these students for the entire four years she's been there. She recalled how they wrote a bill to designate the Eastern hellbender as the state amphibian. After three years of advocating for its passage, the bill died in committee. The students reintroduced the bill in the following session, and it was signed into law in 2019.

Thorpe said when she told them she was leaving, there were a lot of tears.

"They're an amazing group and it's been really inspiring to see their growth," Thorpe said. "That experience working with high school students has informed me it's something I really care about."

In the original story, Thorpe said she wanted to get plenty of life experience before becoming a college professor, because she believed her best professors were those who shared their real-world experience with her. In the years that followed, she had moved away from the idea of being a professor. But after working with students at a nonprofit, the idea has crossed her mind again.

"I just think back to all the people who helped me get to where I am," Thorpe said, noting how Dr. Michael Lewis of the Environmental Studies Department was the one who convinced her that SU was the right college for her. She even called him for advice before she applied to Virginia Tech.

However, there are still a lot of unknowns in Thorpe's life, as she's getting ready to quit her job and go to graduate school. She said she doesn't have all the real-world experience she wants yet, but her experiences over the past decade will bring value to her research.

"I think when I got the fellowship I was still figuring out, as all college students should be, who I was and what I wanted out of life and a career," Thorpe said. "I gained a deeper understanding for scientific research and learned I wanted to be a communicator of environmental studies."

Looking ahead at the next 10 years, Thorpe can see herself being the director of an education program at a nonprofit or working at a university, where she can not only make improvements to environmental education programs but also be a mentor to others. ❖



Thorpe in the field from the first issue of *Re:Search*.



Emily Thorpe and her students at the Chesapeake Bay Foundation formed the Hellbender Defenders to recognize the Eastern hellbender as the Pennsylvania state amphibian.



Emily Thorpe and her students see the Eastern hellbender up close at a "meet and greet."



Emily Thorpe and her students at the Pennsylvania State Capitol before the hellbender bill signing.



Re:Search: 10 Years and Counting



When the first issue of *Re:Search* was published in 2011, Dean of Graduate Studies and Research Clifton Griffin had just completed his first year at Salisbury University. A decade later, he reflects on how far the Graduate Studies and Research Office has come in that time and the lasting impact of this magazine.

Q: What is different about the activities of the Graduate Studies and Research Office now, 10 years later?

A: First, it's hard to believe that we have arrived at our 10th year of *Re:Search*. That's amazing! Generally, there has been a growth in the overall complexity of SU, including our research program. There's a higher percentage of faculty who are engaged in externally funded research, and we have more vehicles to help them. We now have internal grants programs like the Building Research Excellence program that allows faculty to get funding to do pilot research and be more competitive for larger federal funding opportunities. Also, we have 10 years of the Faculty Mini Grants program, so there's a lot more faculty who have years of experience doing research. We're in our third year of the Office of Undergraduate Research and Creative Activity (OURCA), which has been a central hub of activity for the promotion of undergraduate research and creative activities. There is lots of interaction with faculty mentors, so we've really branded that as a shining light for the University. Last year, we had the largest amount of external money in faculty submissions, with over \$20 million worth of proposals. There's just a much richer experience from faculty and students who are more engaged in research and scholarship than ever before on campus.

Q: What is SU's research agenda?

A: The abundance of research at SU is connected to students and community. For the past couple of years, SU has been very involved in issues surrounding the opioid crisis and grants associated with addressing that crisis through community-based action. That history of SU faculty being engaged with community-based issues is very rich. We also have faculty facilitating curriculum development, with new courses and programs, and a richer experience. In the case of nursing, faculty are very engaged in securing grants that can help fund nursing students. I don't see that changing. Going forward, SU faculty are going to be engaged in helping our students, curriculum development and addressing community concerns or promoting opportunity. Moreover, in recent years, we have conducted our first National Institutes of Health-funded research and several National Science Foundation-funded projects have been completed and new ones are ongoing. Our research is truly comprehensive, which is a great component of the overall SU mission.

“You have to be able to fund people initially to help them generate ideas and pursue interests. Then they're more competitive; then they get bigger grants; then we help others.”



Q: In this last decade, how far has SU come with sponsored programs?

A: It's now more complicated to get grants than it's ever been, so faculty have to be more highly competitive. Years ago, when faculty submitted grants, it was about their ability as scientists and scholars in their fields. That's still critically important, but equally important these days is defining the broader impacts of their research. You have to be able to clearly articulate not just what you want to do and how you want to do it, but why it's important to the average citizen. What is the connection, and why does this matter? This is a primary question to answer with each proposal. Also, research pays for research. It's critically important to have that cycle, especially in the world of sponsored programs. You have to be able to fund people initially to help them generate ideas and pursue interests. Then they're more competitive; then they get bigger grants; then we help others.

In 2019,
SU Faculty Earned:

- **167** Grant Awards
- **Over \$8.7M** In Funds

Q: You said 10 years ago that our greatest opportunity is our people and that SU research and graduate studies will only grow. Looking back now, do you think you were right?

A: An overabundance of the faculty we've hired in last 10 years have experience working in a particular area of scholarship and want to continue to do that. Great faculty researchers are usually also great in the classroom. They inspire learning in all forms. I think the idea of faculty and students engaged in research, and the critical and creative skills that students can gain as part of this experience, is incredibly valuable. It's not going to be less valuable 10 years from now. It's going to be more valuable. Hands-on experience and opportunities such as research are more important than ever. We're more interconnected than we've ever been. We're going to have to develop students that understand how to operate in an interconnected world.

Q: Have we achieved the goals set 10 years ago?

A: Success is going to breed more success. Especially in this world of pursuing scholarship, research and creative activities, the more you know, the more there is to know. So I think we've been successful. The metrics will tell you that we have more undergraduates engaged in these activities than ever. We have more graduate students and faculty submitting research proposals than we've ever had. We've gotten more research dollars than we've ever had. Ten years from now, I hope I'm saying the same thing. That would mean that we've continued to be very highly successful.

Q: What areas do you think provide the greatest potential for growth in graduate education at SU?

A: SU continues to grow in complexity. In the last 10 years, we've added a Doctorate of Nursing Practice program, a Doctor of Education program, three online master's degrees, several new majors at the undergraduate level, and a College of Health and Human Services. If you're growing in complexity, you have to have more dedicated people to help address those complicated questions, answers and academic pursuits. The way going forward is going to be to continue to provide people with the resources they need in order to be successful.

Q: In part, the magazine was important to help bring awareness to graduate programs at SU when it started 10 years ago. Why is the magazine important now?

A: The idea of being able to effectively communicate research as a hallmark of your campus is just cool. People want to read about the good things that faculty, staff and students are doing. There's not a better vehicle in my mind to demonstrate why it's a good thing to come to SU as a freshman, transfer student, grad student, staff member, faculty member – you name it – than having something like *Re:Search* magazine, where you can showcase a variety of experiences. I believe it's important to demonstrate the wide variety of activity that happens on campus and give an opportunity for faculty and students to be proud of their research and accomplishments. The idea of the magazine is still important for SU, and I don't want to see it go away. ❖

STUDENTS
Beat the Heat
BY ENGAGING IN
Summer Research



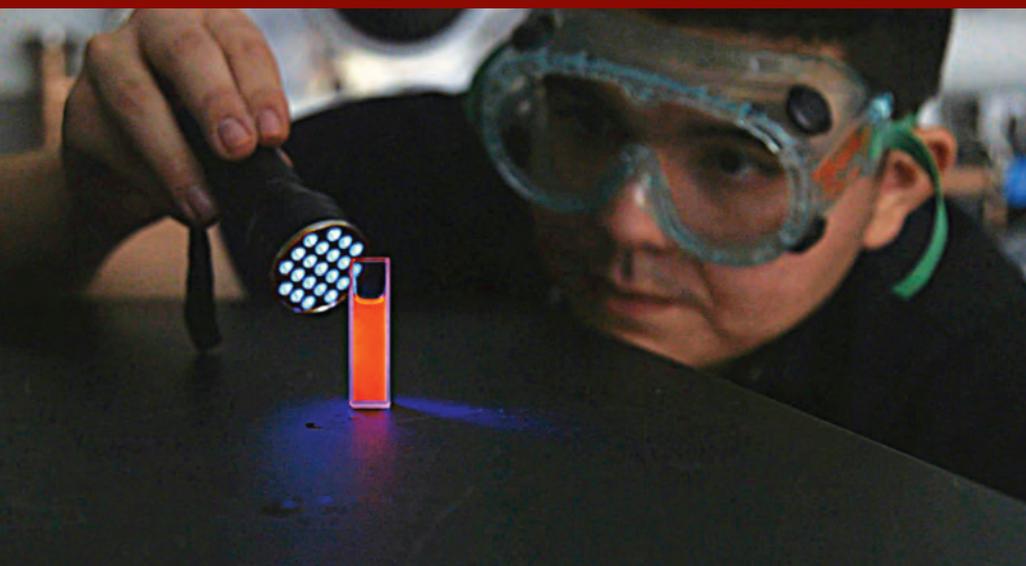
Salisbury University's campus does not close and students don't stop learning once the summer months hit.

SU students get some of their most immersive experiences during this time between semesters, when they have the opportunity to get up close and personal with their passions.

Last summer was a scorcher. With more than 70 projects, it also was the biggest summer for research activity in SU's history. There were no limits, with projects exploring everything from the effect of social media on dating culture to the construction of a mathematical model to examine land values. Some projects extended far beyond the Eastern Shore. One faculty-student research duo utilized GPS tracking information to study habitual routes of elephants in Zimbabwe, hoping to develop a plan to help people and elephants better coexist.

At least 28 of these projects were highlighted on SU's Facebook page as part of the Summer Scholars social media campaign. Several projects were featured in videos that were shared online, reaching nearly 10,000 views across social media platforms.

Accomplishments like this prove the campus research community is thriving, even during the dog days of summer. Congratulations to the students who traded in their swim suits for a lab coat over their break.



Eastern Bluebird by Benjamin M. Clock
Macaulay Library at the Cornell Lab of Ornithology

Elephant Travel Patterns in Zimbabwe

Geographic information systems (GIS) technology has been applied to many different areas in the Delmarva region, including sea level rise, infrastructure and economic development. One faculty-student pair showed that the reach of GIS is even broader.

As part of a sponsored undergraduate research project, Dr. Andrea Presotto, Geography and Geosciences Department, and SU student Trey Wehlan took their GIS skills all the way to Africa to study elephant travel patterns. Rather than just mapping, though, their ultimate goal is wildlife conservation.

"In Zimbabwe, the elephants invade crops," Presotto explained. "They harm humans and humans harm them. So, we are studying elephant movement, trying to figure out a way to share space and create a buffer between people and elephants."

Every month, Presotto and Wehlan receive tracking data from GPS collars on elephants in the Kavango Zambezi Trans Frontier Conservation Area near Victoria Falls in Zimbabwe. Using GIS, they can see where the elephants are, how close they are to humans and the habitual paths they use. Wehlan, an interdisciplinary studies major in biology and geography/GIS, assists with data management and organization, and statistical analysis.

"The food resources that are located within the elephants' protected area may not be all they need, so they have to go out to other places, and that unfortunately leads to human-animal conflict," Wehlan said. "Using this GPS data, we can identify areas the elephants are going that are a little too close to human populated areas. The park then can employ deterrents to try to avoid the elephants and people killing one another."

Using maps helps bridge language barriers with people in Africa, he added.

The duo's work focuses on understanding how animals navigate from a biological and ecological perspective, and why the elephants are getting close to humans when it's harmful for them.

"We want to get people to understand that the reason

elephants do this is because they're way out of their element," Wehlan said. "Elephants are usually nomadic, so if you enclose them in a space like a reserve and expect them to stay in that enclosure, it's not going to work. Their nature is to move from resource to resource, so we have to make people understand if elephants are going into their villages and farmlands, there's a reason why they are doing that."

Presotto spent 13 days in Zimbabwe last summer, and Wehlan plans to return with her for a month this summer to further study elephant diets and food hotspots.

"If we all want elephants alive, our contribution is to try to figure out how to minimize conflict so people can live in a peaceful way with them," Presotto said. "My dream is to have conservation plans so people and wildlife can coexist."

Presotto said SU's summer research opportunities allow professors to involve students in official capacities in bigger projects, giving them a chance to see how research works and explore their own ideas. Wehlan, who hopes to pursue a master's in wildlife ecology, said he appreciates the chance to get hands-on experience in his field.

"With this project, there's a plethora of opportunities for me to grow," Wehlan said. "I'm learning things I never thought I'd learn. I'm going places I never thought go. It is a humbling opportunity."

Quantum Dot Solar Technology

In an effort to search for more "green" energy sources, solar power has been key, but current technology can only harness a third of the energy the sun offers. In a sponsored research project, SU student Brandon Chang, with the guidance of Dr. Lena Woodis, Chemistry Department, is creating quantum dots — tiny semiconductor particles — to test their efficiency in solar cell applications.

"The most efficient solar cell technology is silicon, which can only absorb up to 33.3% of the sun's energy," Chang said. "However, if we theoretically used quantum dots, we could achieve up to 100% efficiency."

The difference is quantum dots are able to absorb all wavelengths and energy of the sun, whereas silicone is only able to absorb certain wavelengths. Woodis said the idea is

to engineer a device with a high level of precision that can mimic what nature can do.

"I really love to tell people that in one hour of sunlight, we can power the planet for a whole year," Woodis said. "We just can't harness that energy. But if you can have shingles on your roof or paint on your house and driveway made out of solar material, and you didn't have to be hooked up to a grid, that would be ideal. That's really driving force behind this quantum dot technology, to get away from harmful materials but also the expense."

The Song of the Eastern Bluebird

In most songbird species, it is the male that does the majority of the singing, but Eastern bluebirds don't sing a different tune. In fact, the female sings as much as the male.

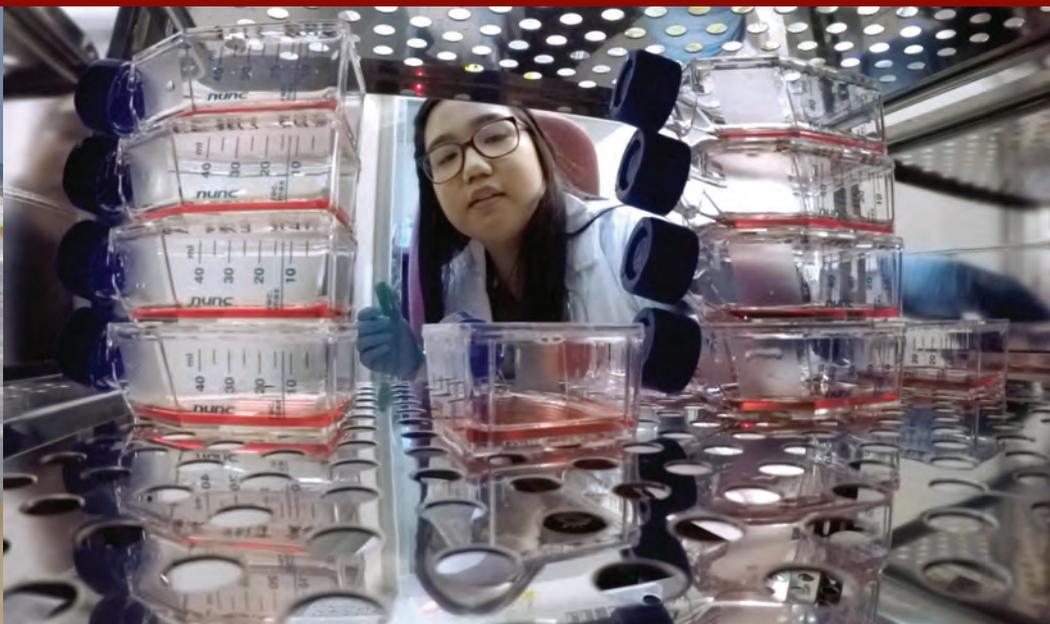
"The interesting thing with Eastern bluebirds is that females sing an equivalent song to the male," said Dr. Jeremy Corfield, Biological Sciences Department. "There is only a handful of songbird species that the females sing, and then to sing as much as the male is a rare finding."

As part of sponsored research, SU student Colin Cassidy, with the mentorship of Corfield, is studying the differences in the song control region of the brain between male and female bluebirds.

"We're looking at the differences associated with song behavior depending on gender," Cassidy said. "We found that Eastern bluebirds, male or female, have equivalent song, and now we're looking at whether their brains match that equivalent. If they do, that would be incredibly interesting and unique."

Their research aims to answer if the brain regions that process this song in females are as big and complex as males. Corfield said every bit of research so far suggests it would be smaller.

"Colin's project compares the brain regions that are associated with song production and learning," Corfield said. "If they are equivalent, that is going to be huge. It would be the first study that shows the female has a similar size song control system compared to males."



Breaking Down the Shore

Beachgoers are faced with more dangerous waves than in the past as beach replenishment seems to have created a phenomenon known as “shorebreak,” where waves break directly on the beach instead of out in the water.

Dr. Mark Muller, Physics Department, was driven to dive deeper into shorebreak after analyzing 10 years of data from accident reports on the beaches of Ocean City, MD.

“I looked at all water-related injuries, including lower extremity, shoulder and spinal injuries,” Muller said. “For more than 80% of all those injuries, shorebreak was a contributing factor. I found that staggering.”

Through his sponsored research project, SU student Bradley Cullen, with Muller’s mentorship, built a wave tank to study the conditions under which shorebreak happens and develop a scientific definition. They wanted to see if there is a connection between beach replenishment, creating conditions conducive to shorebreak and shorebreak-related injuries.

“Our project is about defining shorebreak along coastal beaches,” Cullen said. “What we’re trying to do is study the slope of the beach profile that causes shorebreak to happen.”

Cullen said they plan to start by creating a model of a real beach and making waves at a certain height. They have a long list of variables to test in order to define what is happening with beach replenishment projects.

“We’ll run simulations for one hour, two hours, maybe even overnight, and that will give us a good starting point for what’s going on at certain slopes,” Cullen said. “From there, we can hopefully design a new way to do beach replenishment to make it safer and more cost effective.”

Arsenic and the Immune System

Arsenic, a natural element that behaves like a metal, is found in the environment in small quantities in rock, soil, water and air. About one-third of the arsenic in the atmosphere comes from natural sources, such as volcanoes, but the rest comes from human activity.

As part of summer sponsored research, SU student Jeremie Barbosa explored how low doses of arsenic impact the immune system, with guidance from her faculty mentor, Dr. Jennifer Nyland, Chemistry Department. Her research could help determine if maximum exposure levels set by the World Health Organization are too high or help make the public aware of how low levels of arsenic could affect them.

“If I introduce arsenic into the immune system, specifically macrophage cells, what will happen to the cells in response?” Barbosa said. “Whether it’s by the proteins that cells are secreting, whether the DNA itself is being changed because of arsenic, and if the cells die immediately when they are introduced to arsenic, we want to find out what happens afterward.”

The World Health Organization has set 10 micrograms per liter as a standard for acceptable arsenic exposure. Barbosa’s research aims to determine if that standard is too high and to raise awareness in communities that arsenic

may be causing harm to humans and the environment. For example, if agricultural practices are putting arsenic into growth hormones or pesticides, they want to determine if there are negative health impacts from even low levels of naturally occurring exposures.

“We want to show this because arsenic is correlated with rheumatoid arthritis, diabetes, obesity and cancer,” Barbosa said. “It’s important from human standpoint to know what will happen if we are exposed to these compounds of arsenic. Will we get diseases because of them? That’s what we’re trying to find out.”

Since arsenic can be ingested in small amounts by anyone, Nyland said the goal is to mitigate the risks of health impacts due to arsenic in the body.

“We’re more concerned with if you’re just a regular person eating fish you buy at the supermarket or that you catch out in the bay, if you’re drinking groundwater from a well, are you at risk?” Nyland said. She added that some people may be more susceptible than others — for example, those who have a history of autoimmune disease in their family.

“My hope at the end of this project is to set guidelines and inform the public about what arsenic does to our bodies and specifically our immune system,” Barbosa said. ❖

Want To Know More? Check SU Out on YouTube!



This summer, SU shared the stories of the research happening on campus and beyond through social media. Check out these and other stories in the “Research” playlist of SU’s YouTube channel:

www.youtube.com/salisburyuniversity

SU Earns Honors for Community Engagement

Salisbury University has long strived to be a pillar of civic engagement, not only giving back to but becoming a part of the community.

The Carnegie Foundation for the Advancement of Teaching recently recognized SU's commitment to community-engaged learning with the prestigious Carnegie Community Engagement Classification. SU is one of only 359 campuses nationwide to earn this distinction.

SU has documented "excellent alignment among campus mission, culture, leadership, resources and practices that support dynamic and noteworthy community engagement," the foundation's management team said.

The University strengthens its ties with the surrounding community in a number of ways, such as connecting students with learning experiences at Peninsula Regional Medical Center, local public schools and the Eastern Correctional Institution, which not only benefit the students, but also



"When I began meeting with local leaders upon becoming SU's president in 2018, one of the main themes I heard over and over was how much this University gives back to the surrounding community," said SU President Charles Wight. "Through partnerships with local institutions, our students and faculty have a long history of contributing to the critical needs in the area, including education and health care."

SU will continue to hold its Carnegie Community Engagement classification until 2026, at which time it will be eligible for renewal. To keep the distinction, SU will need to show improvement upon its engagement – finding areas that need development and those through which SU can expand its connection with the community. ❖

contribute to the public good. SU also is home to two AmeriCorps programs: ShoreCorps, through which members serve at nonprofit and government agencies to meet critical community needs, including environmental education, youth development, older adult care and financial literacy; and HOPECorps, which helps address the opiate crisis on Maryland's Eastern Shore.

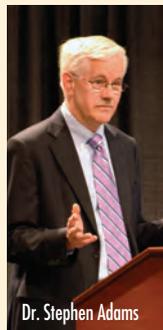
“About 85% of externally sponsored awards at Salisbury University are directly related to community health, development or education.”

— Karen L. Olmstead, Ph.D.
Provost and Senior Vice President of Academic Affairs • Salisbury University

Research. Connect. Create.

Research Day Returns in 2020

After a 2019 hiatus, Research Day returns on **Thursday, September 24, 2020**. Look for details later this year. In the meantime, look back at the featured faculty speakers from the last event:



Dr. Stephen Adams

Dr. Stephen Adams
Management and Marketing Department
"Before the Garage: The Beginnings of Silicon Valley"



Dr. Thomas Pellingier

Dr. Thomas Pellingier
Applied Health Physiology Program
"Going With the Flow: Regulation and Manipulation of Blood Flow in Health and Disease"



Dr. Louise Anderson & Dr. Diana Wagner

Dr. Louise Anderson & Dr. Diana Wagner
Music, Theatre and Dance Department
"Peter Dale Wimbrow: Delmarva's Songster"



Dr. Aston Gonzalez

Dr. Aston Gonzalez
History Department
"Clarity of Vision: Black Activists in the Antislavery Movement"



Dr. Craig Ramseyer

Dr. Craig Ramseyer
Geography and Geosciences Department
"Future Rainfall Variability in the El Yunque National Forest"

STATE RECOGNITION

Posters on the Bay Puts Students in Front of Lawmakers



Salisbury University chemistry major Tasneem Elbashir presented her research to a special audience this year – not to fellow students or university faculty, but to Maryland lawmakers with the power to make policy decisions.

Every year, SU students share their undergraduate research with members of the Maryland General Assembly during Posters on the Bay at the legislative offices in Annapolis. Sponsored by SU's Graduate Studies and Research Office and the Office of Undergraduate Research and Creative Activity (OURCA), the poster presentation gives students an opportunity to meet legislators and showcase their research.

"I am here presenting my research on molecules that have never been discovered before," Elbashir said, as she explained how the project could create new MRI contrast agents that are less toxic to the human body. "I'm thankful for the opportunity to show what we're doing at SU. Sometimes we're forgotten because we're on the other side of the bay, but this is our chance to prove that the students of SU are here and we are moving forward."

Eli Modlin, SU chief of staff, said the event started as a proposal by OURCA to mimic the Posters on the Hill presentation in Washington, D.C. The idea was originally meant to replace the annual SU Day event in Annapolis.

"What happened was phenomenal," Modlin said. "Attendance skyrocketed. Some students have even been contacted by government officials to use their research to help craft bills. It's a great networking experience, and they can advocate about issues important to them."

Students may present on projects or legislation they're in favor of, such as student voting on college campuses. This year, topics

covered everything from the use of quantum dot technology for solar energy to the effect of music and movies on dental anxiety. Even students whose projects aren't directly related to politics benefit from attending.

"They get an opportunity to talk to a really different audience," said Dr. Chrys Egan, co-director of OURCA alongside Dr. Jessica Clark. "Policy decisions and really important questions are being addressed all the time, and we want to get the best information in front of the people who make those decisions. This is a great opportunity for students to share their work with somebody who can make a difference."

The presentation allows students to showcase their work, especially at the undergraduate level, where research often goes unnoticed. With legislators, Annapolis General Assembly staff, elected officials, SU alumni and others who have connections to SU in attendance, Modlin shared it's also a way for students to lobby on behalf of SU. On the Eastern Shore, at least an hour and a half away from the state capital, Posters on the Bay offers an opportunity for engagement SU students may not otherwise have.

"It reminds them we're here and shows them the great work we have going on with our school and students," Modlin said. "Legislators get to see some 20 student presentations in one shot. We're very proud of it, and we plan to keep it going."

Students presented at the third annual Posters on the Bay on January 16 at the Maryland General Assembly Lowe House Office Building.

"There's a reason for this research, and it's not just because they're interested in the topic," Clark said. "It's because these students want to make the world a better place." ❖

Laridae Student Research Magazine Takes Flight

In fall 2019, Salisbury University celebrated the launch of the first undergraduate student research journal in its history: *Laridae*. *Laridae*, the Latin name for the family of birds that includes seagulls, featured published works from students across campus. In this 10th anniversary issue of our University Re:Search magazine, it is exciting to celebrate the inaugural issue of this student-led, sister publication. In his "Letter from the Editor" reprinted here (right), Student Editor-in-Chief Harrison Leon shared the efforts of students, faculty and staff to bring this publication from inspiration to reality.



Abiodun Adeoye

Laridae Undergraduate Student Editorial Board Members

- Founder: Abiodun Adeoye
- Editor-in-Chief: Harrison Leon
- Arts and Humanities Section Editor: Tara Ward
- Professional Works Section Editors: Austin Dabbs & Harrison Leon
- Social Sciences Section Editors: Kateria Rodriguez & Abiodun Adeoye
- Sciences Section Editors: Maggie Giggey & Austin Dabbs
- Copy Editor: Melissa Marsh

Letter from the Editor

Salisbury University is an emerging presence in the arena of student-led research and creative activity. Much of the impetus behind this movement comes from the generous support of faculty and staff at Salisbury University; without their combined efforts, students would not have access to the tremendous resources offered by the Office of Undergraduate Research and Creative Activity (OURCA), the Writing Center, the Office of Graduate Studies and Research (GSR), the Nationally Competitive Fellowships Office, which enabled the creation of *Laridae*.

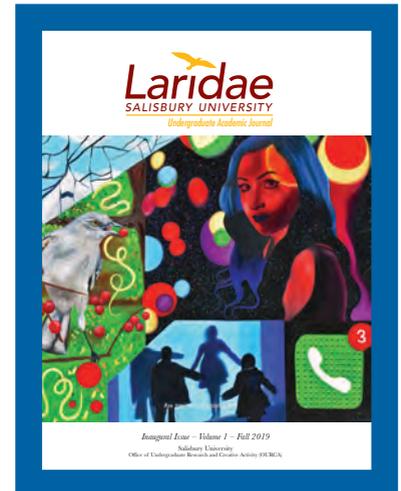
In this context, *Laridae* was assembled in an effort to complement and highlight the great works produced by Salisbury University's brilliant undergraduate student body. The process began when [history and political science double] Abiodun (Abey) Adeoye conceived the idea to bring an undergraduate academic journal to Salisbury University. Early in the idea development phase, Abey partnered with OURCA and GSR. These partners came to form the bedrock on which this student-led journal has constructed a foundation.

With the help of a supportive staff, *Laridae* began to take shape in the spring of 2019. The *Laridae* team spoke to numerous classes and at several school-sponsored events to solicit submissions. By the end of the spring semester, we had received nearly 25 submissions. Throughout the long editing period, which lasted from May to September 2019, the *Laridae* team whittled the submissions down to 12 outstanding manuscripts you will read in this journal.

We are proud of our work thus far and delighted to share this diverse collection of academic works from a range of disciplines. Moreover, this first *Laridae* team is honored to serve as sculptors of history. We designed this journal to act as a vehicle for the dissemination of new knowledge and perspectives across Salisbury's campus. Now it is up to you to use it.

Under the principle of promoting diversity in thought, I dare the student body of Salisbury University to challenge conventions with probing questions and to share your findings with your peers. ❖

Harrison Leon
Student Editor-in-Chief
Sapere Aude



Conference Builds SU's Reputation for Chesapeake Studies



The inaugural Chesapeake Studies Conference took place last summer at Salisbury University with the theme "Casting a Wide Net." Scholars, researchers and students came from all kinds of diverse backgrounds to promote the study of the region. The response was so positive, a second conference is already in the works for 2020.

Dr. Beatriz Hardy, SU dean of libraries and instructional resources and chair of the conference's Steering Committee, said Chesapeake studies is something she has wanted to promote since she came to SU more than seven years ago. With so many units on campus that study the region – from the Edward H. Nabb Research Center for Delmarva History and Culture to growing departments in environmental

studies, history and the social sciences – she sees a lot of potential for SU to become a central hub for the discipline.

"We want to build Chesapeake studies up as a scholarly study, and we want SU to be the place where that happens," Hardy said. "This conference was the first step."

The model for Chesapeake studies at SU is the Center for Appalachian Studies at Appalachian State University in North Carolina. Since it started in the 1970s, the program has expanded to publish a journal, and that university now offers undergraduate and master's degrees in Appalachian studies. Hardy hopes that in a few years, there could be potential for SU to start a scholarly journal focused on Chesapeake studies or offer a minor in the area.

"The Chesapeake and Delmarva are special regions, and they deserve their own separate study," Hardy said.

SU is in a unique position to host the conference, not only because of its location just miles from the Chesapeake Bay, but because of its specialized resources. SU is home to the Nabb Research Center, Ward Museum of Wildfowl Art and Eastern Shore Regional GIS Cooperative. SU also boasts numerous professors, centers and organizations that study the region.

Topics at the inaugural Chesapeake Studies Conference included climate change, servitude and race, maritime culture, and transdisciplinary research. Events included documentary screenings, a crab feast, and opportunities to observe Chesapeake and Delmarva culture firsthand. The conference sponsored visits to the



University of Maryland Center for Environmental Science's Horn Point Laboratory and oyster hatchery in Cambridge, MD; Harriet Tubman Underground Railroad National Park and Blackwater Wildlife Refuge in Cambridge; and Smith Island, one of the bay's only two remaining populated islands.

Mike Lewis of the Environmental Studies Department and Creston Long, director of the Nabb Research Center, are co-directors of this year's conference, which will take place June 10-12 with the theme

"Continuity and Change in America's Estuary." While last year's conference had two tracks – environmental and historical/cultural studies – the Steering Committee hopes to get social sciences involved this year.

"The concept of Chesapeake studies as an area of academic interest is catching on," said Michael Scott, dean of the Henson School of Science and Technology and a member of the Steering Committee. "We have people who are now conducting studies and explorations with the idea of



Chesapeake Studies
CONFERENCE

Join Us: June 10-12, 2020

www.chesapeakestudies.org

“*The Chesapeake and Delmarva are special regions, and they deserve their own separate study.*”

– Dr. Beatriz Hardy
*SU Dean of Libraries and Instructional Resources
and Chair of the Conference's Steering Committee*

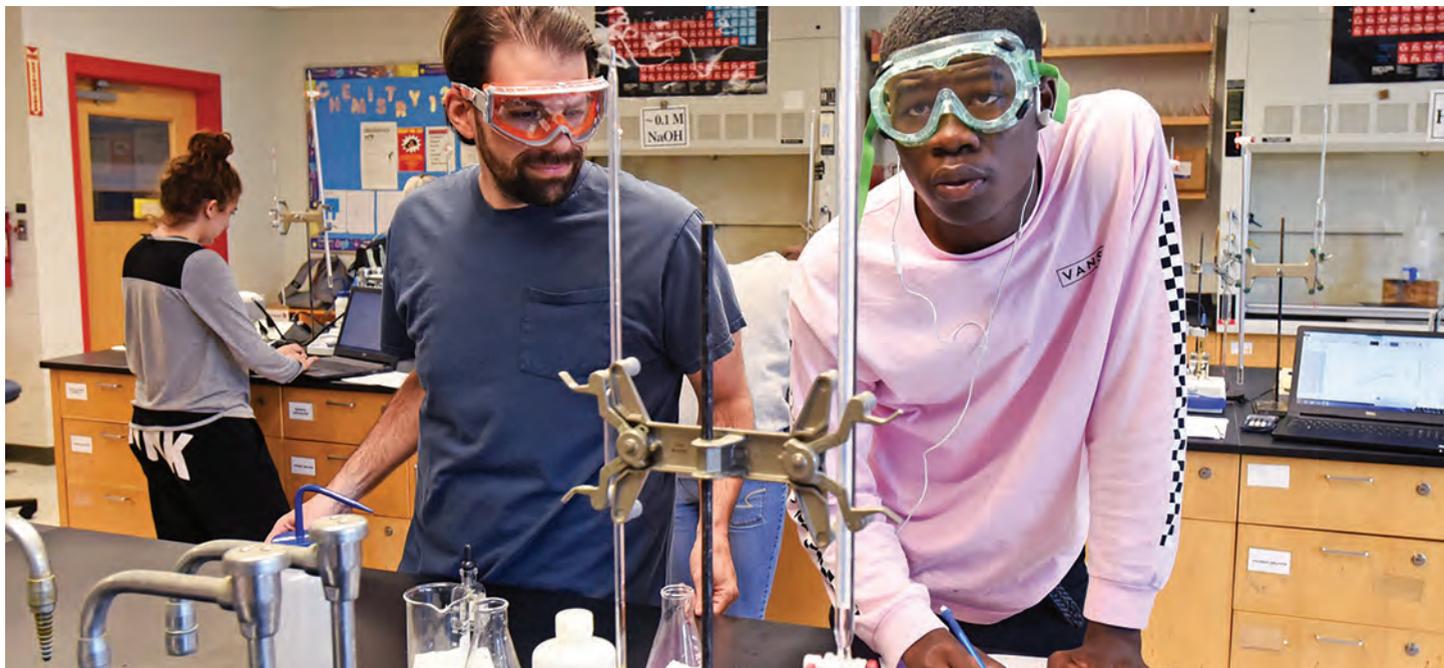
presenting their work at this conference. That's exciting because it was part of what we wanted to do from the beginning, and that seems to be happening now.”

With more than 100 registered attendees last year who praised the conference for the chance to network over disciplines that often go underrepresented, Hardy said they want to keep the momentum going.

“SU is an ideal home to be known for Chesapeake studies,” Hardy shared. “This is an opportunity to build SU's reputation.” ❖

RESEARCH & GRADUATE STUDIES OPPORTUNITIES

campaign.salisbury.edu



Graduate Studies and Research: Invest in Excellence

Last year, Salisbury University launched its We Are SU fundraising campaign. At that time, the Office of Graduate Studies and Research (GSR) outlined the areas where support could enhance the already amazing work being done by our campus community and open doors for new and exciting possibilities. As this 10th anniversary edition of Re:Search (and the nine issues that preceded it) illuminates, GSR and our faculty and staff are doing amazing things – imagine how much further we could go with your support! Here are the areas where your support can make a real difference:

INVEST IN SUPERIOR FACULTY

Building Research Excellence Program (BRE)

This program supports faculty research by providing critically important seed funds to enhance the competitiveness of faculty who submit proposals to external funding agencies. Within approximately 12 months of the end date of the BRE, an application must be submitted to an external funding agency that allows full indirect cost returns to the University with a minimum submission equivalent to 10 times the amount of the internal grant received – an incredible return on your investment!

Summer Faculty Mentoring Fellowship Program

This program provides funding for faculty conducting summer research and scholarly activities with undergraduates. Eligible faculty are those not receiving funding for summer stipends from other sources to support their mentorship of undergraduates (i.e. grants, etc.).

Faculty Mini-Grant Program

This program provides monetary awards to encourage faculty to develop research, scholarly or creative programs that provide the potential for sustained professional development and increased external support and scholarly output, especially in areas that traditionally have difficulty securing funding.

Why Give to SU?

Transform Tomorrow

Together, we can provide scholarships and resources to unlock students' limitless potential.

Shape Success

Together, we can help dedicated faculty and staff open doors and inspire unequalled experiences.

Create Connections

Together, we can enrich collaborations woven across the region, strengthening our communities.



INVEST IN EXCEPTIONAL GRADUATE STUDENTS

Graduate Fellowship Program

These funds are dedicated to directly supporting educational costs for SU graduate students. Specifically, funds support graduate student tuition, along with providing critical resources for graduate students to conduct research and travel for professional development.

Graduate Research and Presentation (RAP) Grants

Awarded twice per academic year, these competitive RAP grants help support graduate research endeavors related to developing and conducting research, with a faculty supervisor, and the presentation of research/scholarly pursuits at meetings.

Summer Student Research Scholars Program

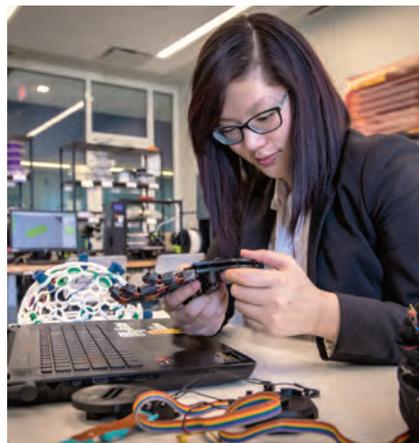
These funds provide financial support directly to students (graduate and undergraduate) that are conducting an active agenda of summer research and scholarly activities with a faculty mentor.



INVEST IN EXCEPTIONAL UNDERGRADUATE STUDENTS

Office of Undergraduate Research and Creative Activity (OURCA)

OURCA is the administrative home for all aspects of undergraduate research. It serves as a leading force to cultivate a vibrant environment of undergraduate scholarship through supporting faculty-student mentorship at all levels. This office helps lead several University-wide programs of excellence including coordinating SU student participation in the National Conference of Undergraduate Research, the SU Student Research Conference, Posters on the Bay Conference, the Undergraduate Research Fellows (URF) program, Mentor Match network and various summer research programs.



Undergraduate Research Fellows Program

This program is dedicated to the “best and brightest” undergraduate student researchers. Based on a competitive selection process, these outstanding students are chosen annually to serve as ambassadors, recruiting new students and serving as role models and mentors for current students. URF students are dedicated to all aspects of research, scholarship and service learning.

Summer Student Research Scholars Program

These funds provide financial support directly to students (graduate and undergraduate) that are conducting an active agenda of summer research and scholarly activities with a faculty mentor.

University Student Academic Research Award

These competitive funds support undergraduate research projects, directed by a faculty mentor, that may include research development, supplies and conference presentation.

Laridae Student Research Journal

This online and print academic journal features the top interdisciplinary research and creative activity of SU undergraduate students. Through a three-step review process, outstanding scholarship is selected for publication. All interested students are invited to participate in the journal organization to discuss scholarly work. ❖

How to Give

Please contact us to discuss how you can support graduate studies and research at Salisbury University:

Amy Luppens
asluppens@salisbury.edu
Office: 410-677-0084
Cell: 410-829-6495



Learn more about
We Are SU: The Campaign
for Salisbury University:
campaign.salisbury.edu

Faculty Mini-Grant Program

The SU Faculty Mini-Grant Program provides awards up to \$2,500 to encourage faculty to develop research, scholarly or creative programs that provide the potential for sustained professional development and “seed funds” to secure additional extramural support. The following is an overview of this year’s awardees.

Measuring Undergraduate Social Work Students’ Values and Understanding of Privilege and Oppression

Rebecca Anthony
Social Work

Experimenting the Human: Experimental Music and Technological Posthumanism

Douglas Barrett
Communication

Effects of Saltwater Intrusion on Plant and Insect Biodiversity in Coastal Forests

Xuan Chen
Biology

Establishing and Sustaining a Research Practice Partnership Between Salisbury University and Wicomico County Board of Education

Maida Finch
Doctoral Studies in Literacy

Caregiving Strain Among Parents of Children with Disabilities: The Protective Role of Resilience Factors in Parental Health Outcomes

Heidi Fritz
Psychology

Korean Immigrant Father’s Experience

Kyoungh-Rae Jung
Psychology

Sri Lanka: “Sole Representatives” in Peace Talks

Ignaciyas Soosaipillai
Conflict Analysis and Dispute Resolution

Understanding the Preferences of Marylanders for Birds in Their Backyard and Neighborhood

Sonja Kolstoe
Economics and Finance,
Environmental Studies

Commission to Present New Work at New York City Choreographers’ Showcase

Helen Myers
Music, Theatre and Dance

Research on Counterprotest During 2016-2017 Impeachment of President Park Guen-hye of South Korea

Taehyun Nam
Political Science

Research in Britain’s Various Archives on Colonial and Princely Powers

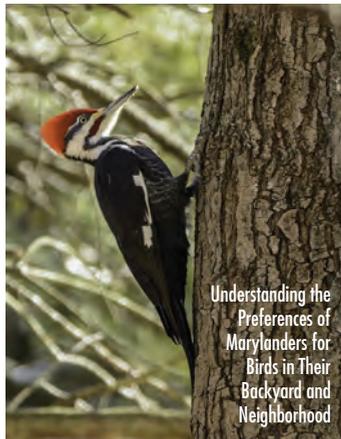
Shruti Patel
History

Assessing Feminist Community Psychology Pedagogy

Michèle Schlehofer
Psychology

An Exploratory Project on the Influence of Dance and Movement on the Wellness of Women of Color

Victoria Venable
Social Work



Graduate Research and Presentation (RAP) Grant Program (Spring and Fall 2019)

The Office of Graduate Studies and Research provides research grants, up to \$500, to help graduate students develop research and scholarly projects with faculty supervisors and present their projects at various conferences and meetings. The program enables students to receive recognition for their work and provides networking opportunities and professional development in their field of study.

Determining Potential Resource Competition Based on Stable Isotope Analyses of Diet in the Endangered Spotted Turtle (*Clemmys guttata*) and Other Native Turtle Species Found in the Same Habitat

Eaqan Chaudhry, M.S. Applied Biology

Habitat selection in several species is determined by both environmental conditions and interspecific interactions. My research explores the extent to which each of these factors influences habitat usage in the endangered spotted turtle (*Clemmys guttata*). Interspecific interactions were investigated through two avenues. I compared the presence and absence of spotted turtles in ponds with that of more common native turtle species. However, the relative coexistence of multiple turtle species in one pond does not definitively delineate the type of interaction. To elucidate the specific interactions among turtle species, I analyzed overlap in habitat and diet between species using mark-recapture trapping surveys and stable isotope analysis. Stable isotope analyses can be used to determine if similar carbon and nitrogen isotopes profiles are present, which could imply similarity in diet. While several studies have looked at habitat selection in endangered turtles, none to my knowledge have used stable isotope analysis to elucidate the potential for species interactions between endangered and more common pond turtle species.

How Multimodal Noise Impacts Signal Recognition and Mate Choice in the Túngara Frog

Derek Coss, M.S. Applied Biology

An environment's soundscape often contains a diverse set of taxa that are signaling acoustically and overlap in vocal frequencies. This can potentially mask signals of interest for species trying to communicate in the environment. Dense aggregations of frogs are an example of this and pose a challenge for females listening for signals from potential mates. In the túngara frog, male choruses produce a cacophony of calls against a backdrop of rainforest noise. This noise may consist of both vocal (acoustic advertisement calls) and visual (inflations in their vocal sac) components. Females face the challenge of deciphering all these signals and choosing the preferred call. In quiet conditions, females consistently choose the most attractive call. However, when those calls are broadcast in a noisy environment, the preference begins to shift as complexity of the environment increases, suggesting that sensory processes in the brain become overwhelmed. One method evolved in animals to enhance detectability of the message is multimodal signaling. However, multiple sensory inputs may alter perception of the signal. My project focuses on understanding how noise generated from conspecifics and heterospecifics affects the ability of females to distinguish between attractive and unattractive male vocalizations.

The Novel Role of Perineurial Glia in Peripheral Debris Clearance and Regeneration in *Danio rerio*

Colin Dunnam, M.S. Applied Biology

Nerves play an indispensable role in facilitating communication between the brain and the environment. When these nerves are damaged, they undergo a well-defined schedule of Wallerian degeneration comprised of a latent period followed by axonal fragmentation. In the peripheral nervous system (PNS), rapid debris clearance precedes regeneration of the nerve and its components. However, these clearance mechanisms do not appear to extend to the central nervous system (CNS), possibly explaining why regeneration in the CNS is often prevented. Understanding the molecular mechanisms underlying successful peripheral debris clearance may offer clues in how to stimulate central debris clearance. Here, we plan to investigate the debris clearing capability of the perineurium, a population of glial cells in the PNS that has recently been implicated in the clearance of debris following laser transection of peripheral nerves. This investigation involves the use of hyperglycemic zebrafish as a model of diabetic peripheral neuropathy, an established method of eliciting peripheral nerve damage. A morpholino oligonucleotide designed to hinder the action of a gene involved in perineurium formation will be implemented to investigate how debris clearance following hyperglycemia-induced neuropathy is impacted by the loss of this glial population.

Comparing Total Mercury Concentration (THg) and Trophic Position in Wild-Caught and Commercially Farmed Cobia (*Rachycentron canadum*) using Stable Isotope Analysis

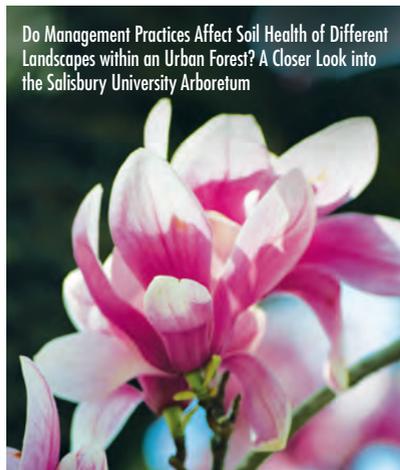
Garrett Hansen, M.S. Applied Biology

Cobia, or *Rachycentron canadum*, are pelagic, migratory fish found in tropical and subtropical waters across the world, except for the eastern Pacific. Cobia are a fast growing and rapidly maturing species capable of batch spawning with high fecundity. Due to their rapid growth rates and batch fecundity, cobia are seen as potential aquaculture candidates in North America and East Asia. However, as strong pelagic predators, cobia are susceptible to the bioaccumulation of mercury in a pelagic food web. This study aims to elucidate the potential for cobia aquaculture operations to harvest and market cobia with mercury levels below the consumption advisories set by the EPA and the FDA of 0.3 ppm and 0.5-1.5 ppm, respectively. Cobia reared in aquaculture operations are typically harvested after one year of growth, and therefore may not be subject to the same bioaccumulation processes as wild-caught cobia.

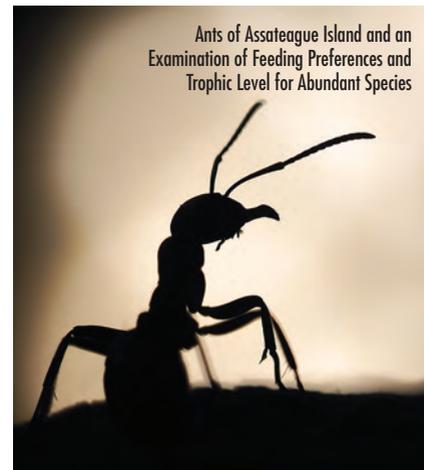
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Emergent Bilinguals' Transactions with Multiple Genres of Texts



Do Management Practices Affect Soil Health of Different Landscapes within an Urban Forest? A Closer Look into the Salisbury University Arboretum



Ants of Assateague Island and an Examination of Feeding Preferences and Trophic Level for Abundant Species

Emergent Bilinguals' Transactions with Multiple Genres of Texts

Nicole Harrison, Ed.D. Contemporary Curriculum Theory and Instruction: Literacy

This presentation explores using Retrospective Miscue Analysis data to explore how diverse readers transact with various texts and support the literacy needs of young readers. Findings include the importance of readers' awareness of the reading process; implementing an authentic, socio-culturally relevant pedagogy; and the effects assessments have on students' reading. This session explores authentic and socio-culturally relevant literacy education (Ladson-Billings, 1995). Miscue studies have proven to be useful for understanding the reading processes of diverse readers (Tatlonghari, 1984; Francis, 2004; Ebe, 2010; Kim & Goodman, 2001; Goodman, Watson & Burke, 2005; Mikulec, 2015; Kabuto, 2016). This presentation explores multiple ways in which Retrospective Miscue Analysis can support and revalue diverse learners. My theoretical framework is grounded in a transactional and socio-psycholinguistic model of the reading process (Goodman, Watson & Burke, 2005). A comprehensive model of reading can help students, teachers, parents and administrators understand literacy as a constructive meaning-making process.

Using High-Resolution Digital Elevation Models in the Brazilian Amazon to Determine Watershed Characteristics Impacting Dry Season Water Availability for Local Farmers

Kyle Kim, M.S. Geographic Information Systems Management

Deforestation has reduced annual average rainfall and increased dry season length in the southwestern region of the Brazilian Amazon, directly affecting water availability for local farmers. Livestock and aquaculture production in the region are heavily reliant on surface water, which is impacted by precipitation change as well watershed characteristics and neighboring water toe. Will farmers have enough water to sustain their farms through the dry season? What watershed and land cover characteristics are necessary to enable year round surface water for farms to remain productive? Three regions in the state of Rondonia, Brazil, have been selected to answer these questions by constructing watersheds with high-resolution Digital Elevation Models (DEMs). The DEMs will be obtained, mosaiced and processed to eliminate errors like gaps and sinks using Quantum Geographic Information Systems (QGIS) and Grass GIS. The watershed tool will generate flow direction, flow accumulation and designate boundaries for the watersheds in the mosaiced DEM. Dry season satellite imagery will be obtained and classified to determine land cover for the region. Image pixels classified as water will be merged with generated watersheds to calculate the number of impoundments within each watershed and the minimum size of a watershed that can sustain a year-round impoundment.

Do Management Practices Affect Soil Health of Different Landscapes within an Urban Forest? A Closer Look into the Salisbury University Arboretum

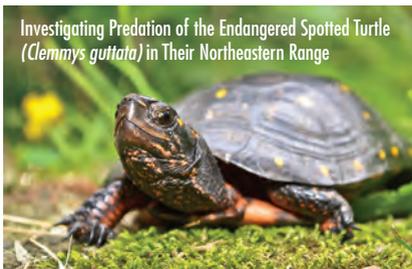
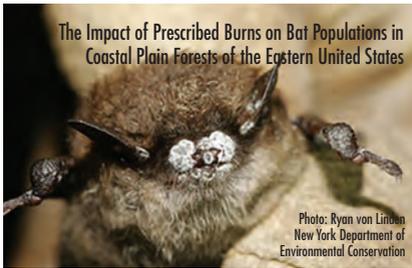
Anthony L. LaBarck Jr., M.S. Applied Biology

Since the turn of the 20th century, urbanization has increased dramatically, displacing natural landscapes and negatively impacting the ecological services provided (Lal & Lorenz, 2009). If urbanization is inevitable, it is important to create and manage urban areas in a way that promotes ecological service. The city of Salisbury currently supports many major highways and constructions, and it serves as a focal point for industry, import and distribution on the Eastern Shore of Maryland. However, in the face of rapid urbanization, Salisbury University has created a flourishing arboretum with over 150 unique tree and woody plant species (Briand personal communication). Previous studies on the Salisbury University Arboretum have elucidated the effects of different management practices on various physicochemical properties of its soils. It was shown that areas with minimal disturbance and greater plant and tree coverage were host to healthier soils; with greater ecosystem service capabilities such as carbon sequestration (LaBarck, et al., 2018). This project further supports these findings by including the description of soil microbial communities in the overall analysis of soil health. To promote and improve the sustainability of managed urban forests, it is important to understand the impact of different managerial practices on soil health.

Ants of Assateague Island and an Examination of Feeding Preferences and Trophic Level for Abundant Species

Denise Manole, M.S. Applied Biology

Ants in general play an important role in the ecosystem, as some are ecosystem engineers, herbivores, detritivores, seed dispersers and prey to other organisms. Currently, there are 73 species of ants (*Hymenoptera*) reported from Maryland's Eastern Shore, yet very little is known about the feeding preferences of these ants and the relationships they share within the food web. We propose to use paired transects of 100 m. on Assateague Island, Worcester County, MD, to examine the ant biodiversity and their feeding habits. We will use pitfall traps for biodiversity studies in the forest and dunes habitats, and hand collection methods for stable isotope analyses. Stable isotope analysis will allow us to analyze the nutritional ecology of ants and determine feeding preferences. Our research will provide valuable diversity information for Assateague Island, as well as baseline data of the feeding preferences of ground feeding ants.



The Impact of Prescribed Burns on Bat Populations in Coastal Plain Forests of the Eastern United States

Chandini Narang, M.S. Applied Biology

Bats have been faced with devastating threats that endanger their survival rates, the largest of these being White-nose Syndrome. It has been suggested that there are ways to mitigate the impacts of White-nose Syndrome by creating high-quality habitats through prescribed burns. Prescribed burns were implemented by Native Americans, but an extended history of fire suppression has changed forests from their pre-colonial state. Prescribed burns, in recent studies, have been shown to create beneficial habitat changes, but may also be detrimental in some instances. Since much is still unknown about the effects of prescribed burns, we aim to contribute to the knowledge about the effects of prescribed burns on the Coastal Plain. This study will also include a survey of local bat species in central Delmarva, especially of the northern long-eared bat in the genus *Myotis*, which is heavily affected by White-nose Syndrome. This study includes acoustic monitoring and bat capture through mist-nets to analyze if there is a statistical difference between post-burn forests and their unburned counterparts and to document the presence of the genus *Myotis*. Ultimately, the study aims to aid future conservation efforts to protect populations and to identify local roosting sites and hibernacula.

Investigating Predation of the Endangered Spotted Turtle (*Clemmys guttata*) in Their Northeastern Range

Amanda Rocker, M.S. Applied Biology

Reptiles are experiencing declines in terms of the numbers of populations and also decreases in population size. Yet, there remains deficient data to understand population trends in many reptile species, let alone understanding the specific causes of declines. One declining species that has not been comprehensively assessed is the spotted turtle (*Clemmys guttata*), a freshwater species found in wetlands in eastern North America. The spotted turtle is classified as endangered under the IUCN Red List and is currently under review for federal listing in the Endangered Species Act. Populations have continued to decline with potential threats including predation, collection for the pet trade and habitat loss. One of the primary aims for my research is to understand the level of potential predation for spotted turtles in Maryland and Delaware. This includes analyzing the predator-caused injuries seen on captured turtles along with the abundance of predators in their habitat. This will give me an idea of what preys upon spotted turtles in their northeast region and the degree of predation. My findings could indicate a need for protection from over-predation to allow the population a chance to recover.

Creating a Smooth Transition: Supporting First Generation College Students

Jacquelyn Rogers, M.A. Conflict Analysis and Dispute Resolution

The culture of higher education is changing. Throughout the past century, higher education has become more diverse and the needs of students have changed. Higher education is no longer composed of upper class, white males. Because of this, more students who are the first in their family to attend higher education are pursuing post-secondary degrees. These first generation college students are facing unique challenges as they attempt to navigate this new educational environment. In this paper, research will be conducted using Holy Family University in Philadelphia, PA, as a case study to create best practices to support first generation college students throughout the institutional orientation program.

Understanding Pre-Service Teachers' Tutoring Experiences with Children

Diana Schultz, Ed.D. Contemporary Curriculum Theory and Instruction: Literacy

Utilizing a university literacy center, professors and doctoral students/classroom teachers mentored pre-service teachers as they tutored children from the community in reading and writing. These pre-service teachers were required to assess, hold family conferences and create lessons to focus on their tutees' funds of knowledge. The purpose of this presentation is to share insights into the learning experiences of pre-service teachers and to examine how they reflected on their own learning experiences when they were assigned to tutor a K-eighth grade reader in the literacy center. This inquiry hopes to reveal critical issues regarding pre-service teachers.

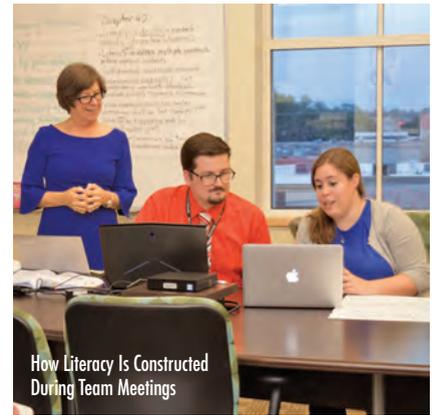
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How Local and Landscape Habitat Factors Affect Breeding-Pond Use and Occupancy of the Eastern Tiger Salamander (*Ambystoma tigrinum*) in Maryland and Delaware



Mediation and Conflict Resolution Professional Development



How Literacy Is Constructed During Team Meetings

How Local and Landscape Habitat Factors Affect Breeding-Pond Use and Occupancy of the Eastern Tiger Salamander (*Ambystoma tigrinum*) in Maryland and Delaware

Hannah Small, M.S. Applied Biology

Determining which abiotic and biotic factors influence habitat preference for a species of concern can optimize conservation efforts for both land managers and financial decision makers. I intend to determine how these factors at local and landscape levels affect breeding-pond preference and occupancy for the state-endangered Eastern tiger salamander (*Ambystoma tigrinum*) in Maryland and Delaware. The variables measured include water quality, pond area, canopy and land-use types surrounding a pond, such as contiguous forest, agriculture, roads and proximity to other wetlands. These variables will then be compared to population (deme) size estimates and pond occupancy from mark-recapture and egg mass surveys to determine, if any, relationships between habitat type and use. Understanding the relationships between population measures and habitat characteristics that affect *A. tigrinum* breeding is important to making management decisions for this species of conservation concern. This research can then be expanded on to study *A. tigrinum* throughout its range and other endangered pond-breeding amphibians.

Using Drone Technology to Detect Warm-blooded Mammals Under Heavy Forested Canopy on Maryland's Eastern Shore

Kathleen Stafford, M.S. Geographic Information Systems Management

In Maryland, there are over 90 mammalian species documented. On the Eastern Shore of Maryland, common large mammals include the white-tailed deer, the Virginia opossum, red fox, groundhogs, beavers, muskrats, the striped skunk and raccoons. Determining the population size of these species is an important task for wildlife organizations. In many studies, traditional line transects have been used to estimate mammalian population sizes. However, these transects are expensive, can prove very cumbersome and affect the local vegetation. A more innovative way to conduct similar types of data collection is by utilizing unmanned aerial vehicles (UAVs) and thermal infrared camera techniques. Mammals give off high heat signatures that can easily be detected using thermal infrared image processing at high-spatial resolutions. However, when collecting data over forest, the heavy forest canopy introduces challenges. While flying a UAV over a heavy forest canopy, the thick layer of canopy vegetation can partially block or limit thermal signatures from being detected, resulting in incorrect or limited data collection. Using LIDAR processing techniques and UAV technology, multiple UAV flights will be documented over heavy forest canopy to determine if mammals can be detected through the canopy and under which conditions are the best results recorded.

Understandings Pre-Service Teachers' Tutoring Experiences with Children

William Tignor, Ed.D. Contemporary Curriculum Theory and Instruction: Literacy

Utilizing a university literacy center, professors and doctoral students/classroom teachers mentored pre-service teachers as they tutored children from the community in reading and writing. These pre-service teachers were required to assess, hold family conferences and create lessons to focus on their tutees' funds of knowledge. The purpose of this presentation is to share insights into the learning experiences of pre-service teachers and to examine how they reflected on their own learning experiences when they were assigned to tutor a K-eighth grade reader in the literacy center. This inquiry hopes to reveal critical issues regarding pre-service teachers.

Mediation and Conflict Resolution Professional Development

Marissa Walker, M.A. Conflict Analysis and Dispute Resolution

The grant allows me to attend the 16th Annual Mediation Training Institute (MTI) at Eckerd College in St. Petersburg, FL. The conference is a full two days and offers several different speakers, topics and several networking opportunities that are important in the conflict resolution community. Topics covered include "The Neurological Impacts of Stress," "Everyday Peacemaking" and "The Impact of Money on Conflict Management Mediation." By attending, I am able to expand my knowledge of alternative dispute resolution and access to networking opportunities.

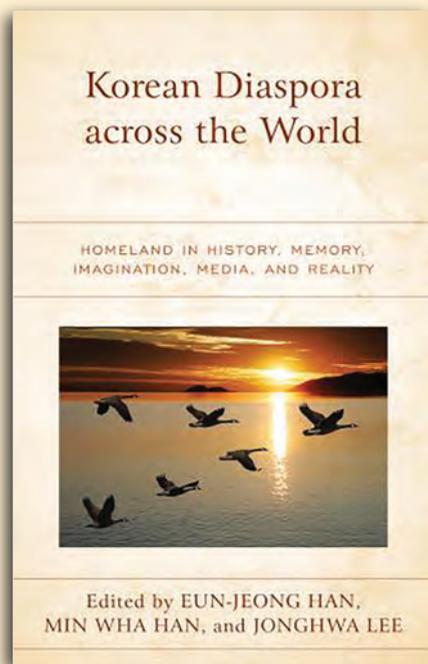
How Literacy Is Constructed During Team Meetings

April Winterson, Ed.D. Contemporary Curriculum Theory and Instruction: Literacy

The purpose of this case study is to understand how educators (administrators, teachers, specialists) at one early elementary school construct literacy in their professional dialogue. The specific goal of this study is to gain insight into the oral and written discourse around literacy during grade level literacy meetings. Data will be collected through direct and participant observations, interviews, and documents. Data will be analyzed using critical discourse analysis methods (Gee, 2011) in order to gain insight into the oral and written discourse around literacy that occurs during grade level meetings, social relations, identity, knowledge and how power is negotiated (Siegel, 2018). This study is being conducted as a pilot project for my dissertation under the guidance of co-PI and faculty advisor Dr. Judith Franzak.



RECENT FACULTY BOOKS

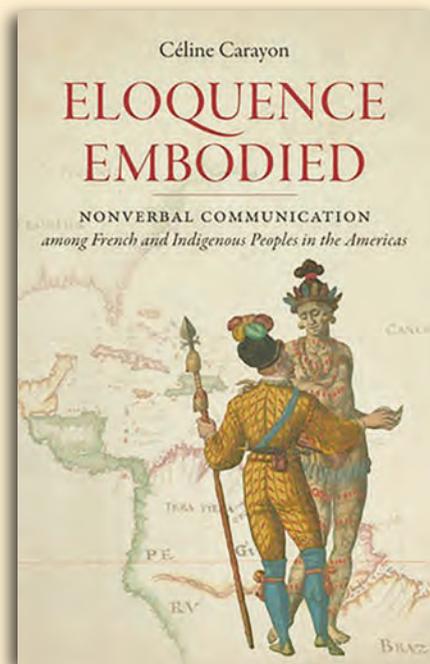


Korean Diaspora across the World: Homeland in History, Memory, Imagination, Media, and Reality

Edited by Eun-Jeong Han, Assistant Professor, Communication

This edited volume analyzes the Korean diaspora across the world and traces the meaning and the performance of homeland. The contributors explore different types of discourses among Korean diaspora across the world, such as personal/familial narratives, oral/life histories, public discourses and media discourses. They also examine the notion of “space” to diasporic experiences, arguing meanings of space/place for Korean diaspora are increasingly multifaceted.

Lexington Books, 2019



Eloquence Embodied: Nonverbal Communication among French and Indigenous Peoples in the Americas

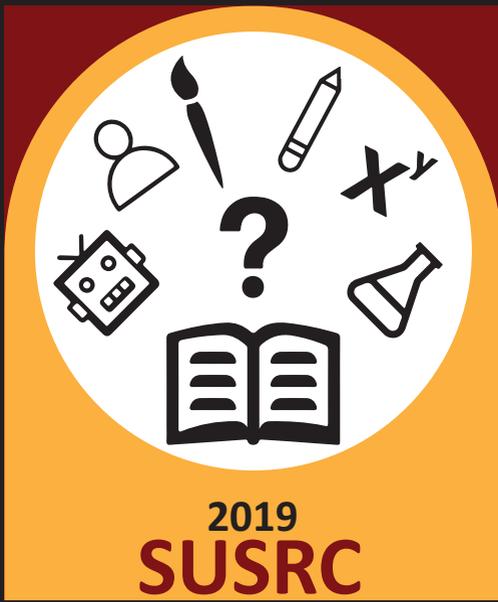
by Céline Carayon, Associate Professor, History

Taking a fresh look at the first two centuries of French colonialism in the Americas, this book answers the long-standing question of how and how well Indigenous Americans and the Europeans who arrived on their shores communicated with each other. French explorers and colonists in the 16th century noticed that Indigenous peoples from Brazil to Canada used signs to communicate. The French, in response, quickly embraced the nonverbal as a means to overcome cultural and language barriers. Carayon's close examination of their accounts enables her to recover these sophisticated Native practices of embodied expressions.

In a colonial world where communication and trust were essential but complicated by a multitude of languages, intimate and sensory expressions ensured that French colonists and Indigenous peoples understood each other well. Understanding, in turn, bred both genuine personal bonds and violent antagonisms. As Carayon demonstrates, nonverbal communication shaped Indigenous responses and resistance to colonial pressures across the Americas just as it fueled the imperial French imagination. Challenging the notion of colonial America as a site of misunderstandings and insurmountable cultural clashes, Carayon shows that Natives and newcomers used nonverbal means to build relationships before the rise of linguistic fluency – and, crucially, well afterward.

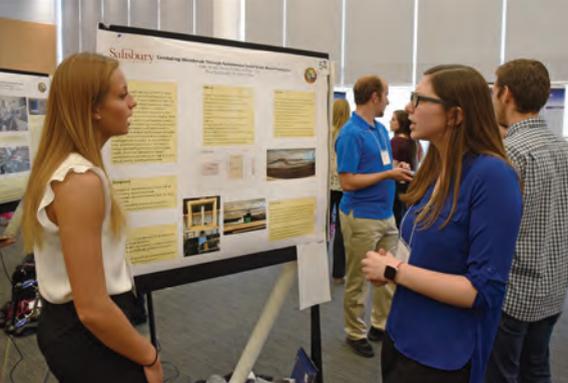
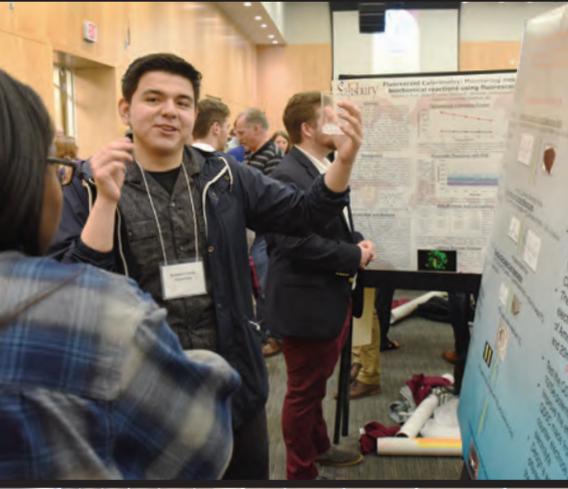
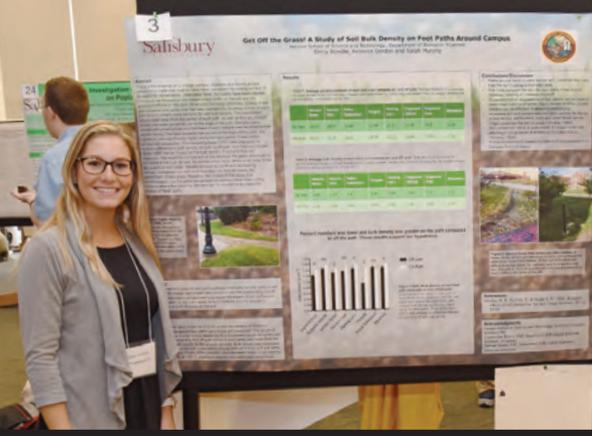
University of North Carolina Press, 2019





During the annual SU Student Research Conference in April, nearly 200 students shared their research on topics ranging from health care, to the sciences, to the liberal arts, to business, to education. At the conference, Dr. Jessica Clark, Biological Sciences Department, was awarded the 2019 Outstanding Research Mentor Award. Clark is known for her zebrafish research – and the number of students she enthusiastically engages in her lab. She also is co-director of the Office of Undergraduate Research and Creative Activity (OURCA) and co-chair of the SU Student Research Conference (SUSRC).





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