

Georgia Southern University

Georgia Southern Commons

Ascension: Elevating Research and Scholarship
(2012-2015)

Division- Office of Research

2015

Ascension

Sandra Bennett
Georgia Southern University

Doy Cave
Georgia Southern University

Follow this and additional works at: <https://digitalcommons.georgiasouthern.edu/ascen>



Part of the [Higher Education Commons](#)

Recommended Citation

Bennett, Sandra and Cave, Doy, "Ascension" (2015). *Ascension: Elevating Research and Scholarship (2012-2015)*. 4.

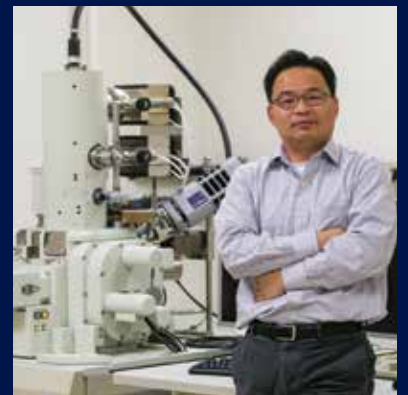
<https://digitalcommons.georgiasouthern.edu/ascen/4>

This magazine is brought to you for free and open access by the Division- Office of Research at Georgia Southern Commons. It has been accepted for inclusion in Ascension: Elevating Research and Scholarship (2012-2015) by an authorized administrator of Georgia Southern Commons. For more information, please contact digitalcommons@georgiasouthern.edu.

ASCENSION

ELEVATING RESEARCH AND SCHOLARSHIP AT GEORGIA SOUTHERN UNIVERSITY

2015



WELCOME



Having the opportunity to participate in research during my own undergraduate years certainly helped shape the vision and priorities for my own career. The experiences added clarity to my vision of what I found rewarding and what I wanted to avoid. Faculty and more senior students provided valuable guidance about what would be needed in order to achieve my goals. It would be a stretch to say that those experiences were solely responsible for what has been a fun and rewarding

career in industry and academics, but they surely helped set the course. Today, undergraduate research is possibly more about student education than it is about the research results; however, research experiences at Georgia Southern demonstrate the importance of contributions to both. In any case, providing research opportunities enables a student to reach beyond the traditional classroom and dig deeper into their interests, career goals and broaden their knowledge.

In this edition of *Ascension*, the focus is on the outstanding work of undergraduate students and faculty working with these students in various areas of research. Most students are motivated and are ready to utilize their knowledge and skills in creative and innovative ways. Providing opportunities for them is the key to broadening and testing their skills. Research is more than testing a hypothesis. It teaches, fine tunes and reinforces the importance of critical thinking, written and oral communication skills, following proper research ethics, and working with a mentor or collaborator.

At Georgia Southern University we are fortunate to have a vast cadre of faculty who are devoted to not only their own research, but also enjoy working with students. Our Undergraduate Research Council was formed in 2010 with representation from all colleges of the University and chartered with several objectives. Primary in those objectives is to identify and maximize opportunities for student engagement and to bring greater visibility to the undergraduate research mission. A key collateral benefit continues to be increased interdisciplinary collaboration among our faculty.

Although it is impossible to capture and feature every aspect of research on our campuses in a single annual edition, it is our hope that this edition of *Ascension* will provide a vignette of the work of our many energetic and creative faculty and students, especially in our undergraduate programs. For more information, visit georgiasouthern.edu/office-of-the-vice-president and download our app at research.georgiasouthern.edu/econdevapp.

In closing and in keeping with our Southern hospitality, we enjoy helping visitors find their way around our beautiful campus. Come see us and all we have to offer.

Don McLemore, Ph.D.
Acting Vice President for Research and Economic Development



ASCENSION 2015

Elevating research and scholarship
at Georgia Southern University

Vol. 4 • 2015

Interim President

Jean E. Bartels, Ph.D., R.N.

Acting Vice President for Research and Economic Development

Don McLemore, Ph.D.

Writers

Sandra Bennett, Doy Cave

Design

Mallory Biggers

Photography

Jeremy Wilburn

Letters to the Editor

and other submissions are encouraged.

Send correspondence to:

Research

P. O. Box 8055

Statesboro, GA 30460-8055

magazine@georgiasouthern.edu

Ascension

© 2015 Georgia Southern University



CONTENTS





ENGAGING UNDERGRADUATES IN RESEARCH

Research is an increasingly important criterion for college students who need to distinguish themselves for careers in today's competitive and challenging workforce or for placement in graduate and professional schools. At Georgia Southern University, it is common for faculty and graduate students to actively engage in scholarly, creative and scientific research across all eight academic colleges. However, the University is committed to ensuring that undergraduates are involved in the scholarly practice as well.

The Council on Undergraduate Research defines undergraduate research as "an inquiry or investigation conducted by an undergraduate student that makes an original, intellectual or creative contribution to the discipline."

"It includes systematic study and presentation of results," said Steven

Engel, Ph.D., who is the director of the University Honors Program. "It needs to be stressed that when we talk about undergraduate research we need to be inclusive of the work carried out in creative endeavors as well as professional and pre-professional fields. Often, when one thinks of undergraduate research, images of labs first jump to mind. Examples may include archaeological fieldwork, investigating best practices in business management, understanding voting behavior or even design projects in engineering, art and fashion."

Through undergraduate research students develop important critical thinking and problem-solving skills and learn to implement research methodology that allows them to transform classroom comprehension into real-world application. The high-impact learning experience also

provides students with the opportunity to engage in hands-on activities in their majors, learn new technical and non-technical skills, dig deeper into their fields of study and to collaborate closely with others in an original experiment, project or creative work. "Plus, it's fun," added Engel.

Shelby Herrin, a newly minted Georgia Southern graduate with a bachelor's degree in recreation and tourism management, found her undergraduate research experience valuable and illuminating in unexpected ways.

"My research actually helped me with time management, communication skills, creative design, marketing and the list goes on," she said. "Research requires you to have a certain level of responsibility to be successful and it definitely takes a lot of perseverance. The experience of doing research, as well as the



FOCUSED EFFORTS

EXPLORING CREATIVE COLLABORATIVE OPPORTUNITIES

As a Carnegie Doctoral/Research University, Georgia Southern provides a wide range of opportunities for students to get involved in groundbreaking research and creative scholarly activity and to collaborate with faculty whose scholarly work have appeared in influential journals or have been invited by prestigious institutions and conferences to present their research and creative work.

Samplings of some of the research being done by undergraduates may be found at the University's website for the Undergraduate Research and Creative Activity department, which is located within the Division of Research and Economic Development. In addition, all of Georgia Southern's eight colleges have undergraduate research offices, centers or dedicated faculty to help students who plan to engage in research and creative activity.

CENTER FOR UNDERGRADUATE RESEARCH AND INTELLECTUAL OPPORTUNITIES

The Center for Undergraduate Research and Intellectual Opportunities (CURIO) is a Georgia Southern program designed to help students reap the full benefits of participating in undergraduate research.

Established in 2008 in the College of Liberal Arts and Social Sciences, CURIO offers a number of resources to help students with their research needs in any way possible. Professors on an individual level encourage those students who might be interested in pursuing a higher degree or gaining advanced understanding of a particular subject to submit a proposal to CURIO. Students on their own are also open to submit a proposal, and faculty will work with the students to assist and provide guidance with the research. Students who have experienced scholarship through undergraduate research experiences are better prepared to address future problems and to assume important roles as enlightened citizens and leaders. To that end, students' undergraduate research experiences will begin their professional lives. To learn more about undergraduate research and creative activity at Georgia Southern, visit research.georgiasouthern.edu/ugrs.

information learned from the research itself, is irreplaceable. I don't think my experience at Georgia Southern would have been as beneficial without it."

For her research, the University Honors Program student focused on heritage tourism in the small town of Millen, Georgia. "Heritage tourists are the tourists who develop a connection to the destination ... and are more likely to try to become part of the community while visiting."

Herrin not only completed an inventory of the area's tourism resources, but also produced print and online materials that could be used to promote the city's resources. Even more impressive, in her senior year, she was given the opportunity to present a work-in-progress abstract about her project at the 20th annual Graduate Education and

Graduate Student Research Conference in Hospitality and Tourism at the University of South Florida.

Research is integrated into Georgia Southern's undergraduate experience in various ways ranging from core classes, laboratory assignments, performances, fashion shows, portfolios, independent study, thesis projects and even assisting faculty in ongoing research efforts. Because undergraduate research is so important, it is at the core of the experience of students in the University Honors Program.

"The Honors Program offers courses in most majors to prepare and mentor students through the process of completing research projects," Engel said. "In addition, the Program offers a research-based study abroad program, Honors Inquiry in Ireland. And, a



ANNUAL RESEARCH SYMPOSIUM

The Research Symposium is a conference style showcase of student and faculty research across multiple academic disciplines within the University. The annual event is a joint initiative with the Office of the Vice President for Research, The Jack N. Averitt College of Graduate Studies and the Office of Research Services and Sponsored Programs.

Our University has hosted the Annual Research Symposium for 14 years and it features speakers, posters and presentation sessions. In its earliest years, the Symposium mainly showcased graduate research efforts as coordinated by the College of Graduate Studies. However, in keeping with our mission as a comprehensive university with a strong presence of undergraduate research and a reach that extends far beyond Statesboro, invitations are extended not only to Georgia Southern students, faculty and others, but also to faculty and students from regional colleges and universities. More than 200 scholars participated in the 2015 Symposium and more than 300 people attended the event.

STUDENT TRAVEL GRANTS

The Office of the Vice President for Research and Economic Development supports student researchers through a limited number of travel grants, valued up to \$2,000 each. The funding will help undergraduate students present their original research at regional, national and international conferences. Students must have a GPA of 3.0 or higher and their primary mentor must be a Georgia Southern faculty member.



number of honors thesis projects have arisen out of community-based projects including the Honors Alternative Break Trip with Camp Blue Skies at Camp Twin Lakes.”

The University provides many opportunities for undergraduates to present their scholarly work and discuss it with others, whether through exhibitions, publications, demonstrations, posters, workshops and conferences. This fall, the annual Georgia Undergraduate Research Conference (GURC) returned to Georgia Southern for the second consecutive year. It was held at the Nessmith-Lane Conference Center from Nov. 6-7, and was open to undergraduates in all disciplines. The conference brings together student researchers, faculty and scholars from colleges and universities across Georgia and the Southeast.

“This conference provides a platform for undergrads to showcase research that they have completed under the guidance of faculty mentors and affords them the opportunity to present here to a very undergrad-friendly, yet juried conference as they prepare for larger content specific venues,” said Kymberly Harris, Ph.D., an associate professor in the Department of Teaching and Learning, who is co-chairing the conference with Engel. “It also increases their ability to network both with faculty and peers within their field as well as widening their understanding of what ‘research’ is in other disciplines.”

The conference is not the only program on campus designed for undergraduates to share their meaningful research with others. The program, “Research to Practice: COE Undergraduate Research Initiative,” is a first of its kind within the College of Education, and it is an effort by special education faculty to embed research within the student teaching experience at the undergraduate level. The program partners students with school districts and schools to focus on in-depth data collection, to work with faculty and school officials to develop research goals, and to connect school improvement plans with a specific issue that the student teachers would use research to solve.

“What we’ve found is that the knowledge gained in their student teaching semesters prepares them to use research in future classrooms,” said Harris. “The data and data analysis obtained during the research experience helped our pre-service teachers to address specific questions related to building relationships with students on the statewide performance assessment more than other pre-service teachers who didn’t have this experience.”

Experiences like this reveal the importance of comprehensive undergraduate inquiry in enhancing and enriching students’ academic achievement, intellectual growth and personal development.



LEARNING FROM THE VIRGINIA TECH MASS SHOOTING

It has been eight years since the Virginia Tech massacre and for Department of Criminal Justice and Criminology Professor Laura Agnich, Ph.D., it is a day she will never forget. She was working on her master's degree at Virginia Tech when a fellow student went on a rampage, killing 32 students and faculty before killing himself in the deadliest mass shooting at a university in U.S. history.

Thirty of the casualties were gunned down in Norris Hall, the building adjacent to Dr. Agnich's office in McBryde Hall. Several of her peers, faculty mentors, and office staff were in that adjacent building the morning of April 16, 2007, and were on lockdown for several hours while emails updated the campus about a gunman on the loose, a double homicide in a dorm, and then multiple casualties in Norris. When the lockdown was over and the shooter was confirmed dead, the immediate threat was gone, but for many, the fear, pain, anger and trauma would take years to subside.

Shortly after the tragedy struck her own campus, Dr. Agnich began researching school shootings. Prior to the mass shooting, she was researching students' perceptions of safety, harassment and inclusion on campus. It was clear, however, that the conversation about safety at Virginia Tech had changed dramatically overnight.

"I began researching school mass violence incidents almost immediately after the shooting because I wanted to understand the commonalities across incidents, to get closer to understanding the factors that may lead to mass violence and shootings perpetrated at

schools, colleges, and universities," Agnich explains. She was invited to present some of her preliminary findings at a conference hosted by the Academy of Critical Incident Analysis at John Jay College of Criminal Justice in 2009, and the following year she was awarded a grant from the Academy to build a database of mass violence incidents.

Since then, the Georgia Southern professor has used the database to examine the characteristics of incidents and perpetrators in 38 nations, in addition to researching media representations of school shootings and community responses to these events. In an article recently published in the *American Journal of Criminal Justice*, Dr. Agnich identified key differences between attempted and completed school mass violence incidents, as well as differences between incidents involving firearms and those perpetrated using other weapons. This research drew the attention of *Harvard Political Review*, and a writer from the prestigious publication contacted her for an interview in January.

"I was honored to be interviewed by such an important publication, and for an article that included interviews with multiple world renowned scholars in the field," she says. While her research shows



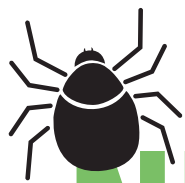
DR. LAURA AGNICH

that the United States has the highest incidence of school shootings compared to other nations, Agnich points out that not all school mass violence incidents are carried out with firearms. However, she agrees with numerous preeminent scholars in the field of criminology that serious mental illness and access to weapons must be addressed in order to prevent these events from occurring.

Moving forward, Agnich is researching ways in which students, faculty and staff can increase their odds of survival if faced with an active shooter situation. She says, "We are typically taught to 'lockdown' and hide during an active shooter event, but my preliminary research shows that when civilians respond in multiple ways (for example, by barricading a door, escaping the building, or in some cases, by attempting to disarm the shooter- whether by using physical force or verbal de-escalation), fewer casualties occur."

Dr. Agnich received her doctorate in sociology from Virginia Tech in 2011, and has been at Georgia Southern since 2012 where she is also advisor to the top-ranked University Mock Mediation Club. In addition to her research on school violence, Agnich investigates gender and crime, sexual assault and intimate partner violence and the association between victimization and drug use.

For a scholar whose research is personally significant, she notes, "It is incredibly meaningful to have my research recognized by a publication as prominent as *Harvard Political Review*."



NEW TICK SPECIES DISCOVERED



National Tick Collection Contains One Million Specimens, 700 Species

Georgia Southern Professor Dmitry Apanaskevich, Ph.D., and his assistant, his wife, Maria, have found 12 specimens of a new tick species, never before identified on earth. The new species, *Dermacentor limbooliati*, is similar to *Dermacentor auratus*, among which it was hiding in plain sight for more than 40 years. Apanaskevich has described the new species and its many differences in his article, “Description of New *Dermacentor* (Acari: Ixodidae) Species From Malaysia and Vietnam,” co-authored with Maria, in the Feb. 25 issue of the *Journal of Medical Entomology*.

“There are not that many [species in the *Dermacentor* genus], but they’re very similar to each other,” he said. “However, the variabilities within the species plus similarities among the species make it hard to break species apart. Each species is so similar to each other you have to dig through hundreds and hundreds of specimens to really understand how they’re different from one another.”

And dig they did. The specimens are part of the U.S. National Tick Collection

(USNTC), where Apanaskevich is assistant curator and Maria, who also has a background in tick research, assists. It is one of the largest tick collections in the world, housed and curated by Georgia Southern since 1990, and holds more than 700 tick species with over one million specimens. To make this discovery, the couple had to pore over 2,000 *Dermacentor auratus* specimens one by one to find the new species.

“Obviously you have a desire after the first hundred to say, ‘I don’t want to look anymore. It’s enough for the research,’” said Apanaskevich. “But here’s the trick: you have to look through all 2,000 specimens. And looking through all 2,000 species, we found 12 of the new species. If we didn’t look through all of them, we wouldn’t have found them.”

Apanaskevich, his wife and Georgia Southern Professor Quentin Fang are studying and curating the *Dermacentor* as part of the National Institutes of Health (NIH) grant, “Systematics of medically important *Dermacentor* tick vectors,” which provided \$327,500 to develop a global-scale taxonomic revision to better identify this genus.

Since beginning the research in 2011, Apanaskevich and his research team have discovered one new *Dermacentor* species and validated a second species, thought to have been a misidentification for more than 100 years. Both discoveries were published in the *Journal of Medical Entomology* and the discoveries allowed him to extend the timeline of the grant. The researchers are also in the process of identifying even more new species discovered among the USNTC specimens.

The team has also described previously unknown nymphs and larvae, redescribed poorly described species and developed identification keys that will help future scientists in their research. Throughout the project Georgia Southern graduate and undergraduate students have been involved in the research.

“For me, this is a big discovery,” the professor said. “*Dermacentors* are considered done, even in my perception. Ticks are well-studied because of their [medical] and [veterinary] importance, and the government put a lot of money into



ticks for this reason. So finding new ticks becomes harder and harder. For us, it's a revelation because we found that even the well-studied ticks still have secrets."

The new species is named after Lim Boo Liat, Ph.D., a renowned professor and zoologist in Malaysia. Apanaskevich says he is solely responsible for the more than 15,000 specimens of Southeast Asian *Dermacentor* in the collection, which he collected in the late '60s and early '70s.

"For five or so years, this guy was collecting samples almost every day from different places in Malaysia," Apanaskevich said. "If he didn't do that, we might have five jars of samples. Because he did, we have more than 200 jars full of vials with ticks just from him."

In addition to the study and publishing, Apanaskevich and his wife are creating detailed illustrations of their discoveries. He draws ink illustrations of the specimens and Maria fills in the textures and colors in Photoshop. These illustrations have already made their way to the cover of the *Journal of Medical Entomology* twice in the last year.



FIRST CHARLES H. HERTY FELLOWSHIP RECIPIENT NAMED

College of Science and Mathematics Professor Honored

Three years after his arrival at Georgia Southern University, Rafael Quirino, Ph.D., assistant professor of organic chemistry, is making his presence known on campus and in the laboratory with his research focused on biorenewable materials, which could lead to reducing the world's reliance on fossil fuels and petrochemicals.

"Biorenewable chemicals and materials allow for sustainable development from an environmental impact standpoint; therefore, my research field represents potential advancements toward more environmentally responsible technologies," said Quirino, whose research group also studies the behavior of carbon nanotubes when exposed to microwaves.

As the first recipient of the Charles H. Herty Fellowship, the chemistry professor said the collaboration and exchange of ideas with the Herty research team provides more of a directed insight into the biorenewables industry that will help him propose more relevant research topics. The Herty Fellowship

is sponsored by the Georgia Southern University Herty Advanced Materials Development Center (AMDC) and the University's Office of Vice President for Research and Economic Development, and is intended to strengthen ties between the University's faculty and the applied scientists at Herty AMDC.

The main focus of his research Quirino explained, "Is to use naturally occurring molecules, such as carbohydrates (cellulose), vegetable oils, lignin and/or available products directly derived from them, into chemical transformations and processes that yield environmentally and economically interesting products, such as plastics, composites and fine chemicals."

In addition, his research creates opportunities for students to conduct research alongside faculty. The Herty Fellowship funds the work of a graduate student; however, Quirino also supervises another graduate student and five undergraduates who are working on other research projects.

"From the student's perspective, getting involved in research early on in their academic life gives them an advantage when applying for graduate school and some professional programs," Quirino said. "Besides the laboratory experience, they are exposed to many opportunities that help them build a strong resume. From a mentor's perspective, I would not be able to make progress on as many research fronts as I currently do if not for my research students, who help me day in and day out. I am really thankful for the students who help me with research throughout their stay at Georgia Southern."





THE GOLD STANDARD IN NANOTECHNOLOGY

Chemistry Professor John Stone, Ph.D., in the College of Science and Mathematics, is one of many Georgia Southern University faculty members who provide undergraduate students with opportunities to gain hands-on research that prepares them for graduate school, medical school or for careers locally, regionally and globally. But only a few years ago, Stone never imagined he would be teaching or mentoring students at the university near his hometown of Rincon, Georgia.

“When I first went to graduate school I envisioned a life in industry. After I finished my master’s work and moved into my doctoral program, a new adviser was overseeing my work and my project changed a lot,” said Stone, who earned his master’s and doctorate in chemistry from the University of South Carolina in Columbia. “I took careful note of her career and how happy she was with her day-to-day duties and began to realize how great the job was and from that moment on I knew that was what I wanted to do.”

At Georgia Southern, Stone teaches general chemistry, analytical chemistry, instrumental analysis and nanotechnology materials to both undergraduate and graduate students. His research group is divided into two basic directions: improved synthesis of gold nanorods, and the

application of these materials to address biological and medicinal concerns.

“Nanotechnology is all about taking nanosized materials and then using them to do things that the bulk components cannot do,” said Stone. “The properties of nanomaterials are much different than the bulk and that’s why they are interesting,” said the professor who is now in his third year as a member of the Georgia Southern faculty. “They don’t have the same properties as cells and bacteria but they have comparable sizes so their ability to interact with those things is much larger. You couldn’t take a chunk of gold and put it in your body because it is much too big, but in the nano regime you can do those things.”

In his lab, students start with a gold source or gold chloride to create the tiny particles. “Gold is particularly interesting because it has optical properties that are very interesting. When you prepare them they result in very brightly colored solutions,” he explained. “They have absorption properties that are in the visible to near infrared region of the electromagnetic spectrum. Once synthesized they are very stable and they are argued by those of us in the community, if prepared properly and modified properly to be relatively non-toxic although there is some argument in the bigger picture about

how true that is and there are a lot of factors that influence toxicity.”

Stone is currently involved in several research projects and is passionate about involving students in his projects. “I tend to run my research group much like a research group is run at a major graduate and Ph.D.-granting institution, and that is I simply manage my group,” he said. “I allow them to work independently. Of course, I mentor them, I meet with them, I discuss research with them almost daily but I do not go into the lab and do the experiments for them. I allow them to operate independently.”

The professor added that in today’s world it is crucial for students to have a background in undergraduate research if they plan to work in scientific fields whether in industry, academia, the government sector or go to medical school.

“If you haven’t done any undergraduate research, you’re really in trouble,” he said. “All of these sectors look for someone who has done undergraduate research and the reason why is because taking what you learn in the classroom and applying it in a hands-on, real-world way, which is what you do in the laboratory, is vitally important. These skills are skills that are very important for students moving on into the working world or graduate school or medical school.”



COLLABORATIVE RESEARCH

MEET GEORGIA SOUTHERN'S GOIZUETA DISTINGUISHED CHAIR OF EDUCATION

Georgia Southern faculty member Alejandro Gallard, Ph.D., loves to take on challenges. Presently, he serves as the Goizueta Distinguished Chair in the Department of Teaching and Learning in the College of Education (COE), and he is the director of the Georgia Center for Educational Renewal (GCER). Raised in Nicaragua and Florida, his interest in research and education stems from an earlier career in the private sector.

“Even though my job was a lot of fun, and intellectually challenging, I kept thinking it would be more fun and satisfying to work in a profession where the fruits of one’s labor went to the general good and not the stockholders,” he said. As a member of the Latino community, he wanted to pay attention to people underrepresented in rural educational settings, primarily Latinos and first generation students. Gallard found it meaningful to devote his research to the “teaching and learning of science to those who have not been afforded equitable learning opportunities.”

As the holder of the endowed Goizueta Chair, Gallard has various responsibilities.

He focuses on developing collaborative initiatives within the University to conduct research and projects that promote educational advancement and on closing the achievement gaps among underrepresented populations. In leading the GCER, he wants the Center to play a primary role in assisting COE colleagues with helping rural school districts meet the learning needs of students and the teaching needs of teachers.

Since arriving at Georgia Southern in the fall of 2012, he has become a mentor to faculty, junior scholars and Latino students while maintaining an active research agenda that includes collaborating with an international research team trying to understand those few Latinas who are successful in the science, technology, engineering and mathematics (STEM) fields.

Gallard said he is a socio-cultural constructivist trying to answer critical questions to make sense of the world in general, and education in particular. “Nothing ever happens in a classroom that doesn’t have mitigating factors that teachers need to deal with,” he said.

“Something from the outside is always going to influence what the teacher wants to do inside the classroom. It can be poverty; it can be contrasting belief systems or all sorts of things. I am a strong believer that education needs to be looked at through multiple contextual lenses in which all teaching and learning takes place. These influencing factors or contextual mitigating factors must be made explicit and dealt with before one can expect meaningful education reform to take place.”

Gallard is also the co-principal investigator of a \$2.5 million, five-year grant from the U.S. Department of Education, for a project that helps middle school special needs students learn science content with e-text readers. The veteran educator said throughout his professional career he has found that not only is it okay to be a Latino, but it also has been encouraged and supported at Georgia Southern.

“That has been a delightful surprise to me,” he said. “Georgia Southern has a great reputation and does a great job with underrepresented people. It has been an outstanding three years.”

SHAOWEN XU

THE PALMETTO TREE AND IMPACT RESISTANCE

Shaowen Xu, Ph.D., a professor in the Department of Mechanical Engineering, is an experienced researcher in solid and computational mechanics, mechanics of material, and material manufacturing and processing. He is also an expert in the effort to make lightweight impact resistant materials that can be used to protect people and for thermal insulation, damping and sound insulation. In his research, Xu uses nanotechnology to develop advanced engineering materials that can withstand the impact of bullets. A nano-fibrous structured material based on the popular tree celebrated in South Carolina, is among the lightweight impact resistant composites and multi-scale structured materials that the professor has developed.

“We studied the structure of the palmetto tree and attempted to invent a new material to resemble that kind of structure,” Dr. Xu said. “We did that because of the tree’s remarkable properties and its Revolutionary War history. A fort made from palmetto logs was successfully used to defend against the enemy in 1776 when it did not suffer severe damage from British cannonballs.”

By studying the structure of the palmetto tree and even bamboo, Xu has developed lightweight, flexible impact resistant materials, including a 0.07-inch thick material that successfully stopped a 0.25 caliber PCP hunting rifle pellet at a speed of 850 feet per second without any damage.



Xu earned his doctorate from the University of South Carolina and his bachelor’s and master’s at Huazhong University of Science and Technology in China, and has been a faculty member in the College of Engineering and Technology for six years.

His research is meaningful to Georgia Southern students in a number of ways. “It is important for me to integrate research into teaching because it makes it more interesting for students to learn,” he said.



DR. SHAOWEN XU

“They also apply the principles they learn in the classroom in the lab.” The professor added that in the University’s Materials Research Laboratory he “uses newer technology that will give students an edge in research experience that will help them when they move on to graduate school or into industry.”

Xu’s exploration of hierarchical structured composites that are impact resistant, durable, constructed by nano-meter fibrous network and can withstand the impact of a bullet also has great potential for developing a new class of advanced engineering lightweight ballistic materials that potentially could be used not only for personal defense but in such areas as the aerospace industry as well as national defense.



JIAN ZHANG

TIPPING THE SCALES ON OBESITY AWARENESS

Dr. Jian Zhang, associate professor of epidemiology in the Jiann-Ping Hsu College of Public Health, is bringing national awareness to the obesity pandemic in the United States through a series of highly publicized research articles about the misperceptions of obesity among children, adolescents and their parents. It's an idea he discovered through his own misperceptions about his son.

"My younger son is relatively slim compared to his friends," he said. "Both my wife and myself were concerned that the little one might have an underweight issue socially and this might not be good for a boy. However, when we compared the little one's weight and height with a growth chart, biologically, he is actually overweight and almost obese. Both my wife and myself are public health professionals, and we are still struggling with the discrepancy between socially and biologically acceptable norms."

Zhang is not alone in his struggle. In an examination of data from the National Health and Nutrition Examination Survey (NHANES), he and his research team found that the parents of preschoolers and school-aged children were getting remarkably worse at perceiving whether or not their child is overweight or obese. Across the studies, Zhang observed

a steep decline in this ability — a 30 percent decline — in less than 20 years.

And while the issue of body weight misperception has been understood among researchers for a long time, the results still surprised him.

"What most surprised me was the trend of the kids as well as the parents to refuse to admit their body weight was a problem," he said. "The declining trend really surprised me. That might be the reason our publication drew so much national attention: the decline within just such a short time period — just in 12 or 15 years a decline of 30 percent. That's a really huge decline."

The national media took notice, and Zhang and his team found their research discussed in such outlets as *The Washington Post*, *TIME* magazine, *U.S. News and World Report* and "The TODAY Show."

Zhang and his team continue to research body weight misperceptions from different



DR. JIAN ZHANG

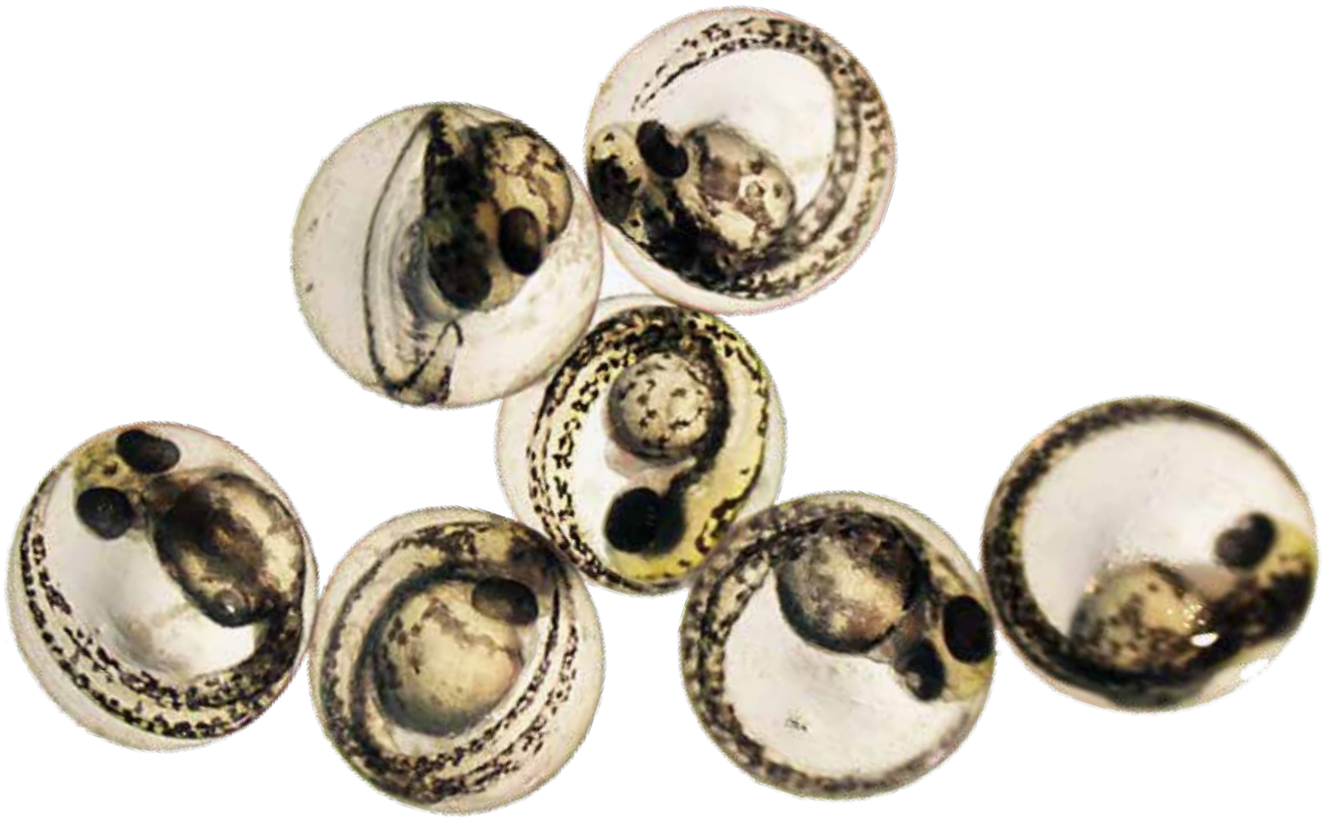
angles, and while he hopes that the results continue to raise awareness, he says that he hasn't found the best way to communicate the message to parents and their children.

"Right now, one in three adults are obese," he said. "One out of three are overweight. That means two out of three adults are in the range of unhealthy body weight. So, we have not yet figured out the most effective communication between the parents and the kids, given that the parents themselves are also struggling with body weight. So if the parents themselves are struggling with body weight, what they say is much less powerful to their kids."

Zhang believes the key to this communication is the medical doctor, who represents a more trustworthy source of expertise, but who is also limited in the amount of time he or she can visit a patient. It's a difficult problem, but in spite of the difficulties, Zhang says he has seen rays of hope.

"In Georgia for example, we definitely see a decline in obesity prevalence among the school kids and among adolescents," he said. "At least from 2011 to 2013, we saw a clearly declining trend that's really an encouraging sign. That means what we're doing is working. We just need to do more."





VINOTH SITTARAMANE

A HOLISTIC APPROACH

A popular aquarium pet is proving to be just the right model for the complex embryonic development research being performed by Professor Vinoth Sittaramane, Ph.D., and several graduate and undergraduate students in the Biological Sciences building. The sturdy zebrafish has been used in scientific research for nearly two decades, but it was introduced to Georgia Southern students when Sittaramane joined the faculty three years ago. The developmental biologist says the zebrafish is a great model because it is similar genetically to humans and is easy to produce, maintain, manipulate and study in the lab.

“We can breed them so they can produce in a single day a couple of hundred of embryos and that is a good number for us to work with,” he said. “Zebrafish leave their embryos in the water and because they are completely transparent we can see each stage of development.”

Sittaramane explained his student researchers are able to observe from day one the entire range of a living embryo as it grows from a single cell into a newly formed fish. “They can see how a new organism functions and can even

manipulate changes to the eggs and immediately see how one gene can change the behavior of the fish,” he added.

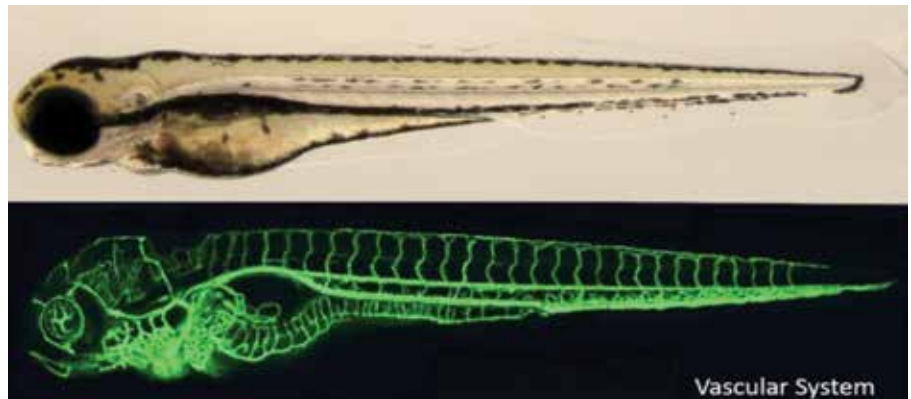
This holistic perspective gives students invaluable direct hands-on experience in the new field of developmental biology. And this type of research could



DR. VINOTH SITTARAMANE

lead to the design of therapeutics for several human neurodevelopmental disorders such as autism.

As a result of their research, Georgia Southern students have been able to publish their data in important journals and present their findings at regional and national meetings where they interact with nationally recognized scientists. “Students have fresh, eager and hungry minds,” Sittaramane said. “They often raise interesting questions and offer new perspectives, which are highly important for creative research.”





JAMES AND SARAH HIGDON

PATH TO THE STARS

Professors James and Sarah Higdon, Ph.D.'s, in the College of Science and Mathematics share a love of physics and astronomy, and they enjoy the challenge of engaging in research to advance knowledge and to pass it on to the students they teach.

“One of the main functions of a university is to create new knowledge; that’s what we do and that’s what we do with our research,” said Jim who entered college as a budding musician but left the University of Texas at Austin with bachelor’s degrees in astronomy

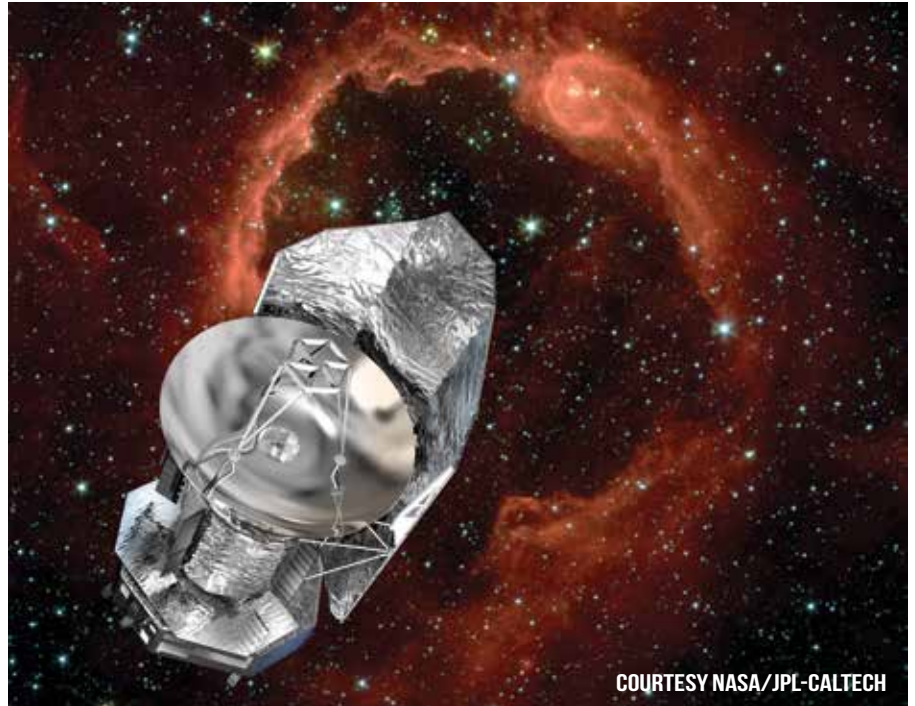
and physics, a master’s in physics and a doctoral degree in astronomy.

His wife Sarah, who earned her higher education degrees in the United Kingdom, spent many evenings looking up at the night sky, which spurred her interest in physics. Both faculty members are committed to sharing their joy of research with the next generation.

“The main goal is to motivate students to continue on a science track,” Sarah said. “Equally important though, is our goal to

educate today’s citizens and tomorrow’s leaders. Having participated in an international science project and practiced the scientific method they will have refined their ability to think clearly, critically and logically. These skills are extremely valuable and applicable to all career paths.”

The Higdon’s have been at Georgia Southern since 2006 and in their research on collisional ring galaxies, they use radio data from the Jansky Very Large Array — a radio telescope in New Mexico, and NASA



COURTESY NASA/JPL-CALTECH



data from the Spitzer and Herschel space telescopes to characterize the magnetic fields and star formation in this class of galaxies.

“Many of the galaxies that we study are merging with another galaxy,” Sarah said. “The collisions sweep up the gas and dust and trigger a burst of star formation. These studies address fundamental questions: How do galaxies form? How do they evolve? How do you trigger star formation? How do you quench it?”

Each semester they involve students in research projects and whenever possible

they take them “on observing runs as nothing can compare to actually visiting a large telescope and gazing up at the heavens,” Sarah explained. “Students from Georgia Southern have observed with us looking for high redshift galaxies in the near infrared using the Hale 5m telescope (the workhorse of modern astronomy) at the Palomar Observatory in Southern California. They have also looked for hydrogen gas in nearby galaxies using the Arecibo Radio telescope in Puerto Rico

and they have used space telescopes to study the interstellar medium in collisional ring galaxies.”

The professors say research goes hand in hand with teaching. “Through the years we have seen a marked increase in the quality of students,” said James. “We have to go to places to look through telescopes whether it’s New Mexico or at high altitude in the Atacama Desert in the Chilean Andes, because that’s where you go to make new discoveries.”

STUDENT SPOTLIGHTS

2015 AVERITT AWARD WINNERS

University's Highest Honor Bestowed Upon Graduate Students

Growing up in Roswell, Georgia, Joshua Holloway was an inquisitive student with an aptitude and enthusiasm for mathematics. There was never a doubt that he would become a teacher and share his knowledge and passion for the subject with students in a classroom.

"I was originally going to be a high school teacher, but decided I would rather do research in mathematics and mathematics education, and teach at the collegiate level," he says. "I like mathematics because it offers a good way to think about how to solve problems and not just math problems, but everyday problems — from the day to day challenges we all face — to the larger problems in the world and society."

Holloway is the recipient of the 2015 Excellence in Instruction Averitt Award, which is presented each year by the Jack N. Averitt College of Graduate Studies. Along with the Excellence in Research Award, they are the two highest honors bestowed within the College of Graduate Studies. The May graduate enrolled in Georgia Southern University's master's program in applied mathematics after obtaining a bachelor's degree from Mercer University. As a teaching assistant he tutored in the mathematics tutoring lab, taught recitation courses for Calculus 1 and II and was instructor of record for two sections of trigonometry.

"Most students see mathematics as something difficult, useless, or unattainable, all of which are very far from true," Holloway says. "I want my students to be able to take the skills they learn in my class and be able to actually apply them in their lives. In particular, I want to focus on how absolutely critical mathematics is in technological applications, such as computer programming, data mining, optimization and even in video game design."

Holloway says he doesn't do anything too out of the box in his classroom; however, he adds, "One thing I do that I know some other mathematics professors

don't do is assign written assignments in my classes. I find it is important for students to not only understand the routine skills of mathematics but know how to apply it in a more general, problem solving sense."

During the summer, Holloway defended his thesis, "Solutions of Inequality Constrained Spline Optimization Problems with the Active Set Method," and said with the research he hopes "to solve an open problem in showing that our algorithm converges in finite steps and can solve spline near-interpolation problems."

Zachary Dietrich received the award for Excellence in Research for his work studying the potential benefits of long distance wilderness experiences on combat veterans struggling with post-traumatic stress disorder (PTSD), and other reintegration issues when they leave military service.

Before grad school, Dietrich enlisted in the United States Marine Corps, but an accident eventually led to his medical retirement. "I frequently saw returning Marines from Iraq and Afghanistan and as their physical injuries healed, they still struggled immensely with the psychological difficulties one obtains after months of extreme stress," he explains. "Although some did benefit from traditional psychotherapy and psychopharmacology, many did not. So my interest began by asking the simple question of why is this not working for them, and what else is out there?"

For his research, the Marine Corps veteran partnered with the Warrior Hike "Walk off the War" program in which participants hike an entire National Scenic Trail for three or six months. That can help them process their combat experiences and alleviate their PTSD. Besides sending the hikers weekly messages to help them cope, Dietrich documents their emotional states, and is hopeful the study's results will provide therapists with more options for treating veterans transitioning back into civilian life.



"Although our approach may be new, there is nothing new about long distance hiking for mental health benefits," he says. "The very first person to hike the Appalachian Trail in one attempt was Earl Schaffer, a WWII combat veteran who said his goal was to "walk off the war."

A native of Indiana, Dietrich says the support of his faculty sponsor, psychologist and Georgia Southern Professor Shauna Joye, has been invaluable. Together they have hiked with participants in the swamps of south Florida, climbed the highest mountain in Maine, hiked approximately 50 miles of the Appalachian Trail and hiked 30 miles through the desert of the California-Mexican border.

"She has put herself through awful conditions to help see this project through," Dietrich says. "More importantly though, her ideas and drive to see them through have complimented my own ambitions with this project and resulted in research I'm very proud of."

Fellow researchers and doctoral students Joseph Garcia and Kathleen Maye also have contributed to the research, which has been featured in national magazines, journals and by major news media outlets including CNN.

GEORGIA SOUTHERN STUDENT WINS FIRST PLACE AT GEORGIA UNDERGRADUATE RESEARCH CONFERENCE

STUART BARKER



University undergraduates engaged in research are getting the opportunity to present their findings at regional and national conferences. Conferences are important venues for student researchers in all disciplines to discuss and show their work to a wide audience, to interact with other student scholars and faculty, and gain experience in making presentations at professional meetings.

This fall, the Georgia Undergraduate Research Conference returned to Georgia Southern's campus for the second consecutive year. In the conference's first year, Georgia Southern's own Stuart Barker ('14) won the Outstanding Student Research Award for his presentation titled "Development of Soil Carbon Inventory: Understanding the Climate Change Mitigation Potential of Georgia Southern University Campus." Barker explained the focus of his research to *Ascension* magazine.



Q: What is the focus of your research?

A: Georgia Southern University aims to be a great advocate of green initiative and sustainable practices. Carbon sequestration (capturing carbon dioxide from the atmosphere) has become a major strategy in mitigating atmospheric carbon dioxide and by promoting carbon accumulation in campus soils; Georgia Southern can become a carbon sink.

Q: How did you accomplish your research?

A: By compiling a campus wide soil carbon inventory, identifying factors responsible for higher carbon storage and making recommendations that lead to climate adaptive strategies on campus.

Q: What was the outcome of your research?

A: As noted to readers of my work at the GURC, the research that was presented at that time was intended to be a preliminary study for a larger project. I am actively involved in completing the large-scale project, which encompasses more soil sampling points on campus and the use of bulk density sampling techniques to better assess soil carbon concentrations.

While the complete analysis of soil samples is still being finalized, I found the level of soil carbon within densely-forested areas on campus to be rather impressive. Campus forested areas have an unwavering potential to sequester significant amounts of atmospheric carbon.

As Georgia Southern University continues to preserve the areas on campus most crucial to effective climate mitigation, we can satisfy our goal to be great advocates of green initiatives and sustainable practices, and continue to be an exemplary model for onlookers of our outstanding university.



COURTESY OF NRAO/AUI

UNLOCKING THE COSMOS

When Georgia Southern undergraduate William LePain gazes at constellations in the clear night sky, he sees so much more than the magnificent beauty of space. The double major in mathematics and physics applies his knowledge of the laws of nature as he seeks answers into the structure of galaxies and what happens when they collide.

“I think the sciences are beautiful and I find it interesting to ask questions and learn how the world works,” he said. “You have to know quantum mechanics to see how the fusion happens in the center of stars. You also need a decent understanding of thermodynamics to figure out how the energy is transported from the center to the outer layers of the star.”

If all that sounds rather complicated, the senior from Watkinsville, Georgia, confesses his father, a radiologist and his mom, a nurse “have no idea either of what I am talking about when I go home.

However, I love all the sciences and I don’t understand why people get glazed over eyes when I say that,” LePain said.

As a result of his research with Professors James and Sarah Higdon, he was able to put his scientific knowledge to work during a summer research trip when they attended a weeklong workshop in Socorro, New Mexico to work with the Very Large Array (VLA), which consists of 27 massive radio telescopes that work together as one to gather faint radio waves.

It is the coolest thing I have ever done,” he said. “We studied the magnetic fields of the Cartwheel Galaxy and during our visit to the VLA, we looked at the polarization of radio emissions coming from the galaxy. We were looking to see if there was a coherent or incoherent signal. This would tell if the magnetic field was tangled or organized, and also give us a rough estimate on its strength.



LePain said faculty and advance research opportunities like the ones he has participated in is what makes Georgia Southern a very special place.

A BRIGHTER, CLEANER FUTURE

Graduate Student Wins Prestigious Fellowship to Study Renewable Energy

He's published four peer-reviewed papers, three of which were presented at the Society of Automotive Engineers (SAE) World Congress. He's conducted research which hasn't been tried anywhere else in the world and he won two different research grants to do them. He's part of a laboratory attempting to steer the automotive industry closer to renewable energy sources.

And he did it all as an undergraduate student at Georgia Southern University.

Martin Muinos is currently enrolled in the Master of Science in Applied Engineering program with a concentration in Energy Science, but for the last two-and-a-half years, he's been a researcher in Georgia Southern's Renewable Energy and Engines Laboratory (REEL), the most advanced of its kind in the Southeast, and the only one of its kind in the nation with undergraduate researchers. He says he can't imagine getting to do the work he's done here anywhere else.

"If we were to visit a research facility conducting similar research anywhere in the United States, we would be surrounded by post-docs, Ph.D.'s, and grad students," said Muinos. "In the Engine Combustion and Emissions lab at Georgia Southern, I am one of three graduate students working under the supervision of one professor and working alongside 15-20 undergraduate students."

At the laboratory, Muinos has been conducting experiments in Low Temperature Combustion through Reactivity Controlled Compression Ignition (RCCI) with renewable fuels such as biodiesel, and butanol: fuels made from biomass. The process of combining RCCI with these fuels delays combustion in the fuel-efficient diesel engine, which reduces its soot and smoke emissions and cleans up its dirty reputation.

"We're currently working on another paper, testing RCCI with synthetic kerosene, and that's never been attempted with the fuels that we're testing," said Muinos. "Every couple of months I'm in the test cell, running the engine, thinking, 'Wow, nobody's ever done this before.' It's really novel fuels that we work with. It's a great opportunity."

Muinos' research led to his selection as a National Science Foundation (NSF) Graduate Research Fellowship recipient.



He was one of 2,000 graduate students in the nation to receive the \$136,000 fellowship out of 16,500 applicants. He joined recipients from such institutions as Georgia Tech, MIT, Stanford, Princeton and Cornell.

The award will allow him to focus all of his attention and efforts on his research and thesis, and continue to learn under his mentor, Valentin Soloiu, Ph.D., the Allen E. Paulson Distinguished Chair of Renewable Energy, an influence Muinos says goes far beyond the classroom.

"This year, we attended the SAE World Congress in Detroit, and it's amazing how many people know Dr. Soloiu," he said. "I think we talked to three or four presidents of different companies or vice-presidents of different companies that he knows personally and they appreciate him. Previous master's students have gotten jobs in Detroit just from being in this lab. One research company — I think they currently have five of his former students now."

Soloiu said the awards and accolades weren't just the result of his mentorship, however. Muinos entered the University as a transfer from Southern Polytechnic State

University as a sophomore, and within just six months of being introduced to the lab, he was promoted to a full student researcher — "one of the fastest student promotions in years," Soloiu said.

Muinos says the professor's influence has been invaluable, and is a testament to Georgia Southern's reputation as a "large scale, small feel" research University.

"I can go talk to any of my professors at any time," said Muinos. "They're always available — especially Dr. Soloiu. If I have a question, I just email him and he'll email me right back. I'll go to his office or labs and he's there for me."

In the future, Muinos hopes to continue his work in engineering, eventually pursuing a doctoral degree, and working in a national lab. Soloiu said the student has already received an offer from the Argonne National Laboratory in Chicago, which houses some of the brightest minds in the world and boasts \$760 million in funding.

Muinos politely declined. The fellowship gives him more time — time with his research and time to continue learning under his mentor. "It's not every day I'm told I can get paid to be a student," he said.

RESEARCH NOTES

COLLEGE OF SCIENCE AND MATHEMATICS

DISTINGUISHED CHAIR IN MATERIALS SCIENCE EARNS EXCELLENCE AWARD

Professor Marshall Ming, Ph.D., the College of Science and Mathematics Distinguished Chair in Materials Science, is one of two faculty members to receive the 2015 Award for Excellence in Research/Creative Scholarly Activity. Ming and his team of researchers at Georgia Southern are using a three-year \$360,000 grant from the Office of Naval Research to develop coatings that can detect and potentially stop corrosion. The sophisticated anti-corrosion coatings, which will be used on military ships, aircraft and more, could potentially save billions of dollars in maintenance costs for the U.S. Navy.

“This award means a lot. It is a great honor not only for myself but also for all

the current and past members in my lab at Georgia Southern, including postdocs, graduate students and undergraduate research assistants,” Ming said. “This is a wonderful recognition of the hard work and dedication to research excellence of all the lab members as well as my numerous collaborators. With this honor, we strive to accomplish more in research, while providing more opportunities for students at different levels to be engaged in cutting-edge research activities.”

Ming and his researchers also are studying super-repellent antimicrobial coating, anti-bioadhesion coating, antifogging/frost-resisting coating, polymer hybrid composites, and self-healing polymeric materials.



REGASSA NAMED 2015 SCIENCE TEACHER OF THE YEAR

Georgia Southern Biology Professor Laura Regassa, Ph.D., was selected as the 2015 University Science Teacher of the Year for the state of Georgia by the Georgia Science Teachers Association. The award recognizes excellence in science teaching. Dr. Regassa, who has been a faculty member in the Department of Biology since 1999, leads an educational research program at the University and partners with regional school districts to deliver inquiry-based STEM content in K-12 classrooms. She is also director of the STEMstars program, which is designed to enhance graduate education for STEM students.



BIOLOGY PROFESSOR'S AGROECOLOGICAL RESEARCH SHARED GLOBALLY

Department of Biology Professor Subhrajit Saha presented his agroecological research before an international symposium hosted by the Food and Agriculture Organization of the United Nations. He was among more than 50 experts from around the globe who made presentations at the forum in Rome, Italy. With the threat of global warming, agroecology is being recognized more and more as a climate-smart method of producing high quality food. Saha's participation in the symposium also exposed Georgia Southern's research initiatives to a global community of researchers, policymakers and international agencies and organizations.

In addition, Saha visited CATIE, a leading organization in Tropical Agricultural Research, in Costa Rica and Nicaragua. He presented his agroecological research, and along with local scientists visited CATIE's research sites in the two countries. His appearances at international platforms have allowed Dr. Saha to expand his research globally and fostered international research collaborations with faculty and students in other countries.



SUBHRAJIT SAHA

For example, Saha made a presentation at the University of Veracruz (UV) in Xalapa, Mexico, and currently serves on a UV

graduate student research committee. That has resulted in visits by UV students and faculty to his Georgia Southern laboratory.

COLLEGE OF LIBERAL ARTS AND SOCIAL SCIENCES

BRYANT SMALLEY RECOGNIZED FOR SUPPORTING RURAL HEALTH

Bryant Smalley, Ph.D., Psy.D., executive director of Georgia Southern University's Rural Health Research Institute, was named the 2015 Outstanding Educator by the National Rural Health Association at the 2015 Annual Rural Health Conference in Philadelphia, the largest gathering of rural health professionals in the nation.

The award is given annually to an individual who has contributed in substantial ways to the education and training of future rural health professionals, and is selected through a nationally competitive process.

"It is a great honor to be selected," said Smalley. "During my seven years at Georgia Southern University, I have had the great fortune to work with dozens of students and faculty members wishing to focus on rural health issues. The needs in rural health are great, but so too are the opportunities, and it is a privilege to contribute to the development of future rural health professionals."

During his tenure at Georgia Southern, Smalley has received more than \$6 million in federal grants to support the efforts of the Rural Health Research Institute, including a \$5.1 million National Institutes of Health Center of Excellence grant that supports several training programs for undergraduate students, graduate students, postdoctoral researchers and early-stage faculty. One such program, the Disparities Elimination Summer Research Experience attracts a national cohort of students each summer to Georgia Southern for a six-week, full-time immersive research training experience. In the 2015 cycle, more than 400 students competed for the six available slots in the program. Smalley incorporates substantial student engagement into his research, with 10 student co-publications, nearly 40 student co-presentations and over 50 students engaged in research and service learning opportunities.



BRYANT SMALLEY

RESEARCHING IRISH MIGRATION TO SAVANNAH

During the summer of 2015, 10 Georgia Southern students — many from the University Honors Program — participated in the second iteration of the full-credit Inquiry in Ireland program. This initiative is affiliated with the Wexford-Savannah Axis Research Project, a transatlantic collaboration spearheaded by the Center for Irish Research and Teaching (CIRT). The other partners are the Georgia Historical Society and two Irish entities: Waterford Institute of Technology (WIT) and the John F. Kennedy Trust.

The Wexford-Savannah Axis project interrogates the causes and effects of migration from Ireland's southeastern county of Wexford to Savannah. Of Ireland's 32 historical counties, none is more represented in Savannah than Wexford. Such common Savannah family names as Corish, Kehoe, Stafford and Rossiter trace their origins to Wexford.

CIRT Director Dr. Howard Keeley commented, "Our unit and the Honors Program wanted to create an opportunity for undergraduates to conduct primary-source research in an international context. The Wexford-Savannah Axis project allows students to participate in both document-based archival research and oral-history research."

The students spent the first half of the semester examining historical newspapers, business and personal correspondence, shipping and immigration records, and other types of material in two Savannah venues: the Georgia Historical Society and the Andrew



Low House. Then they traveled to southeastern Ireland, where they investigated primary sources at the Wexford County Archives and the Graves & Co. Archive at WIT. For the final phase of the semester, the students relocated to Dublin to work at the National Library of Ireland and the National Archives of Ireland.

"The students' scholarly investigations included records stored at, but as yet uncataloged by, the National Archives of Ireland," said Keeley. "Our hard-working and talented Eagles analyzed documents that no one had handled in over a century. This work constitutes a powerful research experience."

"The trip taught me that primary research involves paying attention to details when handling archives," added engineering major, Kayla Allen. "But I also discovered that you



have to go beyond archives and see for yourself the places you're studying."

To an audience that included the congressman for Wexford and the chair of Wexford County Council, the students presented their findings at the Dunbrody Irish Emigrant Experience Center in New Ross, historically one of Wexford's primary ports.

"My favorite part of the program was presenting our research to Irish natives," said Olivia Perdue, a biochemistry major. "They were genuinely interested in our findings, which made all of our hard work worth it."

COLLEGE OF EDUCATION

PRESERVICE TEACHERS' PERCEPTIONS AND KNOWLEDGE OF GRAPHIC NOVELS

Middle grades education majors Tiara Willingham ('15) and Greer Wright ('15) graduated with experience that some seasoned educators don't have: the ability to conduct research to assess and improve their own teaching and to adapt in order to solve problems they identify.

"These recent graduates are now aware of the importance of educational research and the influence this information and understanding can have on teaching practices and methods," said Christine Draper, the College of Education associate professor who led the research study on the use of graphic novels in content areas and conceptual understanding. Her colleague, Associate Professor Michelle Reidel provided additional support.

The students were researchers on a qualitative study to introduce preservice teachers (students studying to be teachers) to graphic novels, which are often considered "unconventional" reading materials. With national data showing students reading below grade level, the use of graphic novels is one option in a multifaceted approach to try to improve reading. Willingham and Wright, with their faculty researchers, studied how preservice teachers reacted to graphic novels and whether they believed graphic novels are beneficial resources to engage students in content material across the curriculum. Most of the preservice teachers found that graphic novels could be beneficial, but they also emphasized that they needed



more exposure and experience understanding and using the novels before introducing them in the classroom. Their research was published in the *Georgia Journal of Reading*.

NATIONAL YOUTH-AT-RISK CENTER FUNDS FIRST RESEARCH GRANTS

The College of Education's (COE) National Youth-At-Risk (NYAR) Center, now in its second year of operation, has awarded its first research grants to COE faculty. The first project, "Computer Science Education in Rural Schools" will use a qualitative research approach to gain insight into what teachers, principals, curriculum directors and parent representatives feel are barriers to science, technology, engineering, mathematics and

computer science (STEM+C) education in rural areas. Professor Charles Hodges and graduate student Rachel Harris are leading the project, which will focus on rural high schools in the First District Regional Educational Service Agency service region.

The second grant funds "The Impact of a CrossFit Intervention for Youth At Risk at the Boys and Girls Club of Bulloch County," project directed by

Professor Michael Moore and College of Health and Human Sciences Professor Christina Gipson. It will investigate how an afterschool intervention program can impact middle school aged children who have been identified as being at risk.

Using CrossFit philosophy that fitness is broad, general and inclusive, the project will look at how an exercise program impacts academics, physical, social and personal development.

ALLEN E. PAULSON COLLEGE OF ENGINEERING AND IT

PROFESSOR WINS TWO GEORGIA POWER GRAPE AWARDS

George Fu, Ph.D., an associate professor of environmental engineering, has been awarded funding for two proposals through Georgia Power's Georgia Research for Academic Partnership in Engineering (GRAPE) project. Once a year, Georgia Power solicits proposals to address technical needs within the company and within the electric utility industry.

The first proposal awarded is a continuation of a project headed by

Dr. Tiehang Wu, assistant professor of microbial ecology in the biology department, with Dr. Fu as Co-Principal investigator. The project is titled "Microbial conversion of nitrate and selenate to remove nitrogen and selenium from flue gas desulfurization (FGD) wastewater." Dr. Fu's other project funded is called "Color removal from pulp mill effluent using immobilized coal

fly ash (CFA) produced from Georgia coal combustion power plants." Both projects aim to reduce the amount of pollutants in wastewater. The first case involves pollutants in wastewater in coal-firing power plants and the second project investigates the possibility of using dumped waste material (coal fly ash) in order to improve the quality of wastewater from paper mills.

RESEARCH GIFT FROM GULFSTREAM AEROSPACE CORP.

Gulfstream Aerospace Corp. has donated \$175,000 to Georgia Southern's new Manufacturing Engineering degree program (MfgE), with \$100,000 used to advance the infrastructure of the program and to develop the MfgE curriculum and purchase equipment to ensure that students have the benefits

of solid, hands-on experience. The additional \$75,000 is earmarked for co-op programs and internships. "Gulfstream's gift to support the program bolsters not only the company's longstanding relationship with the Allen E. Paulson College of Engineering and Information Technology, but also

demonstrates how important this new program is to train professionals for local and regional industry," said the College's dean, Mohammad Davoud, Ph.D., P.E.

"Gulfstream's future depends on the strength of tomorrow's workforce," said Mark Bennett, senior manager, Community Investment at Gulfstream.

COLLEGE OF BUSINESS

HONORS PROGRAM 2015 RESEARCH SYMPOSIUM

The largest College of Business cohort since the inception of College of Business Honors in 2010 presented senior capstone research papers at the annual University Honors Program Symposium in April on campus. In all, nine College of Business undergraduate students, all graduating seniors, presented their papers at the event. More than 15 undergraduate research projects are currently underway across the College of Business, encompassing all majors in the College.

In addition to presenting at the local University Honors Program Symposium,

students are encouraged to present their findings at appropriate discipline-related conferences. Among others, Logistics and Intermodal Transportation majors Thomas Hamilton ("The State of Logistics Performance Measures: A Comparison of Literature and Practice") and Adam Murfield ("Exploring the Impact of Cargo Theft on Your Supply Chain"), both under the supervision of Chris Boone, Ph.D., and Ben Skipper, Ph.D., presented the results of their research at the 45th Annual Southeast Decision Sciences Conference.

Hamilton's paper was awarded first

place in the Undergraduate Business and Logistics track. Caitlin Tongco ("Long-Term U.S. Cross-Border Security Flows with Developed and Emerging Market Countries Surrounding the Global Financial Crisis"), a finance major under the supervision of Axel Grossmann, Ph.D., presented her research at the Academy of Economics and Finance Annual Meeting and was recognized with the "Best Undergraduate Paper" award for the event. Earlier in the year, Tongco also presented her work to the College of Business Executive Council.

COLLEGE OF HEALTH AND HUMAN SCIENCES

RESEARCHING ATHLETIC PERFORMANCE AND THE BODY'S RECOVERY

The School of Health and Kinesiology has partnered with Georgia Southern's men's soccer team to do research on athletic performance and the body's recovery. Additionally, researchers will provide real-time data to coaches about the performance of student-athletes on the field. Researchers led by Professor of Exercise Science Adam Wells use a Zephyr BioHarness along with a GPS tracker, which is attached to each student-athlete's back, to track a variety of factors including heart rate, G-forces on the body, physiological load, distance traveled, calories burned and training intensity. Their system also records climactic conditions to provide a point of comparison. The data is recorded in real-time and streamed to a computer beside the pitch where researchers can watch each student-athlete's load throughout the game. Recent changes by the NCAA now allow coaches to use this information during a match.

"In the past we've worked with the School of Health and Kinesiology to do VO2 Max testing with our student-athletes to measure their cardiovascular fitness," said Head Coach Kevin Kennedy. "By working with Dr. Adam Wells, we're able to give our guys real-time feedback of how their bodies are responding and if they are about to hit the wall."

"The research team sits right beside or behind our bench at every game," said assistant coach Geoff Del Forn. "During the game, we ask them questions and they let us know when some of our guys are reaching



their limit. Coach Kennedy can use that information when deciding whether or not to substitute a player out of the game."

After each game, the researchers, coaches and student-athletes receive a spreadsheet of each game's data. Some soccer student-athletes run as much as six or seven miles over the course of a match and keep their average heart rate over 150 for the match. Once the

2015 season is complete, the professor and his team will analyze the data to see how the student-athlete's performance changes throughout the season. Additionally, the team is interested to learn how rest, recovery and the climate effect the student-athlete's performance. Wells and his team are working also with the men's tennis program to record data on the hardcourt.

\$1.6 MILLION GRANT FOR ADVANCED NURSING EDUCATION

The School of Nursing recently received a \$1.6 million grant from the Health Resources and Services Administration for advanced nursing education. With the funds, Georgia Southern will establish an Advanced Practice Nurse-Psychiatric Mental Health Nurse Practitioners track to uniquely serve the psychiatric and mental health needs of rural and underserved communities, making it the only university in the state of Georgia to focus on telemedicine training.

"This project will create innovative partnerships between the graduate nursing program at Georgia Southern University and agency clinical partners," said Dr. Melissa Garno, associate professor and BSN program director. "We are very excited to be able to bring this educational opportunity to our state, with the goal of increasing and enriching the quality of psychiatric/mental health services in our communities."



INVESTIGATING GENDER DISPARITIES IN WATER, SANITATION AND GLOBAL HEALTH

Georgia Southern researchers say that while the United Nations (UN-Water) met its recent goal to provide clean water and sanitation to global communities, these numbers might not account for the difficulties in providing these life-saving resources to women. In a correspondence article entitled “Gender disparities in water, sanitation, and global health,” published in *The Lancet*, one of the world’s leading medical journals, Georgia Southern doctoral student Varadan Sevilimedu and Isaac Fung, Ph.D., assistant professor of epidemiology in the Jiann-Ping Hsu College of Public Health, suggest that women are disproportionately affected by the scarcity of water and sanitation more than men.

In the article, the co-authors cite the many difficulties women from low-income countries in Africa, Asia and Latin America face when collecting water for their families and communities. As the primary water-collectors, women have increased risks of infection from a range of faecally transmitted diseases. These infections, added to the intense physical effort of carrying the water, affect their wellbeing and limit their ability to pursue economic opportunities. In addition, and more frightening, is the fact that fetching water, bathing and defecation in the open expose women and girls to sexual harassment and sometimes sexual assault. To escape these dangers, the women will often avoid water sources and avoid personal hygiene, resulting in further psychosocial distress. And with a 40 percent water shortfall estimated by 2030, women will face even more difficulty in finding sources of water. And even though the facts paint a harrowing picture, Sevilimedu says the data



isn't yet clear on the extent of the problem.

“I think we share a similar passion for people who live in low- and middle-income countries, where — in some parts of India for example — access to water, access to care, access to sanitation depends a lot on your

social status, wealth or even gender, it so happens,” said Fung. “And therefore, we hope that what we are doing — however small a manner — that we will be able to contribute to our understanding and have an impact on health policies on a global scale,” said Fung.

STUDENTS HONORED FOR RESEARCH

Graduate students in the Jiann-Ping Hsu College of Public Health at Georgia Southern were awarded the Graduate Student Poster Award for a research project that examined the “Impact of an Educational Video on Prostate Cancer Knowledge among African-American Men.” Brandon Wilcher, Wayne Lawrence, Heather Guerreso, Jarrett Johnson and their faculty mentor, Dr. Levi Ross, presented the findings of their collaborative study at the 2015 Xavier University of Louisiana College of Pharmacy’s Eighth

Health Disparities Conference. The award acknowledged their outstanding contribution to the elimination of racial/ethnic health disparities and achievement of health equity.

When conducting educational outreach in a group format, community health educators face the challenge of finding resources that are comprehensible to audience members with different demographic characteristics. The Georgia Southern researchers illustrated the usefulness of a video intervention to promote prostate cancer prevention

and control knowledge among African-American men in community settings. It also demonstrated that racial concordance between researchers and participants facilitates the collection of sensitive health information from individuals that have traditionally been labeled as “hard-to-reach.” The team’s study results add to the research base, which shows that education delivered in an audio-visual format is suitable for adult learners in middle-aged and older age groups.



ABOUT GEORGIA SOUTHERN UNIVERSITY

For more than 100 years, Georgia Southern, a Carnegie Doctoral/Research University, has stayed true to one purpose: to advance the educational and economic aspirations of Georgians. A member of the University System of Georgia, it is one of the state's premier universities with more than 20,500 students, and is also one of the top choices in the state for new freshmen and HOPE scholars. Georgia Southern

is ranked as one of the most popular universities in the country by *U.S. News & World Report*.

Located just an hour from historic Savannah, Hilton Head Island and the Atlantic coast, Georgia Southern's 900-plus acre campus is nestled in the classic Main Street community of Statesboro. The city's host county of Bulloch continues to grow along with the University and is home to more than 70,000 residents.

The University's traditional residential campus includes three original 100-year-old red brick and white columned buildings anchoring a "historic district" that transitions into contemporary academic and residential buildings — many of which were completed or begun during the past decade's nearly \$300 million of construction and renovation projects.

SUPPORT

For more information on supporting Research and Graduate work at Georgia Southern, please visit GeorgiaSouthern.edu/donate. The University offers multiple ways to show your support.

FOUNDATION FUND LISTINGS:

0857 VICE PRESIDENT FOR RESEARCH
0476 Office of Research Services and Sponsored Programs
0867 Rural Health Research Institute
0271 Senior Companion Program
0951 STEM

JACK N. AVERITT COLLEGE OF GRADUATE STUDIES

0934 Office of the Dean
0859 Jack N. and Addie D. Averitt Memorial Graduate Scholarship
3603 Steven R. and Caroline O. Harless Graduate Studies Scholarship
3461 Women's Network/George and Catherine Peacock Graduate Scholarship
3261 Katie and Tanner Miller/Van Tassell Family Graduate Scholarship
3482 G. Lane and Christine S. Van Tassell Graduate Scholarship