





RESEARCH

Quarterly Research Report

February 2026

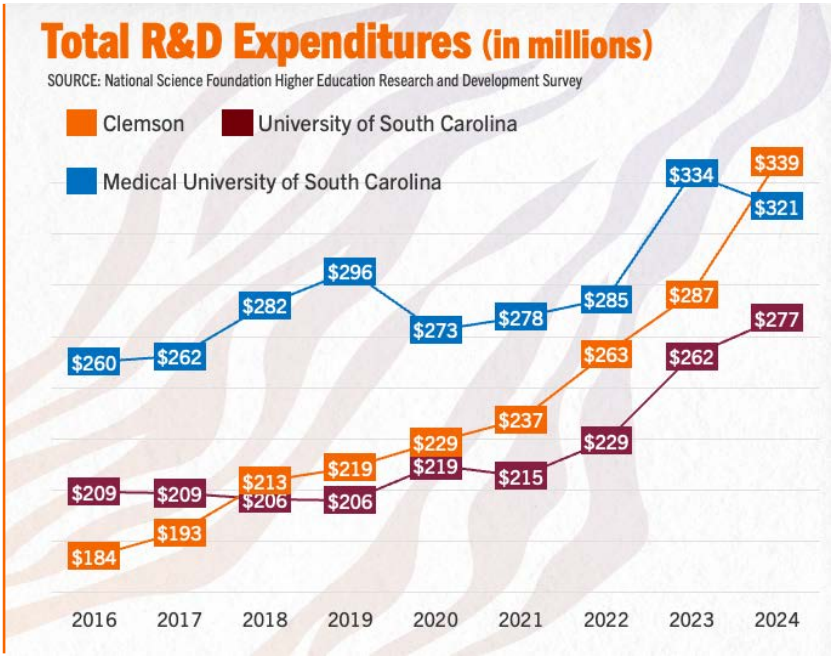
Tanju Karanfil

Senior Vice President for Research,

Scholarship and Creative Endeavors

From the Senior Vice President for Research, Scholarship and Creative Endeavors

Clemson University research transforms lives.



And, Clemson is now the largest research institution in South Carolina, according to analysis of the latest expenditures data released in the National Science Foundation Higher Education Research and Development Survey. In 2024, the latest year for which data is available for all institutions, Clemson surpassed the Medical University of South Carolina in total research and development expenditures (see chart at right).

Despite numerous challenges facing higher education, Clemson continues to post strong growth in its research portfolio. While comparative data isn't available for other universities for 2025, Clemson has just submitted its total R&D figure to NSF for the year. In 2025, Clemson reported $368 million in Total R&D, a year-over-year increase of nearly 9 percent and an amount double the figure reported a decade ago in 2016. More information on Clemson expenditures and other research data is available on pages 4-11.

It is critical to note that expenditures represent much more than dollars spent. Behind these investments are great ideas from passionate researchers working hard to push the boundaries of science, generate and share new knowledge, innovate, and improve the human condition. At Clemson University, our goal is to transform lives through research. We are doing that.

The fruits of this work can be found everywhere. Each year, for example, nurseries grow more than 2 million Clemson seeds for disease-resistant peach trees that are sold to growers around the country. In 2024, South Carolina growers produced more than $174 million in peaches, according to the U.S. Department of Agriculture. But this vital Southeastern agricultural industry is susceptible to disease. Guardian root stock developed by Clemson provides a disease-resistant solution for peaches and other fruits, such as plums, apricots and almonds. Guardian is a great Clemson success story.

Clemson researchers have developed better crops for South Carolina's agriculture industry. They have worked directly with hospitals to reduce hospital readmission and with patients to live healthier. Clemson research is supporting the development of medical diagnostics, therapies and innovative treatments. Clemson research is improving K-12 education and workforce development across the state. Clemson researchers are developing new energy technologies and working with utilities to build strong, resilient grids to deliver power reliably.

Clemson has a growing and diverse portfolio, and our researchers are working directly with utilities, manufacturers, medical providers, K-12 schools, farmers, employers, state agencies, community organizations and others to help improve the economy and lives across South Carolina. Numerous examples of Clemson transforming lives through research are available on pages 13-16.

From the Senior Vice President for Research, Scholarship and Creative Endeavors

Because of this far-reaching impact, Clemson researchers are being recognized for their work. They are earning prestigious fellowships, lifetime achievement awards and early-career recognitions. Likewise, our students are earning prestigious fellowships that provide unique experiential learning opportunities. Examples are on pages 17-18.

There is so much good news to report at Clemson. Soon, the University will open its most technologically advanced facility – the Advanced Materials Innovation Complex – to help shape the next generation of leaders, innovators and entrepreneurs in advanced materials. AMIC will spark new opportunities for collaboration among faculty and students from complementary disciplines to drive advanced materials innovations that impact numerous critical industry sectors, including energy, healthcare, manufacturing, automotive, and others.

Since 2015, Clemson has earned **140 awards** valued at or above $2M, bringing a combined **$825M** to advancee research that transforms lives.

I am excited to see Clemson's impact grow through AMIC and its other unique innovation campuses and research centers. Faculty from every discipline at Clemson continue to pursue new research and creative projects that aim to transform lives. During the first quarter of FY2026, Clemson researchers submitted $188 million in proposals for research funding and received $72 million in competitive research awards. These awards include significant investments to spur innovation across numerous sectors. Consider the diversity among our top grants received as an example (see pages 10-11).

To provide examples of the breadth of research, scholarship and creative endeavors happening at Clemson, the Focus on Faculty section on pages 19-27 includes a profile of one faculty member from each college.

I have great pride in the research at Clemson and the people doing that work. I am excited to see the many ways we continue to transform lives through research in the future. Go Tigers!

Sincerely,

Tanju Karanfil, Ph.D., PE, BCEE, IWA Fellow
Senior Vice President for Research, Scholarship and Creative Endeavors
Clemson University

RESEARCH

RESEARCH METRICS

This section covers institutional research productivity with data on proposal submissions, awards and expenditures.

Executive Summary

- Total R&D expenditures at Clemson increased to $368 million at Clemson in 2025 (page 5).
- Competitive expenditures were $51.5 million in the first quarter of FY2026. Details on expenditures by business unit, innovation cluster, funding source and per tenure/tenure-track faculty member are included on pages 6-7.
- Proposal submissions were $188.2 million for the first quarter of FY2026. Details on proposals per college, along with targets for FY2026, are on page 8.
- Research awards for the first quarter were $72 million. Details on awards per college are on page 9.
- Clemson faculty remain successful at earning high-value awards. A list of the largest grants received in FY2026 is on pages 10-11.

The tables on the following pages provide details on proposal submissions, awards and expenditures per college/unit. Abbreviations used in the tables are listed below.

CAAC: College of Architecture, Art & Construction

CAH: College of Arts & Humanities

CAFLS: College of Agriculture, Forestry & Life Sciences

CBSHS: College of Behavioral, Social & Health Sciences

CECAS: College of Engineering, Computing & Applied Sciences

COE: College of Education

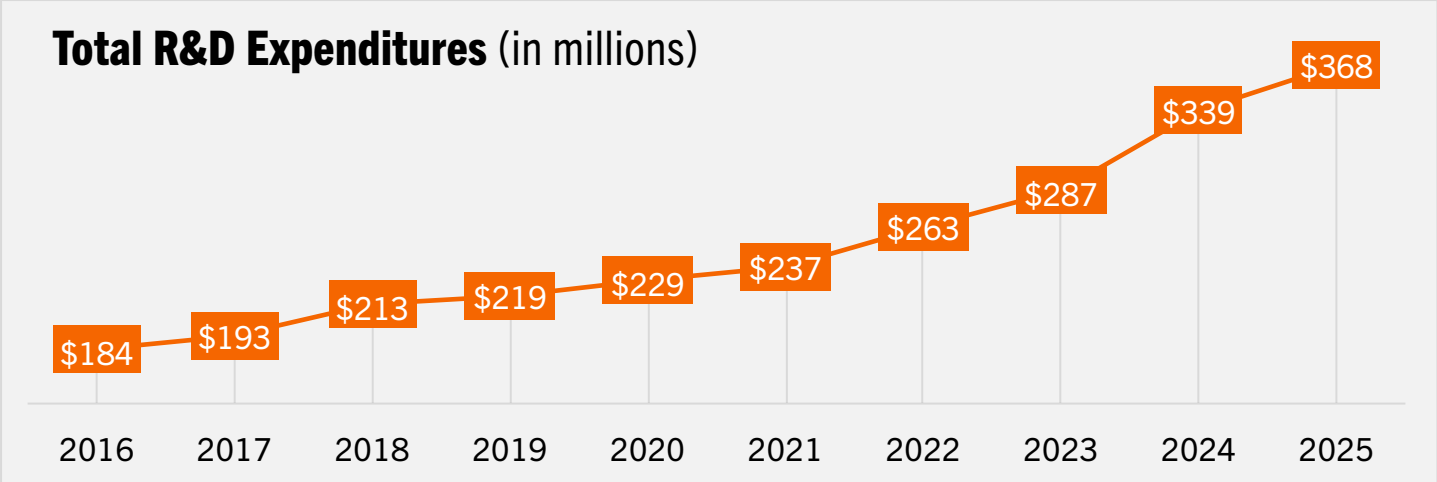
COB: Wilbur O. and Ann Powers College of Business

COS: College of Science

Total R&D Expenditures

Clemson's total R&D expenditures reached $368 million in FY2025, as shown in the graph below. This data includes expenditures on all research revenue, including state support, gifts, external research services, competitive awards and other sources, as reported to the National Science Foundation Higher Education Research and Development (HERD) Survey.

The table below shows various outputs (Ph.D. productivity, licensing revenue, patents, etc.) and the size of the workforce supporting research activity at Clemson.



	2022	2023	2024	2025	1st Quarter 2026
NIH R01-Equivalent Awards	1	6	2	3	1
Doctorates Awarded	242	285	310	318	135
STEM Doctorates Awarded	172	190	197	220	83
Disclosures	50	61	76	73	14
Patents	33	11	13	11	3
Licenses/Options	27	16	20	4	2
Licensing Revenue	$380,286	$392,162	$387,274	$410,660	$32,455
Start-up Companies (based on licenses/options)	4	4	7	8	2
Supporting Workforce					
Graduate Student Enrollment	5,448	6,401	5,872	5,676	5,485
Sponsored Graduate Research Assistants	729	926	1,049	1,031	768
Postdoctoral Fellows	117	112	141	151	151
Research Faculty: Permanent 100% Non-E&G Funded	2	5	4	3	3
Research Faculty: Temporary 100% Non-E&G Funded	32	28	36	56	53

Competitive Expenditures (1st Quarter FY2026)

Competitive expenditures were $51.5 million in the first quarter of FY2026. Competitive expenditures include funds only from competitively bid projects, such as federal grant awards.

Additional details on expenditures by business unit, innovation cluster, funding source and per tenure/tenure-track faculty member are included in the table on the next two pages.

The graph on the following page compares annual competitive expenditure data over the past decade. The orange line shows expenditures for the first quarter for each fiscal year and bar shows year-end data.

Research Expenditures (millions)	2022	2023	2024	2025	1st Quarter 2026
By Business Unit	$141.4	$160.3	$198.5	$218.5	$51.5
CAAC	$1.1	$1.3	$1.8	$1.9	$0.6
CAH	$0.2	$0.6	$1.0	$1.4	$0.3
CAFLS	$25.0	$29.7	$40.7	$45.8	$8.6
COB	$0.7	$1.0	$1.4	$1.6	$0.4
CECAS	$71.7	$76.0	$88.6	$95.9	$23.5
CBSHS	$12.0	$16.7	$21.1	$27.1	$6.2
COE	$3.8	$5.6	$6.6	$7.0	$2.5
COS	$18.5	$23.1	$28.0	$28.7	$7.3
VP for Res & Interdisc Inst	$7.0	$6.2	$7.6	$6.9	$1.3
All Other	$1.5	$1.6	$1.8	$2.2	$0.7
By Innovation Cluster	$141.4	$160.3	$198.5	$218.5	$51.5
Advanced Materials	$18.6	$21.1	$23.6	$25.6	$5.8
Cyberinfrastructure & Big Data Science	$8.2	$7.7	$8.6	$9.8	$2.7
Energy, Trans. & Advanced Manufacturing	$27.7	$29.5	$32.0	$34.5	$9.4
Health Innovation	$26.3	$30.5	$38.7	$42.9	$9.8
Human Resilience	$14.8	$19.1	$24.2	$25.8	$7.0
Sustainable Environments	$26.8	$33.7	$49.7	$55.9	$10.7
Other	$19.6	$20.2	$21.7	$24.1	$6.0

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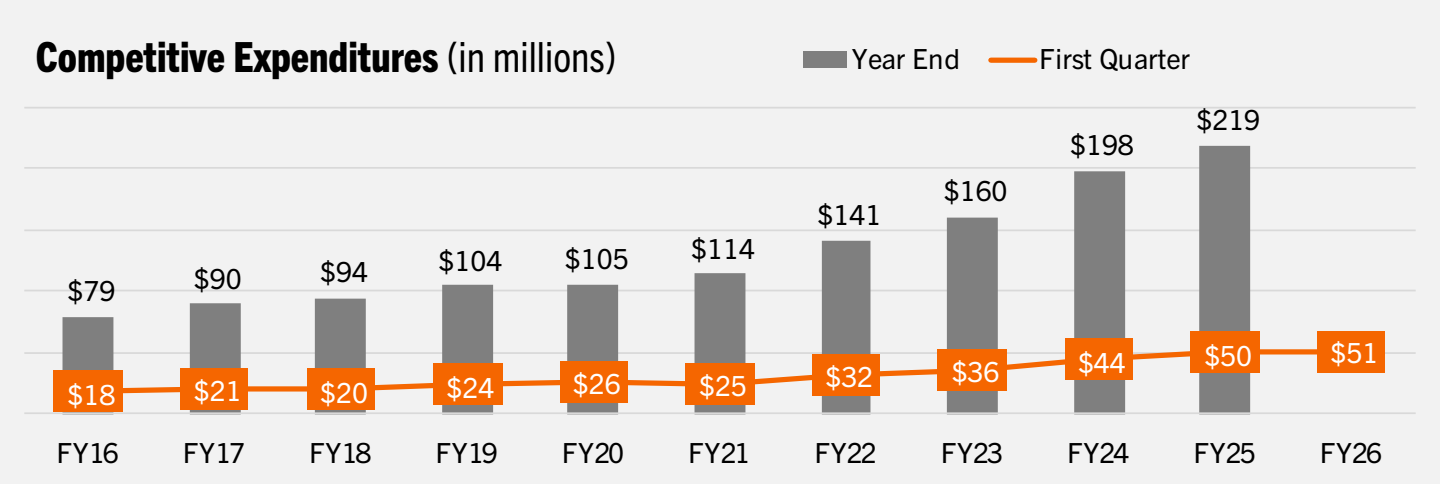
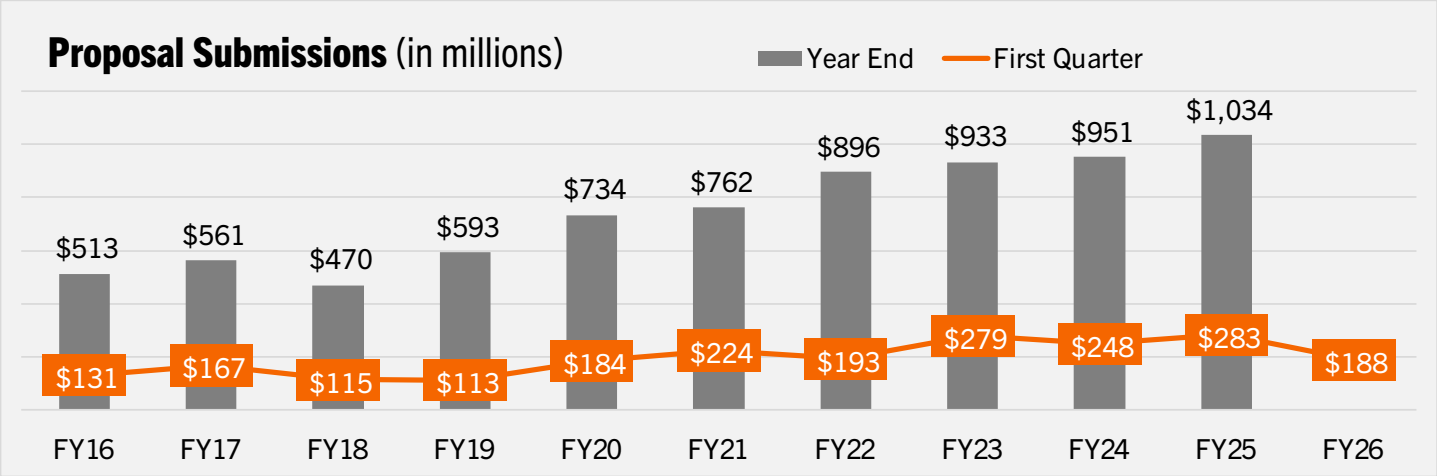
Competitive Expenditures (1st Quarter FY2026)



Research Expenditures (millions)	2022	2023	2024	2025	1st Quarter 2026
By Funding Source	$141.4	$160.3	$198.5	$218.5	$51.5
Federal Government	$125.1	$141.0	$175.0	$193.0	$45.8
Foundations, Societies and Associations	$4.6	$5.4	$6.6	$7.2	$1.6
Industry/Other	$4.8	$5.9	$5.2	$4.9	$1.3
International	$0.5	$0.5	$0.6	$0.5	$0.1
Local Government	$0.9	$0.7	$0.6	$0.8	$0.4
State Government	$6.2	$8.2	$10.4	$12.0	$2.2
Per T/TT Faculty Member					
CAAC	$21,321	$26,231	$35,020	$36,468	$12,246
CAH	$1,864	$5,507	$10,135	$13,125	$2,496
CAFLS	$196,657	$231,788	$301,646	$339,614	$63,500
COB	$6,787	$9,865	$14,564	$15,709	$4,029
CECAS	$296,203	$310,088	$358,535	$386,815	$91,654
CBSHS	$90,220	$121,581	$149,294	$179,508	$43,620
COE	$80,058	$121,114	$124,266	$124,571	$45,502
COS	$120,778	$146,445	$177,322	$177,284	$42,901
Clemson average (Total exp/Total T/TT faculty)	**$142,129**	**$159,792**	**$196,501**	**$207,926**	**$50,000**

Proposal Submissions (1st Quarter FY2026)

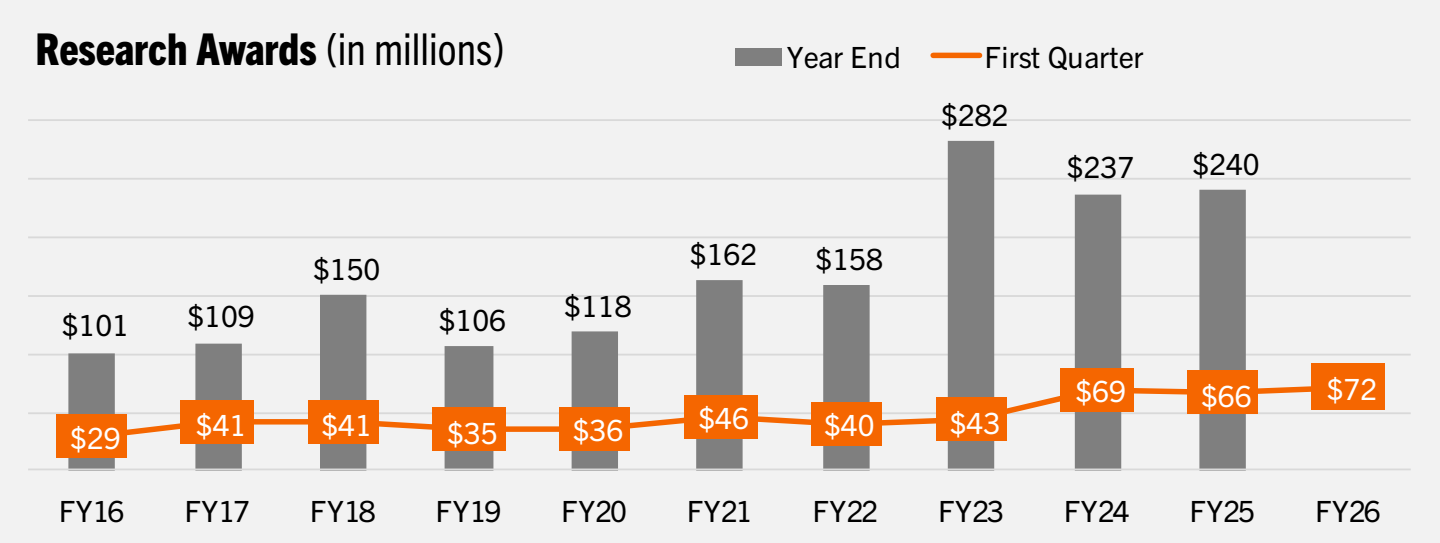
Proposal submissions were $188.2 million for the first quarter of FY2026. The graph shows annual submissions value over the past decade with first quarter comparisons for each year.



Proposal Submissions	2022	2023	2024	2025	1st Quarter 2026	
By Count	1,492	1,680	1,728	1,708	377	
CAAC	24	20	18	30	9	
CAH	11	7	12	14	2	
CAFLS	392	451	455	454	98	
CBSHS	151	183	179	176	36	
CECAS	631	684	701	623	140	
COE	43	45	49	97	25	
COB	9	11	11	14	1	
COS	193	259	262	272	60	
VP for Res & Interdisc Inst	23	11	13	11	3	
All Other	15	9	28	17	3	
By Value (millions)	$896	$933	$951	$1,034	$188.2	FY2026 Targets
CAAC	$6.5	$10.4	$8.6	$9.6	$4.6	**$12.13**
CAH	$1.7	$3.0	$1.5	$0.9	$0.3	**$3.58**
CAFLS	$249.9	$149.6	$188.9	$205.3	$39.4	**$173.22**
CBSHS	$73.1	$106.5	$116.4	$107.6	$19.4	**$123.48**
CECAS	$380.8	$426.0	$429.8	$430.2	$62.8	**$496.13**
COE	$32.3	$34.4	$34.0	$76.8	$10.8	**$39.69**
COB	$4.8	$6.3	$3.1	$4.1	$0.1	**$7.17**
COS	$127.3	$169.8	$125.5	$186.6	$43.5	**$198.45**
VP for Res & Interdisc Inst	$11.0	$6.7	$5.7	$2.1	$0.02	
All Other	$8.9	$20.3	$36.9	$10.6	$7.4	

Research Awards (1st Quarter FY2026)

Research awards for the first quarter were $72 million. The graph below shows annual awards earned over the past decade along with first quarter comparisons for each year. Awards in FY2023 were elevated by the largest single federal award Clemson has ever received, a $70 million grant from USDA. The table provides details on awards per college and young investigator awards received.



Research Awards	2022	2023	2024	2025	1st Quarter 2026
By College/Unit (millions)	$157.6	$282.0	$237.3	$240.4	$71.7
CAAC	$0.4	$3.4	$1.5	$2.3	$0.7
CAH	$0.8	$2.1	$0.7	$0.4	-
CAFLS	$26.9	$107.4	$37.4	$47.8	$10.4
CBSHS	$13.7	$21.0	$27.8	$20.7	$13.1
CECAS	$76.4	$102.8	$109.4	$102.0	$28.1
COE	$5.7	$10.1	$4.9	$13.4	$2.2
COB	$0.9	$1.1	$1.1	$1.9	$0.1
COS	$17.8	$24.4	$34.0	$24.6	$16.7
VP for Res & Interdisc Inst	$6.6	$7.1	$7.0	$7.4	$0.3
All Other	$8.3	$2.6	13.5	$19.8	$0.1
Young Investigator Awards	5	8	10	8	3
NSF CAREER	4	6	10	6	1
NIH KO1	-	-	-	2	-
Air Force Young Investigator	-	1	-	-	1
Army Young Investigator	-	-	-	-	-
DARPA Young Investigator	-	-	-	-	-
EPA Early Career	-	-	-	-	-
DOE Early Career	1	-	-	-	1
Arnold & Mabel Beckman Foundation	-	1	-	-	-

Top Competitive Awards (1st Quarter FY2026)

The U.S. Forest Service awarded Clemson University $18.6 million to lead a large ecological damage assessment and recovery effort across North Carolina's national forests following Hurricane Helene. The storm triggered widespread flooding, landslides and forest loss that reshaped entire watersheds. Clemson was chosen for the project due to its long-standing leadership in applied natural resource science. The project is led by Kyle Barrett, interim chair and professor of wildlife ecology in Clemson's Department of Forestry and Environmental Conservation.

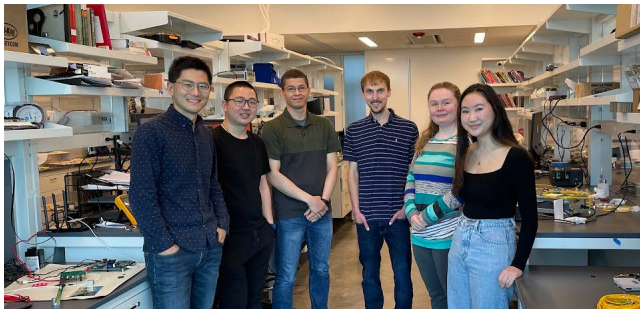
The National Science Foundation (NSF) awarded Clemson $5 million to develop strategies that will help transfer students succeed in STEM education. The goal of STEPS2Clemson (Strategies for Transfers to Engineering to Promote Student Success) is to support domestic, academically talented, low-income students who begin their engineering studies at Tri-County Technical College (TCTC) and transfer to an engineering major at Clemson University (CU) for degree completion. The project is led by Mary Beth Kurz, associate professor of industrial engineering.

The U.S. Department of Agriculture (USDA) awarded Clemson $2.4 million to lead efforts to eradicate the Asian longhorned beetle infestation in the Lowcountry. This non-native pest has the potential to spread to other areas of the United States and cause extensive loss to ornamental and commercial tree species and forested areas, along with associated industries that either utilize wood or its products or depend on tourism related to tree species. The project is led by Jacob Beach, Asian longhorned beetle program manager for the Department of Plant Industry.

NSF awarded Clemson $2.4 million to advance the use of artificial intelligence and machine learning techniques in the development of improved crop varieties, specifically in this case, corn. The research team will advance foundational knowledge and create tools to help identify genetic, metabolic and regulatory mechanisms in corn that can help plants improve nitrogen-use efficiency and increase resilience to abiotic stress, thus reducing fertilizer usage. The project is led by Rajandeep Sekhon, associate professor of genetics and biochemistry.

The National Institutes of Health (NIH) awarded Clemson $1.9 million for a project that aims to transform the way chemists build the essential molecular structures behind modern medicines. The project is led by Byoungmoo Kim, assistant professor of chemistry. Kim is working to create a versatile "toolbox" of reactions that allow scientists to quickly build complex molecules from simple, stable starting materials — such as alcohols and carboxylic acids.

Top Competitive Awards (1st Quarter FY2026)



The U.S. Department of Energy (DOE) awarded Clemson $1.6 million to develop innovative near-detector processors that can solve challenges in handling massive amounts of real-time data in scientific experiments. The goal is to accelerate the pace of data analysis and scientific discovery. The project is led by Tao Wei, professor of electrical and computer engineering.

The Wellcome Trust Foundation awarded Clemson nearly $1.6 million to inform policy that can advance health and energy equity in underserved communities. Led by Chien-fei Chen, professor of sociology, the project will illuminate the physical infrastructures, socio-psychological impacts and social structures that may create household energy burdens and health infrastructure inequalities.

NIH awarded Clemson $1.3 million for research into developing a technique to make RNA medicines longer lasting in the body and to deliver them past the blood-brain barrier for use as therapy for neurologic conditions. The project is led by Jessica Larsen, the Carol and John Cromer '63 Family Endowed Associate Professor of Chemical and Biomolecular Engineering.

DOE awarded Clemson nearly $1.3 million to investigate plutonium oxide, a key material in nuclear technology that is used as fuel for power reactors. Led by Shanna Estes, assistant professor of chemistry, this project will help scientists better understand the stabilization and transformation of plutonium oxides in natural and engineered systems, helping to inform the safe storage and processing of nuclear waste.

NIH awarded Clemson $1.2 million to continue to support opioid use disorder treatment, recovery and prevention in rural South Carolina communities. Led by Lior Rennert, associate dean for health sciences in the College of Behavioral, Social and Health Sciences, the research team will provide screening, treatment and overdose prevention services in high-risk communities and conduct a trial to evaluate the effectiveness of peer support services in reducing overdoses.

RESEARCH

RESEARCH NEWS

This section highlights research news from across the university.

Executive Summary

- Clemson researchers are working directly with utilities, manufacturers, medical providers, K-12 schools, farmers, employers, state agencies, community organizations and others to help improve the economy and lives across South Carolina. Numerous examples of Clemson transforming lives through research are available on pages 13-16.
- Because of this far-reaching impact, Clemson researchers are being recognized for their work. They are earning prestigious fellowships, lifetime achievement awards and early-career recognitions. Likewise, our students are earning prestigious fellowships that provide unique experiential learning opportunities. Examples are on pages 17-18.

Transforming Lives through Research

Clemson researchers are making a big impact in K-12 classrooms, powering a proactive approach to student behavior through the Behavior Alliance of South Carolina. This program equips 18 S.C. school districts to support more than 200,000 students, providing pathways to success and support for lasting change in school systems. The program has reached more than 20 percent of South Carolina's school districts and is not yet done. The researchers behind the Behavior Alliance of South Carolina (BASC) have provided pathways to success and support for lasting change in school systems since forming in Fall 2022. The South Carolina Department of Education Office of Special Education Services funds BASC at Clemson University to work directly with the state to help districts and schools across South Carolina build capacity for supporting students with behavioral needs. **READ MORE**

Clemson scientists are working to release new dry pea cultivars that will give South Carolina farmers a new revenue stream for acreage typically left fallow or planted with cover crops over the winter. Developed under the leadership of Clemson's Dil Thavarajah, the new varieties will be publicly available within a year. Thavarajah and her team are compiling final data from the 2025 trials for submission to Clemson's College of Agriculture, Forestry and Life Sciences' Variety Release Committee, after which the Clemson University Research Foundation will file for Plant Variety Protection patents. The new varieties are USDA-certified organic, requiring no chemical inputs or irrigation. Designed for low-input, rain-fed systems, they have demonstrated yields equal to or greater than conventional crops. **READ MORE**

Surgeons may have a new option for treating children born with heart defects. Clemson alumnus Lee Sierad has been collaborating closely with his friend and former advisor, Dan Simionescu, the Harriet and Jerry Dempsey Professor of Bioengineering at Clemson, to develop a stent that could be part of a heart valve implanted just weeks after birth and could be expanded as the heart grows, offering the chance to replace multiple surgeries with a single operation. Current options force families into grim trade-offs, including multiple open-heart surgeries, oversized implants or years of waiting until an adult valve can fit. The team's device, the ExpandValve, takes a different path. Surgeons would stitch thin sheets of specially processed bovine tissue into the stent. The tissue is biocompatible with humans and remarkably stretchy, capable of doubling in size without losing function. **READ MORE**

Transforming Lives through Research

More than 1,500 South Carolinians have learned to better manage diabetes through a Clemson research collaboration between Clemson Extension, Clemson's Department of Public Health Sciences and South Carolina health systems. The Health Extension for Diabetes (HED) program is reaching rural and underserved populations and equipping communities with tools to manage chronic disease and live healthier lives. Participants report significant improvements in weight loss, diabetes knowledge and self-efficacy, demonstrating the program's measurable impact on personal and population health. In recognition of its impact, HED received the 2025 Priester Culture of Health Award, a prestigious national recognition of its measurable contributions to health and well-being across the state. **READ MORE**

Utilities are working directly with Clemson innovators to keep electricity flowing smoothly. Ramtin Hadidi, an associate professor of electrical and computer engineering at Clemson, is leading a team that aims to create a new grid device called the Smart Hybrid transformer for Abnormal Power Events (SHAPE). The team includes Dominion Energy South Carolina and TECO Westinghouse Motor Company. When a tree limb falls on a power line or other issues arise, the flow of electricity can be briefly interrupted. SHAPE is designed to help keep electricity flowing seamlessly during these short disruptions. The device would be especially valuable for critical facilities such as hospitals and fire stations, as well as data centers and manufacturing facilities, where even momentary power loss can be costly. **READ MORE**

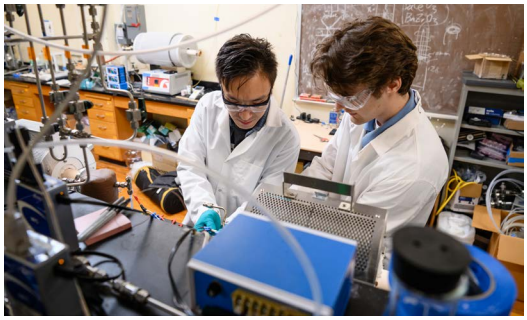
Clemson researchers developed tiny "barcodes" to help scientists better understand disease. Researchers from the College of Science and the College of Engineering, Computing, and Applied Sciences created tiny tags made from DNA and fluorescent dyes that light up in unique patterns, similar to barcodes. The barcodes can help researchers track specific proteins in cells, providing a deeper understanding of how those cells behave, interact, and change. With that information, researchers at Clemson and beyond would be better equipped to understand disease, map tissues and study how cells and microbes interact, all in far greater detail than before. **READ MORE**

About 1,500 patients with hypertension decreased their blood pressure by an average of 9% through Clemson Rural Health. That's just one of the benefits patients are seeing by participating in programs of Clemson Rural Health. As the organizing framework for Clemson University's statewide rural health service delivery and prevention efforts, Clemson Rural Health (CRH) has demonstrated measurable success in advancing the goals of Clemson Elevate by improving health outcomes and transforming lives

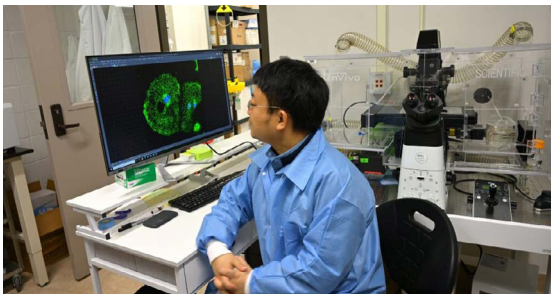
Transforming Lives through Research

across South Carolina and beyond. CRH recently submitted reports to the South Carolina Department of Health and Human Services (DHHS) and Diabetes Free South Carolina (DFSC) outlining significant improvements in chronic disease indicators such as A1c, blood pressure and body weight. **READ MORE**

Clemson recently introduced innovative new technology that can convert fuels, such as hydrogen, into electricity. Researchers Joshua Tong and Kyle Brinkman patented a process to create protonic ceramic cells, PCCs, that can be assembled into stacks to pack more power into smaller, lighter devices than lithium-ion batteries. They registered a company called X-Ion Energy LLC, which was accepted as an SCRA member and received an academic startup grant in November.



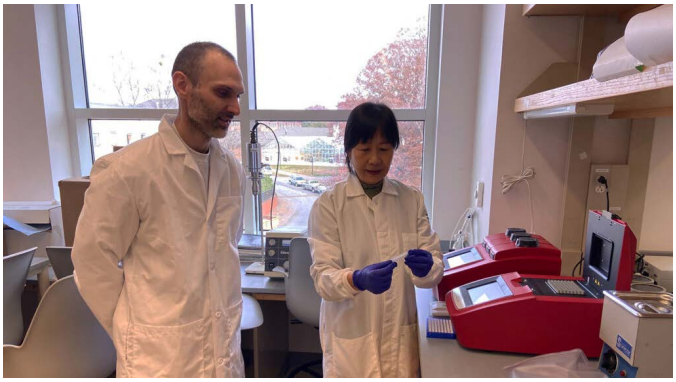
Clemson research assisted in the development of innovative treatment strategies for patients hospitalized with complications stemming from alcohol use disorder. The work helped reduce costly hospital readmissions and led to Clemson's Kaileigh Byrne being honored by Prisma Health with a 2025 Academic Partner Research Award at the hospital system's Health Education and Research Institute Showcase in Columbia. Specifically, Byrne's research utilizes neuroimaging along with computational, genetic and physiological methods to better understand reward processing and decision-making. Byrne examines how factors such as psychopathological symptoms, personality traits, aging and performance pressure affect decision-making outcomes. **READ MORE**



Clemson scientists are using a powerful gene-editing technology called CRISPR to advance human health. Research scientists use CRISPR to selectively modify the DNA of living organisms, allowing them to study gene function in disease, develop diagnostic tests and identify novel treatments. CRISPR, short for Clustered Regularly Interspaced Short Palindromic Repeats, was discovered in bacterial immune systems. When a virus attacks, bacteria save tiny pieces of the viral DNA. The next time the virus appears, the bacteria use CRISPR and a protein called Cas9 to locate and destroy the invader's DNA. Scientists discovered they could copy the mechanism by designing custom guide RNAs that lead Cas9 to the exact spot in human, plant or animal DNA they want to edit. **READ MORE**

Clemson startup company called VRM Labs led by Alexey Vertegel is participating in a clinical trial with Prisma Health and the Cleveland Clinic to test its new disinfection product that works for up to three days, compared to six hours for similar surface sanitizers. The product could reduce the risk of infections acquired in hospitals, clinics, nursing homes and other healthcare facilities. VRM's product includes a mix of ethanol and chitosan, which is derived from shrimp shells and works as a potent antimicrobial against viruses, bacteria and fungi. In VRM's disinfectant, chitosan also serves as an adhesive, forming a long-lasting protective film on frequently touched surfaces.

Transforming Lives through Research



In a promising development for cardiovascular health, scientists at Clemson University and the Medical University of South Carolina have made significant strides in understanding how the human body clears excess cholesterol — a key factor in combating heart disease. Their work could lead to more effective treatments for conditions such as coronary artery disease and stroke, which remain leading causes of death worldwide. At the heart of this research is a deeper examination of how the body's immune system can be harnessed to remove cholesterol from tissues, particularly within artery walls, where buildup can lead to life-threatening blockages. The team's findings center on two proteins—ABCA1 and ABCG1—that play a crucial role in enhancing the ability of immune cells to eliminate cholesterol. **READ MORE**

Four Clemson faculty are developing an artificial intelligence-driven virtual teaching assistant (ViTA) that will provide graduate students the support they need to succeed in the University's highly interdisciplinary medical biophysics program. The medical biophysics (MBIO) program is taught by scientists and engineers from nine different areas, including mathematical and statistical sciences, physics, chemistry, biological sciences, genetics and biochemistry, material sciences, bioengineering, chemical and biomolecular engineering, and nursing. Faculty at Prisma Health also teach. The MBIO curriculum focuses on understanding how fundamental physics principles underlie complex biological and medical phenomena and how scientists can apply those principles to help solve biomedical challenges and provide better health outcomes for people. **READ MORE**

Clemson researchers developed an assistive device to help athletes recover from hamstring injuries. Take a nylon webbed football belt, loop a resistance band through it and tape it down to the bottom of a football cleat. This was one of the initial ideas of Clemson Athletics' team orthopedic lead, Dr. Steve Martin, for a hamstring rehabilitation device. A graduate student in the Department of Bioengineering, Quinn Castner, has spent the past year and a half refining this novel idea under the direction of Reed Gurchiek, Ph.D., assistant professor in the Department of Bioengineering, through the Human Movement Biomechanics Lab (HuMBL). The team received research funding from Clemson University's Robert H. Brooks Sports Science Institute in 2024 to develop a passive assistive hamstring device. They aim to support the muscle recovery process. **READ MORE**

Honors and Achievements

Sarah Stokowski is one of just four faculty from across the world to receive a 2025 ESPN Research Fellowship by the University of Nevada, Las Vegas (UNLV) International Gaming Institute (IGI). Fellowships support research into the complex landscape of responsible gambling messaging within sports media. Stokowski is associate professor of athletic leadership in the College of Education at Clemson University and faculty fellow of the Robert H. Brooks Sports Science Institute. Stokowski's research will combine social media analysis with in-depth interviews to better understand how college students engage with sports betting content online. Using Clemson's state-of-the-art Social Media Listening Center, she will monitor trending conversations and influencer activity across platforms like TikTok, Instagram, YouTube, Reddit and X, formerly known as Twitter. **READ MORE**

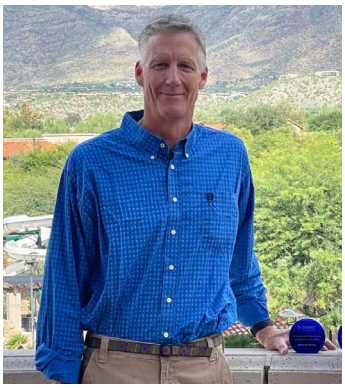
Sumanta Tewari has been recognized internationally for his theoretical contributions to quantum condensed matter physics that could lead to fault-tolerant quantum computers. Quantum computing holds the potential of solving problems too complex for classical computers. Tewari is widely recognized for his work on a new type of quantum particle called Majorana fermions, which are viewed as a possible candidate for qubits, the basic element of a quantum computer. For his contribution, Tewari was elected a fellow of the American Physical Society (APS) in December, a rare and significant honor. **READ MORE**

Jane Dever, director of Clemson University's Pee Dee Research and Education Center (REC), has been inducted into the Cotton Research and Promotion Hall of Fame. Dever, who is also a professor in the University's Department of Plant and Environmental Sciences and a prominent cotton breeder, was recognized for her significant contributions to cotton research, genetics and the industry's growth. Dever is an American Society of Agronomy fellow, a Texas A&M Regents Service fellow and a recipient of the Cotton Genetics Research Award. She has also served on federal advisory councils for both the National Genetic Resources and the Foundation for Food and Agricultural Research. **READ MORE**

Zahra Ghazanfari, a student in Clemson University's Design and the Built Environment Ph.D. program, has earned two prestigious fellowships for her research to support children's mental health. The Center for Health Design has named Ghazanfari a 2025 Joseph G. Sprague Foundation New Investigator Award recipient, and the Foundation for Health Environments Research has selected her as the 2025–26 Griffin/McKahan/Zilm (GMZ) Graduate Fellow in Health Facility Planning & Design. Specifically, she says her research focuses on outdoor spaces designed to support therapeutic care models in pediatric behavioral and mental health facilities. **READ MORE**

Honors and Achievements

Ph.D. student Stuti Garg in the Nieri Department of Construction and Real Estate Development is one of just five students in the U.S. to earn the Chishiki Artificial Intelligence in Civil Engineering Graduate Fellowship offered by The University of Texas at Austin. The fellowship supports graduate research at the intersection of artificial intelligence and engineering. She said that the overarching theme for her research is "high-performance computing for workforce well-being." **READ MORE**



Bob Powell received the Fellow Award from the National Association for Interpretation (NAI) – the professional organization's highest honor – with longtime collaborator, Marc J. Stern, professor of forest resources and environmental conservation at Virginia Tech, for their collaborative career achievements in interpretation. Powell is the George B. Hartzog Jr. Endowed Professor in the Department of Parks, Recreation and Tourism Management (PRTM) and director of the Clemson University Institute for Parks (CUIP). His research interests include environmental education and interpretation, parks and protected area management, ecotourism, outdoor recreation and biodiversity conservation. **READ MORE**

Jessica Larsen received the highly prestigious and competitive NIH Director's New Innovator Award, solidifying her status as one of the nation's leading early-career investigators. She is the Carol and John Cromer '63 Family Endowed Associate Professor of Chemical and Biomolecular Engineering. Larsen is conducting research into developing nanoparticles that can sneak RNA medicines past the brain's defenses to treat diseases ranging from Alzheimer's to cancer. **READ MORE**

RESEARCH

FOCUS ON FACULTY

This section highlights junior faculty members at Clemson University. Each College submitted a profile of one faculty member.

Executive Summary

- Each college provided a brief introduction to a select junior faculty member. Click the links below to read about faculty from the respective college.
  - » College of Agriculture, Forestry and Life Sciences
  - » College of Architecture, Art and Construction
  - » College of Arts and Humanities
  - » College of Behavioral, Social and Health Sciences
  - » Wilbur O. and Ann Powers College of Business
  - » College of Education
  - » College of Engineering, Computing and Applied Sciences
  - » College of Science

College of
AGRICULTURE, FORESTRY AND LIFE SCIENCES

M. Soledad Peresin, Ph.D.

Director

Wood Utilization + Design Institute

Peresin joined Clemson University in 2024, bringing more than 20 years of academic, industrial and international leadership experience in sustainable materials, circular bioeconomy and advanced wood-based technologies. She holds joint faculty appointments in Forestry, Conservation & Environment and Materials Science & Engineering, positioning Clemson as a national leader in bio-based innovation, forest products, and next-generation manufacturing.

Before coming to Clemson, Peresin served as professor at Auburn University, where she founded and led the Sustainable Bio-Based Materials Lab and built a nationally recognized research program in lignocellulosic materials. She previously spent over five years as a senior scientist at VTT Technical Research Centre of Finland, one of the world's leading applied research institutions, where she collaborated closely with industry on fiber-based products, surface engineering and scalable bio-based materials innovation.

Peresin's research focuses on transforming wood-derived biomass into next-generation sustainable materials that advance Clemson's leadership in the circular bioeconomy. Her work integrates nanocellulose engineering, lignin valorization and bio-based polymers to create high-performance composites, films, coatings and hydrogels for applications in packaging, construction and environmental remediation. Internationally recognized for her expertise in cellulose–polymer interfaces and scalable bio-based processing, she also leads innovations in biorefinery approaches and waste-stream utilization. Her research delivers practical, high-impact solutions that strengthen industry competitiveness while supporting regional economic growth and carbon-smart materials development.

As WU+D director, Peresin intends to strengthen South Carolina's $21 billion forestry economy by fostering industry partnerships and statewide engagement, nurturing interdisciplinary research teams, enhancing student training and workforce development and positioning Clemson as a leader in bio-based materials innovation.

Select Accomplishments

- Authored more than 90 peer-reviewed publications and six book chapters, received one patent, and delivered over 100 national and international presentations.
- Received the prestigious NSF CAREER Award in 2021.
- Serves on the Technical Association of Pulp and Paper Industry's Board of Directors, American Chemical Society Cellulose and Renewable Division leadership team and international scientific committees.

College of
ARCHITECTURE, ART AND CONSTRUCTION

Kirk Bingenheimer

Lecturer

Nieri Department of Construction and Real Estate Development

Bingenheimer brings more than over three decades of experience in the residential construction industry to Clemson University and a background steeped in purchasing systems, negotiations, estimating and product development. He has forged successful collaborations with national account representatives and local trade partners.

His application of common-sense pre-construction principles has consistently streamlined processes and driven cost reductions, reflecting his strategic approach to the industry. Bingenheimer's expertise extends to negotiating with national accounts, managing rebates, implementing value engineering plans and onboarding new trade partners. His leadership has been instrumental in shaping department structures through clear job descriptions and job-specific training, fostering a culture of competence and innovation. A seasoned professional, he has demonstrated proficiency in implementing enterprise systems software and creating databases from scratch to run entire purchasing, estimating and contracting functions. His proficiency in cost analysis, tracking cost changes, system setup, itemized quantity takeoff and unit pricing has consistently elevated the efficiency of operations.

Now, as a college professor, Bingenheimer has seamlessly transitioned to his role as a teacher at heart. His love for sharing a wealth of knowledge and industry experience with both former teams and current students reflects a deep commitment to the next generation of construction professionals. His decision to return to teaching is rooted in a desire to contribute to the growth and development of aspiring construction management professionals and the built environment.

Select Accomplishments

- Received the faculty Service-Learning Award from the Pearce Center for Professional Communication.
- Developed a two-semester creative inquiry course serving the Pickens County Habitat for Humanity that emphasizes collaboration of students across the different disciplines in the built environment.
- Serves as a co-principal investigator on projects funded by Housing and Urban Development (HUD) and the Pickens County School District that explore innovative solutions to affordable housing.

College of ARTS AND HUMANITIES

Michael Silvestri, Ph.D.

Professor

History and Geography

Silvestri has been a member of the Department of History and Geography faculty since 2006. He specializes in modern British and Irish history, especially the history of the British Empire and the multifaceted responses of Irish people to British imperial rule. His research has ranged widely, from the publicity campaigns of Irish nationalists in the American South to Indian colonial police support for Mahatma Gandhi's protest movements against British rule.

Silvestri is the author of two books, one co-authored textbook and a dozen chapters and articles in peer-reviewed books and journals. He is currently completing the manuscript for his third book, to be published in 2026. Silvestri has been an invited speaker at international conferences and seminars in the U.S., the United Kingdom, Ireland, India and Japan. He has received grants in support of his research from prominent institutions, the National Endowment for the Humanities and the American Philosophical Society.

His research has also reached non-academic audiences. He has published articles in *An Cosantóir*, the magazine of the Defence Forces of the Republic of Ireland, and *History Ireland*, a popular magazine-format journal of Irish history. Silvestri has also presented his research to U.S. government agencies seeking to understand the historical precedents of modern political violence and insurgency. In 2007, he participated in a U.S. Department of Homeland Security seminar on "What Can and Cannot be Learned from History about Terrorism: A Dialogue Between Social Scientists and Historians." More recently, his research was featured in the Republic of Ireland's RTÉ Radio broadcast/podcast Irish Imperial Lives (2024), where Silvestri was interviewed on the flamboyant and notorious Irish Indian Police officer Charles Tegart, reputedly a master of disguise who survived multiple assassination attempts in India and Palestine.

Select Accomplishments

- Served as reviewer for the National Endowment for the Humanities.
- Served on the Executive Board of the North American Conference on British Studies.
- Currently serves as a co-series editor for the Britain and the World book series.
- Has led nine summer study-abroad experiences for National Scholars students, including trips to England, Wales, Scotland, Ireland and France.

College of
BEHAVIORAL, SOCIAL AND HEALTH SCIENCES

Alyssa A. Gamaldo, Ph.D.

Professor

Institute for Engaged Aging; Psychology

Gamaldo's research focuses on factors that contribute to successful aging and/or risk-adverse health outcomes, such as Alzheimer's Disease and Related Disorders (AD/ADRD). She has conducted an array of studies focused on individual behaviors (e.g., sleep hygiene, stress and resiliency) and environmental factors (e.g., perceptions of neighborhood disorder or cohesion and home environment) that are related to an aging adult's health. She is also involved in national studies identifying accessible and reliable digital tools for detecting risk for poor health outcomes (e.g., cognitive dysfunction and sleep disturbances).

As a faculty affiliate of Clemson's Institute for Engaged Aging (IEA), Gamaldo has incorporated her community engagement research efforts to lead in the establishment of the Outreach, Recruitment, and Engagement (ORE) core of the South Carolina Alzheimer's Disease Research Center (SC ADRC), a statewide partnered initiative of Clemson's IEA, Medical University of South Carolina and University of South Carolina. As director of the ORE core, she has overseen several community outreach initiatives designed to increase awareness of the disease process and interest in joining our statewide and national registries focused on learning and engaging in research on aging and health, particularly related to AD/ADRD risk and prevention.

Gamaldo has published 100 peer-reviewed journal articles, and her projects have been funded by federal (e.g., National Institutes of Health) and non-federal (e.g., Southern Gerontological Society) organizations.

Select Accomplishments

- Principal Investigator and co-Investigator on several National Institutes of Health (NIH) grants (awards over $5M) since joining the faculty at Clemson University.
- With SC ADRC ORE team at Clemson University, she has conducted several engagement activities (e.g., health fairs) in rural and urban communities designed to strengthen AD/ADRD awareness and social interactions among community resource providers, aging residents and researchers.
- Mentored undergraduate and graduate students who have received national scientific conference awards (e.g., Southern Gerontological Society and Gerontology Society of America).
- Serves as Deputy Editor-in-Chief for the *Journals of Gerontology: Psychological Sciences*.
- Committee Member on the NIH review panel for the Biobehavioral Mechanisms of Emotion, Stress, and Health (MESH) study section.

Wilbur O. and Ann Powers College of BUSINESS

Marc Cussatt, Ph.D.

Assistant Professor

School of Accountancy

Cussatt's research focuses on financial accounting, auditing and taxation, with particular attention to how accounting information and disclosures affect capital markets, corporate governance and professional practice. He has published 13 peer-reviewed articles; eight of those in his five years at Clemson. His work has been published in leading academic journals such as *The Accounting Review*, *Contemporary Accounting Research*, *Accounting Horizons*, *Journal of Accounting*, *Auditing & Finance*, and *Issues in Accounting Education*. His paper "The Usefulness of Accounting Information Resulting from Standard-Setting Compromises: The Pension Accounting Case" received the Best Paper Award at the 2016 AAA Western Region meeting.

Cussatt's recent projects examine auditor reputation in the wake of viral events, the aspirations of women in public accounting during the COVID-19 pandemic and the usefulness of tax accounting disclosures.

Additionally, he teaches both financial accounting and data-driven courses. He was brought to Clemson to design and launch an advanced analytics course for the MPAcc program, incorporating platforms such as Power BI, Alteryx and other emerging technologies to prepare students for the evolving demands of the profession. Cussatt also launched and serves as the lead faculty for the spring break study abroad program, "Lions and Tigers: Exploring the Origins of Accounting and Finance in Italy." This program is the only study abroad offering in the Wilbur O. and Ann Powers College of Business tailored specifically to accounting and finance majors and provides a shorter, more accessible alternative to the existing summer and semester-long programs.

Select Accomplishments

- Barnes, B., Cussatt, M., Dalton, D., and Harp, N. 2024. "Overloaded and Underappreciated: Declining Partner Aspirations Among Women Public Accountants During the Covid-19 Pandemic." Forthcoming in *Contemporary Accounting Research*.
- Barnes, B., Cussatt, M., Demeré, P. 2024. "Can a Viral Blunder Damage Auditor Brand Name Reputation? Evidence from Envelopegate." Forthcoming in the J*ournal of Accounting, Auditing, and Finance.*
- Cussatt, M., Demeré, P. 2023. "The Usefulness of Tax Accounting and Disclosures: Evidence from Pension Returns." *The Accounting Review* 98(1): 163-19.

College of EDUCATION

Meihua Qian, Ph.D.

Associate Professor

Education and Human Development

Qian is an associate professor of Educational Psychology and Quantitative Methodology in the Learning Sciences program of the Department of Education and Human Development. She is also the director of the Artificial Intelligence & Measurement (AIM) lab and co-director of the Connected Learning in Education and Research (CLEaR) Lab in the College of Education.

Her research focuses on machine learning, AI education, creativity assessment, game-based learning, test bias and item response theory models. She has published her work in leading academic journals, including *Computers in Human Behavior*, *Creativity Research Journal*, *Elementary School Journal*, *Psychology of Aesthetics*, *Creativity and the Arts (PACA)*, *Journal of Creative Behavior*, *Journal of Psychoeducational Assessment* and *Psychology & Marketing*. She also serves on the editorial boards of several top journals in her field and regularly contributes as a reviewer.

Qian's research at Clemson University has been supported by the National Science Foundation (NSF), Google, William and Flora Hewlett Foundation and other agencies. She has received more than $3.18 million in research funding in the role of principal investigator (PI) or co-PI.

Qian has received several awards, including the American Educational Research Association (AERA) Study of Deeper Learning Fellowship Award in 2016-2018, Clemson CoE Total Citation Achievement Award in 2024, Clemson CoE Citations for a Single Publication Award in 2024, Clemson CoE PI Grant Achievement Award in 2024 and American Psychological Association (APA) Division 38 Best Poster Award in 2025.

Select Accomplishments

- Serves as co-PI and associate director of the NSF-funded NRT program "Inverse Design Training in Advanced and Sustainable Composites (IDeAS Composites)". Working closely with industry partners, the program will prepare 50 graduate students to thrive as leaders in the era of artificial intelligence.
- Recipient of the William and Flora Hewlett Foundation-AERA Study of Deeper Learning Fellowship.
- Recipient of Clemson University Research, Scholarship and Artistic Achievement Award (URSAAA) and the Clemson Board of Trustees Recognition for Notable Faculty Achievement Award.

College of
ENGINEERING, COMPUTING AND APPLIED SCIENCES

Hai Yao, Ph.D.

Professor

Bioengineering

Yao is the Ernest R. Norville Endowed Chair and Professor of Bioengineering at Clemson University and also serves as the associate department chair for the Clemson-MUSC joint Bioengineering Program in Charleston, where he holds a dual appointment in the College of Dental Medicine. He is responsible for helping guide Clemson University and its collaborators in defining areas of biomedical research that are innovative, novel and have a high potential for impact to address societal needs.

Yao's research focuses on the biomechanical function, degeneration and regeneration of musculoskeletal systems, including the temporomandibular joint (TMJ), spine and knee joint. The research is conducted at multiscale levels from the whole body to single cells, including imaging-based joint kinematics (body level), tissue characterization and constitutive modeling (tissue level), single-cell mechanics and mechanobiology (cell level) and molecular transport and assembling (molecular level). This research facilitates earlier diagnosis, novel treatment development and outcomes assessment of temporomandibular disorders (TMDs).

In addition to conducting his own laboratory research and research training, Yao leads several research initiatives that impact students, junior faculty, and society in general, including an NIH-funded Center of Biomedical Research Excellence (COBRE) - the S.C. Center for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - that helps develop a critical mass of investigators who are able to compete effectively for independent research funding through mentorship and core facilities, and an NIH-funded institutional training grant that educates and prepares highly qualified doctoral, dual degree and postdoctoral students for careers that have a significant impact on oral and craniofacial health.

Select Accomplishments

- Earned the SCRA Applied Researcher of the Year Award in 2025 for conducting breakthrough research in emerging technologies.
- Holds numerous patents and founded Apex Orthopedic Technologies, a medical device startup to treat spinal deformities in young children.
- Has authored more than 100 papers in peer-reviewed journals, including *Lancet*, *Nature Biomedical Engineering*, *Cell Stem Cells*, *Nature Materials*, *Advanced Healthcare Materials*, *Advanced Science* and *Nature Communications*.
- Has earned research funding from the NIH totaling more than $44 million as PI.
- Trained more than 30 Ph.D., DMD/Ph.D., MD/Ph.D. students and post-doctoral fellows who have earned numerous fellowships and awards themselves.

College of SCIENCE

Shahid Mukhtar, Ph.D.

Professor

Genetics & Biochemistry

Mukhtar is a plant systems biologist whose research integrates spatial and single-cell omics, multi-omics network biology and artificial intelligence to uncover new regulatory mechanisms underlying plant stress resilience, plant-microbe interactions and human disease. His laboratory investigates non-canonical elements of the genome such as orphan genes, novel transcribed regions and extrachromosomal circular DNA across Arabidopsis, soybean, duckweed and other systems, combining cutting-edge genomics with experimental validation. He established Stereo-seq spatial transcriptomics facilities at Clemson, positioning the university as a growing national hub for high-resolution spatial biology.

Mukhtar has authored over 110 peer-reviewed publications, including work in *Science*, *Nature Portfolio* journals and *PNAS*. He has also edited three books with Springer and holds a U.S. patent in development for inflammatory skin disease therapeutics. His research impact spans both agriculture and health, including collaborations with the University of Alabama at Birmingham Heersink School of Medicine on neuroendocrine and skin cancers. He has delivered 75 invited talks globally and serves as Section Lead Editor for *Communications Biology* (*Nature Portfolio*). In recent years, Mukhtar has secured more than $6 million in research funding, including ~$2.1M as principal investigator (PI), from agencies such as the National Science Foundation.

His leadership includes serving as Director of the Multinational Arabidopsis Steering Committee (2021–2024) and current Chair of the Plant Immunity Subcommittee, helping coordinate global advances in plant biology and organizing major international conferences across North America, Europe and Asia. Within professional societies, he has served as chair, vice chair, secretary/treasurer and executive committee member of the Southern Section of the American Society of Plant Biologists.

Select Accomplishments

- Received the President's Award for Excellence in Teaching and the Dean's Award for Excellence in Teaching in 2021 while at the University of Alabama at Birmingham.
- Has guided research experiences for more than 60 undergraduate and K-12 students as well as over 25 graduate trainees who have gone on to earn competitive honors and fellowships.
- Awarded the Odessa Woolfolk Community Service Award (2023) for his community service in STEM education.

Division of
RESEARCH

Quarterly Research Report

February 2026