School of Medicine Office of Research

2025 Annual Report

UNIVERSITY OF
South Carolina
School of Medicine Columbia

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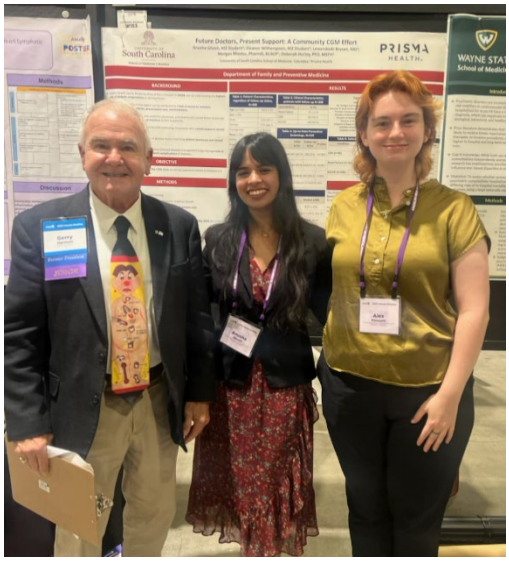
Year in Review

The past year marked a period of meaningful growth and momentum for the University of South Carolina School of Medicine Columbia (SOMC), driven by strengthened collaboration with The Center for Clinical & Translational Research (ClinTrUSC) and a renewed focus on clinical and translational research across the Midlands. This partnership is expanding research capacity, accelerating interdisciplinary discovery, and building new pathways for faculty, residents, and fellows to engage in impactful scholarship.

Equally important has been the outstanding performance of our students, whose achievements in research and national recognition reflect a vibrant culture of inquiry and mentorship.

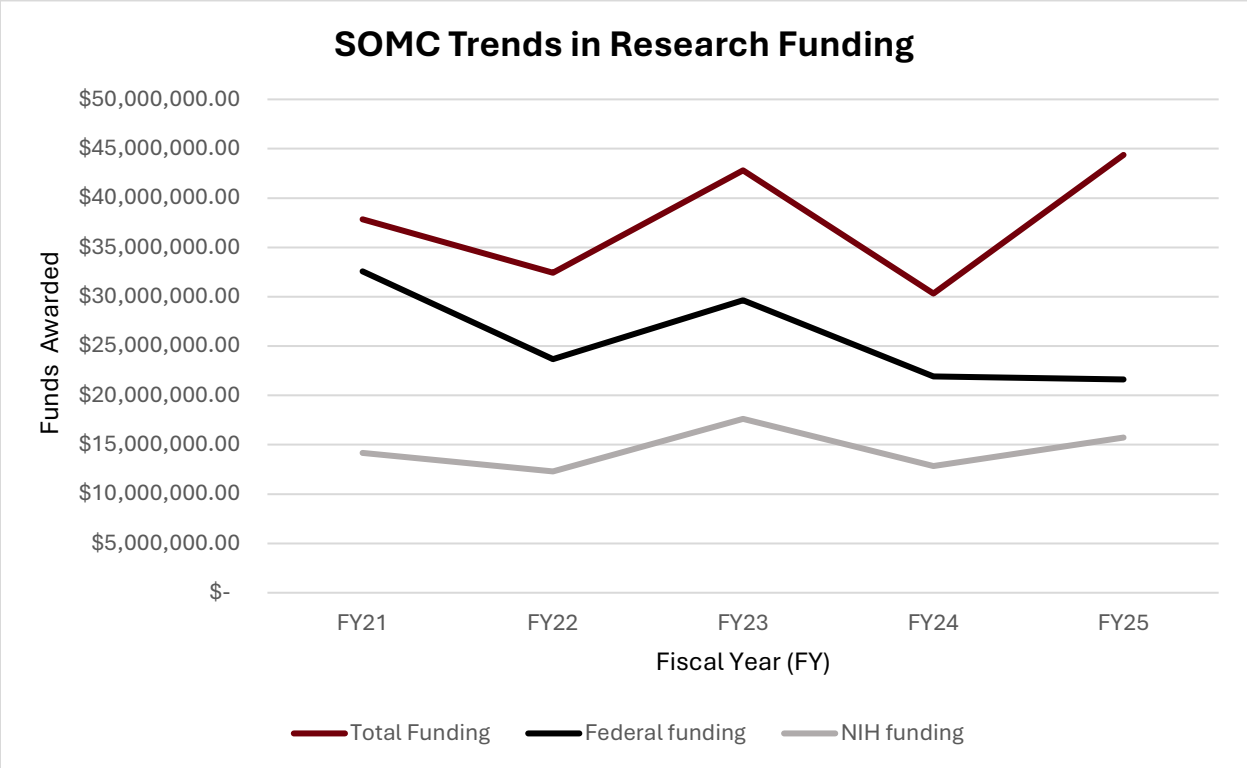
In combination with our other programs and initiatives, these advances support SOMC's commitment to meeting the health needs of South Carolina and beyond through exemplary biomedical education, transformative research, and compassionate care for all.



Increases in Funding

In Fiscal Year 2025 (FY25), the SOMC achieved a significant rise in overall research support, with **total funding increasing to $44.3M**, the highest level in the past five years and a substantial jump from **$30.3M in FY24**. NIH funding also experienced a strong increase, climbing to **$15.7M**, up from **$12.8M** the previous year. These gains are especially noteworthy given the increasingly competitive national landscape for federal research support. Despite challenges, our faculty continue to excel—developing compelling, innovative proposals and sustaining a high level of scholarly productivity. Their success reflects the depth of expertise across our institution and the strength of our research culture.

SOMC Funding Overview			
	Total Funding	*Federal funding*	*NIH funding*
FY21	$ 37,847,078.00	$ 32,569,904.00	$ 14,181,279.00
FY22	$ 32,441,091.00	$ 23,674,882.00	$ 12,294,762.00
FY23	$ 42,807,309.00	$ 29,631,832.00	$ 17,619,613.00
FY24	$ 30,320,823.00	$ 21,929,817.00	$ 12,838,066.00
FY25	$ 44,372,075.00	$ 21,614,967.00	$ 15,722,426.00



ClinTrUSC

ClinTrUSC was established to address the critical need for advanced clinical and translational research in the Midlands of South Carolina.

Leveraging a significant $11M grant from the National Institutes of Health, ClinTrUSC aims to build a sustainable foundation of clinical and translational research capacity at USC. By bringing together expertise from across USC, including the SOMC, the Arnold School of Public Health (ASPH), the College of Pharmacy (COP), the College of Nursing, the College of Arts and Sciences (CAS), and the School of Social Work, ClinTrUSC taps into a robust research workforce that transcends the traditional boundaries of academic medicine.

Pilot and Developmental Research Project Program

The Health Research (HR) Core is the hub for the Pilot and Developmental Project Program, allocating $500K annually to support pilot and developmental projects, fostering collaboration between clinicians, public health scientists, and bench researchers.

In 2025, the P&D program contributed $514,274 to fund 4 pilot projects and one Developmental project. The funded projects are listed below:

Pilot Awards

- **Targeted Therapeutics in Pediatric Oncology**
  PI: Michael Wyatt (COP)
  Co-Is: Campbell McInnes (COP), Phillip Buckhaults (COP)
  Clinical Collaborator: Stuart Cramer (Prisma Health)

- **Cysteine Adducts and Diabetes Complications**
  PI: Norma Frizzell (SOMC)
  Co-I: Gerardo Piroli (SOMC)
  Clinical Collaborator: Ambika Rao (Dorn VA)

- **Train Your Brain Fitness SC**
  PI: Elizabeth Regan (ASPH)
  Co-I: Christine Pelligrini (ASPH)
  Clinical Collaborator: Rob McMahon (SOMC, Prisma Health)

- **Nano-ERASERs for TNBC Therapy**
  PI: Peisheng Xu (COP)
  Co-I: Hexin Chen (CAS)
  Clinical Collaborator: Julian Kim (Prisma Health)

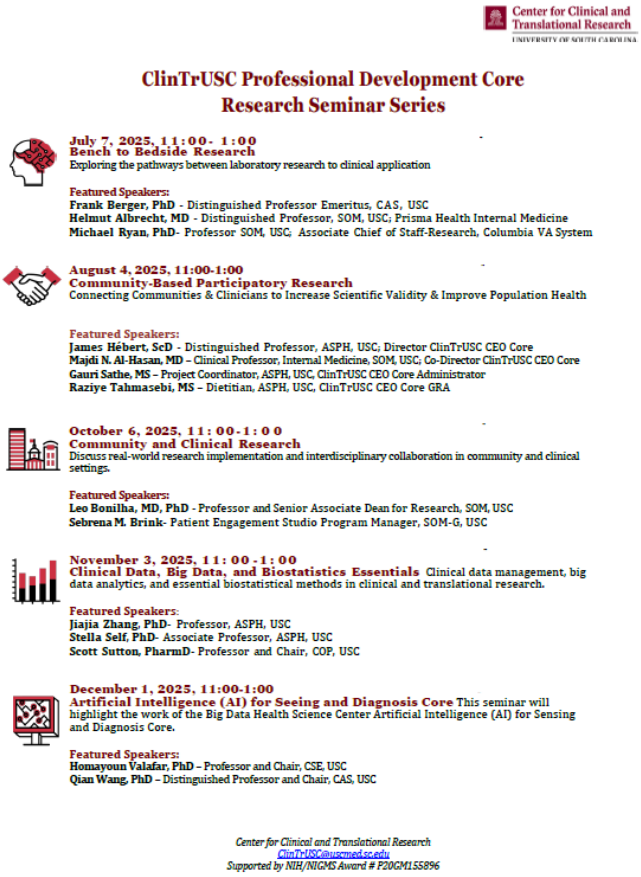
Developmental Award

- **Mindful Walking and Executive Function in Older Adults**
  PI: Chih-Hsiang Yang (ASPH)
  Co-I: Xiaoxue Fu (CAS)
  Clinical Collaborator: Rachelle Gajadhar (Prisma Health)

Seminar Series

The Professional Development (PD) Core is a central resource for educational, training, and mentoring services that supports researchers by advancing grantsmanship, fostering transdisciplinary research, and providing ongoing mentorship and development to enhance Clinical and Translational research.

In 2025, the PD core organized a Research Seminar Series. These monthly sessions brought together experts across disciplines to share practical insights on clinical and translational science in South Carolina.



Center for Clinical and Translational Research
UNIVERSITY OF SOUTH CAROLINA

ClinTrUSC Professional Development Core
Research Seminar Series

July 7, 2025, 11:00- 1:00
Bench to Bedside Research
Exploring the pathways between laboratory research to clinical application

Featured Speakers:
Frank Berger, PhD - Distinguished Professor Emeritus, CAS, USC
Helmut Albrecht, MD - Distinguished Professor, SOM, USC; Prisma Health Internal Medicine
Michael Ryan, PhD- Professor SOM, USC; Associate Chief of Staff-Research, Columbia VA System

August 4, 2025, 11:00-1:00
Community-Based Participatory Research
Connecting Communities & Clinicians to Increase Scientific Validity & Improve Population Health

Featured Speakers:
James Hébert, ScD - Distinguished Professor, ASPH, USC; Director ClinTrUSC CEO Core
Majdi N. Al-Hasan, MD – Clinical Professor, Internal Medicine, SOM, USC; Co-Director ClinTrUSC CEO Core
Gauri Sathe, MS – Project Coordinator, ASPH, USC, ClinTrUSC CEO Core Administrator
Raziye Tahmasebi, MS – Dietitian, ASPH, USC, ClinTrUSC CEO Core GRA

October 6, 2025, 11:00-1:00
Community and Clinical Research
Discuss real-world research implementation and interdisciplinary collaboration in community and clinical settings.

Featured Speakers:
Leo Bonilha, MD, PhD - Professor and Senior Associate Dean for Research, SOM, USC
Sebrena M. Brink- Patient Engagement Studio Program Manager, SOM-G, USC

November 3, 2025, 11:00-1:00
Clinical Data, Big Data, and Biostatistics Essentials Clinical data management, big data analytics, and essential biostatistical methods in clinical and translational research.

Featured Speakers:
Jiajia Zhang, PhD- Professor, ASPH, USC
Stella Self, PhD- Associate Professor, ASPH, USC
Scott Sutton, PharmD- Professor and Chair, COP, USC

December 1, 2025, 11:00-1:00
Artificial Intelligence (AI) for Seeing and Diagnosis Core This seminar will highlight the work of the Big Data Health Science Center Artificial Intelligence (AI) for Sensing and Diagnosis Core.

Featured Speakers:
Homayoun Valafar, PhD – Professor and Chair, CSE, USC
Qian Wang, PhD – Distinguished Professor and Chair, CAS, USC

Center for Clinical and Translational Research
ClinTrUSC@uscmed.sc.edu
Supported by NIH/NIGMS Award # P20GM155896

RADAR

In August 2025, the PD core launched a new program to support resident and fellow research called RADAR (Research Advising & Development for Advancing Resident and Fellow Research).

The goal of RADAR is to provide research project development advising and support, particularly regarding project feasibility and statistical and data management design to Prisma Health's Midlands residents and fellows.

This program is managed by ClinTrUSC and is supported through Prisma Health. Through this collaboration we aim to strengthen the rigor of clinical research, increase scholarly output, and the academic advancement of residents and fellows.

RADAR services

Pre-project Support

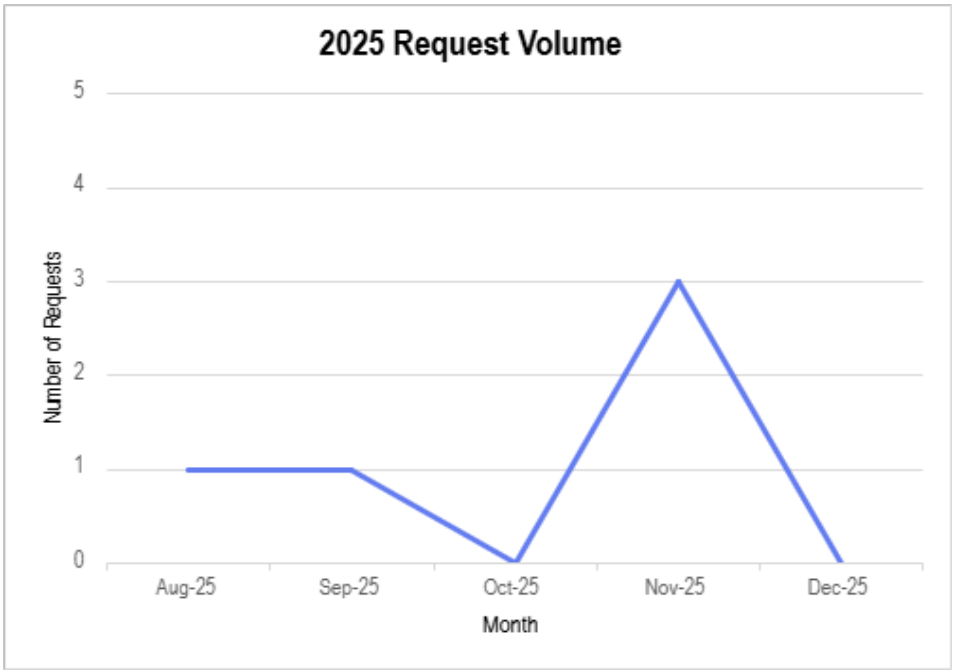
- Project Feasibility Review
- Biostatistical Consultation
- Determining appropriate analyses & power calculations
- Data Management Plans
- Preparing Data Request
- Connecting resident/fellow with mentors, as applicable

Post-project Support

- Data Analysis
- Data interpretation and report preparation

RADAR Progress for 2025

Projects Overview		
Total Requests	5	
Requests by Status		
Awaiting Consultaion	3	60%
Preparing for IRB submission	2	40%
Awaiting DSC approval	0	
Awaiting IRB approval	0	
In Progress (IRB approved)	0	0%
Complete	0	0%
Requests by Department		
Psychiatry	1	20%
Internal Medicine	0	0%
Pediatrics	0	0%
Emergency Medicine	3	60%
General Surgery	1	20%



SOAR Program

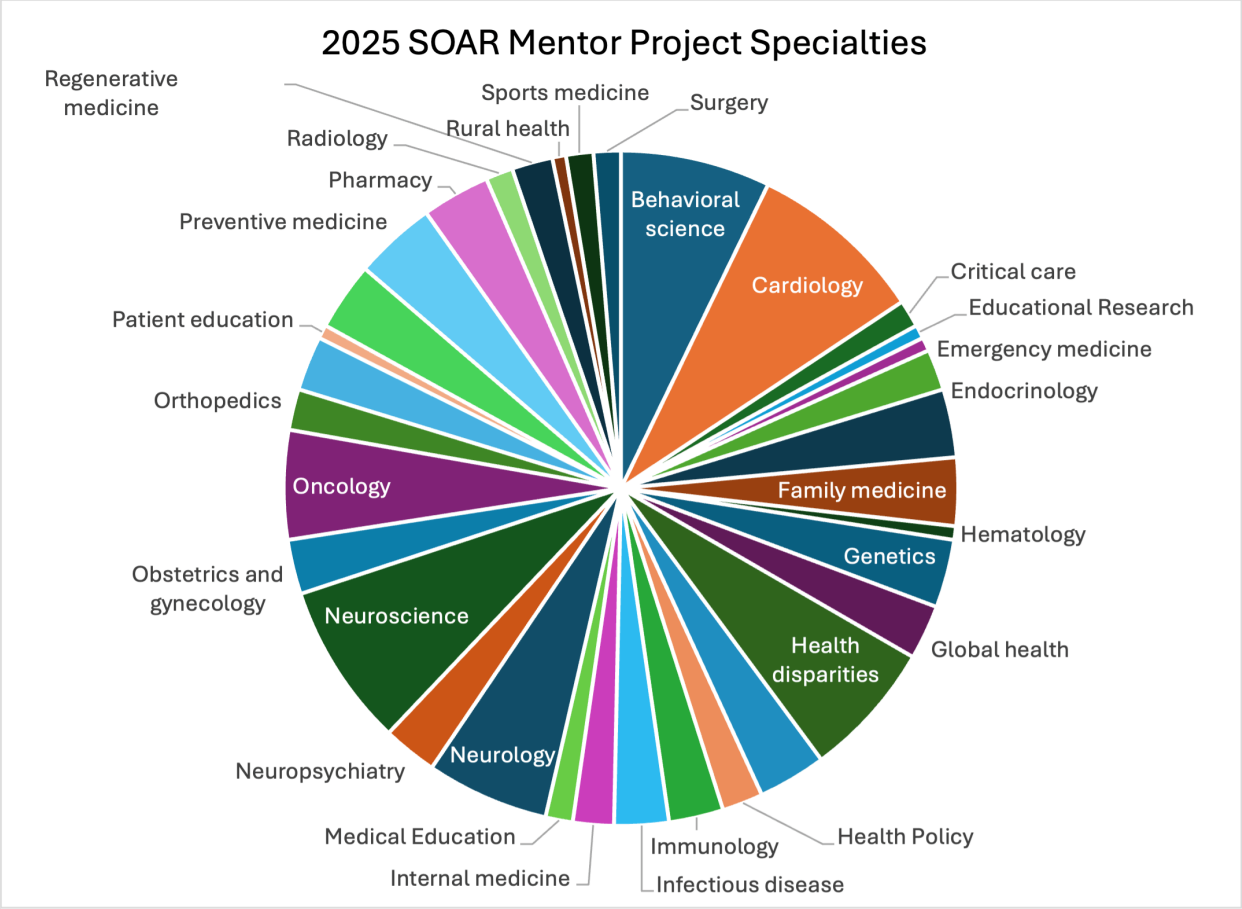
The Student Opportunities for Academic Achievement through Research (SOAR) program is a full-time eight-week summer program that enables USC SOM medical students to work closely with faculty mentors, exploring basic science, translational, or clinical research, or projects focused on health care quality or patient safety, or educational research. Students and mentors apply for participation in the fall, followed by a selection and matching process that aims to align students' interests with mentors' expertise. A top priority of the OOR is to provide access and support to research for our medical students and the SOAR program is the main avenue through which that is achieved.

Program performance

64 students from the Class of 2028 participated in SOAR.

90% of students reported being satisfied with their SOAR experience in 2025.

93% of SOAR students continue research either with their SOAR mentor or another mentor after their summer internship.



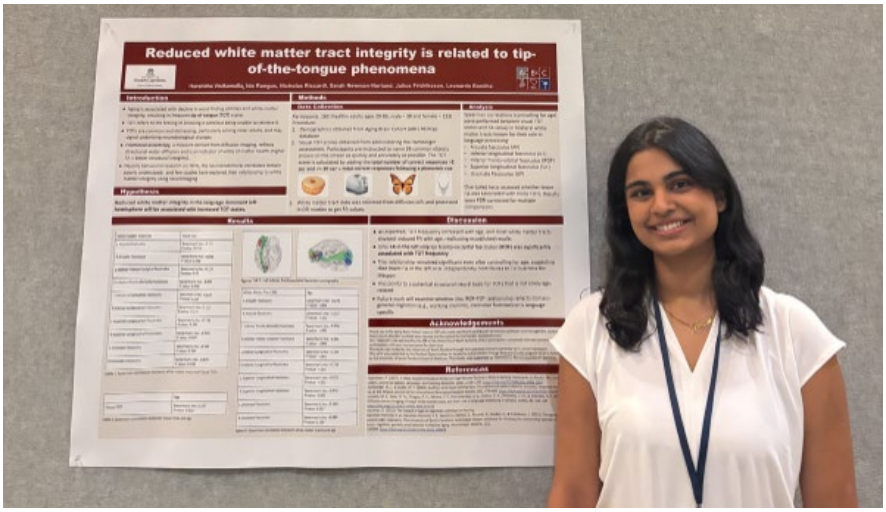
Student Success

Second-year Medical Student Stefanie Wood

Seven publications in 2025, including two papers selected for press release by the American Academy of Neurology this October.

SOAR Students Njasi Oji (right) and Briana Pope (left)

AMA Research Challenge Semi-Finalists - Top 3% of all abstracts submitted to the competition



SOAR Student Harshitha Visikamalla

2nd Place in Poster Competition at South Carolina Neurological Association Annual Meeting

SOAR Students Catherine Chopade & Jordan Lombardo

Outstanding Medical Student Research Award at the PHERI Conference

Bridge Funding Program

Bridge funding is a vital initiative to ensure that the research mission of the USC SOMC is supported and maintained. It serves as a lifeline for ongoing research projects that may face temporary gaps in funding. This type of support is crucial for sustaining momentum, retaining talent, advancing science, and supporting future funding. **In fiscal year 2025, $144,000 of bridge funding was given to faculty members**, allowing them to continue the important work they are doing at SOMC.

Organoid Core

With strong support from Dr. Leonardo Bonilha, Senior Associate Dean for Research, and the departmental chairs at SOMC, **Drs. Wenbin Tan and Camilla Wenceslau received internal funding in November 2025** to lead the establishment and initial activities of the **Stem Cell & Organoid Core (SCOC)** at SOMC. Other key faculty members involved in this initiative include **Dr. Daping Fan, Dr. Kandy Velazquez, and Dr. Gerardo Piroli.** Currently, the SCOC has generated and maintained a biobank of over 68 human iPSC lines derived from normal donors as well as from patients with vascular malformations and hypertension.

This initiative represents an important strategic investment in strengthening SOMC's research infrastructure in regenerative medicine and translational modeling. The mission of SCOC is to develop and disseminate standardized human iPSC- and organoid-based disease model systems, as well as to provide technical training within and beyond the USC campuses. In particular, SCOC will focus on producing iPSCs, iPSC-derived cells, organoids, and biologics for disorders with high prevalence in South Carolina, including neurodegenerative diseases, pediatric neurological disorders, chronic cardiovascular and metabolic disorders, and infectious diseases.

The primary goal of SCOC in this initial phase is to establish robust pipelines for vascularized brain organoids and intestinal organoids, thereby fostering a collaborative and integrative platform among faculty at SOMC and the main campus to support broad institutional research needs.

The SCOC will provide a range of iPSC, organoid, and molecular and functional characterization services to investigators within and beyond the USC community on a fee-for-service basis. The SCOC website at SOMC is currently under construction.

Basic Science Research

Cell Biology and Anatomy

CBA Overview

In FY25, the Department of Cell Biology and Anatomy maintained a strong research portfolio, with **nine principal investigators receiving a total of $4.9 million in research funding**, including **$4.6 million in federal support**. This funding supported investigator-initiated studies focused on fundamental mechanisms of cellular structure, development, and disease. The department's funded research activity reflects its continued contributions to discovery-driven biomedical science and its integral role within the School of Medicine's research enterprise.

CBA Selected Grants, Awards, and Research Funding

- **Colin Evans, PhD**, Assistant Professor, received a grant from the American Heart Association Second Century Early Faculty Independence Program for the project "Promoting Endothelial Regeneration and Vascular Repair After Inflammatory Lung Injury."
- **Wenbin Tan, PhD** received NIH R21 funding for the project "Generation and Validation of Disease Models for Port-Wine Birthmarks."
- **Mohamad Azhar, PhD** received pilot project funding from both the SCBioCraft COBRE at Clemson University and the Center for Targeted Therapeutics COBRE in the Department of Pharmacy to support collaborative translational research.
- **Camilla Wenceslau, PhD** received grant funding through the Alzheimer's Association Research Grant – New to the Field Program, supporting early-stage investigation in Alzheimer's disease research.

Pathology, Microbiology and Immunology

PMI FY25 Overview

The Department of Pathology, Microbiology, and Immunology demonstrated sustained research productivity in FY25, with **eight faculty members publishing 26 manuscripts and ten principal investigators receiving $3.3 million in total research funding**, including **$3.27 million in federal support**. Funded projects advanced investigations across immunology, infectious disease, cancer biology, and molecular pathology. These awards underscore the department's ongoing role in advancing biomedical discovery and supporting collaborative research across the institution.

PMI Selected Grants, Awards, and Research Funding

- **Chloe Weyer-Nichols**, PhD graduate student, received a three-year NIH (NIAID) F31 Predoctoral Fellowship for research on "Mechanisms of Pathogenesis in Staphylococcal Enterotoxin B-Induced Acute Respiratory Distress Syndrome," under the mentorship of Mitzi Nagarkatti, PhD, and Prakash Nagarkatti, PhD.
- **Ryan Ball**, PhD graduate student in the Kubinak Lab, received a three-year NIH (NIAID) F31 Predoctoral Fellowship for the project "Influence of Maternal IgA on Neonatal iNKT Cell Development and Gluten-Sensitive Enteropathy."

- **Pranesh Kannan**, PhD graduate student in Wilson lab, received a Magellan Mini-Grant from the University of South Carolina Office of the Vice President for Research to support pilot research activities.
- **Tu Vo**, PhD graduate student in the Wilson lab, received a University of South Carolina Magellan Journey Grant to support independent research training and scholarly development.
- **Carole Oskeritzian, PhD**, received an NIH R21 award for the project "Unraveling FcεRI-Independent Regulation of Mast Cell Functions by the ITCH Ubiquitin Ligase," serving as Lead Principal Investigator alongside Multi-Principal Investigator Lydia Matesic, PhD (USC). She also received a Seed Grant Award from the Prisma Health Research and Education Institute for the project "Development of a Noninvasive Swabbing Method for Colonic Polyp Detection," which investigates colorectal cancer screening.
- **Jason Kubinak, PhD**, and **Angela Murphy, PhD**, received a pilot project award from the National Cancer Institute for "Meet the FALCs: Understanding the Role of B Cells in Obesity-Associated Colorectal Cancer," in collaboration with the University of Utah and the NCI MeDOC Consortium.
- **Reilly Enos, PhD**, has been awarded a pilot project grant from the NIH-funded Augusta SCORE Program for his research titled "Estrogen Receptor-Alpha Signaling in Skeletal Muscle as a Promising Approach for Obesity Treatment in Both Sexes." Additionally, he received an INBRE Launch award to investigate one of the pathways through which ERα contributes to obesity reduction and enhances skeletal muscle metabolism.

Pharmacology, Physiology and Neuroscience

PPN FY25 Overview

In FY25, the Department of Pharmacology, Physiology and Neuroscience achieved a high level of research engagement, with **thirteen principal investigators receiving $4.1 million in total research funding**, including **$4.0 million in federal support**. This funding supported a broad range of research programs spanning pharmacology, physiology, and neuroscience, reinforcing the department's strength in securing competitive support for innovative biomedical research.

PPN Selected Grants, Awards, and Research Funding

- **Norma Frizzell, PhD** received a United Mitochondrial Disease Foundation (UMDF) / Mito Foundation research grant for the project "Anaplerotic Odd-Chain Fatty Acid Therapy for the Treatment of Leigh Syndrome." This award supports translational research focused on therapeutic strategies for mitochondrial disorders. Dr. Frizzell was also recognized with a presentation award at the UMDF Annual Meeting.
- **Raoni dos Santos, PhD**, PPN Bridge to Faculty Scholar, was awarded a Young Investigator Grant from the Brain & Behavior Research Foundation (BBRF) for the project "The Role of NTS-NE Neurons in the Pathophysiology of Depression and Social Deficits."
- **Dan Foster, PhD** received a VA Merit Award for the project "Targeting CB2 Receptors as a Novel Therapeutic Strategy in Schizophrenia," selected for FY2025 funding.
- **Joe McQuail, PhD** was awarded ASPIRE-AI funding from the University of South Carolina for the project "Decoding Alzheimer's Disease and Advancing AI in Biomedical Research."

- **Sujit Pujhari, PhD** received an NIH-funded ROAR SCORE Pilot Project Award for "Sex-Specific Epigenetic Reprogramming of Microglia in Zika Virus Infection."
- **Aaron Jasnow, PhD** was awarded a five-year NIH R01 grant as Principal Investigator, in collaboration with Gregory Demas, PhD (Indiana University), for the project "A Seasonal Switch: Alternative Neuroendocrine Mechanisms Regulating Aggression."
- **Sujit Pujhari, PhD**, and **Norma Frizzell, PhD** received a Pilot Project Award from the COBRE Center on Targeted Therapeutics (CTT) for "Sex-Specific Epigenomic Reprogramming in ZIKV-Infected Microglia and Its Impact on Brain Development."
- **Jim Fadel, PhD** received funding renewal of an NIH RF1 grant from the National Institute on Aging (NIA) entitled "Hypocretin/orexin modulation of cognitive correlates of brain aging".
- **Ana Pocivavsek, PhD, Alessandra Porcu, PhD**, and **Chase Francis, PhD** were awarded a COBRE Center on Targeted Therapeutics Pilot Project for "Role of Astrocytic EAAT in Aging-Induced Sleep and Circadian Disruptions."
- **Fiona Hollis, PhD**, and **Susan Wood, PhD** received a new NIH R01 award as multi-Principal Investigators for the project "Psychosocial Stress-Induced Neurometabolic Dysfunction as a Mediator of Postpartum Cardiovascular Disease."
- **Joe McQuail** was selected as an R25 Big Data Health Science Fellow ("R25 Fellow) for 2025-2026. This award is funding through an NIH R25 award and the Big Data Health Science Center (BDHSC).
- **Ricardo Aguilar Alvarez**, graduate student in the Department of Pharmacology, Physiology & Neuroscience, received a 2025–2026 State Doctoral Scholars Program award from the Southern Regional Education Board (SREB), recognizing his academic excellence and supporting his doctoral research training.
- **Alexia Crockett** (Fiona Hollis mentor) received a prestigious AAUW American Dissertation Fellowship for 2025-2026. AUW fellowship program is one of the largest and the oldest non-institutional source of graduate funding for women in the United States.
- **Sam Walther** (Ana Pocivavsek mentor) received a Small Research Grant from the American Academy of Sleep Medicine.
- **Christian Wohlfeld** (Jim Fadel Mentor) received a graduate SPARC award entitled: Pharmacologic modulation of hypothalamic circuitry via peripheral semaglutide administration in rats.
- PPN received numerous Magellan Scholarship awards in 2025:
    - **Hannah Brennen** (Fiona Hollis mentor) received Magellan Scholar Research Grant entitled The Impact of Gestational Stress on Hippocampal Mitochondrial Protein Expression in the Postpartum Rodent Brain

- **Taylor Childress** and **Sarah Chugh** (Susan Wood & Cora Smiley mentors) received a Magellan Scholar Research Grant entitled Identifying a novel pharmacological target for stress-related dysfunction in females
- **Audrey Mahoney** and **Leah Stone** (Joe McQuail mentor) received a Magellan Scholar Research Grant entitled An Investigation into Dual-Task Deficits in Aging and Alzheimer's Disease
- **Hayden Withers** (Claudia Grillo mentor) received a Magellan Scholar Research Grant entitled Effect of ginseng on obesity and neurogenesis
- **Anna Nesmelova** (Norma Frizzell mentor) received a Magellan Scholar Research Grant Lysine Uratylation Under Oxidative Conditions as a Biomarker for Neutrophil Activity in Neurological Disease
- **Michael Pitre** (Joe McQuail mentor) received a Magellan Scholar Research Grant entitled From Aging to Alzheimer's: Unraveling the Role of D-serine Metabolism in Memory Loss"

On the Horizon

External Grant Review Program

In 2026, OOR will launch an External Grant Review Program designed to elevate the competitiveness of faculty proposals submitted for external funding. Through this initiative, OOR will connect investigators with independent subject-matter experts who provide detailed, constructive evaluations of proposal strengths, weaknesses, and opportunities for improvement. OOR will invest **$15,000** to **fully cover reviewer compensation, ensuring the service remains free to all SOM faculty.**

This program is intended to **support faculty who have demonstrated sustained effort in pursuing external funding** but have yet to secure awards, as well as those with frequent submissions seeking stronger outcomes. By enhancing proposal quality and readiness, the initiative will help expand the SOMC's research portfolio and strengthen our overall funding success.

Education Research Program

In 2026, OOR will launch an Education Research Program to advance scholarly inquiry into teaching, learning, and assessment within SOMC. This initiative will support faculty in developing rigorous, innovative projects that strengthen how we train future clinicians and health-science professionals.

OOR will invest **$25,000 in the program's first year**, providing funding for **up to five medical education research projects**. These awards will help faculty generate pilot data, evaluate educational innovations, and disseminate findings that contribute to national conversations in medical education.