Office of Research and Sponsored Programs

2025 Annual Report

WAKE FOREST UNIVERSITY

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MISSION

Wake Forest University's Office of Research and Sponsored Programs supports the Vice Provost for Research, Scholarly Inquiry and Creative Activity in building faculty research programs of nationally recognized excellence. We assist faculty in their pursuit and management of sponsored activities; work to assure ethical research achievement, especially involving human subjects, in compliance with all relevant laws and regulations; protect the university's interests; and acknowledge and publicize faculty distinction.

From The Assistant Vice President

Dear Researchers,

It has been an eventful year for research at Wake Forest University!

Despite several grant terminations, the cancellation of multiple grant opportunities, and ongoing delays in award notices, our investigators were successful in bringing in over $14 million for research and other sponsored programs in FY25. Additionally, 205 proposals were submitted in Cayuse, requesting more than $104 million in funding with many still under consideration.

Special congratulations go out to Sarra Alqahtani, John Lukesh, and Ruiying Gao. Dr. Alqahtani received a prestigious NSF CAREER award. Dr. Lukesh, who is also a CAREER recipient, was awarded a MIRA (Maximizing Investigators' Research Award) grant from NIH. This is the first MIRA received at WFU. Finally, Ruiying Gao, was named a National Humanities Center Fellow. All of these projects, as well as other successful awards, are featured in the full report that follows.

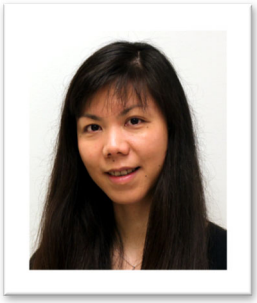
In Fall 2024, we welcomed Dr. Kimberley McAllister as our new Vice Provost for Research, Scholarly Inquiry and Creative Activities. Vice Provost McAllister has been instrumental in leading the visioning process for the academic areas of distinction from WFU's strategic framework, a process that will continue this fall. She has also worked closely with our Legal team and Interim Research Security Officer to develop the University's research security program, ensuring that we meet the federal requirements.

We also want to acknowledge the retirement of our long-time Business Services Specialist, Elisa Burton. Even though she officially retired in January 2021, Elisa stayed on to assist with special projects before stepping down at the end of FY25. We were pleased to welcome Cecilia Rogers as a new Grants and Contracts Manager, supporting the departments of Biology, Economics, and Sociology.

We look forward to building on this momentum in the next fiscal year and are excited to see the continued success of your research endeavors.

Sincerely, Lori Gabriel, CRA, Assistant Vice President Research Administration

Featured Projects



BIOLOGY / MOLECULAR SIGNALING

Ke Zhang Reid, Associate Professor, Biology, with **Erin Henslee, Associate Professor, Engineering**, have received an award from the National Institute of General Medical Sciences (NIGMS) to elucidate the "Functional Diversity of Large Ribosomal Protein 27 and Small Ribosomal Protein 19 Paralogs."

Diamond-Blackfan anemia (DBA) is a rare genetic disorder that appears in infancy. The bone marrow cannot make enough red blood cells, possibly due to ribosomes, the translational machinery essential for protein synthesis. While ribosomes maintain a consistent primary structure and function across various life forms, their rRNA and protein content vary with the number of gene copies, or paralogs, scattered throughout their genomes. Paralog mutations result in distinct phenotypes, possibly when the integration of different ribosomal proteins affects the specificity of mRNA translation or, alternatively, when abnormal amounts of ribosomes are generated. In either case, ribosomes' regulatory role in protein synthesis remains undefined.

This study is designed to determine whether the absence of ribosomal protein paralogs promotes variations in protein sequence, abundance, mRNA specificity, or differential functionality under stress. Results have the potential to uncover new regulatory mechanisms in the expression of ribosomal protein paralog genes, which may pave the way for new treatments for conditions like DBA that impair children's and their families' lives.

CHEMISTRY / MOLECULAR SIGNALING

John Lukesh, Associate Professor of Chemistry, has been awarded a Maximizing Investigators' Research Award (MIRA) from the National Institute of General Medical Sciences (NIGMS) to investigate "Biomedical Applications of Reactive Sulfur and Selenium Species: Diagnosis and Therapeutics."

In the human body, reactive sulfur species (RSS) are responsible for anticancer activity, neuroprotection, vascular relaxation, hormone regulation, and energy production. Researchers are seeking ways to supplement them in preclinical models of cancer, Parkinson's and Alzheimer's disease, cardiovascular-related pathologies, and other age-related illnesses, but effective delivery is extremely challenging. This project implements an innovative approach to harness their reactivity for the development of therapeutics (small molecule RSS donors) and diagnostics (reaction-based fluorescent sensors).

At the same time, it is investigating reactive selenium species (RSeS), building on Dr. Lukesh's pioneering efforts to develop new compounds that can be used to track donor progress or provide added therapeutic benefit.

Both arms of the study deploy molecular design and the principles of physical organic chemistry to access compounds that explicitly address current donor deficiencies. The proposed donors will target specific tissues and organelles; respond selectively to a specific biological stimulus (especially when the released RSS/RSeS can provide therapeutic benefit); and self-report their real-time delivery of RSS/RSeS. The development of these bioactive molecules will have broad impact on the fields of molecular signaling, chemical biology, and medicinal chemistry.

COMPUTER SCIENCE

Sarra Alqahtani, Assistant Professor and Denton Family Faculty Fellow in Computer Science, received the National Science Foundation's most prestigious Faculty Early Career Development Program (CAREER) award for outstanding research and teaching. Her project, "Safety-Centered Multi-Agent Reinforcement Learning (MARL): Safe Algorithms, Debugging Tools, and Standardized Benchmarks," will increase the robustness of multi-agent applications.

Widespread agreement, supported by national and international laws, holds that responsible artificial intelligence (AI) must adhere to such principles as fairness, transparency, privacy, human safety, and interpretability. However, applying them in MARL is a complex problem. First, MARL models' dependence on neural networks creates a black box, decreasing the end-users' ability to interpret their decisions. Second, their systems and policies are vulnerable to adversarial examples and malicious agent actions. This lack of safety guarantees becomes a crippling problem when MARL is applied to cyber-physical systems, such as cars or planes, where industry best-practices demand evidence of safety.

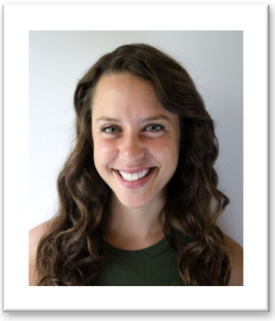
Dr. Alqahtani's proposed framework can be seamlessly integrated with a wide range of existing MARL algorithms to guarantee their safety. Developing add-on, plug-and-play tools spanning the three phases of learning, testing, and deployment, it will enable visualization and debugging of the underlying MARL systems' decisions in critical situations. She will also develop new courses with hands-on projects to engage students in AI and multi-agent systems research to prepare them for successful careers in the field.

HEALTH AND EXERCISE SCIENCE (HES)

Jason Fanning, Assistant Professor, with Assistant Professor Megan Irby and Research Professor Jack Rejeski, Health and Exercise Science, have received a National Institute of Aging (NIA) award to develop "A Mobile Health Behavior Intervention to Reduce Pain and Improve Health -III (MORPH-III)."

As many as three in four older adults live with chronic pain that impairs their quality of life and independence. In a vicious cycle, it both causes and is caused by insufficient physical activity, weight gain, and isolation. In Stage Ia and Ib pilot trials, this study demonstrated the feasibility, acceptance, and potential benefit of a behavioral intervention to increase physical activity and reduce caloric intake. Rooted in social cognitive and self-determination theories, it connects groups remotely and defines a protocol to encourage these behaviors. However, conclusions were limited by short duration (12 weeks), small samples (up to 44 participants per study), and heterogeneous pain sites.

The new study solves these problems. It will test the effects of 6 months of a remotely delivered, group-mediated program promoting day-long movement and healthy eating on daily steps, the primary outcome; pain intensity, the secondary outcome; body weight; quality of life; and psychosocial mediators of behavioral change in older adults with chronic knee or hip osteoarthritis (OA). It will also assess long-term behavioral change over the 12 months following the intervention. Specifically, inactive older adults with obesity and chronic OA pain will follow the intervention or an enhanced usual-care protocol as a control using the same self-monitoring technologies. Results will inform future, broad-scale trials of real-world efficacy.



HEALTH AND EXERCISE SCIENCE (HES)

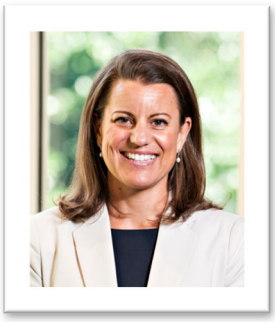
Paige Rice, Assistant Professor, with Professors Stephen Messier and Shannon Mihalko, Health and Exercise Science; Eddie Ip at Wake Forest University Health Sciences; and Leigh Callaghan and Brian Pietrosimone, University of North Carolina at Chapel Hill have received funding from the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) to investigate "Muscle Power as a Predictor of Knee Osteoarthritis in At-Risk Females."

The Centers for Disease Control and Prevention (CDC) estimate that by 2040, 26 percent of US adults will suffer from arthritis. Osteoarthritis (OA) of the knee is the leading cause of disability in adults, and with no cure on the horizon, its prevention is a health imperative. Risk factors, such as age, sex, and obesity, are well defined, but predictive models generally neglect neuromuscular capabilities. In OA, *muscle power*, the product of force and shortening velocity, correlates more strongly with pain and mobility than *muscle strength*.

This study leverages the patient cohort, data, and resources of The Osteoarthritis Prevention Study (TOPS), a 5-year, NIH-funded, randomized clinical trial nearing the end of year 1. In adding maximal knee extensor muscle power measures at baseline to a subsample of female participants (N = 159), its primary aim is to determine whether these measures predict structural knee OA. Secondary aims will determine whether baseline levels of sit-to-stand and countermovement jump performance, surrogate measures of muscle power, predict structural knee OA. A third, mechanistic aim will determine whether reduced knee-joint muscle torque and/or angular velocity indicate(s) low muscle power and predict incident knee OA.

Results will help clinicians identify patients at high risk for this disabling disease using simple muscle-power assessments that can be

performed in clinical settings. Defining the mechanistic pathway may also inform preventive interventions.

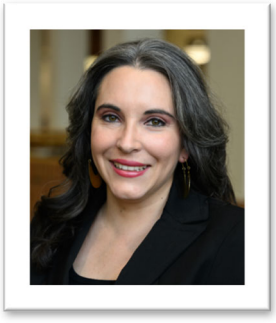


SCHOOL OF LAW

Francie Scott, Assistant Dean of Career and Professional Development, has secured funding from the North Carolina Interest on Lawyers' Trust Accounts (IOLTA) program to support Summer Public Interest Internships. Law students receive stipends to serve people and organizations in counties with less than one lawyer per 1,000 residents, designated "legal deserts."

SOCIOLOGY

Brittany P. Battle, Associate Professor, and Andrea Gómez Cervantes, Assistant Professor, Sociology, have received two prestigious awards contributing to their community-partnered research trajectory focusing on the experiences of individuals involved in various legal systems.



The National Science Foundation award, "Examining Compliance, Criminalization, & Carcerality in Legal Systems," dives into community supervision programs in the immigration and criminal legal systems and enhances the explanatory power of theoretical frameworks focused on compliance by drawing from evidence across multiple institutional settings. More important, this analysis reveals that the mechanisms of regulation, surveillance, and discipline reflect broader characteristics of the institutions. Deliverables and dissemination projects involve academic manuscripts and presentations, community presentations, websites, and art exhibits. Findings will generate new data on the everyday experiences, health, and economic well-being of

individuals navigating community supervision programs.

The Arnold Ventures award, "*Comunidades* Confined Survey-Immigrant Well-being," captures the experiences of immigrants and asylum seekers undergoing state supervision in the immigration system. The first multilingual survey to collect data from this particularly vulnerable and difficult-to-reach population will provide important and timely insights into the lived experiences of immigrants undergoing Alternative to Detention programs and other forms of state surveillance.

These awards build on Professors Battle and Gómez Cervantes's important *Comunidades* Confined Study, the first to examine multiple legal systems in parallel with a focus on individual, organizational and institutional dynamics. Using community partnerships and actions at its core, the study brings nuanced methodological and theoretical insights into social sciences and related fields. Findings will inform researchers, policymakers, and community advocates working toward evidence-based policy reform and community-specific solutions.

THEATER AND DANCE

Christina Soriano, Reynolds Professor, Theatre and Dance, former Vice Provost of the Arts and Interdisciplinary Initiatives, has received an award from the Arts Council of Winston-Salem for "Prescribing Arts as a Healthcare Tool in Forsyth County."

Physicians use "social prescribing" to address the social determinants of health, such as access to affordable housing or fresh food. They may also recommend Arts on Prescription (AoP)—dance, music, art, or creative writing experiences—based on research

showing that regular arts practice can reduce apathy, depression, and loneliness and improve quality of life, social connections, creativity, and purpose.

This project will convene an interdisciplinary advisory board and supporting personnel to study the feasibility of a pilot AoP program for older adults in Forsyth County. Arts, research, healthcare, physician, patient, and community partners will consult with Aly Maier Lokuta, creator and director of one of the first successful AoP programs in the United States at the New Jersey Performing Arts Center in Newark.

Program design will address critical questions: What arts experiences do Forsyth County seniors want/need—arts engagement experiences through class participation, attendance at arts events, or both? What existing programs and resources support these prescriptions, and how might they be scaled up? What would be the payment/fee structure and the referral structure for physicians? How will we measure the program's effectiveness?

Professor Soriano has regularly taught a community dance class for people living with Parkinson's disease and their carepartners and contributed to three scientific studies on the ways improvisational dance can improve the mobility and balance of people living with neurodegenerative disease. She has received funding from the National Parkinson's Foundation, Blue Cross Blue Shield of NC, and the National Institutes of Health.

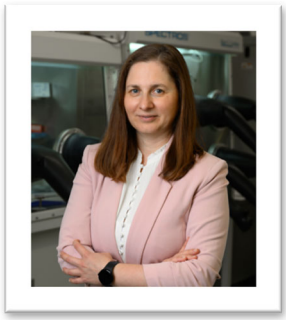
Fellowships and Awards

Ruiying Gao, Assistant Professor of Art, has been awarded a National Humanities Center (NHC) Fellowship to explore the complex cultural implications of *materia medica* images in the Ming dynasty. One of 32 chosen from 588 experts across the humanities, she will pursue and share her ideas in residence at the center in Durham, NC. Her previous research has been supported by the Bei Shan Tang Foundation, the Metropolitan Center for Far Eastern Art Studies, the Getty Foundation, and the Hall Center for the Humanities.

"Collating Nature: Illustrated *Bencao* Books in Ming China (1368-1644)" examines a multifarious genre imparting pharmacological knowledge about plants, animals, minerals, and other natural phenomena. It could take the form of hand-illustrated and -colored treatises produced at the court, woodblock printed books for the commercial market, or pictorial works. Why were so many produced? What knowledge did they convey to their diverse audiences? Were they considered art? How did their intended functions and readership change? How did the dynamics of copying and editing, the relationship between text and image, and the interplay of form and function shape their creation, dissemination, and consumption?

To answer these questions, Dr. Gao looks at the substance and arrangement of the elements on the page: the number, size, and position of illustrations were not arbitrary but indicated the book's functions and target audience. Editors, sponsors, and publishers influenced the final presentation. The books were cultural products and a form of cultural capital. They call attention to such overlooked aspects of Chinese art as anonymous court painters, eunuchs,

physicians, merchants, book collectors, and women artists. These social groups both constructed and challenged intellectual authority, political dogma, business success, and social distinction. As the first English monograph on illustrated bencao books in Ming China, the project will demonstrate the reciprocal relationships between art, knowledge, and social class, enriching scholarship on the history of books, popular culture, gender studies, and the history of medicine.



Oana Jurchescu, Baker Physics Professor, has been elected a 2025 Fellow of the Materials Research Society (MRS), a nonprofit organization that promotes collaboration across all disciplines and venues of materials science through meetings, publications, and programs. Its 14,500 members span over 90 countries, and only 0.2 percent are elected fellows each year.

Prof. Jurchescu, who was also elected a Fellow of the American Physical Society this fall, is the first Wake Forest faculty member to receive this honor. Through it, MRS recognizes members "whose sustained and distinguished contributions to the advancement of materials research are internationally recognized" (see https://www.mrs.org/advancing-careers/award-central/spring-awards/mrs-fellows).

Michaelle Browers, Professor, Politics & International Affairs, was awarded a 2024-2025 Fellowship for U.S. Scholars Conducting Research on Palestine by the Palestinian American Research Center (PARC) at Columbia University. She will investigate "Generational Consciousness and Future Visions among Palestinian Youth in Nablus."

The project is informed by Karl Mannheim's highly influential essay, "The Problem of Generations" (1928; English translation, 1952), exploring how the experience of common political events in our formative years influences our worldview, leads us to contest our parents' ideas, and sparks new values and new political movements. Its historical context rests on a rich body of scholarship in Arabic: primary texts documenting the experiences and ideas of political actors (e.g., Darwaza 1993; Hilal & Farraj 2019; Kayyali 1967) and secondary texts by Palestinian scholars attesting the salience of generational consciousness (e.g., Azawza 2021; Dabbagh 2016/2017; Khalidi 2019; Taraki 2023).

Dr. Browers will analyze the role of generational consciousness in the (re)construction of memory and future visions and the character of political thought emerging from Nablus. Using archival research, interviews, and focus groups, it asks the following questions: What are the generation-formative events in the history of Nablus? What varieties of political thought are associated with each? How does each generation engage with earlier generations and Palestinians of the same generation beyond Nablus? How do these questions interact with history and how Palestinians produce and envision knowledge within the constraints of reality?

Four graduate student research assistants will conduct two rounds of

focus group discussions with 18-26-year-olds in Nablus under the direction of Dr. Browers and Professor Raed Debiy, An-Najah National University, Nablus. The first will investigate the character and extent of their generational consciousness, and the second will explore their visions for the future. They are both designed to capture participants' attitudes, values, experiences, and reactions more deeply and widely than individual interviews or surveys can. The data will inform 1-2 co-authored academic articles.

Professional Development

INTERNAL AWARDS

The Office of Research and Sponsored Programs assists the Vice Provost for Research, Scholarly Inquiry, and Creative Activity in coordinating and administering several internal award programs. In FY25, there were two deadlines for Pilot Research Grants and one for Collaborative Pilot Grants. In addition, Intercampus Collaborative Grants with Wake Forest University Health Sciences were selected. The amounts awarded by program type are listed below. Please note that the amount shown for Intercampus Collaborative Grants represents our campus contribution; Wake Forest University Health Sciences/Atrium contributed an equal amount for the projects awarded in the second year of this pilot program. A gift from the ZSR Foundation supported $49,2000 of the total cost of internal grants.

Pilot Research Grants: $99,526
Collaborative Pilot Grants: $60,000
Intercampus Collaborative Grants: $49,590

ORSP also manages matching and cost-share funds. In FY25, the university provided $130,519K for sponsored project cost-share, open-access publishing, and other initiatives.

PROFESSIONAL DEVELOPMENT

In FY25, the office spent nearly $65K hosting and coordinating professional development workshops and events as well as faculty and staff professional development, research awards, and prizes. Supported programs and events include:

- Creative Research Activities Development & Enrichment Program (CRADLE)
- Responsible Conduct of Research Training for Graduate Students & Undergraduate Students
- Building Research Success at Wake Forest University – New Faculty Luncheon
- Winning Grants Seminar Parts I and II
- Recognition of Research Excellence – Annual Reception
- Centers & Institutes Retreat
- NSF CAREER Quality Circle
- Quality Circle Training
- Team Building Seminar

Human Research Protection

ORSP provides administrative support to the Institutional Review Board (IRB) under the federal Department of Health and Human Services (DHHS) regulations (45CFR §46). Jeanie Baird, Associate Director for Human Research Protection, maintains IRB records; facilitates communication between the IRB and researchers; coordinates meetings; updates and maintains the university's IRB policies and website; monitors training for researchers and other key personnel; provides continuing education for IRB members; and keeps the university's Federal wide Assurance and IRB Registration current. Lindsay Jarvis Breen, Human Research Protection Specialist, coordinates the day-to-day review of all items submitted to the IRB and assists researchers with their submissions and eIRB and CITI training questions.

In FY25, the IRB reviewed 124 new applications: the full board reviewed one; none were expedited or exempt; and 123 were flex reviews, meaning they were reviewed by the same process as exempt or expedited, but were not federally funded. We also processed 374 amendments, 7 continuing reviews, and 387 annual updates. The average number of active applications increased 7%, from 430 per month in FY24 to 462 in FY25, with the highest number (481) in March. Our human research portfolio includes very few federally funded projects, but this year, we have a total of 18 active studies that are federally funded.

The office is proactive, providing study-specific consultations to assist faculty, staff, and student researchers. Group outreach efforts this year targeted graduate classes in Communication and undergraduate research-methods classes in Sociology. We facilitated collaborative research by executing IRB Authorization Agreements and helping nonaffiliated investigators to recruit WFU personnel as study subjects.

In the spring semester, the IRB screened 64 URECA (Undergraduate REsearch and Creative Activities) Center studies by undergraduate and graduate Richter Scholars, Stamps Scholars, Wake Forest Research Fellows, and Wake Forest Arts and Humanities Research Fellows. Thirty-two of those were funded human subjects research projects. These 32 studies were reviewed and approved by the IRB.

We are excited about, and ready to assist in, the future growth of human subjects research at Wake Forest University!

Funding Highlights

In FY25, Wake Forest University received $14.1M million in support for research and scholarly activities, excluding awards for social sciences and humanities scholarships. Faculty and staff submitted 205 proposals, requesting over $104 million.

Federal grants comprised 86% of the total funding and the top federal sponsor was the National Institutes of Health. Researchers in the Health and Exercise Sciences Department received the most funding while those in the Engineering Department submitted the highest number proposals.

The following faculty and staff received their first grants at WFU this year:

Fan Yang, Computer Science

William Crowe, Engineering

David Taylor, Global Study Away

Paige Rice, Health and Exercise Sciences

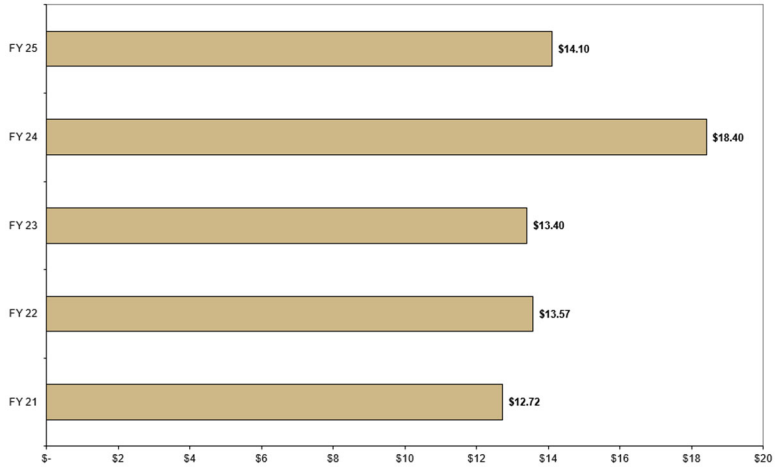
Dominic Veconi, Mathematics

Fan Yang, Mathematics

Sarah Lotspeich, Statistical Sciences

The statistics that follow summarize Reynolda campus sponsored research activity for FY25. Graphs represent funding processed through the Office of Research and Sponsored Programs, not gifts nor fellowship awards made to individual faculty. Awards represent authorization to spend as opposed to research expenditures.

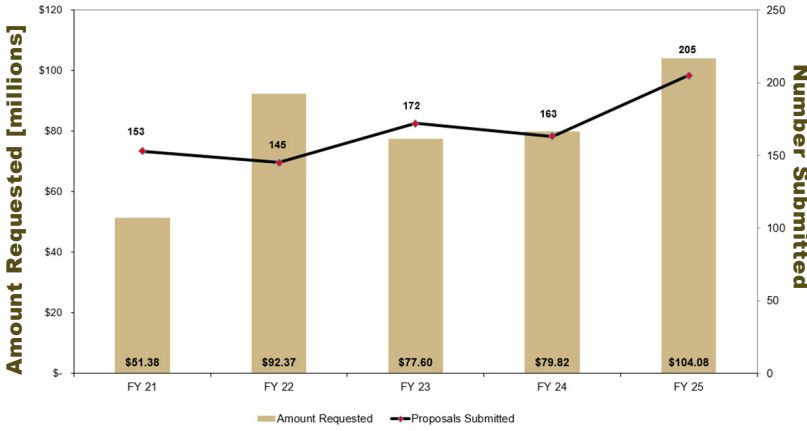
AWARDS BY FISCAL YEAR: 2021-2025



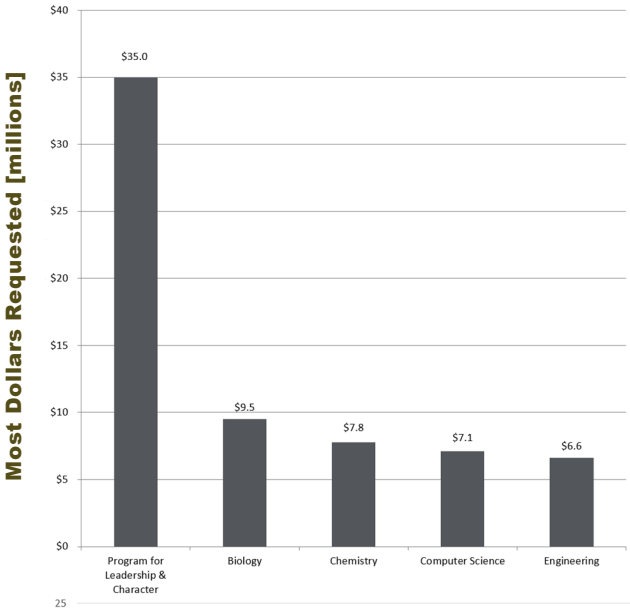
**The FY21 figures in this table exclude CARES Act Funding. Total for FY21 is approximately $25.90M..*

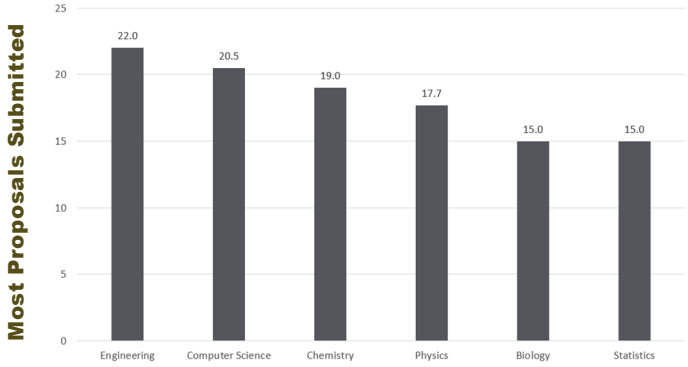
Amount Received [millions]

PROPOSALS BY FISCAL YEAR: 2021-2025

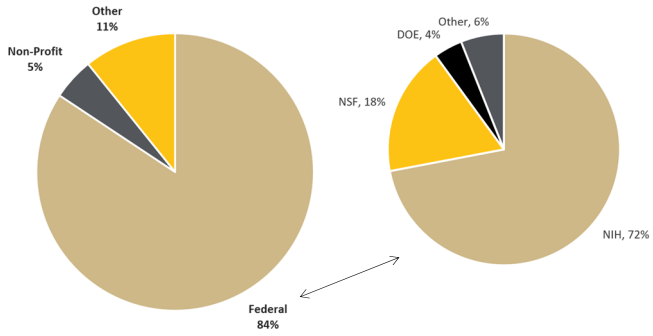


PROPOSALS BY DEPARTMENT





FUNDING SOURCES



Department / Center	Awards	Amount	New Awards	Amount
Bioethics, Health & Society	0.5	$9,041.00		
Biology	5	$914,213.75	1.5	$549,612.43
Chemistry	3	$440,110.90	0.5	$181,875.00
Civic & Community Engagement	1	$200,879.24		
College Interdisciplinary Studies	1	$19,999.96	1	$19,999.96
Communication	1	$16,666.00		
Computer Science	4.5	$694,920.00	3.5	$453,684.93
Economics	1	$17,499.55	1	$17,499.55
Education	1	$21,563.00		
Engineering	12	$1,128,716.00	4	$470,971.40
Functional Materials	1	$222,191.62	0.5	$124,999.87
Global Abroad Programs	1	$4,125.00	1	$4,125.00
Health & Exercise Science	16.5	$6,849,974.00	3	$1,741,493.54
Law	3	$64,999.00	1	$50,000.00
Mathematics	4	$258,364.00	3	$22,509.00
Molecular Signaling	2	$583,236.33	1	$396,361.43
Nanotech & Molecular Materials	1.5	$82,031.29	1	$57,031.70
Philosophy	0.5	$9,041.00		
Physics	7.5	$412,225.11	2.5	$195,688.06
Program for Leadership & Character	1	$41,373.00	1	$41,373.00
Psychology	5	$836,236.00	4	$801,258.00
Sabin Center	0.5	$48,684.49	0.5	$48,684.49
School of Business	1	$80,982.00		
Sociology	2	$308,192.00	2	$308,192.00
Statistical Sciences	5	$283,689.00	3	$83,471.00
Theather & Dance	2	$150,226.00	1	$34,500.00
Translational Science Center	4.5	$374,629.00	1	$13,656.50
WFDD	2	$26,576.00		

CREDITS

The Office of Research and Sponsored Programs gratefully acknowledges photographs by WFU photographers Lyndsie Schlink and Ken Bennett.

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