



Office of Research and Sponsored Programs

2023 Annual Report



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MISSION

Wake Forest University's Office of Research and Sponsored Programs supports the Vice Provost for Research and Scholarly Inquiry 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.

CREDITS

The Office of Research and Sponsored Programs gratefully acknowledges photographs by WFU photographer Ken Bennett.

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From The Executive Director

Dear Researchers,

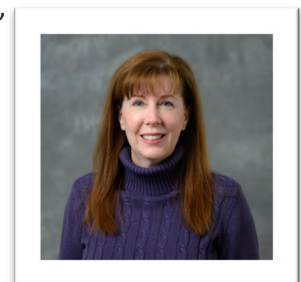
In FY23, investigators were awarded \$13.4M for research and other sponsored programs, roughly the same as last year. However, as compared to FY22, almost 20% more proposals were submitted, the most since 2009, when the federal government added many new funding opportunities under the American Recovery and Reinvestment Act (ARRA).

Junior researchers continue to be successful in competing for the prestigious National Science Foundation Faculty Early Career Development Program (NSF CAREER) awards. In fact, more WFU researchers have received CAREER awards in the past three years than in the previous ten. Our latest recipient is Elham Ghadiri, Chemistry and the Center for Functional Materials. Her project is featured in the report that follows.

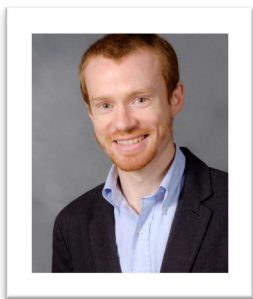
FY2023 brought several new faces to ORSP. In September 2022, Jocelyn Pagel started as our new Human Protections Specialist. She was hired to replace Jeanie Baird, who was promoted to Associate Director, and together, they support the IRB. Rick Orzechowski came on board in May 2023 as the new Business Services Specialist, a role formerly held by Elisa Burton, who retired from working full time in January 2021. We are fortunate that Elisa is still helping ORSP with special projects on a part-time basis. Doug Mounce was hired in January 2023 as a part-time remote Grants and Contracts Manager (GCM), assigned primarily to the Andrew Sabin Family Center for Environment and Sustainability. Doug has also been helping faculty in departments without an assigned GCM.

The College of Arts and Sciences also welcomed two new GCMs. Jennifer Szescula started in September 2022 as the new GCM for Chemistry and Engineering. Phillip Summers, formerly of Wake Forest University Health Sciences, became the new GCM for Computer Science, Mathematics, Statistics, and Psychology in January 2023.

Sincerely, Lori Gabriel, CRA, Executive Director



Featured Projects

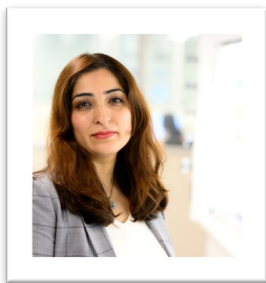


BIOLOGY

James Pease, Associate Professor of Biology, has received two collaborative research awards from the National Science Foundation. *BEE: Bridging the ecology and evolution of East African acacias across time and space: Genomics, ecosystem, and diversification* explores how African acacia trees have changed and will change in response to climate. Evolving to survive and reproduce under harsh conditions, they tolerate fire, drought, browsing giraffes and elephants, and competition from other plants. This project will (1) construct new, detailed models of their phylogenetic history and the ecological distribution of species and traits; (2) study selection, introgression (the incorporation of novel genes from other species), and gene family expansion; (3) measure trait responses to specific savanna changes in a common garden experiment in Arusha, Tanzania; and (4) analyze the molecular aspects of their phenotypic responses from transcriptomic profiles collected in both Tanzania and controlled greenhouse experiments. The project will also train undergraduate and graduate students and postdoctoral fellows in evolutionary biology, ecology, plant physiology, and molecular genomics; expand the content and reach of a successful undergraduate teaching module on Serengeti National Park ecology and evolution; and launch a bioinformatics training course in partnership with African universities.

Integrating fossils, genomics, and machine learning to reveal drivers of Cretaceous innovations in flowering plants will develop machine learning approaches to define the rapid changes that resulted in plant dominance of today's environment. The Tree of Life is marked by moments when groups change dramatically and diversify quickly: birds, mammals, plants transitioning from water to land, and, in particular, flowering. However,

identifying the processes that spark such transformations calls for new approaches to acquiring and analyzing data. This project will use novel machine learning methods to generate a large, morphological dataset for flowering plants and new statistical methods for modeling evolution. It will train undergraduate and graduate students and postdoctoral fellows in machine learning methods, evolutionary biology, and techniques for working with both fossil and living specimens. It will also develop resources and training for middle and high school students and the broader research community.



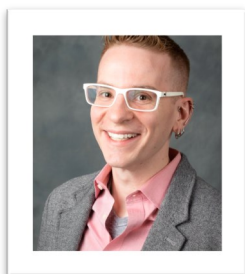
CHEMISTRY

Elham Ghadiri, Assistant Professor of Chemistry, has received the National Science Foundation's prestigious Faculty Early Career Development Program (CAREER) award for *Broadband UV-NIR Ultrafast Photochemistry Imaged in Space and Time**. The grant provides \$650,000 over five years to cultivate leadership integrating research and education.

Dr. Ghadiri and her students are developing new, ultrafast optical microscopy and spectroscopy techniques that can visualize complex photochemical reactions in real time and at a spatial resolution of a few hundred nanometers. The primary focus is light-absorbing semiconductors based on earth-abundant elements, which are promising candidates for sustainable energy-conversion applications. Results will inform design criteria for highly efficient light-harvesting materials to generate and store clean energy, while the new microscopy tools will push the limits of conventional time-resolved spectroscopy in many areas.

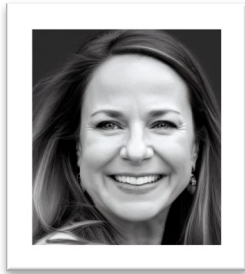
In addition to hands-on, cutting-edge research opportunities, Wake Forest students will build their scientific communication skills. In partnership with the WFU Environment and Sustainability Studies (ENV) Program, the Ghadiri group will design and lead workshops and other activities to educate high school students and the wider community about the daily role of sustainable solar devices in climate change mitigation.

**This project is affiliated with the Center for Functional Materials.*



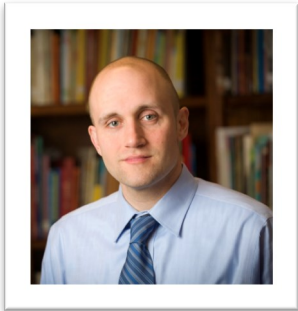
CLASSICS

T.H.M. Gellar-Goad, Associate Professor of Classics, and Christopher B. Polt, Associate Professor of Classical Studies, Boston College, were awarded a grant from the National Endowment for the Humanities to lead an Institute for Higher Education Faculty, “The Performance of Roman Comedy.” From 9 July to 4 August 2023, selected faculty convened in Boston to engage with three generations of experts in a wide variety of research specialties. They studied the entire surviving corpus of plays by Plautus and Terence, examining ancient evidence for, and modern experiments in, their performance; their social, historical, and literary contexts; and their continuing significance and influence. Participants also applied their new knowledge by staging and filming scenes from Roman comedies in various styles and drafting pedagogical modules and research guides to share with students and colleagues. The institute's blog (<https://romancomedy.pubpub.org/blog>) offers a day-by-day, play-by-play reconstruction of the events and links to the videos, teaching modules, and research guides when they are published.



EDUCATION

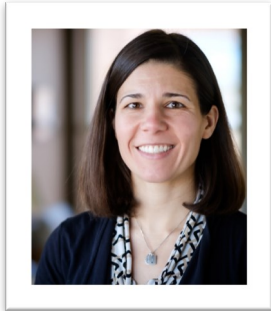
The U.S. Department of Education awarded Winston-Salem TEACH a \$4.7 million Teacher Quality Partnership (TQP) grant. Winston-Salem Teachers for Equity, Achievement, Community, & Humanity (WS-TEACH) is a partnership between Winston-Salem State University, Wake Forest University, Salem College, and Winston-Salem/Forsyth County Schools designed to create a pipeline of highly-effective, equity-centered educators in high-need WS/FCS schools. The TQP program provides grants to institutions of higher education and their partner school districts to enhance teacher quality and effectiveness in high-needs schools and subject areas.



WS-TEACH integrates evidence-based best practices to recruit, prepare, and retain aspiring educators with a strong commitment to equity to teach in high-need WS/FCS elementary (K-6), secondary (9-12), and special education (K-12) classrooms. Selected from candidates holding an undergraduate degree with a GPA of 3.0 or higher, 100 Winston-Salem TEACH residents will receive a \$30,000, 12-month stipend as they complete Master's-level coursework and two clinical internships in high-need WS/FCS schools. Upon graduation, they will continue to teach for at least three years in a high-need WS/FCS school, supported by a collaborative coaching model and ongoing professional development.

Winston-Salem State University will serve as the fiscal agent of the grant. Program leaders include Executive Director and Research Associate Professor, **Dr. Kate Allman** (WFU & WSSU); Dr. Anthony Graham, Provost, and Dr. Cynthia Williams Brown, Interim Associate Dean of Education (WSSU); **Dr. Alan Brown, Chair of the Education Department** (WFU); Dr. Rebecca Jordan, Associate Professor of Literacy Education (Salem College); and Alexandra Hoskins, Senior Executive Director for District Coherence (WS/FCS).

HEALTH & EXERCISE SCIENCE



Kristen M. Beavers, Associate Professor, Department of Health and Exercise Science, is the principal investigator on three grants and a major contributor to a fourth awarded by the National Institutes of Health. Earning over \$13.5M, all these projects address a significant public health concern: *How can we make weight loss safer and more effective for older adults?*

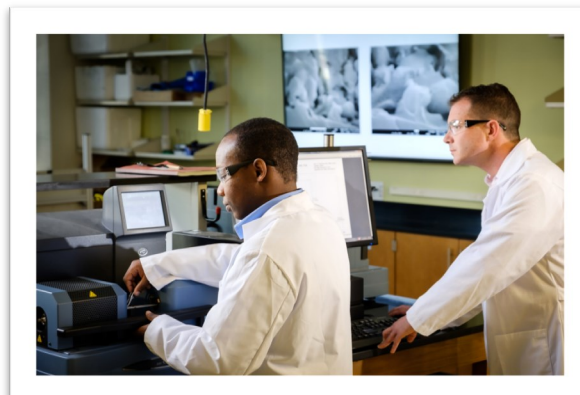
*Incorporating Nutrition, Vests, Education, and Strength Training in Bone Health (INVEST in Bone Health)** tests whether wearing a weighted vest can reduce weight loss-associated bone loss and fracture-related risk factors in older adults living with obesity. This National Institute of Aging-funded R01 is based on the observation that while strength training exercise helps to solve the problem, uptake among older adults is low. In addition, it often requires expensive equipment, on-site participation, and supervision by trained staff, limiting its scalability. In contrast, weighted vests are readily incorporated into activities of daily living.

*Bisphosphonate Use to Mitigate Bone Loss Secondary to Bariatric Surgery** is designed to determine whether the bisphosphonate *risedronate* can effectively counter bone loss associated with sleeve gastrectomy—a surgical procedure that produces robust weight loss but increases skeletal fragility. Bisphosphonate medications have been used for over 20 years to manage and treat age-related bone loss. This U01, funded by the National Institute of Arthritis and Musculoskeletal and Skin Diseases and conducted in partnership with the Wake Forest Weight Management Center, is based on pilot data suggesting that taking risedronate for six months is feasible and may be effective in minimizing bone loss associated with bariatric surgery.

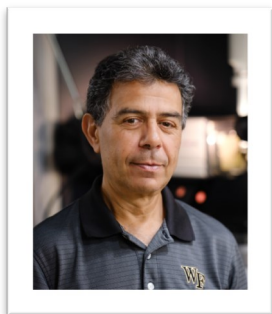
A Shared Instrument Grant provides funding for an XtremeCT II high-resolution peripheral quantitative computed tomography (HR-pQCT) scanner. HR-pQCT is a noninvasive, low-radiation approach for assessing bone strength and fracture risk. Its integration into the WFU/WFSM repertoire of biomedical imaging tools advances the initiatives of 18 NIH-funded centers, institutes, and departments and bolsters collaborative efforts with regional partners.

Finally, *Exercise and Bisphosphonate Use to Minimize Weight Loss-Associated Bone Loss among Older Adults* is a multisite R01 comparing the independent and combined effects of strength training plus bone-loading exercise and bisphosphonate use on dietary weight loss-associated bone loss among older adults living with overweight/obesity and low bone mass. The primary endpoint is change in total hip area bone mineral density. Among other measures, HR-pQCT allows state-of-the-art assessment of changes in bone microarchitecture and strength.

**These projects are affiliated with the Translational Science Center.*



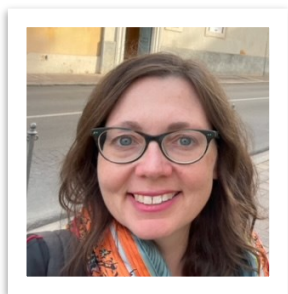
Fellowships and Awards



Abdessadek Lachgar, Professor of Chemistry, will conduct research and teach in the Materials Science Department at the University of Namibia as a 2023-2024 Fulbright US Scholar. These prestigious fellowships advance both research and diplomacy, building long-term personal and national networks.

Namibia's constitution is the first to incorporate mandates for environmental protection and justice. Professor Lachgar will collaborate with Namibian colleagues and students to develop materials and methods to reduce reliance on fossil fuels, focusing on sustainable production of hydrogen using solar energy and biowaste conversion to biofuel.

Professor Lachgar also served as a Fulbright Fellow in 2019 at the University of the State of São Paulo in Brazil. Results from this curricular and scholarly collaboration include four publications on materials for renewable energy, and the work of a PhD student he hosted at Wake Forest was recently published in the *Journal of Materials Chemistry*.



Monique O'Connell, Professor of History, has been singled out by the Gladys Krieble Delmas Foundation to receive its annual Giles Constable Award. Her book project, *Communication and Political Culture in Venice's Early Modern Empire*, explores how distinctive political cultures emerge when institutions, state representatives, and nonstate actors exchange knowledge, news, and values.

Historians of late medieval and early modern empires from China to

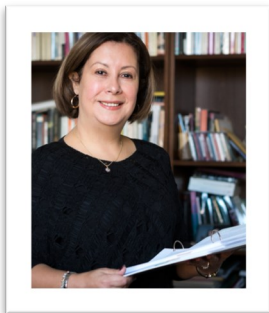
Sri Lanka to Portugal to Byzantium are turning their attention to social and political communication to elucidate imperial integration and statebuilding. Family and patronage networks, printers, translators, and intelligence brokers contributed to the emergence of textual and visual communication in public spaces. Rituals, the built environment, soundscapes, and landscapes are plumbed to explain how various state and nonstate actors form durable political cultures sustained by both consensus and contestations of power.

This scholarship acknowledges the city of Venice as an information center and a model of representative government yet surprisingly neglects its empire. By the early sixteenth century, the republican councils of Venice ruled over a land and sea empire that stretched over 1,200 miles, from Bergamo in central Italy to Cyprus. The long distances, linguistic and cultural diversity, and other differences between regions posed challenges to creating a system of political ideas and values that connected individuals and networks at the core and periphery. Professor O'Connell's book will contribute a new understanding of how early modern empires performed and shared power and created cultures and structures of political order with varying levels of control across long distances.



Eranda Jayawickreme, Harold W. Tribble Professor of Psychology, has received the 2023 Early Career Contributions Award from the International Society for the Science of Existential Psychology. The society supports quantitative research approaches to define mental processes and develop new theories across the spectrum of human experience. Professor Jayawickreme studies responses to trauma related to morality, wisdom, and well-being. He directs Wake Forest's Growth Initiative Lab and is the senior research fellow for the Program for Leadership and Character.

Prior awards include the 2018 WFU Faculty Excellence in Research Award, the 2015 Rising Star award from the Association for Psychological Science, a Mellon Refugee Initiative Fund Fellowship, and grants from the John Templeton Foundation, Templeton Religion Trust, Templeton World Charity Foundation, the European Association for Personality Psychology, and the Asia Foundation/USAID. His work has been profiled in the *Guardian*, *New York Times*, *Philadelphia Inquirer*, *Scientific American*, *Slate*, and *Washington Post* and by the BBC, NPR and PBS. He serves as co-editor for *Social Psychological and Personality Science* and associate editor for the Personality Processes and Individual Differences (PPID) section of the *Journal of Personality and Social Psychology* and *Applied Psychology: Health and Well-Being*.

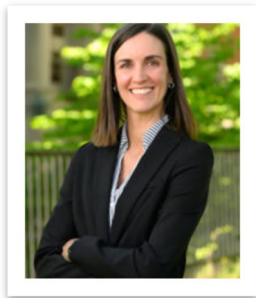


Maria-Teresa Sanhueza, Associate Professor of Spanish, was selected to attend a 2023 NEH Summer Institute for Higher Education Faculty supported by the Democracy Demands Wisdom program. The Center for José Martí Studies Affiliate at the University of Tampa, FL, hosted "The Immigrant Communities of Florida and José Martí in Cuban Independence and the Dawn of the American Century." The institute proposes cross-cultural approaches to the teaching of US history, international relations, immigration, race and ethnicity, Latinx and Caribbean/Cuban studies, Hispanic language and cultures, and related disciplines.

Experts and participants examined the US military intervention in Cuba's War of Independence from the perspective of Florida's Cuban émigré communities. From the late nineteenth century, living in cigar-manufacturing enclaves in Key West, Ybor City, and West Tampa, they played a critical role in the anticolonial struggle against Spain, while

reconceiving labor rights, ethnic identity, and self-determination in the Jim Crow South. Their experience clarifies the complex cultural and political evolution of what is often termed “the American century.”

Dr. Sanhueza’s final project addressed the depiction of Italians in Cuban-American theater, “Recovering Sicilian Voices in Ybor City.” She has incorporated her new knowledge into her current Spanish seminar.



Staci Hepler, Associate Professor of Statistical Sciences, has been awarded the 2023 American Statistical Association (ASA) Section on Statistics and the Environment’s Early Investigator Award. The Early Investigator Award recognizes Hepler’s outstanding contributions to emphasize the cross-disciplinary focus of statistics and the environment.

You can read more about the ASA’s ENVR Awards at:

<https://community.amstat.org/envr/recognitionandawards/distinguishedachievementawards> .

Professional Development

INTERNAL AWARDS

The Office of Research and Sponsored Programs assists the Vice Provost for Research and Scholarly Inquiry in coordinating and administering internal award programs. In FY23 there were two deadlines for Pilot Research Grants, one for Collaborative Pilot Grants, and one for the new Intercampus Collaborative Grants with Wake Forest University Health Sciences. Amounts awarded in FY23 are listed below. The ZSR Foundation gift supported \$49,636.

Pilot Research Grants \$78,636

Collaborative Pilot Grants \$40,000

Bridge Funds \$30,000

The office also manages matching/cost share funds. In FY23 nearly \$150K was provided for sponsored project cost share, open-access publishing, and other initiatives.

PROFESSIONAL DEVELOPMENT

In FY23, the office spent over \$42K 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

Recognition of Research Excellence – Annual Reception

Awards for Excellence in Research

ACC InVenture Prize Competition

NSF CAREER Proposal Discussion

Team Building Seminar

Human Research Protection

ORSP provides administrative support to the Institutional Review Board (IRB) under federal Department of Health and Human Services (DHHS) regulations 45CFR §46.

In FY2023, the IRB reviewed 141 new applications in the following categories: 1 full-board, 3 expedited, 3 exempt, and 134 flex. We processed 277 amendments, 2 continuing reviews, and 319 annual updates. The average number of active applications increased only slightly, from 394 per month in FY2022 to 398, and May witnessed the highest number of active applications for the year (410).

Our human research portfolio includes very few federally funded projects, but this year, we hit an all-time high of 20.

In the spring semester, the IRB reviewed and approved 30 URECA (Undergraduate REsearch and Creative Activities) Center studies by undergraduate and graduate Richter Scholars, Stamps Scholars, Wake Forest Research Fellowship recipients, and Wake Forest Arts and Humanities Research Fellowship recipients.

In early May 2023, eIRB underwent a long-needed upgrade. Our programmer worked closely with Huron, the software's vendor, to replace the version we had used since July 2019

(8.1.6) with the most up-to-date (10.0.5). Users can now scroll through the application rather than toggle between pages, and IRB administrators can directly insert comments/concerns to address a specific word or phrase in the text, eliminating any potential ambiguity for the research team.

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



Funding Highlights

In FY23, Wake Forest University received \$13.4 million in support for research and other scholarly activities, not including the awards for scholarship in the social sciences and humanities. Faculty and staff submitted 172 proposals, requesting \$77.6 million.

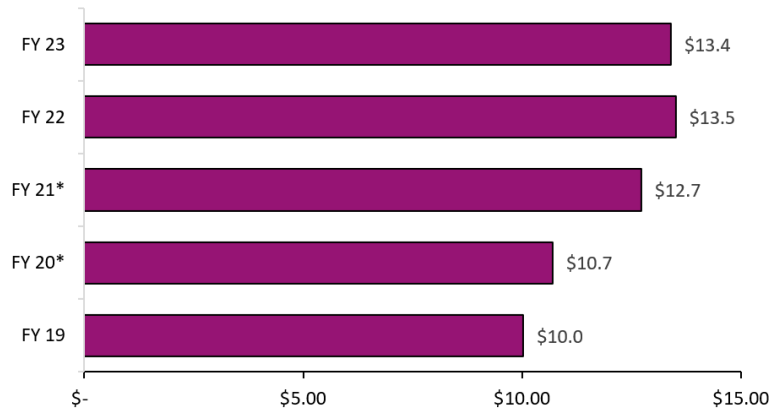
Federal grants accounted for 90% of all funding. The Health and Exercise Science Department received the highest amount, followed closely by the Biology Department. Faculty in the Physics submitted the most proposals.

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

Timothy Gitzen, Anthropology
 Stacie Petter, Business School
 Karen Singer-Freeman, Center for the Advancement of Teaching
 Elham Ghadiri, Chemistry
 THM Gellar-Goad, Classical Languages
 Amanda Alston, Civic and Community Engagement
 Michael Vanbastelaer, Computer Science
 Natalie Aho, Divinity School
 Qiaona Yu, East Asian Languages & Cultures
 Mark Alan Brown, Education
 Eleni Caldwell, Education
 Michele Myers, Education
 Julie Velasquez Runk, Environmental Program
 Megan Irby, Health and Exercise Science Department
 Scott Schang, Law School
 Nay Coleman, LGBTQ+
 Terry Brock, Provost Office
 Veronica Cole, Psychology
 Denice Lewis, ZSR Library

The statistics that follow summarize Reynolda campus sponsored research activity for FY23. 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.

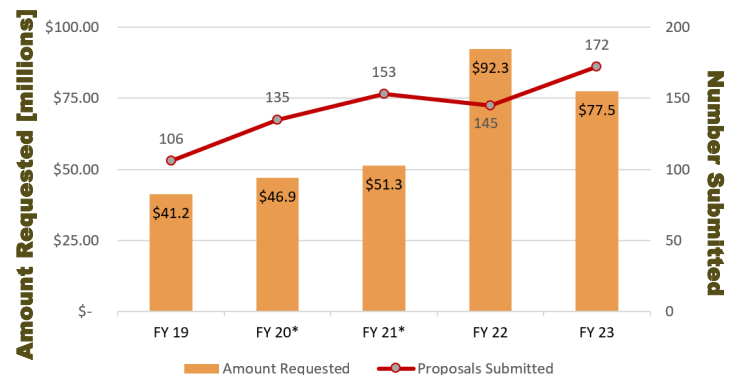
AWARDS BY YEAR: 2019-2023



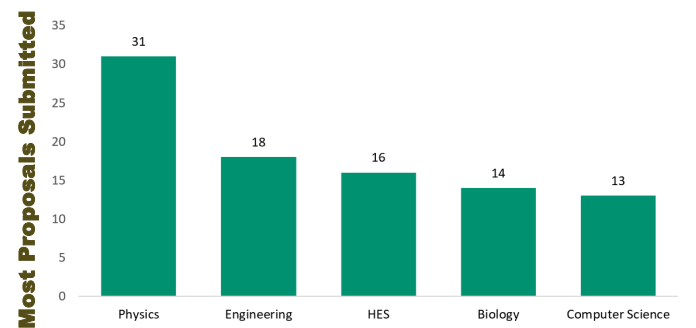
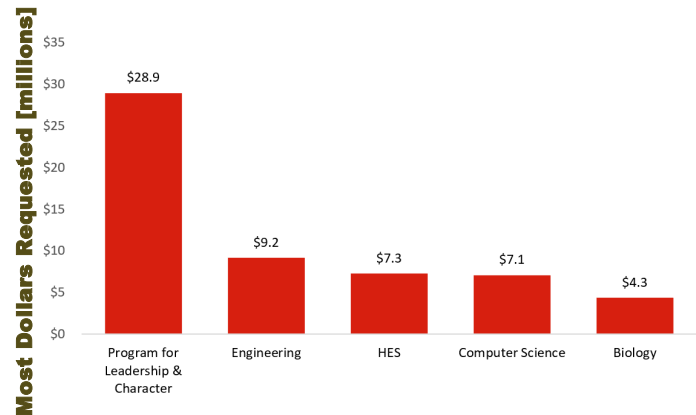
**The FY20 and FY21 figures in this table exclude CARES Act funding. Inclusive of CARES Act Funding, the totals for FY20 and FY21 are approximately \$14.10M and \$25.90M, respectively.*

Amount Received [millions]

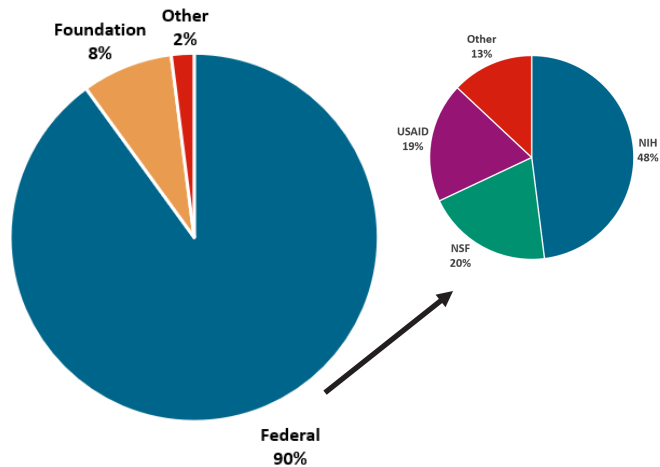
PROPOSALS BY YEAR: 2019-2023



PROPOSALS BY DEPARTMENT



FUNDING SOURCES



Department/Center	Awards	Amount	New Awards	Amount
Health & Exercise Science	16	\$2,967,593.03	4	\$1,415,259.00
Biology	7.5	\$2,536,361.35	3.5	\$648,684.14
Sabin Center for Environment &	2.33	\$1,283,381.43	0.83	\$91,557.33
Psychology	9	\$1,100,755.09	6	\$965,009.00
Physics	12.66	\$832,347.23	4.66	\$417,283.17
Translational Science Center	2.33	\$748,925.48	0.83	\$84,040.00
Engineering	9.5	\$700,106.43	4.5	\$271,897.50
Computer Science	6	\$627,387.42	4	\$430,756.83
Chemistry	2.5	\$523,214.21	0.5	\$130,000.00
Center for Functional Materials	2.83	\$451,870.83	1.33	\$203,324.17
Civic Engagement	3	\$282,505.82	3	\$282,505.82
Center for Molecular Signaling	2.33	\$246,021.14	1.83	\$198,403.64
Statistical Sciences	4	\$228,233.12		
Nanotech & Molecular Materials	1	\$180,925.00	1	\$180,925.00
Education	7	\$149,312.00	5	\$140,712.00
Provost Office	1	\$116,985.00		
Mathematics	1	\$65,369.00	1	\$65,369.00
Graduate School	2	\$62,292.00	1	\$49,490.00
Law School	1	\$50,076.40	1	\$50,076.40
WFDD	5	\$45,404.00		
Bioethics, Health & Society	1.5	\$36,652.78	0.5	\$24,520.78
Philosophy	1.5	\$36,652.78	0.5	\$24,520.78
Art	1	\$30,000.00	1	\$30,000.00
Business Schools	1	\$24,591.00	1	\$24,591.00
Divinity School	1	\$15,000.00	1	\$15,000.00
Environmental Program	1	\$13,694.00	1	\$13,694.00
Anthropology	1	\$13,338.91	1	\$13,338.91
CAT	1	\$10,608.00	1	\$10,608.00
Advancement: Alumni Affairs	1	\$7,000.00	1	\$7,000.00
E Asian Languages & Cultures	2	\$6,250.00	2	\$6,250.00
LGBTQ+ Center	1	\$5,000.00	1	\$5,000.00
ZSR Library	1	\$2,500.00	1	\$2,500.00
Classical Languages	1	\$0.00	1	\$0.00



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