



# Office of Research and Sponsored Programs

2021 Annual Report



## STAFF

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### BUSINESS SERVICES SPECIALIST

Elisa Burton

## MISSION

Wake Forest University's Office of Research and Sponsored Programs supports the Associate 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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Funding Highlights

# From The Executive Director

Dear Researchers,

Research is thriving at WFU. Coming back from the closure of nearly all labs in the spring of 2020, funding achievements are on the rise. We submitted 17 more proposals in FY21 than in FY20; the last time we submitted this many was in FY12.

Buoyed by CARES Act funding, awards from external sources exceeded \$25 million, of which over \$12.7 million support research and other scholarly activities. Awards for research are higher than in each of the past four years. Please see the last pages of our report for trends over the last five years as well as awards by department/center/school.

We have not been able to celebrate in person at our annual reception for a couple of years. We hope to gather together next spring to recognize all our achievements such as Grey Ballard in Computer Science securing a prestigious National Science Foundation Faculty Early Career Development Program (NSF CAREER) award. The largest grant for Humanities research, over \$4.4M, was secured by Philosophy Professor Christian Miller and his collaborators in the Honesty Project. The largest grant in WFU history, \$8.8M, was awarded to Miles Silman and Luis Fernandez, who are continuing their ecological research in Peru. Details about these projects can be found in the following pages.

You may know there have been staffing changes among our research managers. To take advantage of the early retirement incentive offered in FY21, Lisa Burton, Business Services Specialist for ORSP, retired in January but is temporarily working for us part time. Gloria Stickney retired as Grants and Contracts Manager for the Physics department in February, and Heather Chapman is now fulfilling those duties.

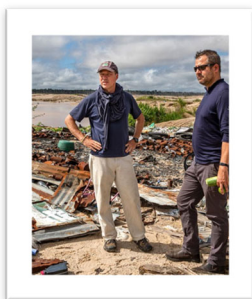
Thanks to online systems, such as Cayuse and eIRB, research administration staff were able to work remotely with little-to-no disruption in service. We continued to engage in professional development opportunities, such as the National Institutes of Health (NIH) Virtual Grants Seminar and NSF Virtual Grants Conference. Jeanie Baird (Certified IRB Professional) and Mark Woodard (Certified Research Administrator) successfully renewed their professional certifications during FY21. Congratulations Jeanie and Mark!

Sincerely,

Lori Gabriel, CRA, Executive Director



## Featured Projects

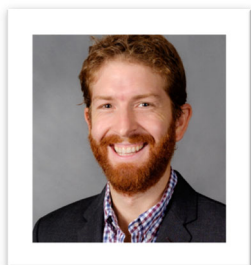


### CENTER FOR ENERGY, ENVIRONMENT & SUSTAINABILITY

**Miles Silman**, Professor of Biology, Andrew Sabin Family Foundation Professor of Conservation Biology, and director of the Center for Energy, Environment, and Sustainability, and **Luis Fernandez**, Research Associate Professor of Biology and co-founder and executive director of the Center for Amazonian Scientific Innovation (CINCIA), have secured \$8,800,000 from USAID in support of CINCIA ACIERTA: Alliance for Science and Ecosystem Recovery.

The Peruvian Amazon's wealth of biodiversity has been the focus of research and conservation efforts for over half a century, and its communal reserves and protected areas are home to large populations of indigenous people. However, the region is also an epicenter of a global gold rush; illegal artisanal and small-scale gold mining (ASGM) creates pits and ponds that damage forests and increase the risk of mercury poisoning.

This project consolidates and expands on results achieved under a previous USAID-funded project. It applies CINCIA's proven three-pronged approach—policy-relevant scientific and technological innovations, close policy engagement, and multidimensional press outreach—to reduce ASGM impact in Madre de Dios and to initiate activities in the northern department of Loreto. Working with established research partners in both regions, the project will build a new analytic mercury laboratory, introduce next-generation methods to detect early-stage ASGM impact, grow societal awareness, and empower forward-looking government action. The goal is to interrupt a growing threat to biodiversity sustainability, including human life, in one of the largest, most ecologically crucial regions in the Amazon Basin and the world.



### COMPUTER SCIENCE

**Grey Ballard**, Assistant Professor of Computer Science, has won the National Science Foundation's prestigious, 5-year Faculty Early Career Development Program (CAREER) award to advance his outstanding research and teaching.

His project, Communication-avoiding tensor decomposition algorithms, addresses the data avalanche overwhelming analysts. Standard techniques often organize information in two-dimensional tables, where rows correspond to subjects and columns correspond to features. However, many of today's datasets involve multiway relationships that are more accurately represented by higher dimensional tables called tensors. For example, movies are 3D tensors, or a 2D set of pixels varying over time; a 4D tensor can represent communication information tracked between senders and receivers across time and various modalities; and scientific simulations tracking variables in three physical dimensions across time are 5D tensors.

This project is designed to optimize algorithms for tensor decomposition, the most common method for unsupervised exploration and analysis of such multidimensional data. It is used to discover hidden patterns and behavioral anomalies, to remove noise from measurements, and to compress prohibitively large datasets, but it can take too much time and memory. Results of the proposed studies will standardize optimal computational and storage techniques, allowing larger datasets to be processed more interactively, and facilitating bigger and better science.

The educational outcome will be a textbook on tensor decompositions and multidimensional data analysis for use in upper-level undergraduate or graduate courses or as an introduction for application-domain researchers. It will be problem-based, integrating programming exercises with datasets in various application areas. Both the research and educational components of the project will lead to open-source software development.

## ENGINEERING



**Saami K. Yazdani**, Associate Professor of Engineering, has been awarded a 4-year grant from the National Institute of Biomedical Imaging and Bioengineering (NIBIB) to study Local delivery of a smooth muscle cell-targeted aptamer to inhibit neointimal growth and accelerate vascular healing.

Peripheral artery disease (PAD) develops when atherosclerotic or cholesterol deposits narrow vessels, restricting blood flow to the limbs, head, and stomach. Current strategies to manage it—stents and drug-coated balloons—have failed to

provide long-term relief to the 8.5 million US patients who suffer it. Specifically, their inefficient delivery of nonspecific drugs cannot prevent restenosis, when activated vascular smooth muscle cells (VSMCs) migrate to, and proliferate in, the innermost, or intimal, layer to re-occlude the artery.

Dr. Yazdani's project will develop a smart drug that exclusively targets VSMCs and use a perfusion catheter to deliver it directly into the vessel wall where they reside. The benefits of these innovations over commercially available treatments will be demonstrated in both ex vivo and in vivo models. Results will lead to the first consistently effective treatment.

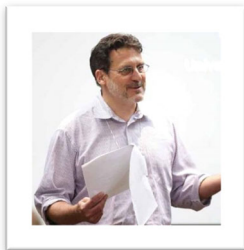
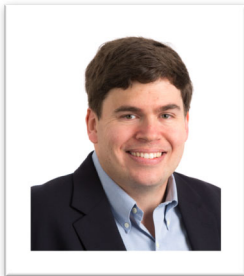
## PHILOSOPHY

**Christian Miller**, A. C. Reid Professor of Philosophy, is director of the **Honesty Project**, awarded \$4,402,255 for three years by the John Templeton Foundation, following on a two-year planning grant. Colleagues **William Fleeson**, Hultquist Family Professor of Psychology; **R. Michael Furr**, Professor of Psychology and Wright Faculty Fellow; **Eranda Jayawickreme**, Associate Professor of Psychology and Senior Research Fellow, Program for Leadership and Character, all at Wake Forest University; and Taya R. Cohen, Associate Professor of Organizational Behavior and Theory at the Tepper School of Business at Carnegie Mellon University, are project leaders.

Honesty is almost universally deemed a virtue that must be cultivated as part of a good moral education, yet many fields, especially philosophy and psychology, have not explored it in great depth and are now raising basic questions:

1. What is the definition and value of honesty? What are the behavioral and motivational requirements for being honest or exceptionally so?
2. To what extent are people honest? How does this vary by culture?
3. What contextual and internal factors encourage honesty and shape its development in individuals, groups, organizations, and institutions?
4. What are the consequences of honesty and dishonesty for relationships, groups, organizations, and institutions?
5. Under what conditions is dishonesty justified, if any? What factors lead people to be receptive to, or offended by, honesty?

Five activities are proposed to address these questions:





1. Lead two funding competitions to support research;
2. Organize two conferences featuring the winners;
3. Conduct research at Wake Forest University and Carnegie Mellon University;
4. Write a book for a popular audience; and
5. Lead a summer seminar for junior scholars.

The Honesty Project will foster new research on this fundamental, yet underexplored virtue. It is expected to generate 40-65 paper submissions, 6-8 book manuscripts, and 60-90 presentations.

## PSYCHOLOGY

**Eric Stone**, Professor of Psychology, heads a 4-year collaborative research project on the Behavioral consequences of excessive confidence with National Science Foundation (NSF) support.

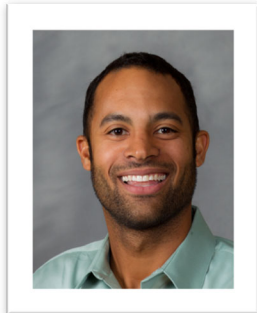


Many believe that lack of confidence impedes performance in such areas as academics and athletics. However, behavioral decision research finds that people tend to be overconfident and posits that confidence unsupported by relevant knowledge leads to maladaptive risk-taking. This project is designed to reconcile the opposing views, hypothesizing that confidence unjustified by knowledge can have both positive and negative effects, and decision outcomes depend on specific circumstances.

Initial exploratory studies contrasted lay and expert mental models of the consequences of unjustified confidence to expose gaps in the literature, and the team is writing up the results for publication along with another paper examining various ways to manipulate confidence. Next, a series of interrelated correlational and experimental studies will examine how unjustified confidence affects psychological processes, such as expectations and anxiety; behavioral processes, such as risk-taking or the search for, and evaluation of, relevant information; and ultimately, decision outcomes. Findings will inform interventions to improve decision-making and, hence, individual well-being as well as an online, customizable, confidence-calibration training tool that will be made available to the research community.



# COVID Related Projects



## COUNSELING

**Philip Clarke**, Associate Professor of Counseling, received funding from Chi Sigma Iota, the counseling academic and professional honor society international, to conduct a study titled Examining the longitudinal relationships among wellness, COVID-19 stressors, mental health and substance use in the general population.

In a recent survey conducted by the American Psychiatric Association, 36 percent of Americans believe the coronavirus is having a serious impact on their mental health. The purpose of this project is to explore the long-term effects of the COVID-19 global pandemic on mental health and well-being and to identify wellness behaviors that help to mitigate negative mental health effects.



## SCHOOL OF BUSINESS

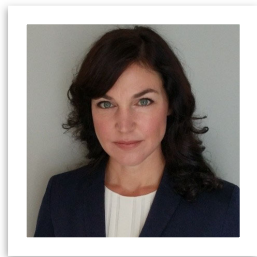
**Amol Joshi**, Bern Beatty Fellow and Associate Professor of Strategic Management, School of Business, is collaborating with colleagues at the University of Oregon on RAPID: Examining the innovative ecosystem during the COVID-19 pandemic. The National Science Foundation (NSF) deploys Rapid Response Research grants when an emergency threatens the availability of, or access to, data and infrastructure.

The project examines shocks to the US entrepreneurial ecosystem induced by the COVID-19 pandemic and ensuing policy responses. It focuses on small, minority-owned, high-tech ventures and ventures that support the federal government's attempts to bolster the economy. Initial findings suggest that in the first months of the crisis, startup activity increased dramatically among minority-owned and service-related businesses in tandem with federal procurement transactions, which jumped from 14.4 million contracts in 2019 to 23.1 million in 2020, an unprecedented single-year increase. However, while comprising nearly half of all new startups since the pandemic began, minority-owned startups have received only 20 percent of this massive influx of new procurement contracts. Similar



disparities hold for firms owned by women and veterans.

The project will compile comprehensive, scalable, nationwide databases and make them and an interactive dashboard publicly available to advance research and inform policies to assist small high-tech firms in supplying much-needed resources even during disasters.



## SCHOOL OF LAW

**Emily Benfer**, Visiting Professor of Law, has received support from the Pew Charitable Trusts for Analysis of COVID-19 eviction and rental housing policy and from the Jessie Ball duPont Religious, Charitable, and Educational Fund for COVID response: Eviction court watch, tenant rights education, and pro-bono education.

The first study, conducted with Matthew Desmond, Princeton University, Peter Hepburn, Rutgers University-Newark, and Danya Keene, Yale School of Public Health, will analyze how and how effectively political actors and court systems have addressed the unprecedented eviction and displacement crisis precipitated by the pandemic. Specifically, they will conduct (1) a comparative analysis of eviction moratoria and housing stabilization measures issued by governors, legislators, and courts nationwide as well as district courts and county and municipal governing bodies in 27 large metropolitan areas and 50 states; (2) a longitudinal, quantitative analysis of changes in eviction filing patterns before, during, and after these policies were deployed in the 27 metropolitan areas and 6 states; and (3) a qualitative study to learn how tenants at risk of eviction interpret, respond to, and experience these policies. Results will provide policymakers and the courts with concrete information to ensure access to the legal system and the proper functioning of housing law during and after a state of emergency.

The second study comprises tenant education, eviction court watch, qualitative interviews, and file review. WFU School of Law faculty and students, Legal Aid of North Carolina (LANC), and the community organization Housing Justice Now

(HJN) will conduct canvassing, rights education, and referrals in Forsyth County neighborhoods with the highest eviction and job-loss rates. WFU pro bono law students will create materials on tenant rights in eviction for canvassers to distribute. In addition to meeting an urgent community need, the students will gain basic legal research and communication skills and an understanding of the barriers to justice inherent in the legal system for low-income and minority communities. In addition, Isaac Sturgill of Legal Aid of North Carolina will expand on the students' initial research to develop a manual for pro bono attorneys and tenants defending against eviction in the state.

In the court watch, undergraduate and law student teams will record both procedural and demographic observations of magistrate court in Forsyth County and construct a novel database. Professor Benfer; Brittany Battle, Assistant Professor of Sociology at Wake Forest; and Dan Rose, Assistant Professor of Sociology at Winston-Salem State University, will also conduct interviews of tenants to understand their experience in eviction court during the pandemic. Finally, a review of eviction-proceeding files will test the strength of protections added or subtracted from June 22 to December 30, 2020, including the CARES Act, the CDC Eviction Moratorium, and NC Governor's Executive Order 171, which adopted the CDC Order. By incorporating various perspectives and data sources, the project will provide a comprehensive picture of the eviction crisis in Forsyth County to inform proposals for reform.



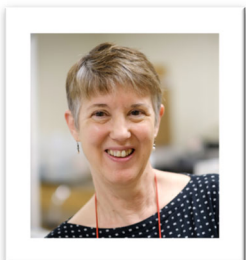
# Fellowships and Awards



## ART HISTORY

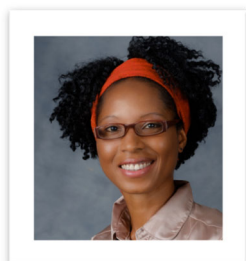
**Chanchal Dadlani**, Associate Professor of Art History and ZSR Foundation Faculty Fellow, has been awarded a National Endowment of the Humanities (NEH) fellowship to complete research on and to write *Translating India: Mughal Art and French Knowledge Production in the Eighteenth Century*.

The book examines art commissioned and collected in India by Jean-Baptiste Gentil, an officer of the French East India Company who lived in Mughal India from 1752-1778. It interprets a set of illustrated histories that he co-produced with a select group of artists. Moving beyond standard approaches that focus on biography or style, the book contextualizes the collection in various artistic and epistemic systems, from the manuscript workshops of north India to the networks of early Orientalism. It shows how these culturally layered art objects mediated between India and France during a crucial period of European colonial expansion. In emphasizing the centrality of images in processes of cultural exchange, it restores agency to Indian artists rendered all but invisible in the historical record.



## BIOLOGY

**Susan E. Fahrbach**, Professor and Chair of Biology, was elected Fellow of the International Society for Neuroethology in recognition of her groundbreaking work elucidating the mechanisms of neural plasticity in honey bees and for her service as the society's secretary from 2012-2018.



## COMMUNICATION

**Rowena Kirby-Straker**, Assistant Teaching Professor of Communication, has received a Weather Ready Research Quick Response grant from the Natural Hazards Center, the National Science Foundation's clearinghouse for information and research on the societal dimensions of hazards and disasters, including preparation, management, and policy initiatives. It supports her

project, Extending disaster stories to save lives: Investigating the staying power and influence of narratives on disaster preparedness in three North Carolina counties.

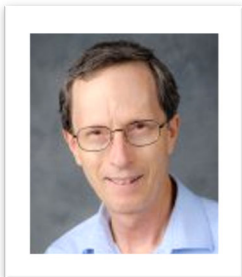
This study uses the experiences of North Carolinians affected or threatened by the flooding associated with tropical storm Eta in November 2020 to investigate the influence of disaster narratives on future preparedness and prevention efforts. Contributing to the literature on risk perception, risk and crisis communication, narrative persuasion, personal relevance, self-efficacy and behavior, integrated resource management, and disaster preparedness, it has powerful implications for scholarship and practice.



## STUDY OF RELIGIONS

**Nelly van Doorn Harder**, Professor, Department for the Study of Religions, and Jason Zaborowski, Associate Professor of Philosophy and Religious Studies at Bradley University, received an award from the National Endowment for the Humanities (NEH) to organize A summer institute for college faculty on Middle Eastern Christianity: A Historic and Living Tradition.

Middle Eastern Christians have an enduring heritage, stretching from pre-Islamic times to the present. For the last 1400 years, they have preserved their distinct beliefs and traditions in Muslim-majority homelands and as emigrants to other countries. Their experiences hold lessons for other groups working to maintain their identity amid social change. The institute will explore contemporary communities in their historic context, preparing educators to integrate the topic of Middle Eastern Christianity into courses in various fields of study.



## PHYSICS

**Paul Anderson**, Professor of Physics, has been elected a 2020 Fellow of the American Physical Society in recognition of his contributions to the understanding of quantum field theory in curved spacetime applied to black hole and cosmological spacetimes.

# Professional Development

## INTERNAL AWARDS

The Office of Research and Sponsored Programs assists the Associate Provost for Research and Scholarly Inquiry in coordinating and administering internal award programs. In FY20 and FY21 there were four deadlines for Pilot Research Grants and two for Collaborative Pilot Grants and a total of \$355,350 was awarded. The Provost Office and the Office of Research and Sponsored Programs contributed over \$181,296 for these grants, while gifts from the ZSR Foundation and Blue Cross Blue Shield of North Carolina provided \$131,647 and \$35,000, respectively.

Pilot Research Grants \$169,950

Collaborative Pilot Grants \$170,000

Bridge Funds \$15,400

The office also manages matching/cost share funds. In FY21 \$110K was provided for sponsored project cost share, open-access publishing, high speed computing equipment, start up, and other initiatives.

## FACULTY DEVELOPMENT

In FY21, the office spent \$47K hosting and coordinating virtual professional development workshops and events as well as faculty and staff professional development. Supported programs and events include:

Creative Research Activities Development & Enrichment Program (CRADLE)

Responsible Conduct of Research Training for Graduate & Undergraduate Students

Building Research Success at Wake Forest University

Quality Circle Training

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 FY2021, the IRB reviewed 123 new applications in the following categories: 2 full-board, 1 expedited, 2 exempt, and 118 flex. Record numbers of amendments (334) and application renewals (8 continuing reviews and 273 annual updates) were processed. Active applications averaged 366 per month, and May witnessed the highest number in office history (383).

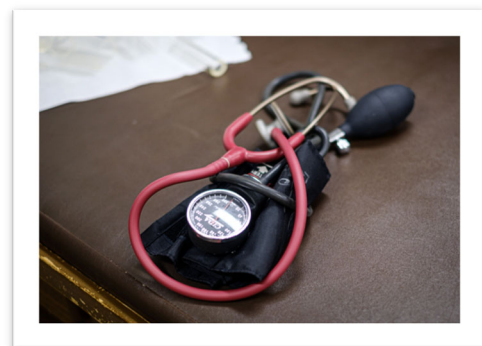
Because much of the research submitted to the IRB employs online procedures, the COVID-19 pandemic had little effect on new applications. Likewise, many existing research protocols with in-person procedures were easily adapted to remote methods, fueling the huge increase in amendments.

Our human research portfolio includes very few federally funded projects (3% of the total); however, in FY21, the number of federally sponsored active eIRB applications nearly doubled. This increase prompted us to reexamine eIRB programming to ensure that the workflow in all review categories is compliant and functional.

The University Administration Support Program (UASP) of the nonprofit organization IREX (International Research & Exchanges Board) invited the Associate Director for Human Research Protection to host a fellow. UASP Fellowships support the development of university research management and knowledge- transfer capacity through an eight-week, online, interactive experience for university leaders in the global community. Remote learning activities were designed

to help our UASP Fellow create an actionable plan for the implementation of institutional reforms to improve research management at her university in Nigeria.

In August 2020, the Wake Forest School of Medicine and Reynolda Campus slid the last pieces of the puzzle into place to improve the eIRB system. The authentication process is now simpler: WFU users use their existing @wfu.edu Google account credentials instead of creating new WF Health Systems-compliant passwords. Access has also been simplified. Latent eIRB accounts are automatically created for all potential Reynolda Campus users via monthly feeds from Banner (students) and Workday (faculty and staff) and can be activated as needed. These improvements, first proposed in 2014, have smoothed the user experience and increased the efficiency of office operations.





# Funding Highlights

In FY21, Wake Forest University received nearly \$26 million for research, scholarly activities, and other support. This total does not include amounts awarded for scholarship in the social sciences and humanities. In addition, faculty and staff submitted 153 proposals, requesting just over \$51 million.

Awards from federal sources accounted for 78% of all funding. Funding, in the amount of \$13M, was received from the CARES Act Program through the US Department of Education and this amount is included in our total from federal sources.

The Philosophy Department received the most funding of all departments, centers, and institutes. Faculty and staff in the Physics submitted the greatest number of proposals but the Biology Department researchers requested the most dollars.

During FY21, the following faculty and staff received their first grants at WFU:

Scott Geyer, Chemistry

Shelley Sizemore, Civic Engagement

Erin Henslee, Engineering

Amol Joshi, WFU Schools of Business

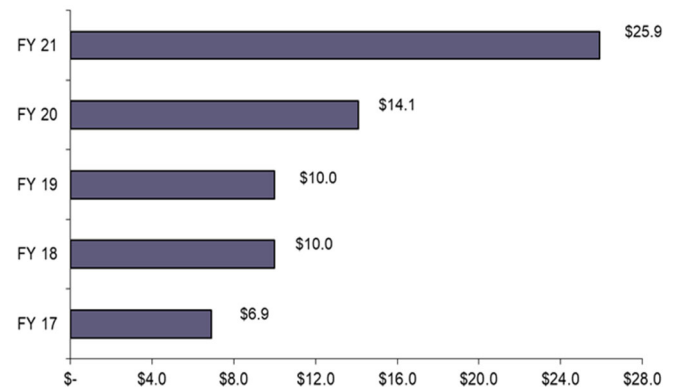
Emily Benfer, Law School

Shannon Brady, Psychology

Emily McCord, WFFD

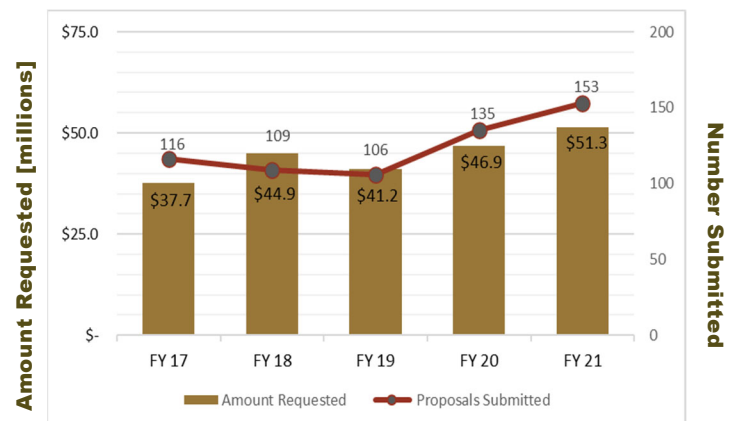
*The statistics that follow summarize Reynolda campus sponsored research activity for FY21. These graphs include funding processed through the Office of Research and Sponsored Programs and not gifts or fellowship awards made to individual faculty. Awards represent authorization to spend as opposed to research expenditures.*

AWARDS BY YEAR: 2017-2021

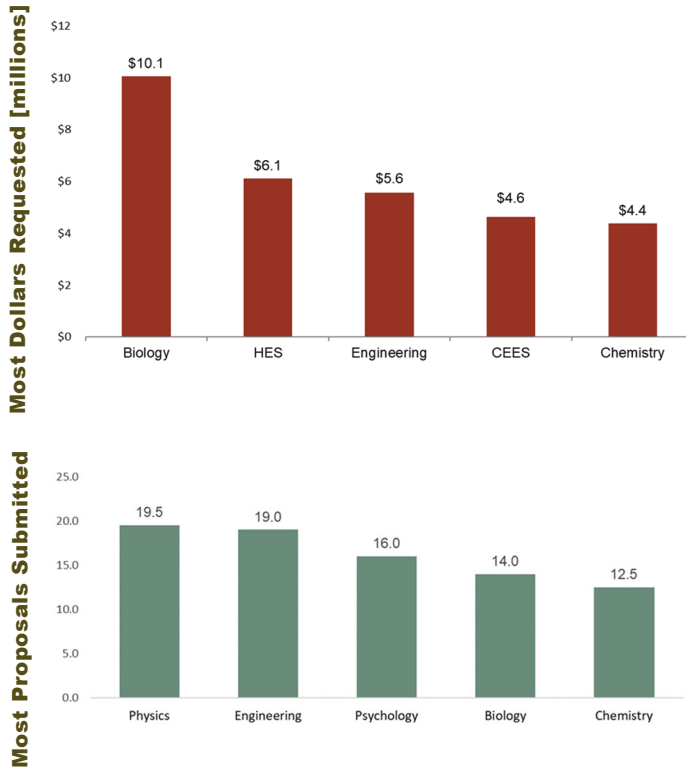


Amount Received [millions]

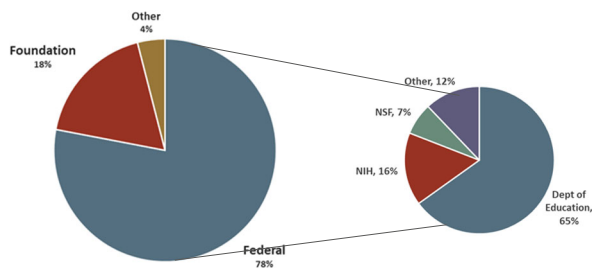
PROPOSALS BY YEAR: 2017-2021



## PROPOSALS BY DEPARTMENT



## FUNDING SOURCES



Department/Center	Awards	Amount	New Awards	Amount
Financial Services	4	13,219,340.00		
Philosophy	2.5	4,420,743.06	1.5	4,404,782.50
Biology	11	2,437,889.73	6.5	1,859,465.20
Health & Exercise Science	18.5	1,178,968.63	1	43,150.00
Center for Energy, Environment & Sustain.	3	932,144.62	3	932,144.62
Physics	10	711,683.67	1.5	94,460.50
Engineering	8	656,354.74	5	99,497.50
Translational Science Center	1.5	397,616.00	0.5	51,960.50
Chemistry	2	364,216.57	1	337,932.00
Computer Science	2.5	355,235.50	1.5	222,044.50
Law School	2	308,372.10	2	308,372.10
Center for Functional Materials	2	243,577.42		
Psychology	6	182,350.45	3	77,643.38
Center for Molecular Signaling	0.5	123,269.00		
Business Schools	3	102,282.00	2	68,742.00
Global Affairs	1	49,955.97	1	49,955.97
Center for Nanotechnology & Molecular Materials	1	42,500.00	1	42,500.00
Provost Office	1	35,000.00	1	35,000.00
WFDD	2	33,750.00	2	33,750.00
Counseling	2	31,741.00	2	31,741.00
Education	1	24,991.20		
Economics	3	24,385.04		
Bioethics	1.5	18,488.06	0.5	2527.50
Graduate School	2	14,224.04		
Theatre & Dance	1	13,607.00		
Communication	1	9,839.00		
Civic Engagement	1	5,000.00	1	5000.00



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