



# Office of Research and Sponsored Programs

## 2019 Annual Report



## STAFF

### EXECUTIVE DIRECTOR

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### ASSOCIATE DIRECTOR

Amy Comer, CRA

### ASSOCIATE DIRECTOR FOR HUMAN RESEARCH PROTECTION

Pam Moser, MPH, CIP

### HUMAN RESEARCH PROTECTION SPECIALIST

Jeanie Baird, MPA, CIP

### ASSISTANT DIRECTOR

Stephen L. Williams, CRA

### 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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# From The Executive Director

Dear Researchers,

Once again, awards in FY19 exceeded \$10 million. Excluding gifts and fellowships, faculty and staff research received external funds totaling \$10,029,779 in support of their research and scholarly activities.

Projects with an international focus continue to be rewarded. In FY16, USAID made a new award to the WFU/CINCIA (Centro de Innovación Científica Amazónica) group; in FY19 this project was renewed for an additional two years of support in the amount of \$2.5M. Several related projects under the direction of Miles Silman and Luis Fernandez, Biology, helped to strengthen WFU's research efforts in the Amazon. Elsewhere on campus, staff from Global Affairs submitted proposals and received awards for the first time to study the efficacy of an extracurricular program designed to enhance the global competence of North Carolina high school students.

In the pages that follow, we feature a few special FY19 awards. A number of faculty received their first awards since joining WFU. Regina Cordy, Biology, secured a prestigious Mentored Research Scientist Development Award (K01) from the National Institutes of Health to study the role of gut microbes and blood metabolites in the development of malarial anemia.

One of the most visible changes since the appointment of Keith Bonin, Physics, as our current Associate Provost for Research and Scholarly Inquiry is the overhaul of the Research, Office of Research and Sponsored Programs, and Human Protections websites to make them more accessible to mobile users.

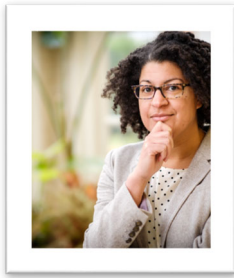
In the Office of Research and Sponsored Programs, Associate Director Amy Comer and I both renewed our Certified Research Administrator (CRA) credentials for 5 more years. Pam Moser, Associate Director for Human Research Protection, renewed her Certified IRB Professional (CIP) credential for 3 more years, passing a rigorous 4-hour examination. Congratulations, Amy and Pam!

Sincerely,

Lori Gabriel, CRA, Executive Director

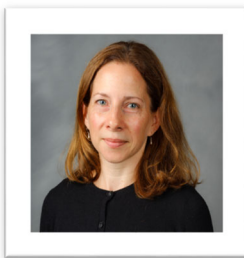


## Featured Projects



### BIOLOGY

**Regina Cordy**, Assistant Professor of Biology, has received a National Institutes of Health Research Career Development (K) Award to launch “A systems biology investigation of the interplay between gut microbes and blood metabolites in the development of malarial anemia.” The parasitic disease malaria is one of the leading causes of anemia, which plagues over 1.62 billion people, or approximately a quarter of the world’s population (World Health Organization, 2008). Dr. Cordy’s research team analyzes large multi-omic, long-term datasets from malaria-infected macaques to identify blood metabolites and gut microbes associated with the onset and severity of, and recovery from, malarial anemia. The goal is to identify novel drug targets that will enable metabolic and/or probiotic therapies for anemia generally.

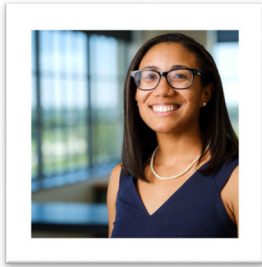


### BIOLOGY

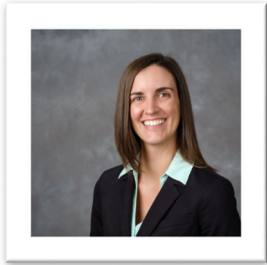
**Sherri Floge**, Assistant Professor of Biology, is the principal investigator of the National Science Foundation-funded project “Collaborative Research: Viral-induced chemotaxis mediating cross-trophic microbial interactions and carbon flux.” Photosynthetic microbes drifting on the ocean surface carry out nearly half of global carbon fixation, supporting the marine food web and reducing atmospheric carbon dioxide. However, the process is highly complex, controlled by myriad individual interactions within a tightly interconnected planktonic food web. At approximately ten million particles per milliliter, marine viruses are the most abundant biological entity in the oceans. During infection, they rewire phytoplankton metabolism and facilitate release of important nutrients, such as vitamins and amino acids. The team will conduct a series of multiscale laboratory experiments to test the hypothesis that bacteria and zooplankton are attracted to virus-infected phytoplankton and that these interactions alter carbon flux pathways. The goal is to develop a mechanistic understanding of the role of intact, virus-infected cells in oceanic carbon cycling. The project will also train two postdoctoral researchers, one graduate student, and undergraduate students in viral ecology, microfluidics, and metabolomics. An educational outreach program engaging middle-school students in hands-on, high-

speed imaging of microbes will be expanded, and the project will culminate in a three-day workshop to advance the application of microfluidic devices and mass spectrometry analyses in microbial ecology.

## ENGINEERING

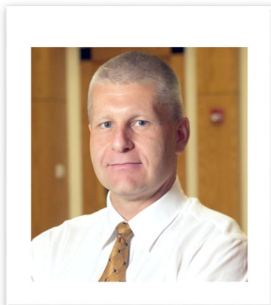


**Lauren Lowman**, Assistant Professor of Engineering, developed a community-science event, “The Lost Waterways of Winston-Salem,” with support from the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) as part of Let’s Talk About Water, an international program that uses films to promote environmental education and activism. Through computational modeling, geospatial analysis, and field experiments, Dr. Lowman and her Environmental Dynamics Lab study how changes in water availability affect ecosystem health, productivity, and sustainability. “Lost Waterways” considered whether streams covered up by urban development could be healthy and the effects of Winston-Salem’s growth on water quality and quantity. Students from the city’s colleges and universities were introduced to engagement opportunities with The Science of Winston-Salem, Living Creek Project, Yadkin Riverkeeper, Kaleideum, Piedmont Environmental Alliance, Temple Emanuel Environmental Movement, Simon’s Community Gardens, Gateway Nature Preserve, and Hydrating Humanity. They watched the documentary film *Lost Rivers*, which explores subterranean waterways in cities around the world and participated in a panel discussion about regional water problems led by Dr. Lowman; Sheila Saia, a postdoctoral research fellow in the Biological and Agricultural Engineering Department at North Carolina State University, who studies the Yadkin River basin; Kristen Haaf, director of urban planning for Roots First, which is designing ecologically sound landscapes in Winston-Salem and elsewhere; and photographer Christine Rucker, whose multimedia series “Dance for the River” ponders the polluted beauty of the Yadkin.



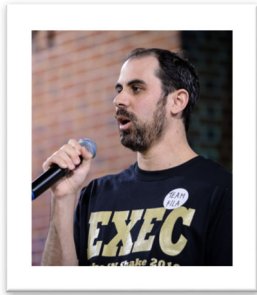
## MATHEMATICS AND STATISTICS

**Staci Hepler**, Assistant Professor of Mathematics & Statistics, has received a National Institutes of Health subaward/subcontract from The Ohio State University to explore “A Bayesian spatio-temporal approach for estimating county-level opioid misuse rates in Ohio.” Opioid misuse is a national epidemic, wreaking significant damage on human lives, the social fabric, and the economy. The scale of the problem is undeniable, but in order to stem the tide of the epidemic, we need to distribute resources for targeted prevention and treatment programs. Optimizing resource allocation requires accurate local estimates of opioid misuse, which are difficult to obtain. In this work, a new statistical modeling framework is constructed based on principles of abundance modeling. The model jointly considers many outcomes of routinely collected surveillance data, such as overdose deaths and counts of treatment admissions, to provide a more comprehensive understanding of opioid misuse at the county level. This work can be leveraged to inform estimates of county-level prevalence of opioid misuse, the association with socio-environmental factors, and a better understanding of the trends of opioid misuse over time.



## SCHOOL OF BUSINESS

**Jon Duchac**, Delmer P. Hylton Professor of Accounting, has received a grant to examine “Responsible Business Practices and the Role of Divestiture” from the Fund for Peace, a US nonprofit, nongovernmental research and educational organization that works to develop practical ways to reduce conflict. This project is a collaborative effort between Fund for Peace and Professor Duchac, focusing on the intersection of shareholder activism and capital markets. Specifically, the project investigates divestiture campaigns that are initiated by activist groups to place financial pressure on public entities whose behavior is identified as morally or ethically unacceptable. The analysis considers the history of divestiture, the success and failure of these campaigns in recent years, and the effectiveness of divestment as a strategy for achieving social change.



## PRO HUMANITATE INSTITUTE

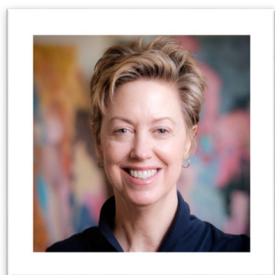
**Brad Shugoll**, Assistant Director of Philanthropy and Service for the Pro Humanitate Institute, has received three awards supporting the Campus Kitchen mission “to teach, reach, feed, and lead.” The first, “Campus Kitchen summer feeding site 2019,” is a partnership with the Freedom School Program, the United States Department of Agriculture (USDA), and the North Carolina Department of Public Instruction. The Campus Kitchen will receive reimbursement to provide meals twice a day for nine weeks to as many as 125 local school students who are eligible for free or reduced-price lunch. Wake Forest students serving as summer interns will learn more about food security in the Winston-Salem community as well as how to prepare meals within USDA guidelines and work with a federal reimbursement program.

The second, “Kids' Cooking Coalition at CLMS,” is supported by the Reynolda Rotary Club. This Campus Kitchen project is designed to teach Cook Literacy Model School children the skills and confidence to prepare healthy meals and to understand their value. At the same time, Wake Forest students learn how to mentor elementary and middle-school children and to facilitate cooking. The KCC program extends to other Winston-Salem schools as well.

The third, “Kids' Cooking Coalition—Pop-Up Sessions,” is funded by the Alliance for Strong Families and Communities, comprised of nonprofit family service and economic empowerment organizations. The project will host pop-up KCC events for greater reach into the Winston-Salem community.



# Fellowships



## ART

**Page Laughlin**, Professor of Art, has been awarded a residency at the Virginia Center for the Creative Arts (VCCA). Visual artists, composers, and writers are selected through competitive peer review of their important, innovative work. Professor Laughlin will use her time at the VCCA to generate draft drawings and preliminary wash paintings for large-scale, theatrical, public works—banner-to-mural size—that will ultimately combine photographs and oil painting. Groups of contemporary women engaged in daily tasks—digging, carrying water, picking tomatoes—will convey the same heroic sweep as nineteenth-century history paintings or early twentieth-century Cyclorama paintings. She believes that “painting, as a record of human activity, has compelling urgency in a time when the digital remove raises the question of what it is to be human, to be engaged, to be present, to exist in the physical world.” The new works will pose those questions, forcefully, inescapably, front and center.



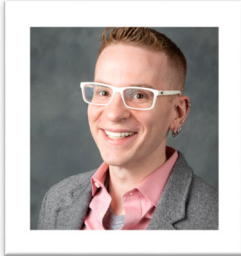
## CHEMISTRY

**Akbar Salam**, Professor of Chemistry, has been awarded a Marie S. Curie External Senior Fellowship, co-financed by the European Union and the state of Baden-Württemberg. In spring 2019, he will work on “Development of quantum electrodynamical theories of resonance energy transfer” at the Freiburg Institute for Advanced Studies in Germany.

Dr. Salam will develop and apply the theory of quantum electrodynamics (QED) to molecular resonance energy transfer (RET), focusing on the modifying effect one and two additional particles have on the exchange rate. Supplementing a microscopic approach to many-body RET with macroscopic QED calculations, his studies will elucidate the process of energy exchange in a medium. Since RET is widely used in biophysics to measure distances between interacting proteins and nucleic acids, a better understanding of its theoretical underpinnings could render its applications more precise. Ultimately, this work could also improve the

# Fellowships

performance and efficiency of light-harvesting devices, such as solar panels, optical sensors, and opto-mechanical switches.

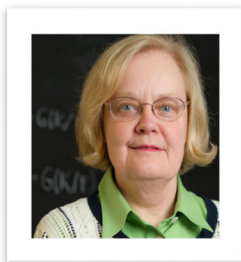


## CLASSICAL LANGUAGES AND PHILOSOPHY

**Emily Austin**, Associate Professor of Philosophy, and **T.H.M. Gellar-Goad**, Associate Professor of Classical Languages, have received an award from the Loeb Classical Library Foundation of Harvard University in support of the eighth in a series of conferences held every four years. **Feminism & Classics 2020: body language** will take place from 21-24, May 2020 at Wake Forest University. Individual papers, panels, workshops, roundtables, posters, author-meets-critic sessions, and other programming formats will consider how the body and/or language were used to secure, deny, and question power in the ancient Mediterranean world. The long-standing dichotomy between body/physicality and language/reason noted by philosophers, literary theorists, and social historians will also be challenged. Exploring any aspect of the ancient world, modern encounters with ancient cultures, or the academic practices, governance, constituency, and power dynamics of Classics, Philosophy, and related fields, now and in the past, will clarify “how voices engender movement(s) and transform bodies or movement(s),” prompting “recognition of unheard or otherwise suppressed voices” to spark change.

## MATHEMATICS AND STATISTICS

**Ellen Kirkman**, Professor of Mathematics and Statistics, has been elected a Fellow of the Association for Women in Mathematics (AWM). The Executive Committee established the program in 2018 “to recognize individuals who have demonstrated a sustained commitment to the support and advancement of women in the mathematical sciences.”



Dr. Kirkman was elected a Fellow of the American Mathematical Society (AMS) in the initial class of 2013. In addition to her widely acknowledged teaching, publications, invited talks, and funded research, she has served as treasurer for the AWM from 2012 to 2019 (two terms), on the Board of Directors for EDGE

# Fellowships

(Enhancing Diversity in Graduate Education), as director of the Conference Board of Mathematical Sciences (CBMS), chair of the Educational Testing Service's Mathematics Subject Test, which is used for admission to PhD programs in mathematics, and as Associate Editor of *Communications in Algebra*. A National Science Foundation award for *Surveys of Undergraduate Mathematical Sciences Programs 2010, 2015, 2020* will be announced soon.



## OFFICE OF THE PROVOST / THEATRE AND DANCE

**Christina Soriano**, Associate Provost for the Arts and Interdisciplinary Programs and Associate Professor of Dance, is one of eight Kennedy Center Citizen Artist Fellows for 2019-2020. The program recognizes artists who work to advance and uplift their communities. Fellows gain opportunities for career enhancement, performances and exhibitions at the Kennedy Center and elsewhere, and advising the center on fruitful new directions.

Soriano developed IMPROVment®, an improvisational dance method to help the elderly and people with neurodegenerative diseases improve their physical and mental fitness. Since 2012, she has regularly taught community dance classes for people living with Parkinson's disease and their caregivers and disseminated her methods and experiences to other communities. Her research has been funded by the Parkinson's Foundation and BlueCross BlueShield of NC, and with Christina Hugenschmidt, Assistant Professor of Gerontology and Geriatric Medicine, Wake Forest School of Medicine, she secured funds from the National Institutes of Health to conduct a clinical trial of the effects of her dance method on balance and mobility in a community of adults living with mild cognitive impairment. She is also involved in Wake Forest's annual symposium Aging Re-Imagined, where artists and scientists share their insights on healthy aging, and in 2018, she was named an Influencer in Aging by *Next Avenue*, a PBS system website focused on older people.

# 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 FY19 there were two deadlines for Pilot Research Grants and one for Collaborative Pilot Grants. Over \$152K was awarded for internal grants and bridge funds; funding from the ZSR Foundation provided \$67,200.

Pilot Research Grants \$57,200

Collaborative Pilot Grants \$20,000

Bridge Funds \$75,000

The office also manages matching/cost share funds. Nearly \$122K was provided in FY19 for sponsored project cost share, open-access publishing, equipment and other initiatives.

## FACULTY DEVELOPMENT

In FY19, the office spent over \$35K hosting and coordinating professional development workshops and events and well as supporting research-related committees. Supported programs and events include:

Recognition of Research Excellence

Reception to Honor Authors, Editors, and Fine & Performing Artists

Creative Research Activities Development & Enrichment Program (CRADLE)

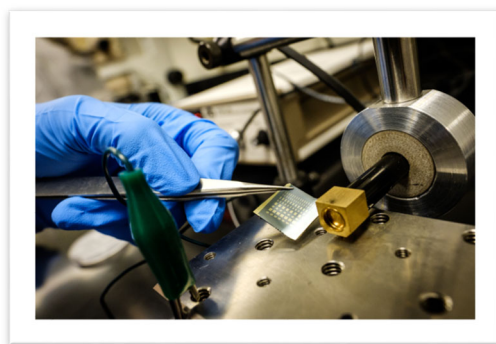
Responsible Conduct of Research Training for Graduate & Undergraduate Students

ACC Innovation Competition

Building Research Success at Wake Forest University

Team Building Seminar

Centers and Institutes Retreat



# Human Research Protection

ORSP provides administrative support to the Institutional Review Board (IRB) under 45CFR §46. Pam Moser, Associate Director for Human Research Protections, 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; audits approved studies; provides continuing education for IRB members; and keeps the university's Federalwide Assurance and IRB Registration current. Jeanie Baird, Human Research Protections Specialist, is an integral member of the Human Research Protections team.

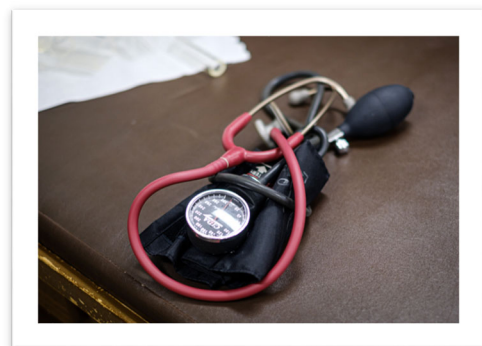
This year, the office provided study-specific consultations as well as group presentations to assist faculty, staff, and student researchers pursuing human research. We facilitated our growing portfolio of collaborative research projects by executing IRB Authorization Agreements with other institutions and assisting nonaffiliated investigators seeking to recruit WFU personnel as study participants.

Training and support for eIRB, the electronic submission and review system, continued for individual users across campus. We launched an extensively revised eIRB application in January to ensure compliance with the revised Common Rule (45 CFR §46) and to introduce a new review category for minimal risk research that is not federally funded and therefore not subject to our Federalwide Assurance. The new category, *flex*, has a streamlined application and an abridged renewal process called *annual update*. The goal of these revisions is to simplify the eIRB submission, review, and approval process for minimal risk projects, thereby freeing

investigator time for other pursuits and IRB time for attention to more complex, higher risk research and outreach.

The Human Research webpages, among the most trafficked portions of the WFU Research Website, were overhauled to improve functionality, design, clarity, and consistency.

In FY2019, the IRB reviewed 127 new applications in the following categories: 2 full-board, 63 expedited, 4 exempt, and 58 flex. An additional 199 amendments, 164 continuing reviews, and 46 annual updates were processed. The highest number of active applications in office history was recorded in April (356). Although the total number of active applications continues to grow, the number of individual departments, programs, institutes, or schools with at least one active protocol has dropped 26 percent in two years. Of the 12 units accounting for this drop, 7 are targeted for outreach to encourage future submissions and to ensure that they are submitting all projects meeting the definition of human research. Fortunately, 5 new or returning departments submitted at least one application in FY 18-19 to temper this downward trend.



# Funding Highlights

In FY19, Wake Forest University researchers once again received grants totaling more than \$10 million from external sponsors, not including fellowship support for scholarship in the social sciences and humanities. In addition, faculty and staff submitted 106 proposals, requesting over \$41 million.

The National Institutes of Health continued to be WFU's top research sponsor, providing over one-third of the total funding. Federal funding from all sources accounted for more than 75% of awards.

Faculty and staff in the Health and Exercise Science Department received and requested the most funding. Global Affairs submitted proposals and received the unit's first externally sponsored awards.

During FY19, the following faculty and staff received their first grants at WFU:

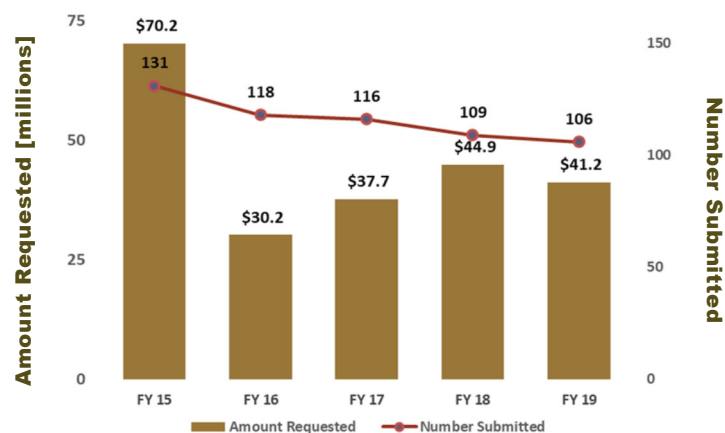
Regina Cordy, Biology  
Luis Fernandez, Biology  
Sheri Floge, Biology  
Lauren Lowman, Engineering  
Nelson Brunsting, Global Affairs  
Staci Hepler, Mathematics and Statistics  
Jon Duchac, WFU Schools of Business

*The statistics that follow summarize Reynolda campus sponsored research activity for FY19. 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.*

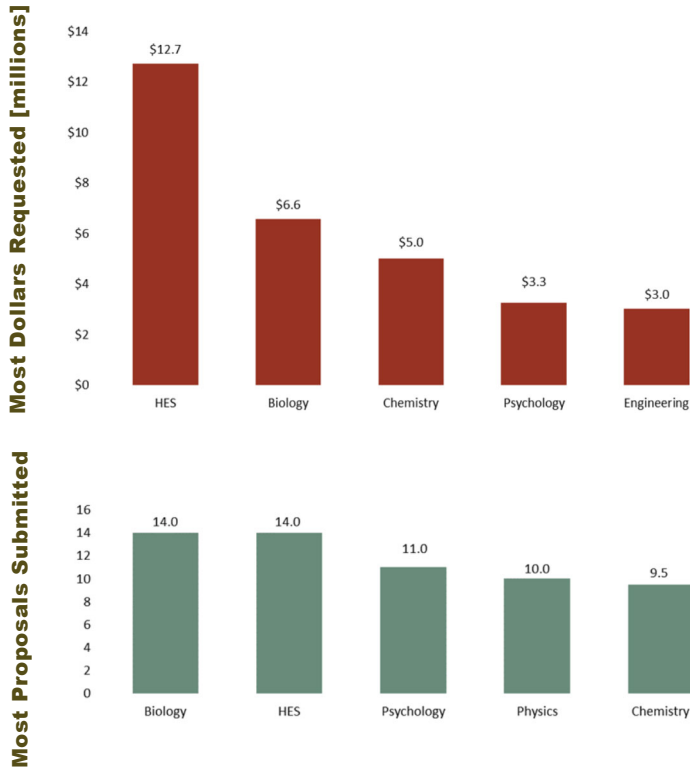
AWARDS BY YEAR: 2015-2019



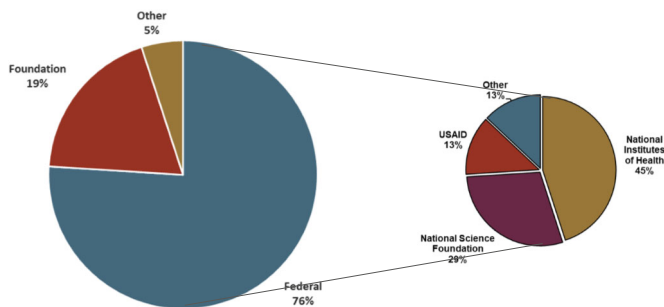
PROPOSALS BY YEAR: 2015-2019



## PROPOSALS BY DEPARTMENT



## FUNDING SOURCES



Department/Center	Awards	Amount
Health & Exercise Science	25	\$2,839,990.85
Biology	6.5	\$2,087,001.01
Divinity	1	\$ 998,945.80
Physics	13	\$ 908,760.00
Center for Energy, Environment & Sustainability	2.5	\$ 850,804.12
Center for Molecular Signaling	1.5	\$ 315,003.39
Chemistry	3	\$ 310,230.67
Psychology	4	\$ 264,917.56
Economics	1	\$ 249,980.00
Philosophy	4	\$ 243,576.32
Center for Functional Materials	0.5	\$ 175,000.00
Center for Nanotechnology & Molecular Materials	0.5	\$ 150,000.09
WFU Schools of Business	1	\$ 121,451.30
Mathematics	3.5	\$ 99,410.23
Global Affairs	2	\$ 84,354.80
Sociology	2	\$ 81,673.50
Translational Science Center	1	\$ 51,883.09
Communication	3	\$ 42,250.47
Theatre & Dance	1	\$ 36,397.44
Pro Humanitate	4	\$ 36,385.28
Computer Science	1	\$ 32,522.16
Engineering	2	\$ 19,000.00
Graduate School	1	\$ 13,642.08
Bioethics	2	\$ 10,098.72
Counseling	1	\$ 5,000.00
Law School	1	\$ 1,500.00



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