
# Office of Research and Sponsored Programs

*2014 Annual Report*

WAKE FOREST
UNIVERSITY

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## MISSION

Wake Forest University's Office of Research and Sponsored Programs assists the Associate Provost for Research in building faculty research programs of nationally recognized excellence. Our mission is to assist faculty in their pursuit and management of sponsored activities; to encourage and to support ethical research achievement, especially involving human subjects, in compliance with all relevant laws and regulations; to protect the university's interests; and to acknowledge and publicize faculty distinction.

## CREDITS

The Office of Research and Sponsored Programs gratefully acknowledges Ken Bennett's and Stephen Williams' photographs.

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# From the Director

Dear Researchers,

FY14 was an exciting year for research and scholarly activity at WFU. Despite a government shut down and more competition for limited funds from all sponsors, researchers managed to increase externally sponsored awards by one million dollars over last year to $10,839,255. This total represents the second best in WFU history. Congratulations to all faculty and staff who received support for their research and other projects.

This spring brought wonderful news for another former CRADLE participant, Amanda Jones in Chemistry. She is the most recent recipient of a National Science Foundation CAREER grant on our campus. You can read about her project on the pages that follow. Several researchers received their first awards in FY14, and they are listed in the Funding Highlights Section of this report.

The Office of Research and Sponsored Programs (ORSP) significantly increased its support for internal grants this year. We continued the Collaborative Pilot Grants but, in lieu of the Science and Social, Behavioral, and Economic Science Research Funds, we offered two deadlines for the new Pilot Research Grant (PRG) program. Unlike previous programs, it is open to all disciplines, and its goal is submission of an external proposal. Also new in FY14 were cross-campus internal grants resulting from a partnership between the Associate Provost for Research and the Translational Science Institute (TSI) at the medical school. This program focused on new research collaborations.

A new cohort of the popular CRADLE program started this year. In addition, five faculty from the Business School are participating in a B-CRADLE pilot program.

The ORSP team continues to excel in professional development. Pam Moser renewed her Certified IRB Professional (CIP) designation for 3 years. Amy Comer and I recertified our Certified Research Administrator credential for another 5 years. Amy also served on the program committee for the North Carolina Society of Research Administrators and presented a session at their annual meeting. Stephen Williams and I co-presented a well-received session about the CRADLE program at a National Council of University Research Administrators regional meeting. Susan Edwards was elected to the Staff Advisory Council and, among other things, helped to organize the staff appreciation day at the Reynolda House.

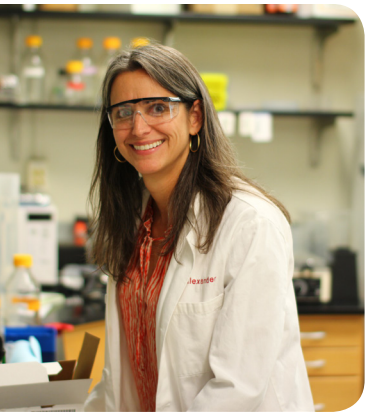
Hopefully by now you have had an opportunity to visit the new Research website. It was revised during FY14 and now uses the standard university template, which gives it a more modern look. The ORSP homepage has been incorporated into the main Research page, which should improve access to all research-related links.

Sincerely,

Lori Messer, CRA
Director

# Outstanding Projects

**Rebecca Alexander, Professor and Associate Chair of Chemistry, and Director of URECA (Undergraduate Research & Creative Activity Center)** secured 2-year funding from the Arnold and Mabel Beckman Foundation to support five undergraduate Beckman Scholars. They are chosen on the basis of their research proposals to carry out summer-to-summer projects with one of 15 faculty mentors in the Biology, Chemistry, and Physics departments. Stipends, a travel or supply allowance, and professional development funds help them to achieve their long-term graduate school and career goals. Wake Forest was invited to apply and is one of twelve universities nationally to receive the award.



Two 15-month scholarships started this summer. **Hannah Martin**, mentored by **Associate Professor of Chemistry Patricia Dos Santos** and graduate student **Katherine Black**, is a rising sophomore. She is studying ways to target harmful bacteria without harming beneficial bacteria for therapeutic applications and will present her results in Germany next summer.

Rising junior **Kathleen DiNapoli** is working with **Biology Professor Gloria Muday** and postdoctoral fellow **Greg Maloney** to identify regions of ancestral DNA that, when bred into the genome of a cultivated tomato, will confer drought-resistance. DiNapoli presented her results at the annual meeting of the American Society of Plant Biologists in Portland this August, where she was honored as a Summer Undergraduate Research Fellow.

**Biology Professor Dave Anderson**'s study of Galápagos seabirds began in 1984 and has been supported by the NSF's Long-Term Research in Environmental Biology (LTREB) program since 1992. LTREB supports decadal projects, and continuation requires a new preliminary proposal that articulates a new ten-year research plan addressing questions that cannot be answered by the data already collected. The full proposal must be invited, and Dr. Anderson's was accepted this year.

*LTREB: Evolutionary Ecology of Seabird Reproductive Life Histories* has gained fresh insights into the evolution of clutch size and sibling competition, the sex ratio and mating system, and the role of hormones in expressions of social behavior. Seventeen Wake Forest and 11 Ecuadoran graduate students, six WFU undergraduates, and over 100 technicians from a number of countries have participated in fieldwork. In addition, the study has generated large samples of banded, thus recognizable, adults of known age, enabling the new initiative's focus on aging. Since foraging performance seems to determine reproductive success, electronic trackers and loggers will be used to measure it in young and old adults. Aging will also be investigated using new quantitative genetic techniques based on the comprehensive individual histories in the project's databases and the developing pedigree.

Dr. Anderson's work has also been supported by the National Geographic Society and the Galapagos Conservancy.

**Computer Science Professor Jennifer Burg** received a 3-year award for *Collaborative Research: Computing in the Arts - A Community-Building Initiative* from the NSF's Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics (TUES) program. In partnership with the College of Charleston and UNC Asheville, the project aims to build a strong, diversified community interested in adopting and developing innovative instructional material related to computing in the arts (cita). The team will integrate the successful cita model implemented at the College of Charleston with complementary approaches at partner institutions and create new instructional materials and exemplary curricula. Results will be disseminated at annual faculty development workshops, meetings and special sessions of SIGCSE (Special Interest Group on Computer Science Education), and on a shared website.

This project follows on two previous NSF-funded projects, awarded concurrently: *Linking Science, Art, and Practice in Digital Sound and CPATH: Revitalizing Computer Science Education through the Science of Digital Media*. In the first, Dr. Burg collaborated with a digital sound designer at the University of North Carolina School of the Arts to created, implement, and disseminate innovative curricular material integrating the science and art of digital sound design. The second project placed digital media at the center of collaborative explorations to broaden the relevance and excitement of computer science.

**The School of Divinity** has been surely and steadily amassing external support for its programs. Both individually and collectively, members are applying for and securing awards. Gail R. O'Day, Dean and Professor of New Testament and Preaching, defined the strategy: to identify and pursue opportunities that match their mission and primary initiatives.

For example, The Lilly Endowment, Inc., a primary funder of theological education, issued both an open request for proposals and an invited request that included WFUSD.

The result is two new programs, one supported for three years; the other, 5 years. The first, *Financial Well-Being for Pastoral Leaders* addresses financial literacy and well-being as a core pastoral practice. New courses will enable Divinity students to be practical, creative, and confident, not only about their own finances, but in leading their congregations to thrive. Summer ministry internships will help them to decrease dependence on student loans. The program will also gather data about students' circumstances and the economic complexities that mark theological education and a life of pastoral leadership. Developing and disseminating these innovative practices will ground pastoral leaders in their Christian commitment to the wise stewardship of resources.

*Clergy Making a Place: Early Career Pastors as Generative Community Leaders* aims to strengthen the pastoral and civic leadership of the most promising early-career clergy serving congregations from Greensboro to Danville, VA; Winston-Salem to Lexington; Asheville to Brevard; Statesville to Hickory. Two cohorts, each composed of 14 clergy who have been in ministry for 5-10 years, will engage in open, in-depth discussions with outstanding

civic and business leaders about the most difficult social and economic problems facing their communities, so they can work together to solve them. The clergy will also explore community engagement opportunities crucial to the places they serve and to which their congregations can make vital contributions.

The ink is still fresh on an award from the American Association for the Advancement of Science (AAAS) program Science for Seminaries. *Moving Science to the Forefront of Theological Education* will amplify the role of science in the core WFUSD curriculum and strengthen the commitment to prepare future religious leaders to engage with the world. At present, the curricular focus on science and religion at WFUSD is in the areas of bioethics and sustainability, and students are exposed to applied science in the Food and Faith and Faith and Health of the Public concentrations. Grant funding will enable dramatically increased exposure to science and extend the work to the widest possible audience through a conference on science and theology.

**Associate Professor of Mathematics Jennifer Erway** was awarded NSF funds for *Collaborative Research: Trust-search Methods for Inverse Problems in Imaging* with Roummel Marcia, Associate Professor of Applied Mathematics at the University of California, Merced. The team uses linear algebra and optimization theory to develop software for processing and analyzing very large data sets. The research objective of this award is to develop and implement first-order trust-search methods for use in large-scale data-generated optimization problems that arise in such applications as signal and image processing. These problems are especially difficult to solve since the data are often high dimensional and noisy, incomplete, and/or inexact. Trust-search methods are hybridizations of the most fundamental types of methods for unconstrained optimization: trust-region methods and line-search methods. They seek to implement line-search strategies in combination with trust-region theoretics to obtain more robust methods. Results will be especially useful for such applications as medical imaging, low-light video surveillance, and monitoring nocturnal ecological activity where the data are very large and noisy. The project has already generated three articles and three presentations.

**Karin Friederic, Assistant Professor of Anthropology**, received support from the Feminist Review Trust to develop "A Multipronged Approach to Combating Intimate-Partner Violence in Rural Coastal Ecuador." The project implements an intervention to disrupt the culturally specific dynamics of intimate-partner violence in rural northwestern Ecuador. La Laguna is widely considered a lawless frontier. Violence against women

is extremely common, in part because it is perceived as legitimate. Recently, local women's knowledge of their rights and access to state-based justice mechanisms have increased, but their social and economic vulnerability limits progress. Many suffer more violence and attempt suicide when their newly discovered right to live safely is blocked by the lack of means to change their circumstances. These findings demonstrate that women's rights interventions must be paired with economic empowerment and new types of social support.

Based on over twelve years of research and activist involvement in the region, Dr. Friederic will implement (1) educational workshops on relevant laws and rights, alcoholism, and the cycle of violence; (2) targeted investments in existing micro-credit institutions to create and consolidate economic opportunities; and (3) protective mechanisms, such as a Men-Against-Violence task force and community-based "safe-zones" for victims of gender-based violence. The project builds on and fortifies longstanding community resources to ensure sustainability and minimize dependence on external interventions.

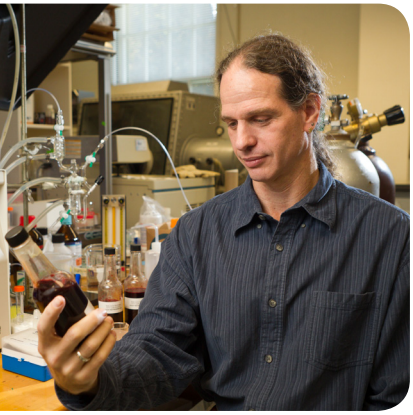
**Assistant Professor Amanda C. Jones, Chemistry**, has won the National Science Foundation's most prestigious Faculty Early Career Development (CAREER) award, to assist teacher/scholars who integrate outstanding research and education programs.

*Mechanism as a Driving Force in Gold(I) Catalyzed Alkyne Functionalizations* aims to improve the efficiency of gold catalysts by determining how they work. These powerful, environmentally friendly reagents can be used to produce pharmaceuticals and fine chemicals, and in the past 14 years, new reaction methodologies have flourished. However, their use is economically feasible only in minimal quantities with maximal recycling. Much of the literature describes methods development and computational studies but not experimental studies to determine structure/activity relationships and the need to use gold. Recent observations and preparations of organogold intermediates reveal exciting new details about catalyst and/or intermediate structure and a research field ripe for discovery.

This project combines NMR spectroscopy, crystallography, and kinetic techniques to explore the structural features, synthetic preparations, and kinetic reactivity of mechanistically significant organogold intermediates. In the process, it will build a rapid-injection NMR (RINMR) apparatus. The information obtained will be used to improve the scope, catalytic efficiency, and cost-effectiveness of gold(I) catalysts, expanding chemists' synthetic capabilities.

The project also provides training for undergraduate and graduate students, who will learn to execute chemical and scientific methods, conduct responsible research, and think critically about reaction mechanisms. Dr. Jones is also developing a novel program to encourage early and life-long engagement with science and to recruit students to scientific fields. Reading clubs will expose community members and elementary school students to novels with scientific themes as well as nonfiction writings of "dual personalities" who have achieved success in both science and the arts or activism.

**Physics Professor, Harbert Family Distinguished Chair for Excellence in Teaching and Scholarship, and Director of the Translational Science Center Daniel Kim-Shapiro** has held a National Institutes of Health Method to Extend Research in Time (MERIT, or R37) award since 2007, based on a research project grant (R01), first funded in 2002, that was a competitive renewal of a NIH R29 FIRST grant awarded in 1998. MERIT awards were initiated in 1986 "to provide long-term stable support to investigators whose research competence and productivity are distinctly superior and who are likely to continue to perform in an outstanding manner." To relieve the applicant – and NIH review panels and administrators – from the burden of frequent renewal applications, up to 10 years of support are granted in two parts: an initial 5 years and a 3-5-year extension based on expedited review of first period accomplishments. Investigators do not apply for a MERIT award but are selected from R01 awardees.



*Effects of Nitric Oxide in Sickle Cell Blood* explores the link between the primary cause of the disease and clinical outcomes, especially interactions with the important signaling molecule nitric oxide. The participating laboratories have shown that, contrary to the existing paradigm, nitrite acts as a vasodilator in human circulation, preferentially released under low oxygen conditions. Results are elucidating mechanistic pathways in the pathology of sickle cell disease to develop nitrite therapy to increase NO bioavailability and, since NO is important in many diseases, this approach will have wide application.

Dr. Kim-Shapiro's work has also been supported by the American Heart Association, collaborative NIH proposals with Loma Linda Adventist Health and Science Center and the University of Pittsburgh, the Army Research Office, and Cardioxyl Pharmaceuticals, Inc.

Since 2006, the **Department of Communication** has been awarded funds from the US Department of State's Bureau of Educational and Cultural Affairs to implement the Benjamin Franklin Trans-Atlantic Fellows Summer Institute (BFTF). Assistant Professor Ron Von Burg and Associate Professor Alessandra Von Burg lead the program, succeeding Professor Allan Louden.

Ten high school students from all over the United States join 35 students from Albania, Azerbaijan, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Italy, Latvia, Lithuania, Macedonia, Malta, Moldova, Netherlands, Poland, Portugal, Russia, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom - for four weeks of classes, workshops, site-visits, and travel. This structure emphasizes the students' individuality over nationality; they interact based on common interests and values.

The BFTF encourages a focus on community engagement and social entrepreneurship, cross-pollinating the program experience. BFTF staff teach workshops and mentor small groups based on collective

ambitions. These groups go out into the community to work on, not merely look at, local social and arts projects. Drawing on Wake Forest's extraordinary resources, they attend classes, lunch with faculty for informal discussions, and work with students from the Documentary Film program to share their experiences with the wider world.

ORSP was delighted to witness several capstone projects. Each student presents an idea to solve a social problem following a grant application format, with a title, a logo, a problem statement backed by research and statistics, methods, partners, potential sponsors, and an evaluation plan. These polished 10-minute performances—"Wait! I'm almost done!"—were live-streamed, and viewers tweeted questions.

The program offers students $500 in seed funding to realize their projects, and some have collaborated for the additive effect: 4 students @ $500 = $2000.

No wonder the Department of State Program Officer told Ron and Alessandra that Wake Forest's BFTF has "the greatest alumni loyalty" among their educational programs. For more information, see http://bftf.org/.

**Physics Professor Richard T. Williams** has four active awards on top of an extraordinary record of publication, citation, and collaboration. Most recently, the NSF supported the first year (2013-2014) of the project *Realizing High-Performance Inorganic Scintillators at Low Cost*; the next four years will be funded by the Domestic Nuclear Detection Office of the Department of Homeland Security. Wake Forest is the lead institution in this collaboration with Fisk University and Arkansas State University. The main goal is to prevent illicit shipment of nuclear materials through ports, airports, and highways by finding out how to make high-resolution radiation detectors cheaply enough that they can be widely deployed in the Global Nuclear Detection Architecture.

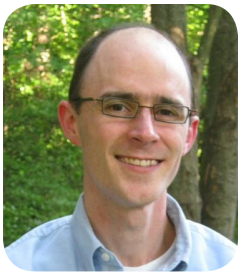
*Research on Scintillator Materials and Mechanisms: LaBr3 with Co-doping and Other Topics to be Determined* is sponsored by Saint-Gobain Ceramics & Plastics, Inc., the largest manufacturer of scintillator crystals for radiation detection, imaging, and monitoring for diverse medical, homeland security, oil-well logging, and physics research applications. The Williams laboratory brings femtosecond ultraviolet laser techniques that can measure many of the important material parameters governing nonproportionality. The project supports a graduate student.

In *Physics of Scintillator Nonproportionality*, funded by the National Nuclear Security Administration and the Lawrence Berkeley National Laboratory, the Williams lab is performing laser measurements on scintillators to develop predictive models.

*Quantifying Recombination Dynamics in $SrI_2:Eu^{2+}$ with Material Variations: Mechanisms and Scintillator Optimization* is funded by the National Nuclear Security Administration and Fisk University. High-performance scintillators for gamma spectroscopy in nuclear nonproliferation and homeland security applications require excellent energy resolution to distinguish neighboring element and isotope lines quickly. For broad implementation, the material should also be inexpensive. The project's main objectives are (1) to optimize the intrinsic proportionality of light yield from $SrI_2:Eu^{2+}$ and its variations; (2) to lower the cost of optimally performing $SrI_2:Eu^{2+}$; and (3) to measure parameters to improve $SrI_2:Eu^{2+}$ experimentally and to enable numerical modeling to guide discovery of new scintillators.

# Fellowships

**Chanchal Dadlani, Assistant Professor of Art History**, received a National Endowment for the Humanities (NEH)-Getty Research Institute Fellowship for 2013-2014 for her study *Art and Epistemology between Early Modern India and France: The Collection of Jean-Baptiste Gentil.* An officer of the French East India Company who lived in India for 25 years, Gentil (1726-1799) built a sizable collection of manuscripts and albums, many of which he co-produced with Indian artists and translators. This project interprets the collection in relation to multiple systems of artistic and epistemological production, including the Indo-Persianate manuscript tradition from which it stemmed and the broad network of European artists, scholars, and patrons active in eighteenth-century India. It explores the significant role the collection played in mediating between India and France in the early modern period as well as relevant implications for current discussions of cross-cultural exchange, colonial encounter, and the notion of translation as applied to visual culture.



**Robert Erhardt, Assistant Professor of Mathematics**, received an award from the Casualty Actuarial Society and the Society of Actuaries to study *Spatial Dependence and Climate Change Impacts on Weather Risk Pricing*. Organizations seeking financial protection against Nature's whims can buy weather derivatives; for example, farmers fearing drought or flood or entertainment venues that depend on clear skies. Utility companies enter contracts based on heating or cooling degree days to balance their annual earnings,

In fifteen years, the market for these products went from approximately $0 to $11.8 billion. Many actuaries may still be unfamiliar with them, but they closely resemble insurance, and more knowledge about spatial statistics and weather models should make them accessible. This project will answer two questions:

> *What tools can be developed to effectively measure how spatial dependence – variations over space, as for rainfall or cities - increases the risk in holding a portfolio of weather derivatives?*
>
> *How do climate models project changes in weather derivative risk?*

Answers to these timely questions should allow actuaries to expand into the growing area of weather risk management and insurers to offer new products and to consider the financial benefits of diversifying their investments with holdings in weather derivatives. The project will also introduce climate models to the actuarial science community.

# Faculty Development

**Penny Sinanoglou, Assistant Professor of History**, was awarded an American Association of University Women (AAUW) Postdoctoral Research Fellowship for 2013-2014 and, concurrently, a spring 2014 residence at New York University's Remarque Institute for *Legally Subject: Contested nationality and subjecthood in the British Empire, 1870-1950*. This study examines how individuals across the empire used British legal systems to argue for their status as subjects and nationals. These were not abstract markers of identity, but rather legal definitions that enabled or restricted individuals' movements, livelihoods, and their ability to claim protections and rights. Their cases expose the gaps between legal status, imperial protection, and national identity, with ramifications that extend well beyond the individual claimants to the basis of imperial jurisdiction.

Fellowship support enabled Dr. Sinanoglou to conduct research during the academic year at libraries and archives in Britain, Israel, and the United States. In the near future, she will visit Indian and Maltese archives. Two journal articles are in preparation, while a book, of interest to scholars of history, law, and colonial studies, is the next goal.

In FY14, the office spent over $76K hosting and coordinating workshops and events, supporting research-related committees, and paying for faculty travel to professional development seminars. Supported programs and events are:

- *Reception and Dinner to Honor Authors, Editors, and Fine & Performing Artists*
- *Creative Research Activities Development & Enrichment Program (CRADLE)*
- *Creative Research Activities Development & Enrichment Initiative for the Schools of Business (B-CRADLE)*
- *The Winning Grants Seminar – Part I, Federal*
- *The Winning Grants Seminar – Part II, Foundations and Corporations*
- *Building Research Success at Wake Forest University*
- *Responsible Conduct of Research Training*
- *Recognition of Research Excellence*
- *Quality Circles*
- *Center and Institute Retreat*

The office edited 41 proposals and other documents and performed over 29 searches for funding opportunities.

# Compliance

ORSP provides administrative support to the Institutional Review Board (IRB) under 45CFR §46. Pam Moser, Associate Director for Faculty Research Compliance and Support, 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 Federalwide Assurance (FWA) and IRB Registration current. As part of her responsibilities as Associate Director, Amy Comer is also an IRB Administrator, reviewing applications, monitoring training for researchers, and providing critical cross-coverage.

In 2013-2014, the IRB reviewed 138 new applications, a 17 percent decrease from the previous year. Two studies were reviewed by the full board; 110 qualified for expedited review; and 26 as exempt research. In addition, 131 amendments 109 continuing reviews, and 5 safety events (1 unanticipated problem and 4 minor protocol deviations) were processed. When comparing statistics from the past five years, the numbers of new applications, amendments, and continuing reviews had declined from last year's high but exceeded the means for each category.

Group outreach efforts targeted graduate programs in Psychology and Education and undergraduate URECA Scholars/Fellows and Honors students in Health and Exercise Science. Training and support for eIRB, the electronic submission and review system, continued for individual users across campus.

Prompted by an abrupt change in the board's leadership in the fall semester, the HRP Consulting Group, Inc., was engaged in the spring to evaluate the IRB and provide guidance on the efficiency and effectiveness of its functions. HRP reviewed policies and procedures, eIRB records and other documentation; conducted a one-day site visit that included interviews with the Institutional Official, IRB staff, IRB members, IRB chair, and researchers representing the departments that conduct the most human subjects research; and provided a detailed report. While the report stated that the "WFU IRB functions efficiently", the recommendations aimed at transitioning from a "functional IRB" to a "robust Human Research Protection Program" included: increase staffing to 2.5 FTE from the current 1.2 FTE; improve current training/education of the university research community (IRB members, investigators, student researchers); develop a Quality Assurance/Quality Improvement program encompassing post-approval monitoring of human subjects research and internal audits of the IRB; and revise Standard Operating Procedures to provide more detail. Implementing these and other process-improvement recommendations is contingent upon bringing the staffing level closer to recommended levels.

ORSP continued its oversight of potential financial conflicts of interest involving WFU research faculty and compliance with responsible conduct of research education requirements.

# Funding Highlights

Wake Forest University researchers brought in over $10.8 million from external sponsors, not including fellowship support for scholarship in the social sciences and humanities. Awards increased by $1 million compared to FY13. Researchers submitted 139 proposals, requesting over $37 million.

Faculty in Health and Exercise Science received the most funding again this year; not coincidentally, they submitted the most proposals and requested the most funding. The Physics Department received the next highest total amount, followed by the Biology Department, which achieved a whopping $800K+ increase in funding over FY13. The number of departments, centers, and colleges receiving externally sponsored awards increased 18% over last year, and over half of those that received funding received more than last year.

The Center for Bioethics, Health and Society, the Center for Molecular Communication and Signaling, and the Undergraduate Research and Creative Activity Center received their first externally sponsored awards in FY14. The following faculty and staff received their first individual external grants at WFU in FY14:

- Kyle Bryner, Anthropology
- Karin Friederic, Anthropology
- Hana Brown, Sociology
- Kyle Denlinger, ZSR Library

## INTERNAL AWARDS

The Office of Research and Sponsored Programs assists the Associate Provost for Research in coordinating and administering internal award programs.

This year, we started a new internal grant program to replace the Science Research and Social, Behavioral, and Economic Sciences Funds. The first Pilot Research Grants (PRG) competition ran in October; a second competition was held in February.

FY14 awards by program are as follows:

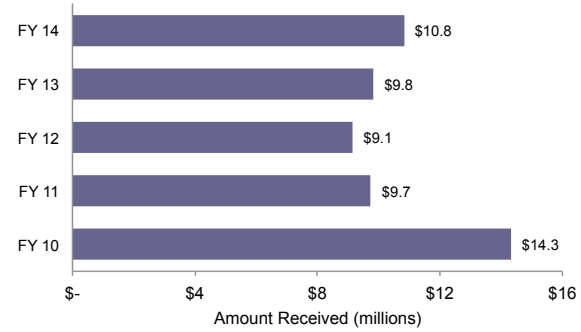
| | |
|---|---|
| Pilot Research Grants (PRG) | $126,991* |
| Collaborative Pilot Grants (CPG) | $58,943 |
| Bridge Funds | $10,000 |
| Triad Interuniversity Project Planning (TIPP) Phase II | $25,000 |
| WFU & Wake Forest Baptist Medical Center Translational Science Institute | $30,000 |

** The ZSR Foundation provided $50,000.*

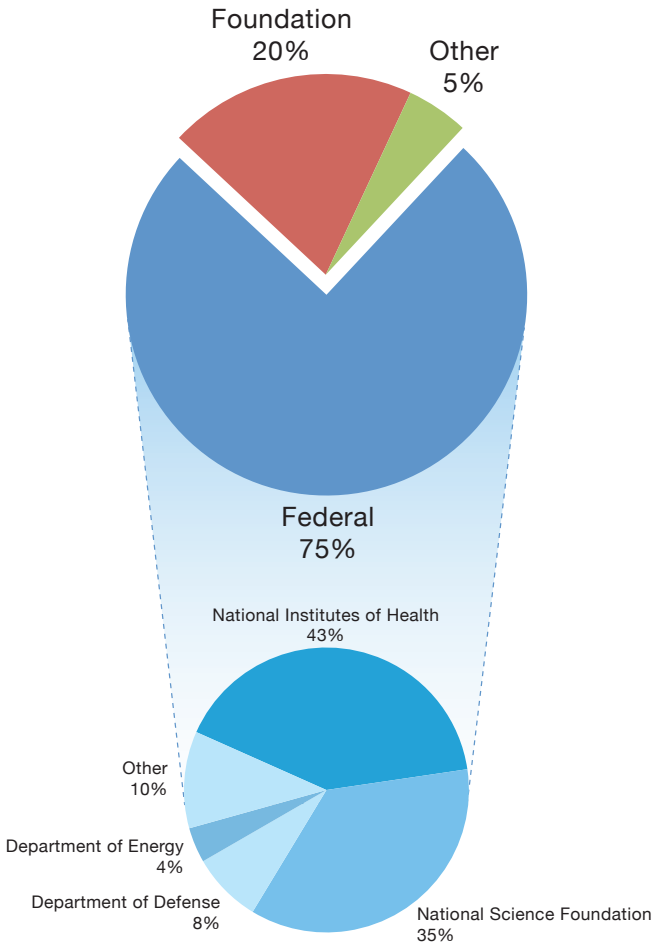
The office also manages matching/cost share funds. In FY14, nearly $121K was provided for sponsored project cost share, high-speed computing, open-access publishing, faculty workshops and conferences, and other internal grants.

*The statistics that follow summarize Reynolda campus sponsored research activity for FY14. These graphs include funding processed through the Office of Research and Sponsored Programs and not gifts or the many fellowship awards made to individual faculty. Awards represent authorization to spend as opposed to research expenditures.*

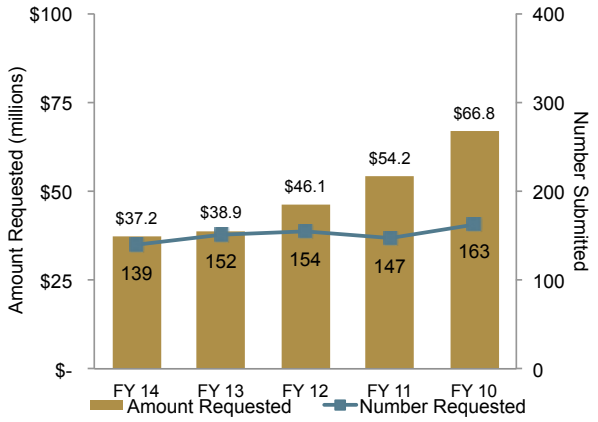
## AWARDS BY YEAR (2010-2014)



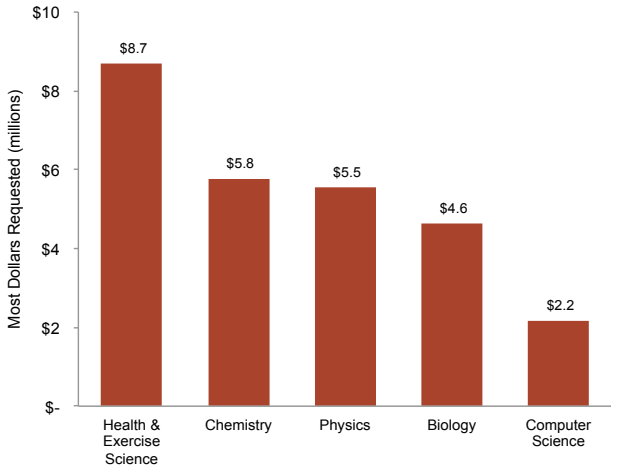

## FUNDING SOURCES

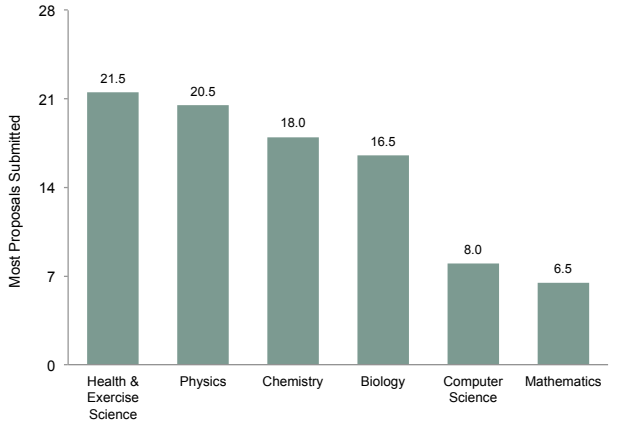



## PROPOSALS BY YEAR (2010-2014)



## PROPOSALS BY DEPARTMENT




| Department | Awards | Amount |
|---|---|---|
| Health & Exercise Science | 23.0 | $2,599,975.77 |
| Physics | 26.5 | $2,024,797.09 |
| Biology | 13.0 | $1,576,703.50 |
| Philosophy | 1.0 | $968,036.00 |
| Divinity School | 2.0 | $749,961.00 |
| Center for Nanotechnology & Molecular Materials | 4.0 | $477,308.59 |
| Chemistry | 4.0 | $397,771.50 |
| Psychology | 3.0 | $324,810.23 |
| Center for Energy, Environment & Sustainability | 4 | $262,354.00 |
| Computer Science | 1.5 | $234,750.00 |
| Communication | 2.0 | $232,200.00 |
| Translational Science Center | 2.5 | $209,506.00 |
| Humanities Institute | 1.5 | $200,000.00 |
| Mathematics | 2.5 | $191,857.00 |
| URECA | 1.0 | $130,000.00 |
| Graduate School | 1.0 | $74,000.00 |
| Center for Molecular & Cell Signaling | 1.0 | $44,819.50 |
| Humanities | 0.5 | $25,000.00 |
| Anthropology | 3.0 | $23,486.69 |
| Center for Bioethics, Health & Society | 1.5 | $19,460.50 |
| Law | 0.5 | $17,460.50 |
| Politics | 1.0 | $15,000.00 |
| ZSR Library | 2.0 | $13,000.00 |
| Education | 1.0 | $12,996.00 |
| Sociology | 1.0 | $9,251.00 |
| Magnolia Scholars | 1.0 | $4,750.00 |

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