



# Office of Research and Sponsored Programs

2017 Annual Report



## STAFF

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### BUSINESS SERVICES SPECIALIST

Susan Edwards (January—July)

Elisa Burton (July—December)

## MISSION

Wake Forest University's Office of Research and Sponsored Programs supports the Associate Provost for Research 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 Ken Bennett's photographs.

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# From The Executive Director

Dear Researchers,

After achieving a record level of funding in sponsored awards for FY16, it is understandably disappointing to report that in FY17 Wake Forest only received \$6.9 million. However, many impactful things without statistical representation that occurred last fiscal year easily offset the disappointment. Undoubtedly, the most exciting event was the opening of the Wake Downtown campus. This addition is sure to have a positive effect on research productivity in the years to come.

In another example of the CRADLE program's continued success, Mike Gross (Engineering) received a CAREER award from the National Science Foundation (NSF). He is the fifth CRADLE fellow and seventh Wake Forest faculty member to receive this prestigious honor. Mike is also one of the founding members of the new department of Engineering. In a first for the University, Christa Colyer (Chemistry) received a GOALI (Grant Opportunities for Academic Liaison with Industry) from NSF. This three-year grant is for a project being done in collaboration with Ameritox. Both of these projects are featured in our report.

The Office of Research and Sponsored Programs experienced staffing changes at the end of FY17. The most significant one, of course, was that Associate Provost S. Bruce King went back to the Chemistry department full time. Although Bruce has been available to help during this transition year, the Associate Provost position will not be occupied until FY19. Many of you have come to rely on the help of Susan Edwards, Business Services Specialist. Susan left the University, and North Carolina, for the neon lights of Las Vegas. Lisa Burton (formerly of the Center for Innovation, Creativity and Entrepreneurship) joined the staff and has quickly stepped up to fill the void.

In March, Wake Forest University hosted the North Carolina Society of Research Administrators. Approximately 250 research administrators from across the state attended this day-long event which included a key-note address by Dr. Anthony Atala, Director of the Wake Forest Institute for Regenerative Medicine and W. Boyce Professor and Chair of Urology. Amy Comer was instrumental in organizing this meeting and her efforts resulted in her being honored with three awards: President's Award, Founding Member, and Program Committee.

The Wake Forest research administration staff are among some of the most highly skilled. April Poteat, Financial Services, became the latest to earn her Certified Research Administrator (CRA) credential while Stephen Williams successfully renewed his for another five years.

Sincerely,  
Lori Gabriel



# Outstanding Projects



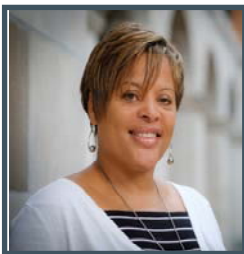
## ENGINEERING

**Michael Gross**, Associate Professor of Engineering, has earned the National Science Foundation's prestigious, 5-year Faculty Early Career Development Program (CAREER) award to integrate and advance his exceptional research and teaching.

*Processing High Surface Area, Nanostructured Ceramic Scaffolds at High Temperatures via In-Situ Carbon Templating of Hybrid Materials* aims to discover and elucidate highly efficient electrochemical technologies that could transform a broad marketplace encompassing how we generate electrical power, produce value-added chemicals, separate gases, and store renewable energy.

Student researchers will be exposed to state-of-the-art ceramic processing and electrochemical technologies in the context of value rubrics and individual development plans, and their motivation to pursue scientific careers will be measured against that of students in more conventional labs. To further broaden participation in STEM, summer Research Experiences for Undergraduates (REUs) will recruit and support minorities, and a Science Olympiad program at the lowest performing elementary school in North Carolina is designed to excite at-risk minority students about science and engineering and build their confidence to achieve.

## ANTHROPOLOGY



**Sherri Lawson Clark**, Assistant Professor of Cultural Anthropology, has received funds from Family Services, Inc., to serve as project evaluator for the Family Success Collaborative, Strong@Home, for three years. Using theory and ethnographic methods, she will assess its overall effectiveness and provide ongoing feedback to optimize its success.

With social service budgets and other support evaporating, advocates for the poor are creating novel approaches to improve quality of life and social mobility. Strong@Home aims to step away from the service delivery model to engage families more directly in alleviating their poverty. It consists of 100 Head Start families, 50 low-income families who have preschool-aged children, five leading community agencies (Family Services, Goodwill Industries, Financial Pathways of

the Piedmont, Imprints Cares, and Habitat for Humanity), and advocates who work one-on-one with family members to identify needs and make referrals to partner agencies.

Dr. Clark will collect observational data in the community at meetings, research sites, and other venues. She will conduct semi-structured interviews and participant observations with 20 Head Start families and 10 Boston-Thurmond families gathered through nonrandom snowball sampling of the Strong@Home collaborative. She will also interview the family advocates and three personnel from each partner agency and converse with the Program Liaison throughout the evaluation.

Findings will address the ongoing policy implications of social deprivation and exclusion and promote a model of community agencies coming together with community members to combat the deleterious effects of poverty.

## CHEMISTRY

**Christa Colyer**, Professor of Chemistry, has secured a National Science Foundation Grant Opportunities for Academic Liaison with Industry (GOALI) award to develop, with Ameritox, Ltd., *Carbon dots and squarylium dyes for sensing, screening, and separations: Beyond medication monitoring*.



Basic research is needed to explore, develop, and assess new analytical tools that can deliver highly sensitive measurements with high efficiency, especially for targets relevant to human health and safety. This project is designed to discover and test approaches to improve drug and drug metabolite detection in partnership with Ameritox, Ltd., a leader in monitoring pain medication, for quick translation to social needs. Cannabinoids and synthetic cannabinoids will be the initial focus, driven by recent changes in state laws regarding recreational marijuana use, increasing medical use for pain management, and the increasing prevalence of designer drugs. In a case study of the flipped analytical chemistry classroom, students will be exposed to industry practices and standards, and an enhanced collaboration with Osaka Prefecture and Saitama Universities in Japan will provide opportunities to increase global and cultural competencies along with expertise in ligand development and fluorescent dye synthesis to accelerate the research. A laboratory curriculum in instrument design and fabrication by additive manufacturing to provide low-cost analytical tools will be developed for, and delivered to, public schools to enhance real-world STEM education.

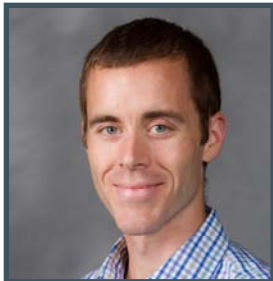


## ECONOMICS

**Mark Curtis**, Assistant Professor of Economics, received an award from the Alfred P. Sloan Foundation for *Industrial energy efficiency: the role of management practices and public policy*.

This project will use classified plant level data from the Census to explore the determinants of industrial energy consumption. Three related lines of related research will be explored. First, the project will examine which management practices of a plant predict reductions in its energy intensity. Second, do voluntary energy efficiency programs work? Finally, do environmental regulations improve manufacturing plant energy efficiency. Census data on program participation and management practices allow for these questions to be answered. We hypothesize that energy specific management practices, such as setting energy targets, improves plants' energy efficiency. Second, we predict that the effects of voluntary energy efficient programs and environmental regulations depend on the quality of a plant's management. These findings would have important implications for policy makers attempting to understand how their programs can be most effective for reducing energy consumption.

## ECONOMICS



**Fran Flanagan**, Assistant Professor of Economics, along with Ron Wright, Law School, has received a National Science Foundation award to examine the question: *Do peremptory challenges increase bias on juries?* Peremptory challenges are vetoes attorneys use to challenge prospective jurors, putatively to assure impartiality. However, numerous studies have shown that prosecutors and defense attorneys differ systematically in how frequently they challenge prospective jurors of certain races, and in preliminary work, Flanagan (2015) showed that peremptory challenges may actually increase jury bias by increasing the probability that a higher percentage of jurors with relatively similar biases sit on the same jury.

The proposed empirical study will be the first to measure the effect of peremptory challenges on jury composition and verdicts. It will collect demographic information, including race, age, gender, and profession, on prospective and seated jurors in all Minnesota District Court felony trials over a two-year period, recording which jurors were challenged, by whom, and the trial's verdict. Objectives are to determine (1) any distinct patterns in prosecutors and defense

attorneys' use; (2) how it affects the composition of impaneled juries; (3) how any effect on composition influences verdicts; and (4) how results compare to previously collected parallel data from North Carolina. Finally, the study will establish resources and procedures, so data collection can continue beyond the tenure of the grant.

The study has several immediate benefits for society. Given the importance of trial by jury, we must know whether peremptory challenges are achieving the desired goal. If not - if they actually increase the volatility of juried verdicts - then revisions or new strategies must be developed and tested. Even small reforms could have large implications for conviction rates and sentences across the legal system.

## SOCIOLOGY

**Amanda Gengler**, Assistant Professor of Sociology, has received an award from the American Sociological Association for *Turning Science Fiction into Science Fact: Selling the Promise of Tissue Engineering and Regenerative Medicine*.



Laboratory-engineered organs can now be transplanted into patients with little-to-no risk of the complications associated with donated human organs. However, if such medical innovations are to be further developed and widely implemented, researchers and practitioners, funders, regulators, and patients must be convinced of their safety and promise. This process is likely to hinge on their emotional responses. Through ethnographic observations of professional conferences and educational seminars and in-depth interviews with medical researchers in tissue engineering, this study aims to determine how *promise* is constructed and communicated and whether and how it influences the public's embrace or rejection of novel medical technologies.

# Fellowships



**José Luis Venegas**, Associate Professor of Romance Languages and Interdisciplinary Humanities in the Department of Spanish and Italian, has been awarded a summer stipend from the National Endowment for the Humanities. This year, only 8 percent of over eight hundred applications were funded.

*Orientalism, Andalusia, and the Making of Modern Spain* (Northwestern University Press, 2018) is an interdisciplinary analysis of visual art, literary texts, music, architecture, and cultural expositions from the late 1800s to the early twenty-first century. It will be the first systematic account of how Spanish artists, intellectuals, politicians, and promoters represent the south as an encounter between modernizing aspirations and the Moorish past. Neither identical nor antithetical to the Arab world, Andalusia – land of the fabled Muslim civilization of Al-Andalus, the Alhambra Palace, Carmen the Gypsy cigar-maker, and flamenco, not to mention endemic poverty and class conflict - challenges ethnocentric notions of Spanish culture while disrupting such oppositions as Oriental vs European and primitive vs modern. In tracing the development of its ambivalent image, the project demonstrates its overlooked yet pivotal role in formulations of national identity in modern Spain.





# Wake Downtown

**Wake Downtown** opened on January 9, 2017, after less than two years of physical and curricular planning. The team was led by Rebecca Alexander (Professor, Chemistry), Emily Neese (Associate Vice-President, Strategy and Operations), and Sam Perrotta (Director of Strategic Initiatives) with help from partners across the university.

**Significant hires** include Olga Pierrakos, tenured Professor and Chair of the new Engineering department. Via remote access, she participated in the interview process for the department's founding faculty: Michael Gross, formerly of Chemistry, hired as an Associate Professor with tenure, and Assistant Professors Elise Barrella (with shortened tenure clock) and Elizabeth Boatman. Two other assistant professors were hired: Sarah McDonald in Biology and John Lukesh in Chemistry. Staff hires in the past year for Wake Downtown include Office Manager Amanda Tingle, Lab Manager Brian Smith, Assistant Microscopy manager Heather Brown-Harding, and Mass Spectrometry Manager Chris Tracy.

**New programs** include an interdisciplinary BS in Biochemistry and Molecular Biology (BMB), with 33 declared majors in spring 2017, and a concentration in Medicinal Chemistry and Drug Discovery, with 8 declarations.

**Activities:** In the spring 2017 semester, 281 students attended 18 pilot-scale courses: three lab courses, six division-5 lecture courses, three entrepreneurship courses, a first-year seminar, and courses in history, education, and communication as well as a course taught collaboratively with Winston-Salem State University.

In the summer and fall, activities ramped up significantly, in part because Salem Hall was closed for renovations. Thirteen faculty and staff and six research labs also moved to Wake Downtown for the academic year and most Chemistry lecture and lab courses will be held there during 2018.

**Research:** Faculty who moved to Wake Downtown or were newly hired to establish programs in Engineering, BMB, or Medicinal Chemistry and Drug Discovery are eager to obtain external grants to support their scholarship. Now that curricular and building plans are complete, they will be able to secure support for their own research programs and contribute to overall institutional funding levels.

In the last three fiscal years, the 15 faculty now at Wake Downtown have submitted an average of \$7.9M in funding requests and have received an average of \$1M in new awards per year. These figures include new faculty who have not yet applied for funding as WFU employees.

With the Office of the Provost, the Office of Research and Sponsored Programs contributed significant funds for equipment purchases; most notably, a Bruker 400 MHz NMR and Zeiss Laser Scanning Confocal Microscope. In addition to the larger investment of faculty hires and space development, these and many other smaller items will benefit research and teaching in many ways.

# Professional Development

## INTERNAL AWARDS

The Office of Research and Sponsored Programs assists the Associate Provost for Research in coordinating and administering internal award programs. In FY17, there were two deadlines for Pilot Research Grants and one for Collaborative Pilot Grants.

A total of \$98,400 was awarded for Pilot Research Grants and bridge funds; funding from the ZSR Foundation provided \$50,000 toward these grants.

The office also manages matching/cost share funds. In FY17, over \$280K was provided for sponsored project cost share, high-speed computing, open-access publishing, and other initiatives. An additional \$295K was spent for Wake Downtown Initiatives.



## FACULTY DEVELOPMENT

In FY17, the office spent over \$47K hosting and coordinating workshops and events, supporting research-related committees, paying for faculty travel to professional development seminars, and research-related training.

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 and Undergraduate Students

ACC Innovation Competition

Building Research Success at Wake Forest University

Team Building

Centers and Institutes Retreat

## HUMAN RESEARCH PROTECTION

ORSP provides administrative and financial support to the Institutional Review Board (IRB) under 45CFR §46. Pam Moser, Associate Director for Human Research Protection, maintains IRB records; facilitates communication between the IRB and researchers; coordinates meetings; updates and maintains the university's IRB policies and website; monitors training for researchers and other key personnel; provides continuing education for IRB members; and keeps the university's Federal wide Assurance and IRB Registration current. She is assisted by Jeanie Baird, Human Research Protection Specialist.

In FY2017, the IRB reviewed 124 new applications (109 expedited review and 15 exempt). An additional 134 amendments, 200 continuing reviews, and 7 safety events (5 protocol deviations, 1 unanticipated problem, and 1 serious adverse event attributed to an existing underlying condition, not the research) were processed. The highest recorded number of active applications (333) was achieved in April.

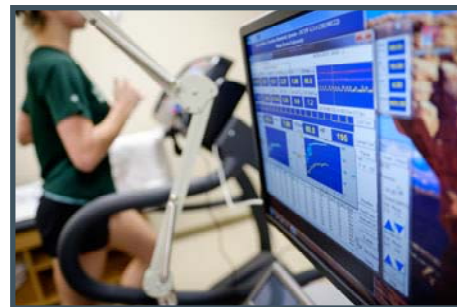
Post-approval monitoring (PM) is an important component of our comprehensive human research protection program. Our goals for PM are to ensure the safety of human research subjects, provide education to researchers and identify areas for improvement in research practices. Two studies were selected: one, because it is greater than minimal risk level, and the second because of the relative complexity of the study history. Neither was monitored "for cause".

Group outreach efforts targeted Education graduate students and undergraduate URECA grant applicants. Faculty, staff,

and student researchers received assistance via study-specific consultations. Our office facilitated collaborative research by executing IRB Authorization Agreements and approving recruitment of WFU personnel as study subjects by non-affiliated investigators. Training and support for eIRB, the electronic submission and review system, continued for individual users across campus.

The federal regulations for ethical conduct of human subjects research, known as the Common Rule, were updated on January 19, 2017, the last day of the Obama administration. The Human Research Protection Office is working to revise our Policies and Procedures as well as the eIRB application in order to implement the revised Common Rule on the scheduled effective date of January 19, 2018.

Funding for the Human Research Protections Program exceeded \$175K in FY17. This amount was used for staff salaries, the online system, committee support and professional development.



# Funding Highlights

In FY17, Wake Forest University researchers received grants totaling more than 6.9 million from external sponsors, not including fellowship support for scholarship in the social sciences and humanities. In addition, faculty and staff submitted a total of 116 proposals, requesting nearly \$37.7 million.

Consistent with previous years, the vast majority of the funding received was from federal sources. Approximately 83% of awards were federal grants, most notably the National Institutes of Health.

Faculty and staff in the Health and Exercise Sciences Department received the most funding. The Physics Department submitted the greatest number of proposals *and* requested the most dollars.

During FY17, the following faculty and staff received their first external grants at WFU:

- Grey Ballard Computer Science
- Eric Chapman, Physics
- Sherri Lawson Clark, Anthropology
- Mark Curtis, Economics
- Francis Flanagan, Economics
- Amanda Gengler, Sociology
- Sara Kugler, Anna Julia Cooper Center and Pro-Humanitate Institute
- Sarah Mason, Mathematics and Statistics
- Peter Siavelis, Politics and International Affairs

*The statistics that follow summarize Reynolda campus sponsored research activity. These graphs include funding processed through ORSP and not gifts or fellowship awards made to individual faculty. Awards represent authorization to spend as opposed to research expenditures.*

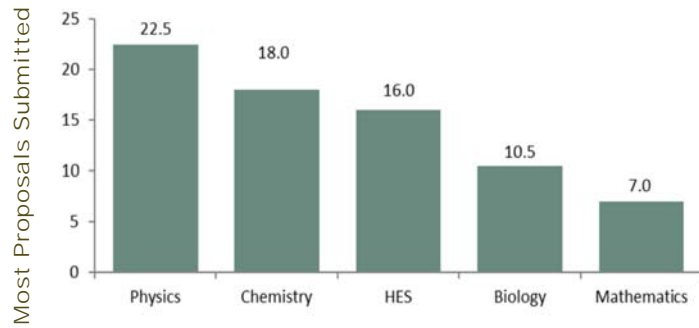
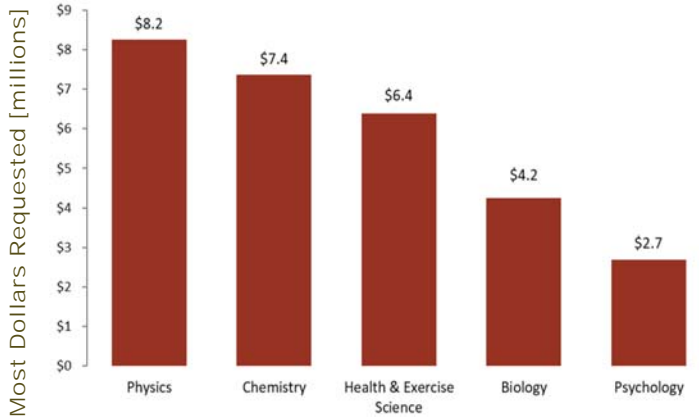
AWARDS BY YEAR: 2013-2017



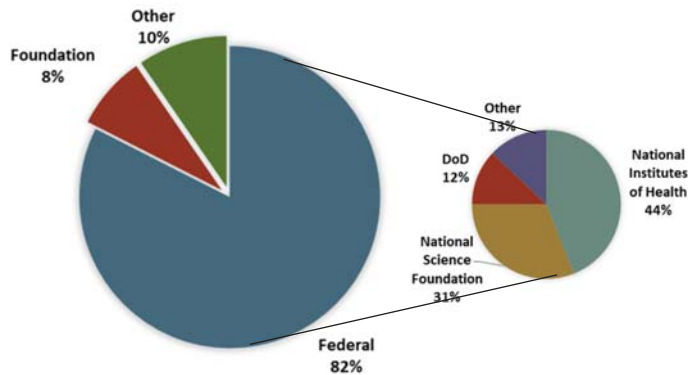
PROPOSALS BY YEAR: 2013-2017



## PROPOSALS BY DEPARTMENT



## FUNDING SOURCES



Department/Center	Awards	Amount
Health & Exercise Science	19.0	\$2,187,615.22
Physics	16.5	\$1,186,663.70
Chemistry	6.5	\$1,144,955.50
Biology	7.5	\$ 520,008.41
Economics	2.0	\$ 361,785.00
Communication	1.0	\$ 250,000.00
Computer Science	3.5	\$ 235,091.50
Graduate School	2.0	\$ 230,000.00
Center for Energy, Environment & Sustainability	2.0	\$ 129,845.00
Divinity	1.0	\$ 125,000.00
Psychology	2.0	\$ 109,991.00
Mathematics	2.5	\$ 96,560.50
Center for Molecular Signaling	0.5	\$ 94,965.50
Center for Nanotechnology & Molecular Materials	1.0	\$ 86,911.00
Anthropology	1.0	\$ 85,497.00
Anna Julia Cooper Center	0.5	\$ 48,609.50
Pro Humanitate	0.5	\$ 48,609.50
Politics	1.0	\$ 10,140.00
Sociology	1.0	\$ 7,937.00



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