Office of Research and Sponsored Programs

ANNUAL REPORT 2011

WAKE FOREST UNIVERSITY

From the Interim Provost

Dear Colleagues,

Wake Forest University faculty's energetic pursuit of sponsorship for research and creative work during the 2010-2011 fiscal year once again demonstrated national significance. Apart from the 2009-2010 fiscal year, which profited from extraordinary stimulus opportunities, annual external dollars awarded to projects this year exceeded all previous fiscal years, reaching $9,749,679. The Department of Biology received the most sponsored research dollars, with the Departments of Physics and Chemistry following closely.

The following individual faculty received their first awards at WFU in FY11:

Patricia Dos Santos, Chemistry, NSF CAREER and 2 research awards from NCBC
Wayne Pratt, Psychology, NIH AREA
William Turkett, with Errin Fulp, Computer Science, NSF research grant
Adam Friedman, Education, Library of Congress program development award
Ulrike Wiethaus, Religion and American Ethnic Studies, Burroughs Welcome Fund program implementation award
Nelly van Doorn Harder, Religion, East-West Center, workshop support
Jeremy Rouse, Mathematics, NSF research grant
Neal Walls, Divinity, Cf Foundation, Inc. program implementation award
Mark Jensen, Divinity, Duke Divinity award, program implementation award
Robin Simon, Sociology, NSF research grant
Dan Johnson, Biology, with Kristin Bennett, Education, and Jed Macosko, Physics, Educause product development award

Two separate NSF Major Research Instrumentation (MRI) awards were awarded to Anita McCauley, Biology, and Abdou Lachgar, Chemistry. The acquisition of these powerful new tools is expected to generate even more research success. On the pages that follow, you will find comprehensive data about proposal activity reported by sponsor and department and stories on a few featured projects and fellowships.

Such a year could not have happened without the knowledge, resourcefulness, and commitment of Office of Research and Sponsored Programs staff. Lori Messer, Diane Samuel, Pam Moser, Stephen Williams, Julie Edelson, and Susan Edwards make every effort to encourage and to help faculty submit winning proposals. This report provides quantitative information about the variety of activities ORSP conducted this year and how our internal funds are invested to promote faculty research and creative work.

Thanks again for all of the hard work you do to obtain external support on behalf of Wake Forest University.

Sincerely,

Mark E. Welker
Interim Provost

Outstanding Awards

Patricia Dos Santos, Assistant Professor of Chemistry, had a stellar year. She has been awarded a five-year Faculty Early Career Development Award (CAREER), the National Science Foundation's most prestigious award in support of junior faculty. Winners exemplify the teacher/scholar role through outstanding research, education, and their integration, where the discovery process stimulates learning, and research findings and methods are quickly and effectively communicated in a broader context to a larger audience.

Target Specificity of Cysteine Desulfurase in Bacillus subtilis examines how sulfur, long recognized as indispensable to protein cofactors, is incorporated into biomolecules. In most organisms, sulfur recruitment involves a single general enzyme, cysteine desulfurase, but its diverse functionality poses major obstacles to determining specific mechanisms; inactivating it is either harmful or fatal.

Bacillus subtilis and other Gram-positive species code for several distinct cysteine desulfurases. Based on genomic location, coding sequences, and preliminary analysis, Dr. Dos Santos hypothesizes that each has specialized functions in sulfur metabolism. The project's long-term goal is to elucidate the catalytic mechanisms by which these enzymes mobilize sulfur and their metabolic roles in Gram-positive bacteria, using the genetically tractable, nonpathogenic model organism *B. subtillis*. Her laboratory will combine genetic, biochemical, and biophysical approaches, focusing on the protein-assisted assembly of [Fe-S] clusters and activation of their physiological targets.

The project provides meaningful research roles and advanced training for undergraduate and graduate students, who will contribute to publications and learn how to present their results. Further, in an ingenious internship program, Salem College and Winston-Salem State University undergraduates will conduct summer research projects at Wake Forest and attend seminars on science careers throughout the academic year. They will be mentored by a graduate student, who gains teaching skills, and a home-institution advisor, who gains from Wake Forest resources, including faculty and graduate student interactions.

Dr. Dos Santos also won two awards from the North Carolina Biotechnology Center (NCBC), one in collaboration with the Wake Forest School of Medicine Biochemistry Department. For her individual award, *Novel strategies to develop antibiotics to Gram-positive bacteria: How Gram-positive microbes assemble essential [Fe-S] clusters*, her laboratory will seek novel metabolic targets in a broad spectrum of Gram-positive bacteria, which are partially or completely resistant to current treatment strategies and the major cause of death by infection, to develop new antibiotics.

In all of her projects, Dr. Dos Santos is developing new methods to solve longstanding problems related to Gram-positive bacteria. The impact of her work is four-fold: improving our basic understanding of sulfur mobilization mechanisms in bacteria; improving and devising new methods to enable breakthroughs in this area; strong potential for developing therapeutics against a devastating disease vector; and educating students for valuable science careers.

Mark Jensen, Jessie Ball duPont Associate Professor of Pastoral Care, School of Divinity, earned an award from Duke University for *Interdisciplinary Conversations: A Theology of Embodiment*. Most modern Christians do not conceive of wellness as a community concern related to social justice. Dr. Jensen will lead a series of interdisciplinary conversations among pastors, university faculty, mental and physical healthcare professionals, and members of the laity in medical/therapeutic and local church and/or theological school settings. Discussions will address biblical witness, focusing on the healing stories in the Gospels; theological, medical, and psychological theories of embodiment; and aspects of pastoral care involving congregants' wellness that will note the healthcare ministries in local churches.

A. Daniel Johnson, Senior Lecturer in Biology, won support from Educause, a nonprofit association that promotes intelligent use of information technology to advance higher education, to develop *BioBook: A Scaleable, Cloud-based eText Manager*.

Introductory biology courses can be a significant barrier to overall college success. They pile on technical language and foreign concepts, and classes are often too large for individualized instruction. The current generation of biology textbooks and eTexts provides little help, with dense language, excessive content, and a rigid format. To retain students, not only in biology but to graduation, the delivery structure and content approach to this pivotal course must be radically rethought. Learning theory indicates that nonlinear, multimedia, collaborative interaction increases both learning and student engagement with content.

BioBook is an exciting eText model recently developed by Wake Forest University and Odigia, Inc. Its simple, intuitive structure supports most learning styles. Content, multimedia, and self-assessments are organized in a flexible network that instructors and students can adjust to fit specific course learning needs; materials from other institutions and access to copy-protected materials as supplements via hyperlinked URLs can also be incorporated.

Funding will support 1) development of a Moodle-based platform that permits scaling and data collection across courses and institutions in real time while providing student access to *BioBook* via any HTML5-compliant browser on any device; and 2) in-depth evaluation and refinement of *BioBook's* functionality and efficacy. Test groups will include undergraduates enrolled in introductory biology courses for nonmajors at WFU, Salem College, Winston-Salem State University, and Guilford Technical and Community College. In Phase 1, half of the targeted students will use a generic version of *BioBook*; the other half, their regular textbook. Based on analytics and survey data, *BioBook* will be tailored to each site's needs and in Phase 2, a second cohort of students at each site will evaluate the revised *BioBook*.

Products will include 1) a robust, scalable, open-source eText technology for national dissemination; 2) standards and procedures for developing and evaluating new materials; and 3) a body of data showing what instructors can expect their students to gain by adopting eText - evolved technology, using *BioBook* as the proof of concept.

Oana Jurchescu, Assistant Professor of Physics, earned two national awards this year. First, a National Science Foundation research grant supports *Patterning Organic Thin-film Transistors by Differential Microstructure*. Organic thin-film transistors (OTFTs) are used in electronic components, notably radio frequency identification cards, a range of sensors, and computer displays that are bright, easy to read, with vivid colors and fast response times. The ability to pattern their active layers is crucial to reducing power

consumption and increasing performance, but progress has been impeded by many problems, both conceptual and practical, related to their degradation when exposed to conventional lithography processes. Dr. Jurchescu's laboratory will develop reliable, reproducible methods to simultaneously deposit and pattern organic field-effect transistors at low-cost and moderate temperatures. The goal is to drive patterning using self-assembled monolayers (SAMs) on the surface of contacts or dielectric materials. The presence/absence and type of SAM will promote different orientations of the organic semiconductor molecules forming the thin film. A high degree of order will enhance conductivity, while mixed orientations will induce low-conductivity regions. By connecting molecular design with device processing, organic semiconductors will be selectively deposited on pretreated surfaces to achieve self-patterning at low cost. Results will clarify the physical processes that originate at organic/dielectric and metal/organic interfaces and lead to low-cost, high-yield methods for fabricating high-performance organic electronic devices.

Second, Dr. Jurchescu won an award from the National Institute of Standards and Technology for *Nondestructive Deposition of Electrical Contacts on Organic Semiconductors*. This research program explores the use of nontraditional soft-contact deposition methods, such as nanotransfer printing, to overcome the mechanical and thermal limitations of the organic materials and to preserve organic semiconductor quality at the metal interface. Since they require a low thermal budget, they are compatible with the fabrication of large-area, light-weight, low-cost flexible electronics on plastic substrates.

Wayne Pratt, Assistant Professor of Psychology, has been awarded an Academic Research Enhancement Award (AREA) from the National Institutes of Health. The AREA program seeks to promote hands-on student participation in meritorious research and to strengthen the institution's research environment. It rewards Dr. Pratt's exceptional ability as a teacher/scholar.

Dr. Pratt's laboratory will study *Meso-Accumbens Serotenergic Involvement in Appetitive and Consummatory Behaviors* to elucidate the functions of serotonin receptors in the midbrain motivational circuitry of rats to gain information essential for developing and refining pharmacological weight control treatments. The project will train and mentor promising undergraduate and Master's students in biomedical research.

The World Health Organization now considers obesity one of the top five health concerns in developed nations. Over 65 percent of the US adult population is overweight, and 5-7 percent of annual medical expenditures, or over $75 billion, are obesity-related. Obese individuals are at elevated risk for diabetes, hypertension, heart disease, stroke, and certain kinds of cancer. The causes of this recent epidemic are complex and include genetic predisposition, sedentary lifestyles, and the proliferation of highly palatable and calorically dense foods. A tendency to overeat helped our ancestors to survive regular famines but is dangerous with the ready availability of diets high in fat and sugar.

The only centrally active drug currently approved for weight maintenance is thought to inhibit feeding by promoting brain serotenergic function. Recent work suggests that serotonin receptors in the hindbrain and the hypothalamic

regions, which modulate food intake based on energy need, mediate some of these effects. However, eating based on the palatable properties of food is thought to be regulated by other brain regions; specifically, the neural reward circuitry that also mediates the addictive properties of drugs. This project will test the hypothesis that serotonin receptors in the rat nucleus accumbens and ventral tegmentum regulate food consumption and food-seeking behaviors.

Neal Walls, Associate Professor of Old Testament Interpretation, School of Divinity, received support from the Cf Foundation, Inc., for the project, *Renewing Ministers, Revitalizing Congregations*. The Divinity School sponsors the 2011 Holy Land Pilgrimage/Macedonian Ministries Program for pastoral renewal. It begins with a spiritual journey through the summer heat to Galilee and Jerusalem and continues with a multiyear program of peer-support. Twenty parish ministers make daily visits to sites associated with the life of Jesus and the Desert Mothers and Fathers of early Christian monasticism,

participate in group conversations related to spiritual renewal, spend time each day in solitude and silence, build an authentic community centered on worship and prayer, and read selections that reflect on the historical and theological contexts of Christian spirituality and pilgrimage. Activities prepare them to approach Advent with purified hearts, rested and renewed in mind, body, and spirit.

Ulrike Wiethaus, Professor of Religion and American Ethnic Studies, in partnership with the Eastern Band of the Cherokee Indians (EBCI) and the Wake Forest Baptist Health Center for Excellence in Research, Teaching, and Learning (CERTL) and Northwest Area Health Education Center (NW AHEC), secured funding for *Cherokee MedCaT Academy: Enriched Student Experiences in Health Careers* from the Burroughs Wellcome Fund. MedCaT brings 25 western North Carolina high school students and five high school teachers to the WFU campus for a week during the summer to provide a problem-based learning science enrichment experience focused on career opportunities in healthcare and biotechnology. Teachers receive PBL instructional materials and training that parallels the student activities, so they can take this proven methodology back to their schools. Follow-up sessions by MedCaT staff at participating schools two times during the school year will ensure continuation of the program.

HUMANITIES INSTITUTE WINS NEH CHALLENGE GRANT

The National Endowment for the Humanities (NEH) awarded a five-year, $500,000 Challenge Grant to the new Humanities Institute. Wake Forest is committed to matching the award threefold to sustain the institute's interdisciplinary seminars, reading groups, round-table discussions, long-term collaborative research projects, guest speakers, events, and symposia.

Sparked by a 2007 planning grant from the Provost's Office, Associate Professor of Religion Mary Foskett, now the institute's director, Associate Professor of English Dean Franco, and Associate Professor of Humanities David Phillips laid the groundwork. Professor of Romance Languages Sally Barbour joined the executive board in June. More than 45 Wake Forest faculty were involved in reading groups and collaborative research, leading to panels at national conferences, guest speakers, new books, and new courses.

Now, Religion, Theatre, Political Science, English, and Divinity School faculty meet regularly to address conflicts in the Middle East and South Africa; English, Romance Languages, German and Russian, Music, and Art faculty study the relationship between science and the arts in the 18th century.

The institute celebrated its opening in March with a two-day symposium, "The Humanities in the 21st Century." Southern historian Edward L. Ayers, President of the University of Richmond, Founding Executive Director of the Virginia Center for Digital History, and co-founder of the Institute for Advanced Technology in the Humanities at the University of Virginia, gave the keynote address, "The Puzzle of Innovation in the Humanities." In February 2011, he noted, the American Academy of Arts and Sciences announced creation of a national Commission on the Humanities and Social Sciences to advance teaching and research in these areas, while the State University of New York at Albany is ending programs in French, Italian, Russian, classics, and theater because of low enrollments. "The humanities live with the challenge of both keeping alive the cultural heritage of the world and reinventing it. That is at the heart of what we do." By starting a Humanities Institute, Wake Forest is "stepping up to ensure that the humanities remain a powerful force in the 21st century."

The symposium offered a different view the next day. Stanley Fish, Davidson-Kuhn Distinguished University Professor of Humanities and Law at Florida International University, dean emeritus of the College of Liberal Arts and Sciences at the University of Illinois, Chicago, and former professor at the University of California Berkeley, Johns Hopkins, and Duke University, spoke on "Are the Humanities Good for Humanity? The Aims and Place of the Humanities in Liberal Education." He cautioned academics against doing more than introducing unfamiliar material and helping students to interpret it. "[N]o state legislator pays academics to be therapists, parents, or political agents of change."

The university responded with a panel discussion. History Professor Michele Gillespie asserted that the humanities give us "an empathetic grasp on the human experience and its complexities." Religion Professor Simeon Ilesanmi used the Yoruba term *olaju*, eyes wide open, to express the alert and expansive attention of the humanities. The Wake Forest University Humanities Institute is wide awake.

CHARACTER PROJECT

Christian Miller, Zachary T. Smith Faculty Fellow and Associate Professor of Philosophy, leads the team awarded $3.67 million over three years by the John Templeton Foundation to conduct the Character Project (http://www.thecharacterproject.com). Psychology Co-Directors are Professor **William Fleeson**, Kirby Faculty Fellow, and Associate Professor **R. Michael Furr**, McCulloch Faculty Fellow. Theology Director **Dr. Angela Knobel** is Assistant Professor of Philosophy at the Catholic University of America.

The Character Project will conduct an array of ambitious intra- and extramural activities to deepen our understanding of character. Dr. Miller will write *A New Theory of Character*, developing a conceptually coherent framework supported by empirical social psychology research. The Psychology

Co-Directors will investigate the consistency of character, its causes, its relationship to normal personality, the role of virtue in knowledge of ourselves and others, and the role of emulation in virtuous behavior. WFU faculty, postdoctoral fellows, graduate students, and residential scholars involved in the research will meet biweekly over the term of the award to read and discuss their work in progress.

Three New Frontiers funding competitions situations extend the enterprise, prioritizing junior faculty investigators:

- 6-10 awards ranging from $50K-200K for up to two years for psychological research;
- 5-6 awards ranging from $40K-100K for up to one year for philosophical work; and
- 3-4 awards ranging from $40K-100K for up to one year for work in theology.

Conferences begin with an *Initial Research Workshop*, two days in June 2012 when the 6-10 New Frontiers in the Psychology of Character awardees will discuss their preliminary results; PIs in the other areas will be required to attend; and other participants will include the external referees of the research grant competition; the Project Leader, Directors, and staff; WFU faculty and students; and other interested scholars.

A two-week summer seminar at WFU in June 2013 will address "Character: New Perspectives and Empirical Discoveries." Dr. Miller will convene fifteen graduate students and pretenure faculty from any field of study to discuss recent work in the psychology of character and its relevance to philosophical and theological thinking about human behavior to advance their future research and teaching.

Timed to begin at the end of the seminar, a three-day Final *Research Colloquium* in June 2013 will present "Conclusions about Character: Results from Psychology, Philosophy, and Theology." The PIs of all 14-20 funded projects will speak before all external referees; the Project Leader, Directors, and staff; the fifteen participants in the Summer Character Seminar; the nine Character Essay Prize winners; WFU faculty and students; and other interested academics. The colloquium will provide feedback, suggest avenues for future research, and disseminate results. All PIs will submit a chapter-length summary of their central findings for two edited volumes.

In addition, nine winning essays on the psychology, philosophy, and theology of character, accessible to nonacademic audiences, will be awarded $3K. They must be published or forthcoming in a popular publication with a circulation of at least 12,000 between June 2010 and May 2013, with special consideration to those that discuss research connected to the Character Project. These awards will be presented at a banquet on the last evening of the Final Research Colloquium.

Fellowship Awards

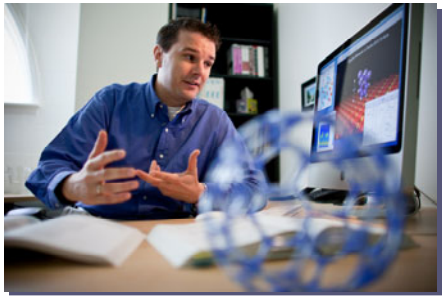
Fellowship awards not only allow individual faculty to focus on potentially transformative original research and creative activities, they lend international prestige to the university and nurture connections to people, places, and resources that will enhance wider collaborative opportunities.

Sandya Hewamanne, Assistant Professor of Anthropology, has earned a prestigious residential fellowship from the National Humanities Center. Located in the Research Triangle Park, the center supports the best work in every area of humanistic investigation. Forty fellows are chosen in an annual competition that typically draws more than 500 applications.

Dr. Hewamanne will use this opportunity to write *Sri Lanka's Free Trade Zone Factory Workers Negotiating New Identities in their Village Homes. To write her first study, Stitching Identities in a Free Trade Zone: Gender and Politics in Sri Lanka* (University of Pennsylvania Press, 2008), she lived and worked with young women hired for a few years to staff textile mills. Based on those relationships, since 2003, she has conducted ethnographic research in 41 former workers' village homes to determine how they use the new sense of self and political consciousness acquired in the FTZ to advance themselves and their families in a context that often stigmatizes their past. The book will add a crucial missing piece to studies of globalization's effect on communities and contribute to the body of knowledge on identity formation, agency, resistance, NGO politics, transnational networks, sexuality, and empowerment.

Timo Thonhauser, Assistant Professor of Physics , has been selected as a Kavli Institute for Theoretical Physics (KITP) Scholar for 2011-2013.

Launched in 1979 under the auspices of the National Science Foundation (NSF), located on the campus of the University of California at Santa Barbara, and directed by Nobel Laureate David Gross, KITP is ranked number one by the *Proceedings of the National Academy of Sciences* for the impact of its research initiatives. It brings together theorists in physics and allied fields for sustained periods of intense collaboration on a broad range of questions arising from investigations at the leading edges of science.



Each year, KITP selects approximately seven scholars nationwide based on their research accomplishments and potential. The scholarship provides travel and accommodation for frequent visits. See www.itp.ucsb.edu/for-scientists/fellowships/kitp-scholars/scholars-to-date.

Other Awards

INSTRUMENTATION AND MEETING AWARDS

Applications for instrumentation funds require departmental, interdepartmental, and cross-campus collaboration to enhance Wake Forest's capacity to conduct cutting-edge research and student training. Acquiring funds to support meetings not only serves the wider disciplinary community but draws attention to Wake Forest's outstanding faculty and initiatives.

Anita McCauley, Senior Lecturer and Director of Microscopy, acquired Major Research Instrumentation funds from the National Science Foundation to upgrade a Zeiss LSM 710 confocal microscope purchased with an earlier NSF award. The requested accessories permit live-cell, dynamic, and multilabel experiments, enabling faculty, postdoctoral fellows, and graduate and undergraduate students to pursue and publish important findings on brain plasticity; hormonal regulation of plant development; stress response systems, gene expression, and protein localization in Drosophila; DNA repair mechanisms; protein complex formation; protein oxidation; and posttranslational modification. Consistent with Wake Forest's mission to strengthen connections beyond campus, the LSCM is also used by regional investigators for research and education and in outreach workshops. In November 2010, it allowed the department to host a two-day meeting on advanced microscopy that attracted over 75 researchers from across the state.

Abdou Lachgar, Professor of Chemistry, acquired NSF funds to purchase a multipurpose powder X-ray diffractometer (PXRD) that will improve and expand the scope of science and engineering research and education in western North Carolina. PXRD instrumentation allows study of the molecular structure of solid materials, with applications in new materials, nanomaterials, polymers, thin films, drug discovery, forensics, and archeology. The equipment will enhance collaboration with Winston-Salem State University, North Carolina Agricultural and Technical State University, and the nanotechnology program at Forsyth Technical Community College and be heavily used in a series of weekend workshops offering topics in materials, cultural heritage, and forensics.

Dr. Lachgar also secured funds from the Air Force Office of Scientific Research (AFOSR) to support the Second *US/Africa Summer School on Materials: Tutorials in Reticular Chemistry, Metal Organic Frameworks, and Hybrid Inorganic Materials*. Held in Casablanca, Morocco, the

workshops focused on reticular chemistry—linking specifically designed molecular building blocks or metal-organic polyhedra into predetermined crystals through covalent coordination bonds. This approach has led to the discovery of diverse and novel materials, including metal-organic frameworks (MOFs), under study for applications as diverse as hydrogen storage, methane transport, carbon dioxide sequestration, catalysis, chemical separations, magnetism, and electronic and ionic conductivity. Students learned the potential of materials science to address global energy and other environmental challenges.

Nelly van Doorn Harder, Religion Professor, secured funds from the East-West Center of the University of Hawaii to support *Health as Metaphor and Reality in Religions in Asia*. This workshop, designed to meet the needs of teaching faculty, especially in the humanities and social sciences, interested in adding Asian content to their undergraduate courses, explored health as a focus of concerns and practices related to the complex interplay of physical, mental, spiritual, environmental, social, and economic dynamics. In particular, it examined how different Asian cultural and religious traditions understand and respond to a broad spectrum of health questions, from achieving personal health to defining a healthy society.

Len Preslar, Schools of Business Executive Director of Health Management Programs and Distinguished Professor of Practice, received a grant from the North Carolina Biotechnology Center in support of the second annual *Wake Forest Biotechnology Conference and Case Competition*. With the help and direction of primary sponsor Targacept, the event provided MBA, JD, MD, and PhD students, faculty, biotechnology and health professionals, firms, and community leaders an opportunity to interact directly in a case competition, panel sessions, and guest presentations. In addition to the WFU team, the event attracted teams from the Harvard, MIT, UCLA and UC-Berkeley, University of Texas, University of Virginia, and Duke/Fuqua MBA programs.

INTERNAL AWARDS

The Office of Research and Sponsored Programs assists the Provost's Office in administering and coordinating several internal award programs. FY2011 awards are as follows:

TRIAD Interuniversity Project Planning Grants (TIPP)	$11,000
Cross-Campus Collaborative Research Fund	$20,000
Social, Behavioral, & Economic Sciences Research Fund	$75,750
Science Research Fund	$48,500
Center Planning Grants	$35,000
Humanities Institute	$125,000
Bridge Funding	$10,000

The office also manages matching/cost share funds. In FY2011 more than $152K was provided as match/cost share for faculty research projects and other support.

Professional Development Initiatives

ExPERT

The Office of the Provost and the Office of Research and Sponsored Programs launched the Extended Professional Enhancement and Research Training (ExPERT) initiative this year. The eight fellows—David John and Stan Thomas, Computer Science; David Phillips, Humanities; Monique O'Connell and Tony Parent, History; James Schirillo, Psychology; Simeon Ilesanmi, Religion; and Cindy Gendrich, Theatre and Dance—represented tenured faculty seeking to develop more competitive external proposals to support multiyear research projects and creative activities. They received both internal and external consultation to plan and execute a 5-year plan that incorporates proven strategies for securing funds.

Fellows received a $2,500 stipend to focus on the program in summer 2011, a $500 travel supplement, and a copy of *The How-To Grants Manual: Successful Grantseeking Techniques for Obtaining Public and Private Grants* by consultant David Bauer, who provides individual and group mentoring.

In fiscal year 2011, fellows attended several Winning Grants Seminar workshops, participated in the half-day Quality Circles seminar, and met individually with Dr. Bauer to discuss their professional development plans. Fellows will complete the program in the fall.

FACULTY DEVELOPMENT

In FY2011, the office spent over $77K hosting and coordinating workshops and events, supporting research-related committees, and paying for faculty travel to sponsors and professional development seminars. Some of the supported programs and events are:

- Reception and Dinner to Honor Authors, Editors, and Fine & Performing Artists
- Creative Research Activities Development & Enrichment Program (CRADLE)
- Extended Professional Enhancement & Research Training (ExPERT)
- Keys to Increasing Collaboration & Effective Team Building
- Building Research Success at Wake Forest University
- Recognition of Research Excellence
- The Winning Grants Seminar
- Scholarly Writing Workshop
- Center and Institute Retreat
- Quality Circle Training

The office edited 70 proposals and other documents and performed over 50 searches for funding opportunities.

Compliance

ORSP provides administrative support to the Institutional Review Board (IRB) under 45 CFR §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.

In 2011-2012, the IRB reviewed 138 new applications, a 17 percent increase over 2010-2011. Both full board and expedited category reviews increased, and the trend of fewer exempt applications continued. Three studies were reviewed by the full board, 116 qualified as expedited review, and 19 as exempt research. In addition, 55 amendments, 60 continuing reviews, and 1 safety event were processed. Less than five "paper" protocols, submitted before electronic submissions became mandatory, were active by year's end.

Training and support for eIRB, the electronic submission and review system, continued for individual users across campus. Group outreach efforts targeted graduate programs in Psychology, Education, and Divinity; undergraduate and graduate students in Communication; and faculty from the Law and Divinity Schools. Existing outreach programs continued; for example, the IRB column in ORSP's *Research News*.

Concerted communication and collaboration between the Reynolda and Medical School campuses continued to improve eIRB experiences for our users. Major upgrades to the eIRB system were accomplished, including a new authentication process that does not require a VPN connection for secure eIRB access when off-campus. The CITI website was revised to reduce learner errors when registering for courses in human subjects research and responsible conduct of research.

Finally, ORSP continued its oversight of potential financial conflicts of interest involving WFU research faculty.

Funding Highlights

Wake Forest University investigators earned over $9.7 million from external sponsors as well as fellowship support for scholarship in the social sciences and humanities. Overall, we submitted 147 proposals, requesting over $54 million.

The Center for Energy, Environment, and Sustainability and the Innovation, Creativity, and Entrepreneurship Program each received their first awards in Fiscal Year 2011.

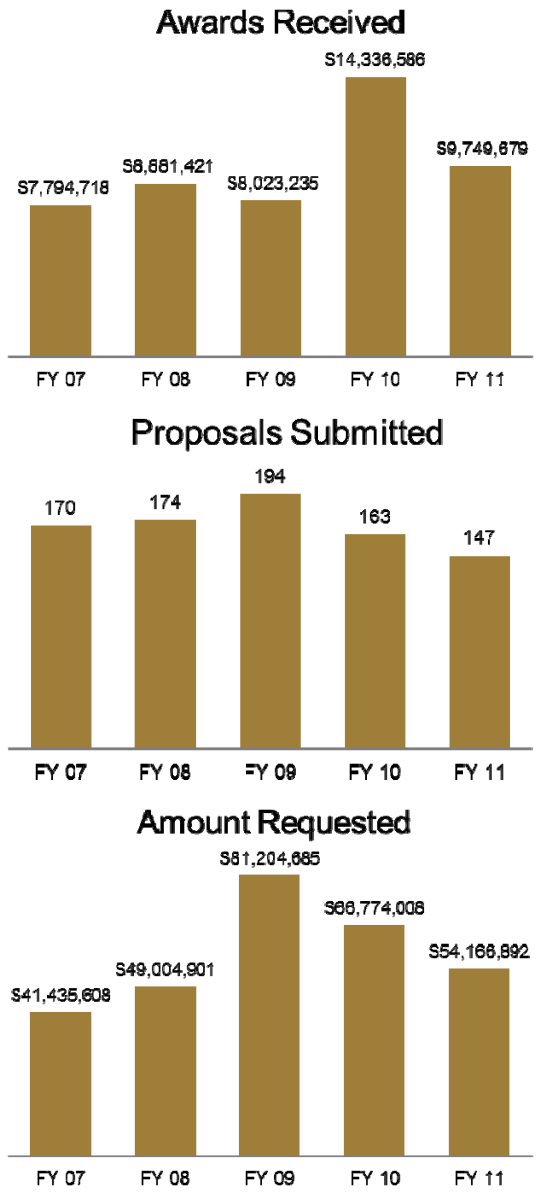
Faculty in the Physics Department once again submitted the most proposals, but the Biology Department received the most funding. The Departments of Chemistry, Communication, Computer Science, and Psychology all increased the amount awarded over last year. In fact, Computer Science more than doubled its external funding over Fiscal Year 2010. The Divinity School, WFDD, and the Religion Department received awards for the first time in a few years.

Federal sponsors accounted for significantly more awards this year as compared to last year: 81% versus 66%. Although the National Institutes of Health remains our primary federal sponsor, this year funding from the National Science Foundation increased from 30% to 37%.

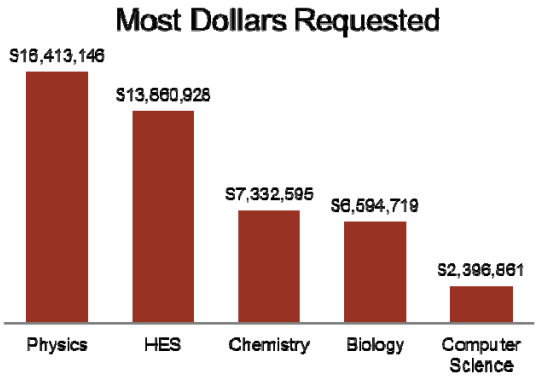
ORSP acknowledges the tremendous effort and imagination of all faculty who submitted proposals and congratulates those who received awards.

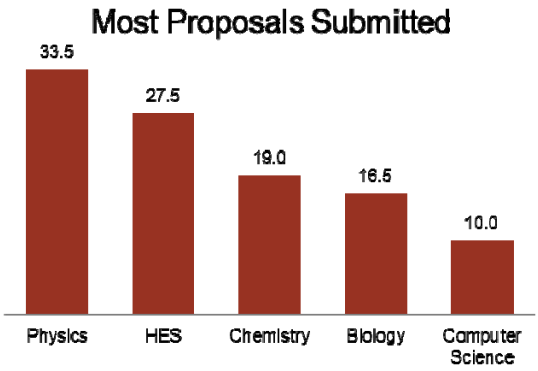
The statistics that follow summarize Reynolda campus sponsored research activity for Fiscal Year 2011. These graphs include funding processed through the Office of Research and Sponsored Programs and not gifts or the many fellowship awards made to individual faculty. Awards represent authorization to spend as opposed to research expenditures.

FISCAL YEARS 2007-2011



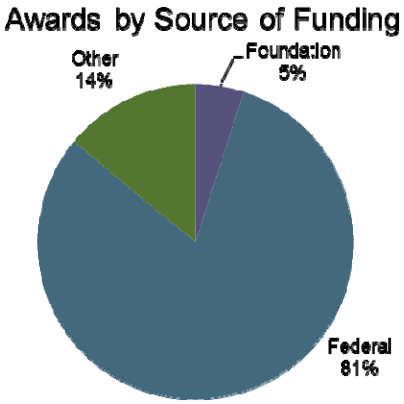
AWARDS BY DEPARTMENT

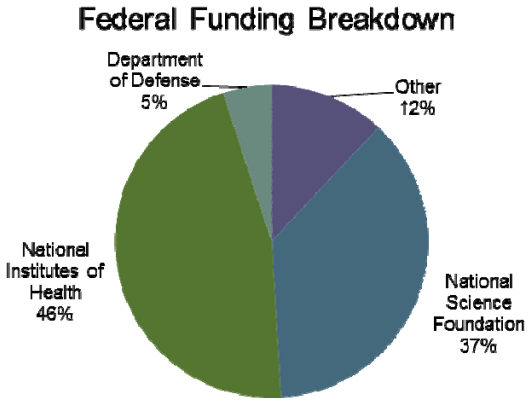




Unit	# Received	Amount Awarded
Biology	11.5	$1,997,784.50
Physics	23.0	$1,808,002.16
Chemistry	15.5	$1,718,912.00
Health & Exercise Science	18.0	$1,461,329.00
Computer Science	12.0	$902,817.63
Psychology	7.0	$709,129.59
Center for Energy, Environment & Sustainability	1.0	$300,283.50
Communication	3.0	$247,195.13
Religion	2.0	$180,535.00
Graduate School	1.0	$81,000.00
Z. Smith Reynolds Library	1.0	$75,000.00
Mathematics	2.0	$66,572.00
Divinity School	3.0	$53,000.00
WFDD	1.0	$33,893.00
Sociology	1.0	$29,393.00
Political Science	2.0	$21,101.62
Education	1.0	$20,000.00
Economics	2.0	$19,298.00
Anthropology	1.0	$14,932.98
Innovation, Creativity & Entrepreneurship Program	2.0	$7,000.00
Business Schools	1.0	$2,500.00

ADDITIONAL INFORMATION





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