

Research News

Please circulate to:

OFFICE of RESEARCH and SPONSORED PROGRAMS

October 2007

WAKE FOREST WINS OVER \$7.7 MILLION IN EXTERNAL RESEARCH AND SPONSORED PROGRAM SUPPORT

Message from Associate Provost for Research Mark Welker



Once again, faculty and staff were highly successful in attracting external funding to support their research and sponsored projects. In FY07, over \$7.7M was awarded to Wake Forest University, the second highest amount ever received, and exceeding last year by nearly 4%. This achievement is particularly impressive in the current tight funding environment. Faculty and staff are heartily congratulated for their efforts!

At the departmental level, both Physics and Health and Exercise Science had a strong year. Physics received the most funding, \$1.57M, followed by HES with \$1.55M.

Several faculty must be singled out for recognition. First is Dany Kim-Shapiro, Physics, who won an NIH MERIT award. Eligibility is restricted to projects previously ranked in the top 10% and currently among the top 5% of renewals. Only 5% of all NIH grantees receive one, and no one on the Reynolda campus, to our knowledge, has been so honored.

Al Louden, Communication, received the largest single award—over \$845K for 2.5 years from the State Department for the Benjamin Franklin Transatlantic Initiative: Summer Institute for Youth. This program seeks to encourage individual expression, communication, and information-sharing to advance positive relationships among 15-19 year-olds of various ethnic and religious groups from Eurasia, Europe, and the United States.

Jack Rejeski and Steve Messier, HES, were each awarded single grants of over \$500K, and several faculty received awards with budgets over \$250K: Gloria Muday, Biology; Betsy Gatewood, Office of Entrepreneurship and Liberal Arts; Jacque Fetrow, Computer Science and Physics; Dany Kim-Shapiro and Dave Carroll, Physics.

Andrea Ellis, Student Development, received her first award from the Campus Kitchens Project.

Several faculty won prestigious fellowships again this year. Robert Hellyer and Monique O'Connell, both in History, were each awarded two fellowships to support their projects. As many of you know, each fall, we host a reception and dinner to honor authors, editors, and fine and performing artists who completed large works in the past year. This year, WFU authors published over 40 books, Gerry Esch, Biology, and Scott Klein, English, by Cambridge University Press, and Christian Miller, Philosophy, and Jay Ford, Religion, by Oxford University Press.

With respect to technology transfer, 9 invention disclosures (15% of the WFU total) named at least one Reynolda campus inventor, and 3 provisional patent applications were filed as a result. Eleven patent applications were filed on Reynolda campus invention disclosures made in FY06. Much of the intellectual property activity originates from work at the Center for Nanotechnology and Molecular Materials under the direction of Dave Carroll, Physics. Three companies that rely heavily on Reynolda campus intellectual property were started in 2006-2007—Great Wall Systems, PlexiLight, and FiberCell. Great Wall Systems earned a \$750K Phase II STTR award, which also helps to fund the research of inventor Errin Fulp, Computer Science.

On September 1, the Reynolda campus began using the eIRB system to prepare and to review IRB applications online. The system, training materials, and FAQs are accessible by clicking on eIRB at <http://www.wfu.edu/rsp/irb/new.html>. Paper applications will be accepted until November 30, when all new submissions must be made through eIRB. We would like to thank the IRB Office, IS, and Academic Computing on the Bowman Gray campus for working to make electronic review and submission possible on the Reynolda campus.

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WAKE FOREST
UNIVERSITY

STEPHEN WILLIAMS ACHIEVES RESEARCH ADMINISTRATION CERTIFICATE

Stephen Williams, ORSP's Assistant Director, recently earned his Certified Research Administrator (CRA) credential. Passing the test of the independent, nonprofit Research Administrators Certification Council means that he has mastered the body of knowledge in proposal development and award administration; matters of ethics, professionalism, and intellectual property; and legal, financial, and management requirements. We congratulate Stephen on his commitment and accomplishment.

CHANGES TO eSNAP PROCESS ON SINGLE-INVESTIGATOR NIH GRANTS

ORSP will no longer require an eSNAP routing form for NIH progress reports submitted for grants with a single principal investigator.

On April 7, 2006, NIH eliminated the PI signature from the face page of grant applications and progress reports. Instead, grantee institutions were required "to secure and retain at the organization a written assurance from the Principal Investigator (PI) prior to submitting an application to the PHS." As a result, ORSP began requesting an eSNAP routing form with all progress reports to record these signatures.

On May 1, 2007, a notice (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-07-064.html>) revised that position: "Since eSNAP already includes a PI sign-off as part of the electronic routing process, it was determined that this sign-off function could be used as the institutional system of record for the institutional PI assurance." Therefore, ORSP no longer requires the eSNAP routing form for single-PI NIH grant progress reports.

However, the eSNAP process only accommodates a single PI assurance, so NIH grants that include multiple PIs must still submit the eSNAP routing form and Co-PI/I addendum form.

COST-SHARE POLICY

Cost share, also called match, is the portion of the total project costs not borne by the sponsor. It can be provided in different ways, including cash, in-kind, and third-party contributions.

Cost share can be mandatory or voluntary. Mandatory cost share is required by the sponsor, as will be stated in the grant solicitation/guidelines and as a condition of the subsequent award. In general, WFU will commit resources to a project when required to do so by the sponsor and when the resources are available.

When cost share is mandatory, the PI must send an email

request to the Associate Provost for Research and the ORSP Director. The PI's home department or school is expected to provide up to one-half of the amount requested as cost share.

Voluntary cost share can be committed or uncommitted. Voluntary committed cost share is not required by the sponsor but is included in the budget or other sections of the proposal by the PI. WFU does not participate in voluntary committed cost share, and PIs who include it will be asked to delete it before the proposal is submitted.

Voluntary uncommitted cost share is cost share that is over and above any amounts stated in the proposal. WFU is not required to document this cost share.

Faculty appointments include a research component. Voluntary uncommitted cost share associated with faculty effort is assumed to be part of the normal research component, so it is not necessary to separately show cost-shared effort on the effort report.

In addition to the dollar value of cost share or match provided to a project, cost share requires additional administrative costs to the university. Once cost share is committed, it must be tracked and reported to the sponsor. These costs are subject to annual internal audit and audit by the sponsor. If the audit finds that the university has not met its cost-share commitment, funds may have to be returned to the sponsor. Some sponsors, such as NSF have policies prohibiting cost share unless required by the specific program. PIs should consult with ORSP for clarification of sponsor and program guidelines well in advance of their proposal deadline.

NIH NEW INVESTIGATORS PROGRAM

The director of the National Heart, Lung, and Blood Institute has mandated funding new investigators at significantly higher percentile scores than those who have already had NIH funding. The current payline is at the 14th percentile, but new investigators can be funded up to the 24th percentile in addition to getting a break in the initial review groups. When requesting assignment to an institute, new investigators should check into their policies at http://grants1.nih.gov/grants/new_investigators/institute_center_practices.htm.

TRANSFORMATIVE SCIENCE AT NSF

from *Federal Grants and Contracts Weekly* 31, 36 (9/13/07)

Applicants to the National Science Foundation will soon see grant review criteria amended to recognize and implement radically new ideas. An internal working group is looking for ways to foster transformative research, which, as defined by the National Science Board, "has the capacity to revolutionize existing fields, create new subfields, cause paradigm shifts, support discovery, and lead to radically new technologies." A specific task is to develop a new funding mechanism for early concept research projects, including a way to monitor and track their impact.

OUTSTANDING PROJECT PROFILES

WFU INVESTIGATORS DOUBLE THEIR IMPACT

Two imaginative faculty went beyond the typical grants equation, one idea = one proposal, to widen support for their projects. Associate Professor of Computer Science Jennifer Burg received 2 almost simultaneous awards from the National Science Foundation. The first, *CPATH: Revitalizing Computer Science Education through the Science of Digital Media*, proposes an exciting new model, especially appropriate to liberal arts universities, where interdisciplinary initiatives thrive. Workshops around the US will convene academic, business, and industry representatives to create a broad network of stakeholders in computer science education. More coherent and robust models for interdisciplinary programs linking computer science with art and practice will be developed. The information will be compiled, analyzed, and reported both incrementally for continuous refinement and at the end of the 3-year project for broad dissemination.

The second, *Linking Science, Art, and Practice in Digital Sound*, engages professors of computer science, education, and digital sound design in developing curricular material that uses examples from theater, movies, and music production to explain the science and mathematics of digital sound. The team will create a textbook, interactive tutorials, worksheets, MATLAB and programming exercises, and application-based projects in modules that move from higher to lower levels of abstraction and from concept to practice. Collaborative research and creative projects will engage students of different backgrounds and teachers of various courses in computer science and production aspects of the performing arts. Results will be assessed through direct observation and questionnaires and at workshops for college-level teachers of digital media from computer science and art disciplines.

Assistant Professor of History Robert Hellyer won a Smithsonian Fellowship for the summer and a Japan Foundation Fellowship for a subsequent year in Tokyo to develop a museum exhibit and a book on *Green Tea and the Path to an Industrial, International Japan*. First, 10 weeks of research at the Freer & Sackler Galleries and the National Museum of American History in Washington, DC, provided access to Japanese prints and photographs that depict tea growing, processing, and consumption as well as vast archives of business Americana that include advertisements for green tea and marketing plans, like the Japanese tea rooms built in major US cities. Popular art, especially prints and photographs, better elucidate Japanese cultural patterns than economic statistics and will be used to mount a public exhibit on US consumption of Japanese tea.

Second, at the University of Tokyo, Hellyer is based at one of the largest archives on Japan before 1868, which has a research center dedicated to 19th-century photographs and

popular art. He also gains access to 19th- and early 20th-century Japanese newspapers and magazines, government archives, and Japanese historians with special knowledge of the tea trade.

From the 1870s, green tea became Japan's second largest export, with 90% shipped to the US in a trade that held strong until the 1920s. The book will explore how rural Japanese society was shaped by the rapid development of industrial tea production and the new relationships with Western firms that controlled export and sale to the US market. Everyday beverage consumption patterns and social trends were recast in urban Japanese society when a traditional beverage became a world commodity, while, for several decades, rural Americans consumed more green tea than the Japanese. This interdisciplinary history will offer new ways to consider the intertwined processes of industrialization, foreign trade, and internationalization that shaped primarily Japanese but also US society.

KIM-SHAPIO: CLEAR MERIT

Physics Professor Dany Kim-Shapiro has earned a National Institutes of Health MERIT (Method to Extend Research in Time) award for extraordinary breakthroughs in the study of sickle-cell disease. On top of his 5-year CAREER award, it provides 10 years' continuous support for his research program without the need to compete for renewals. Only 5% of NIH grantees receive one, based on consistent excellence.

Kim-Shapiro and colleagues, including Chemistry Professor Bruce King, investigate ways to improve nitric oxide (NO) therapies for sickle-cell disease, which affects 1 in 600 African Americans among others. It causes severe pain and tissue damage that can lead to heart and neurological complications and death. Current treatments are inadequate, and there is no cure.

The project proposes the novel hypothesis, developed in collaboration with Mark Gladwin of the NIH, that released cell-free hemoglobin scavenges NO, with pathological consequences. It aims to elucidate how: (1) the hemoglobin mutation increases red blood cell fragility; (2) reduced NO scavenging by red cell-encapsulated hemoglobin compares to cell-free hemoglobin; (3) NO reacts in sickle-cell compared to normal blood; and (4) patients' NO response can be restored using nitrite.

Wake Forest recently helped to sponsor an NIH 2nd International Role of Nitrite in Physiology, Pathophysiology, and Therapeutics meeting. Almost 500 people registered for this conference to catalyze nitrite research and translation of nitrite therapy to orphan and other diseases.

WFU LAUNCHES CRADLE

The Provosts' Office and ORSP conceived **Creative Research Activities Development & Enrichment (CRADLE)** to help faculty win external support for research, creative, and service projects. Group and individual training is directed by David Bauer, author of 10 books on funding strategies. He served as Director of Development for the Center for Educational Accountability at the University of Alabama at Birmingham; Director for Extramural Funding and Grants Management at the University of Rochester School of Medicine Department of Pediatrics; and Assistant to the President at the State University of New York College of Technology.

Dr. Bauer kicked off the program with 2 full-day workshops, open to all faculty. In "How to Find and Win Government Grants," he asked participants to consider their motives: What do you want to do for your students, your organization, your discipline, your career? What will be the impact? Grantors want to support positive change. Your proposal should focus on what you will change—not the means, but the end.

In the short term, how will you find time to write grants? Dr. Bauer recommended Lakein's *How to Get Control of Your Time and Your Life*. Its "Swiss cheese concept" suggests knocking holes in the daunting larger mission. Organize a proposal development workbook with specific tasks and take 30 minutes daily or an hour a week to accomplish one.

"Values-based grant-seeking" draws on Festinger's Theory of Cognitive Dissonance. Reviewers see the facts you present through their "values glasses." You must target the dissonance between what they want—to cure cancer—and what you can deliver—elucidate a pathway. You don't try to convince them that other pathways are wrong; they may be authorities on the other pathway. Instead, you clearly state the urgent need to understand your pathway and why they should invest now in exploring its potential. The project summary should at least tell them why they should keep reading the proposal. You don't claim that you can completely close the gap between ought and is but that you will make progress. Certainly don't begin, "I need money to . . ."; no one cares if you need money.

You learn about sponsor values from the review criteria, who will review you, and funded proposals. First, find 10-15 programs that might be relevant using ResearchResearch.com. At the sponsors' URLs, study guidelines and review criteria. Use the number of points or pages for a section to determine your emphases. Note previous grantees' names, institutions, and proposal titles. If all the money is going to Harvard, how will you position Wake Forest? Make a strong case for its unique strengths (contact ORSP for tailored boilerplate) and your own. If no one has secured more than \$20K, figure out what you can achieve for that amount or how you might cobble other awards together. Contact 5 of the grantees to ask if you can read their proposals; most are happy to share their success. Finally, try to find out who will review your proposal. Since NEH reviewers may not be experts in hysterical realism, explain it and its value. Best yet, sign up to serve as a reviewer

to learn the process and make contacts.

Developing grant-winning ideas requires brainstorming other approaches. Seek advice from a "quality circle" with diverse expertise and perspectives as well as mentors in the field. In contacts with program officers, show that you're flexible and creative. Travel to DC to talk with them, preferably with a co-investigator: "I have several approaches. I want to pick the best." Dress conservatively, bring a concept paper and your laptop, and immediately write down what you learn. Preproposal contact is the difference between success and failure with all sponsors.

Dr. Bauer suggested an internal preproposal process. Write up the problem; the solution; how the project relates to department or university goals; estimate duration, costs, personnel, release time, equipment. Then submit it to your chair or other authority for conditional approval. You'll not only have a scaffold for full project development but learn what may stand in your way.

Day 2 was devoted to foundation and corporate funding. Faculty must contact the WFU Development Office before pursuing private grants to avoid conflicts with university initiatives and to benefit from its knowledge. The competition is fierce, and you have only a 2-3 page letter of intent to convince an executive, not a subject expert, to support your work. The process doesn't have to be fair, transparent, or even coherent; you won't find the analogue of a federal PO to answer questions and tender sample proposals, and making personal contact may be difficult. Passion and persistence are required to gain insight into sponsor values.

If ResearchResearch turns up a likely private source, note its name and location, and at dgbauer.com, under Helpful Links, access the Foundation Center to find its 990 tax form. The last page will show whom they have funded for what amounts.

Dr. Bauer offered a template for the letter. It starts with what you know about the sponsor's values and giving to explain why you are approaching them with a problem of urgent interest.

Paragraph 2 makes the sponsor *feel* the problem. Quote an expert or community members or a case study or show photographs that make vivid what will happen if the problem is not solved.

Paragraph 3 transitions to the solution. Propose approaches suggested by the titles of funded proposals.

Paragraph 4 describes the solution: fund this project! Paragraph 5 enunciates why you are the best person for the job and Wake Forest the best place to do it.

Paragraph 6 asks for the money. If you can, provide an Excel spreadsheet and summarize the budget. Note any funds you have or expect from other sources.

Who signs the letter? Give your name and contact information for questions, but the signature is the president's, the provost's, or the dean's to demonstrate institutional commitment.

Please contact ORSP for Dr. Bauer's handouts. He will offer more workshops open to all faculty in the future.

INSTITUTIONAL REVIEW BOARD NEWS

IRB Roster for 2007-2008

Robert Evans, chair (Education); Deborah Newsome, vice-chair (Counseling); Steve Folmar (Anthropology); Nancy Crouch (Information Systems); Joseph Soares (Sociology); Steve Giles (Communication); Peter Brubaker (Health & Exercise Science); Janine Jennings (Psychology); Jackie Hundt (Community Representative). **Alternates:** Jack Rejeski (Health & Exercise Science); Laura Veach (Counseling); Donald Helme (Communication); Eric Stone (Psychology).

eIRB

PIs can now submit their IRB applications and amendments electronically through eIRB. All study team members have input and can view the status of their protocol 24/7. ORSP offered training this fall. The system, training materials, and FAQs are accessible from www.wfu.edu/rsp/irb/new.html. In planning your research, please invest the time to master eIRB. Paper applications will be accepted only through November 30.

Associate Professor of Education Mary Lynn Redmond's Cultural Development study was the first Reynolda campus eIRB submission reviewed and approved. She said, "The actual submission process was not too complicated at all. It requires an extra step for the advisor to review the application once the student has completed it online and, if there are questions, to go back to the student for the answers. But once we are all accustomed to doing it this way . . . we will save a lot of time!"

eIRB FAQs to get you started!

Q. Who can use eIRB?

Reynolda campus researchers who have been assigned roles in the eIRB system may use eIRB. They must change their password before using it for the first time; allow 30 minutes for processing. New passwords cannot be any of your previous 8 passwords; can be changed only once a day; must be at least 6 characters; and include any 3 of the following items:

- English uppercase characters (A through Z)
- English lowercase characters (a through z)
- Numerals (0 through 9)
- Special characters (\$, #, @).

Q. Where can I go for help with eIRB?

Access the *User's Guide to eIRB*, eIRB Vocabulary, and eIRB FAQs on the IRB website under What's New. Researchers working off campus must access eIRB using VPN. If you need VPN access to DEACNET, see techtalk.wfu.edu/vpn/index.html or call the IS Help Desk at 758-4357.

Q. What should I do if study team members are not listed in eIRB?

Not all faculty and staff are listed in the system. Email the IRB coordinator (irb@wfu.edu) with the names and WFU ID numbers you wish to add and justify requesting an eIRB account. People outside WFU should include their full name, affiliation, email address, and telephone number.

What Delays Approval of IRB Applications?

1. Failing to complete the mandatory **basic** CITI training.
2. Failing to include required information and documents.
3. Failing to properly change your DEACNET password.
4. Failing to follow submission procedures. In eIRB, this means not including the requisite biosketches or agreements to participate.
5. Disregarding deadlines for submitting full board protocols or responding to IRB concerns.

Research Courses

Regular courses, research methods courses, and even service-learning components of courses that engage people from outside the class in individual or group projects may need IRB approval. Any of the following conditions requires IRB review:

- ◆ If the interaction with people involves record keeping (e.g., field notes, survey responses) that will be stored and may be used for future research reports by student(s) or professor.
- ◆ If any part of the work will be presented orally or in print to any audience apart from the class, including honors theses presented to, or available to, nonclass members.

When all or many students in a research class conduct similar projects, the instructor may submit a single IRB application describing the aims of the class project (e.g., different datasets or types of interactions with subjects) and any other factors that clarify the project to the IRB.

Chair's Comment: "The challenge in submitting a general application that will provide a framework for conducting similar studies and protect human subjects will be to provide enough details to ensure that anything meeting the criteria can be exempt and approvable. A carefully designed set of parameters with given risk levels and effective oversight and quality control is required. The second challenge is to draft a consent form that can encompass the variability without being hopelessly vague."

COMPLIANCE HOTLINE – Call 1-877-888-7888 or email www.tnvinc.com/Reportline/International/ to anonymously report suspected violations of laws, regulations, rules, policies, procedures, ethics, or other information you feel uncomfortable reporting to a supervisor or faculty administrator. The operator, who is not a university employee, will report your concerns to the University Compliance Office.

NEW COMPETES ACT SUPPORTS SCIENTIFIC RESEARCH AND EDUCATION

from *Federal Grants and Contracts Weekly* 31, nos. 18, 32, 33
(26 April; 9, 16 August 2007)

America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) is a new law that aims to strengthen research and education in science, technology, engineering, and mathematics (STEM). It will provide \$33.6B over fiscal years 2008 to 2010 for new and increased activities at the Department of Energy (DoE), Education Department (ED), National Aeronautics and Space Administration (NASA), National Institute of Standards and Technology (NIST), National Oceanic and Atmospheric Administration (NOAA), and the National Science Foundation (NSF).

NSF. The NSF budget will double to \$11.2B by FY2011. The early career grants program (CAREER) will be strengthened, and a pilot program created to disburse seed grants of at least \$80K a year for 5 years to outstanding new investigators and for high-risk research. The Graduate Research Fellowship program must be enhanced and at least 1.5% of research funds reserved for Integrative Graduate Education and Research Traineeships (IGERT) to expand their interdisciplinary thrust in coordination with other agencies. In addition, NSF must establish a clearinghouse and pilot initiatives to create or to improve MS degree programs; a mentoring program for women and minorities who are interested in STEM careers; and basic research in advanced information and communication technologies.

Education funding must increase by the same percentage as research support. K-12 programs will be enhanced, including the Noyce Teacher Scholarships and Math and Science Partnerships, which prepare thousands of new STEM teachers and contribute to current teachers' content and pedagogical expertise. To increase support at the earliest stages of the workforce pipeline, the STEM Talent Expansion (STEP) and Advanced Technological Education (ATE) programs will aim to attract thousands of new STEM college graduates, including 2-year college graduates.

ED. To enhance teacher education in STEM fields and critical foreign languages, the law authorizes two new competitive grant programs at the ED. One implements courses that lead to a bachelor's degree with simultaneous teacher certification, and the other, 2- or 3-year, part-time master's degree programs to improve current teachers' content knowledge and pedagogical skills in these areas.

Other new programs aim to increase highly qualified teachers serving high-need schools and to expand access to higher level classes; to enhance elementary and middle school mathematics; to increase the number of students studying critical foreign languages from elementary through postsecondary education; and to enable states to better align elementary and secondary education with the knowledge and skills needed to succeed in institutions of higher education, the workforce, and the Armed Forces.

DoE. The DoE's Office of Science budget will double to support outstanding early career researchers; to create an Advanced Research Projects Authority-Energy (ARPA), like the Defense Department's DARPA, to engage in high-risk, high-reward energy research; to appoint a Director of Mathematics, Science, and Engineering Education; to create an education fund that will support special math and science schools, summer internship programs for middle and high school students at national laboratories, and Centers of Excellence in Mathematics and Science at schools near national laboratories; to strengthen math and science teaching in public schools; and to enhance nuclear science education.

NIST. The Commerce Department's National Institute of Standards and Technology budget will also double. It will begin work on implementing a new \$100M Technology Innovation Program (TIP) that will fund high-risk, innovative, and enabling technology development that, for the first time, explicitly allows university participation.

National Science Board Plan of Action. The same day that President Bush signed the COMPETES act, the NSB issued its long-awaited STEM plan. Board member Jo Anne Vasquez conceded, "The train has left the station," pointing out that Congress is already financing programs and instructing the ED and National Academies to identify best STEM practices.

The NSB plan recommends:

- ◆ creating a congressionally chartered, nonfederal National Council for STEM Education that would require federal STEM education programs to coordinate their activities with local and state education bodies and various stakeholder groups;
- ◆ creating a standing committee on STEM education within the President's Office of Science and Technology Policy to coordinate all federal STEM education programs;
- ◆ creating a new assistant secretary of education, charged with coordinating the ED's STEM efforts and interacting with stakeholders outside the department; and
- ◆ mandating that the NSF lead efforts to create a national roadmap to improve pre-K-16 STEM education.

WFU FUNDED RESEARCH

1 March - 31 August 2007

ANTHROPOLOGY

Kenneth Robinson

- ◆ *Testing Lots near the Fayetteville Arsenal*, Museum of the Cape Fear Historical Complex, \$30,259
- ◆ *Survey and Testing*, Charlotte Douglas International Airport, \$16,952.06
- ◆ *Field Program*, Museum of the Cape Fear, \$14,174
- ◆ *Survey, Overmountain Victory National Historic Trail, Spruce Pine, NC*, National Park Service, \$1,999.98
- ◆ *Archaeological survey*, Uwharrie National Forest, \$27,928.15

Stephen Whittington, *Rosebud Sioux Exhibit and Humanities Programs*, North Carolina Humanities Council, \$8,789

BIOLOGY

Susan Fahrback

- ◆ *Functional Genomics of Chronobiological Plasticity in the Honey Bee*, Bi-National Science Foundation, \$9,775
- ◆ *Muscarinic Regulation of Plasticity in the Brain*, NIH/U of IL, \$64,800

Kathleen Kron, *Collaborative Research: Systematics and Evolution of the Wintergreen Group*, NSF, \$122,720

Raymond Kuhn, *Diagnostic Assay and Nutraceutical for Enteric Septicemia of Catfish*, NCBC, \$75,000

Anita McCauley, *Acquisition of a Laser Scanning Confocal Microscope for Research and Training in Biology and Physics at Wake Forest University*, NSF, \$385,220

Wayne Silver, *Multiple Mechanisms of Nasal Chemoreception*, NIH, \$16,970

William K. Smith, *Birch Seedling Establishment in the Caucasus Mountains*, CRDF; \$8,998

CHEMISTRY

Rebecca Alexander, *CAREER: Dissecting domain/domain communication in methionyl-tRNA synthetase*, NSF, \$121,619

Christa Colyer

- ◆ *A Collaborative Exploration: Using CE to Quantify PE Pigment Concentrations*, NASA, \$5,000
- ◆ *Noncovalent labeling and CE-LIF strategies for the determination of intact microorganisms*, NCBC, \$75,000

Brad Jones, *ARI-SA, a Portable Tungsten Coil Atomic Emission Detector for Nuclear Forensics*, NSF, \$100,469

Akbar Salam

- ◆ *21st Century Centre of Excellence Guest Professor*, Kyoto University, Japan, YEN 500,000
- ◆ *Visiting Fellow, Institute for Theoretical Atomic, Molecular, and Optical Physics*, Harvard University, \$4,000

Suzanne Tobey, *Anatiosselective Synthesis of Alpha-Amino Phosphonates using an Ene Reaction*, Herman Frasch Foundation, \$50,000

COMMUNICATION

Mary M. Dalton, *Documentary on the Oakdale Mill and Mill Village*, American Express Philanthropic Program, \$6,000

Allan Loudon, *Benjamin Franklin Transatlantic Initiative: Summer Institute for Youth*, US DoS, \$845,676; \$35,104

COMPUTER SCIENCE

Jennifer L. Burg, *Revitalizing Computer Science Education through the Science of Digital Media*, NSF, \$237,991

Jacquelyn Fetrow (and **PHYSICS**)

- ◆ *Algebraic and Statistical Models of Redox Signaling*, NIH, \$254,488
- ◆ *Integrated Process for Functional-Site Feature Analysis*, NSF, \$167,800

Robert Plemmons (and **MATHEMATICS**)

- ◆ *Integrated Optical-Digital Imaging Camera System*, U of New Mexico, \$52,975
- ◆ *Phase II: Practical Enhanced-Resolution Integrated Optical-Digital Imaging Camera*, U of New Mexico, \$9,385; \$103,464
- ◆ *Postdetection Processing and Inverse Problems in Ground-Based Imaging*, AFOSR/U of New Mexico, \$15,000

HEALTH & EXERCISE SCIENCE

Michael J. Berry, *Exercise and Regional Fat Metabolism after Menopause*, NIH/WFUHS, \$5,282.71

Jeff Katula, *Translating Research in Practice (TRIP)*, NIH/WFUHS, \$61,978

Shannon Mihalko, *Improving Quality of Life for Women with Ovarian Cancer*, NIH/WFUHS, \$12,000

Stephen Messier, *Intensive Dietary Restriction with Exercise in Arthritis*, NIH, \$577,306

Jack Rejeski

- ◆ *Cooperative Lifestyle Intervention Program (CLIP)*, NIH, \$613,526
- ◆ with Gary Miller and Paul Ribisl, *Look Ahead*, NIH/WFUHS, \$118,219

HISTORY

Robert Hellyer *Green Tea and the Path to an Industrial, International Japan*, Smithsonian Institution; Japan Foundation

Continued...

LAW SCHOOL

Kate Mewhinney, *Client Needs Funds*, NC Bar Association Fdtn, \$2,000

MUSIC

Susan Borwick, *Composition Residency*, Wildacres Retreat

PHYSICS

Paul Anderson, *Studies of Classical and Quantum Effects in Gravity*, NSF, \$32,198

David Carroll

- ◆ *PlexiLight*, PlexiLight, Inc., \$131,808
- ◆ *FiberCell*, FiberCell, Inc., \$292,067

Martin Guthold, *Determining the Mechanical Properties of Single Fibrin Fibers*, NSF, \$225,000

Daniel Kim-Shapiro, *Effects of Nitrite in Sickle Cell Blood*, NIH, \$343,920

PSYCHOLOGY

William Fleeson, *Integrating Processes and Structure in Personality*, NIH, \$184,063

Michael Furr

- ◆ *Behavioral Models of Impulsivity: Alcohol and 5-HT Effects*, NIH/WFUHS, \$17,699
- ◆ *Impulsivity and Information Processing in Adolescent Cannabis Abuse*, NIH/WFUHS, \$17,699

ZSR Library

Susan Smith, *Digital Forsyth*, State Library of North Carolina, \$74,079

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