

RESEARCH *News*

OFFICE of RESEARCH and SPONSORED PROGRAMS

A CONSENSUS AMONG MENTORS

The Office of Research and Sponsored Programs hosted three Junior/Senior Luncheons this fall so that researchers successful in securing external funding could share their experience with colleagues just starting out. A remarkable consensus developed across the disciplines: cultivate program officers and colleagues; build on internal awards; write to the sponsor's priorities; and learn from reviews.

THE NATURAL SCIENCES AND MATHEMATICS

At the luncheon for science faculty, **Rebecca Alexander**, Assistant Professor of Chemistry, who has awards from the North Carolina Biotechnology Center and the American Cancer Society/WFU Comprehensive Cancer Center, advised, "look around you." Join with other new faculty to learn who's applying where and when. Help each other to meet deadlines and to consider the next step. Cooperate and encourage one another but also compete, so that you can assess what makes you distinctly valuable in the department and your field at large.

Follow your passions. If you're primarily interested in teaching, plenty of sponsors are interested in instructional methods and materials and curriculum development. Specific programs also support community outreach or equipment purchase or travel or hosting a conference.

In focusing on research, however, you may have to sculpt your passions to match the sponsors' profile. Rebecca noted that for the cancer center project, she had to

emphasize aspects of her work that were not her major priorities. Similarly, find common ground with other individuals and departments to compete in wider venues. Don't overlook small and local opportunities, such as the university's Science Research Fund or collaborations with the medical school, WSSU, UNC-G, and the school system. Identify the private sponsors in your state and your discipline.

Be sure to meet and greet. Go to meetings, host speakers, contact Program Officers, review manuscripts and grants. Put your name out there, while picking up on hot topics, buzzwords, and rivalries.

Write write write! Try to learn tricks to carve out time and to balance ambition and realism. While you can't take rejection personally - success rates typically average 30 percent, and roadblocks include teaching, advising, mentoring, service, and family - still, mine the nugget of truth from each review. Keep writing and asking others to read and critique what you write. R&SP's Edelson is handy.

Ultimately, how do you measure success? Rebecca suggests this definition: **when you achieve the freedom and amass the resources to pursue your passions.**

Bob Plemmons, Reynolds Professor of Mathematics and Computer Science, was a WFU undergraduate and a professional baseball player. He received his first external grant from the NSF algebra section in 1968 and has been continuously funded by various agencies ever since. His work with the Department of Defense (DOD) began in 1973. Current projects include an Air Force subcontract to investigate Space Situational Awareness in association

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with the Maui Surveillance Center (2002-07). Bob and co-investigator **Todd Torgersen**, Associate Professor of Mathematics and Computer Science, have had NSF funding that engaged many students in Research Experiences for Undergraduates, which Bob thinks accounts for their success with that agency. Todd also recently secured a supercomputer from the Department of Defense.

Another project is sponsored by the Army Research Office. Bob and his group were invited to apply based on previous ARO research and only had to submit a budget. In collaboration with Assistant Professor of Computer Science **Paul Pauca** and Todd Torgersen, he works on biometrics applications for homeland security.

Bob advises keeping research concepts flexible to adapt to shifting agency priorities. **Always have a proposal “almost ready” to submit when a program is announced.** You may have as little as a month to respond. Contact the PO, or “point of contact” (POC) at the DOD, to make sure the money isn’t already earmarked for someone else.

Bob agreed with Rebecca that interdisciplinary projects, engaging research teams, are popular with funding agencies; look into crossdivisional programs. Note that proposals can be moved to different divisions, study sections, or panels at NSF and NIH. Always submit a preproposal, if possible. At the DOD, you can submit a preliminary 5-page white paper for comments; if they won’t read it, you know they’re not interested in a full proposal. If you attach the white paper as a pdf to an email, you’ll get almost immediate feedback.

While the DOD doesn’t often start new projects, once funded, you’ve got the inside track. That’s why personal contacts are vital: serve on panels; present your work; invite sponsors to visit your lab; visit their labs. At NSF, a letter of support from industry or a federal lab helps enormously. R&SP Director **Lori Messer** pointed out that R&SP will pay for travel to visit sponsoring agencies and reminded the group about DOD summer fellowships to work at federal labs. Bob said that he likes R&SP better than any other office he’s worked with – we keep things simple, and we’re effective.

THE SOCIAL AND BEHAVIORAL SCIENCES

Sylvain Boko, Assistant Professor of Economics, shared his successful struggle for funding. His research focuses on decentralization’s impact on state and local fiscal positions in four West African countries. Starting out, he noted, prospects seemed bleak. He contacted R&SP to identify sources, but all

the records produced by a search of his keywords had a fairly narrow focus. If you fit, fine; but if you don’t, learn their priorities and pitch yours to meet them.

Sylvain agrees that it pays to develop a rapport with the PO, but his first call to the NSF was disheartening. “If you’re not from Harvard, Princeton, or Yale and not published in the *American Economic Review*, forget it,” he was told. Although NSF was discouraging, R&SP remained encouraging. While developing the external proposal, he won an Archie and was able to visit one country, collect data, and write a chapter. NSF rejected that proposal, but shortly thereafter, the PO phoned and asked him to submit another within a week. It, too, was rejected – the acceptance rate is only 37 percent - but Sylvain kept talking. A pilot program arose, and the PO called Sylvain to let him know. This time, his proposal was accepted.

Sylvain feels that his early attempts didn’t sufficiently leverage university resources; later, he emphasized his two Archies to prove strong institutional support. His original focus struck reviewers as too broad. The PO verified that NSF’s economics panels look for theory first, with data to validate it, so Sylvain’s revised literature search showed awareness of existing theory, while he developed his own hypotheses. When his book was published, he sent it to the NSF to prime the pump for larger grants.

Lori asked Sylvain if applicants should make their initial agency contact by email or telephone. Sylvain said that email allows you to explain your project more clearly. He added that R&SP’s help was invaluable. When Stephen Williams visited NSF’s Social, Behavioral, and Economic Sciences division last year and said “Wake Forest”, the PO said, “Boko.” **Having one investigator succeed improves the field for all.**

When **Chuck Longino**, Wake Forest Professor of Sociology, began his teaching career, he was looking for a serious research specialty and applied for a postdoctoral fellowship at the Midwest Council for Social Research on Aging. He only knew that he wanted to remain a social science generalist and felt that gerontology would allow that. He learned a lot from postdoctoral and faculty colleagues and, with a large grant from the Social Security Administration, studied Midwestern retirement communities. After initial funding, he was adopted as an adjunct by the Institute for Community Studies in Kansas City and the Institute for Social and Environmental Studies at the University of Kansas. He feels that his connections to research institutions were essential.

With access to the first Census Public Use Microdata files, he wanted to study patterns of retirement migration. In collaboration with a demographer, geographer, and other experts, he

sent a first proposal to the NSF sociology section, where it was discouraged. The revision wound up at Environmental and Social Resources, another NSF subsection. Its director went over the proposal in detail over beers at a professional conference; the team reworked the content, memorizing the guidelines. Then President Carter reorganized the NSF, and this subsection now only studied hurricanes and earthquakes. The former PO suggested sending it to the new National Institute on Aging, and it was awarded on the first round.

Meanwhile, Chuck got a job at the University of Miami. He and his scattered team put together an ambitious project for \$800K, but reviewers found the scope too broad and the PIs too young. After narrowing the scope (and the budget), it was funded. **Peter Furia**, Assistant Professor of Political Science, asked Chuck if junior faculty were well advised to apply for a big project independently or as part of a team led by a more senior investigator. Chuck's experience counseled collaboration.

Chuck now chairs an NIH review panel. Over two decades of his research on retirement migration have been funded. A recent submission, however, was rejected. He's learned that while the sponsor may seem perfect, the review panel can be uninterested or uninformed on your topic. You can find out who is on NIH study sections at their website and choose the optimal panel. Know their biases and be sure to cite their work. At NSF you can suggest reviewers (4 is the best number) and note anyone you would *not* like to review your grant.

Applicants have to be in it for the long haul, willing to read omnivorously and find out who's doing what and who's funding it. Track down researchers at professional meetings and ask for a copy of their funded proposals to study as models. They're often flattered! Develop a group of colleagues to read and critique your proposals and, if rejected, use the agency's review to build a better proposal. Like Bob Plemmons, Chuck suggests that applicants keep a couple of proposals in the works. **Time spent studying the system and who will evaluate your work is well invested.**

ARTS AND HUMANITIES

Harry Titus, Professor of Art, whose Kress Foundation grant enabled his collaboration to complete a groundbreaking photogrammetric survey at an exemplary Gothic cathedral in France; and **Jeff Lerner**, Associate Professor of History, who was a junior fellow of Harvard University's Center for Hellenic Studies in 2000-01, teamed up for their presentation to Arts and Humanities faculty.

Jeff suggested that the applicant for external funds imagine a

perfect world: **if money were no problem, what would you like to do?** Write an article or a book, travel to investigate a community, an archive? What would you need to do it? First, write that out. Then ask R&SP how to accomplish it.

Harry has served on NEH panels, so he knows that projects like his, studying subjects outside the United States, are hard to fund. He dismissed any thought of salary replacement, because the project was his priority. He started building support with Archie grants. At the beginning of his career, he thought "big ticket," but **developing institutional support and preliminary data was the way to go.** He winnowed the field to identify special agencies and project funds.

Jeff only needs time and a library. He won an Archie but had to spend time away from his family. The external fellowship allowed him to bring the family, but at a cost – his wife had to quit her job, and moving was hard on the kids. Now, he's looking for a stipend that will simply allow him to write.

Knowing that networking is vital, he wrote to top scholars in his field, asking them to read his proposal, which they seemed flattered to do. In applying for an ACLS Burkhardt fellowship, Jeff found the PO very friendly and familiar with one of his references; Jeff made the waiting list. He wrote to ask why he didn't make the cut, and the PO told him exactly why and then died. Same story at the National Humanities Center: Jeff shared Indian food with the director; he retired. Jeff applied again, got feedback, and rewrote the proposal with that in mind. **Persistence is the message.**

Harry also advised attending professional meetings; if you don't, you won't be talking the same language as your peers, and reviewers aren't going to get what you're doing. You'll also hear about other projects and who's funding them. He noted that on his NEH panel, resubmissions did poorly. Of course applicants are encouraged to resubmit so that the panel has a wide array to draw on, but reviewers remained in close agreement on what was fundable. He was skeptical about changing a proposal in response to critiques and suggested looking for a better source. Wake Forest is in a favorable position, because it straddles the line between research university and liberal arts college and has a good reputation in the South.

Roberta Morosoni, Assistant Professor of Romance Languages, noted that your references must speak strongly about the project, not just about you. Send your proposal to your references along with your CV and publications, Jeff advised. In the cover letter, point out your strengths. Harry noted that naming the project is critical.

Jeff returned to the question of resubmission. You don't have to change your project to meet reviewers' biases, but you can change the way that you talk about it. The fellowship application forces you to focus: Why is the project necessary? How long will it take? How much will it cost? Jeff feels that WFU's emphasis on teaching strengthens our proposal-writing skills. To teach, we must be clear, without using jargon and footnotes, to a broad constituency. "My audience is someone in the dentist's office waiting to have a root canal," he said.

Harry and Jeff agreed that R&SP's Edelson helped their writing. Go to her early in the process. She gives disinterested feedback that helps to make the work accessible. Both pointed out that internal support demonstrates quality to external sources. **Once you've gotten money, getting more is easier.**

2004 BUDGET LOOMS

— From *Federal Grants and Contracts Weekly* 27, nos. 4 & 5 (3 & 17 February 2003)

Just as 2003 domestic appropriations have been finalized, the 2004 budget looms. This year's budget reduces some expectations but in many cases gives President Bush more than he wanted. Big grantmakers like the National Institutes of Health and the National Science Foundation did well, with a 6% boost for the Education Department.

Some administration promissory notes for 2004 are as follows:

- \$150M to a Health and Human Services program that pairs adult mentors with children of prisoners; \$300M over 3 years to ED mentoring programs for disadvantaged middle-school students;
- \$2B for the President's Emergency Plan for AIDS Relief, especially in Africa and the Caribbean;
- \$6B for new medical bioterrorism countermeasures and to expand a proposed Project BioShield, run jointly by HHS and Homeland Security;
- \$125M to prevent diabetes, obesity, and asthma through new community initiatives;
- \$2.1B over 5 years for New Freedom Initiatives to integrate individuals with disabilities more fully into society;
- \$5M for an HHS, DOD, and USAID collaboration to establish clinics and teaching centers to improve maternal and child health in Afghanistan;
- \$211M to expand the Centers for Disease Control and

Prevention's breast and cervical cancer screening programs for low-income women;

- \$600M to increase drug abuse treatment programs, including those run by faith-based organizations; and
- \$45M for a HUD counseling program, under which nonprofit organizations provide information and assistance to low-income renters, home-buyers, and homeowners.

REORGANIZED ED RESEARCH STRUCTURE

— From *Federal Grants and Contracts Weekly* 26, no. 44 (11 November 2002)

This fall, a new bill overhauled the Education Department's research wing and established a new Institute of Education Sciences. The institute replaces the Office of Educational Research and Improvement (OERI) and provides:

- a director appointed by the president with the advice of the Senate;
- an expert advisory board to recommend research priorities;
- 3 national centers - for educational research; statistics and evaluation; and regional assistance - headed by commissioners; and
- explicit definitions for science-based research and research standards.

The Education Sciences Reform Act is intended to insulate federal educational research from politics, but the Bush administration is reserving the right to establish its agenda and suppress the publication of any findings it deems objectionable. Bush reaffirmed his constitutional authority as it pertains to several sections of the act, notably provisions requiring that research be "objective, secular, neutral, nonideological and ... free of partisan political influence and racial, cultural, gender, or regional bias." The White House has issued similar caveats when legislation appears to encroach on executive power, but, in light of recent concerns over politicization of the scientific advisory process at the Department of Health and Human Services, its application here raised eyebrows.

Although the president appoints the director and all voting members of the institute's board, Bush is maintaining additional authority. For instance, the law's section 186 gives the institute's director the right to publish any data without higher approval, but Bush said the director is "subject to the

supervision . . . of the Secretary of Education.” He asserts the Constitution’s recommendations clause, which allows the president to “recommend to [the Congress] Consideration of such Measures as he shall judge necessary and expedient,” in several areas, including section 115, which requires the director to propose long-term research priorities; 117(d), which requires that the institute’s research, analysis, and dissemination be subject to the director’s approval; 119, which authorizes a biennial report describing grants awarded, research activities, and how all activities are consistent with scientifically valid research and institute priorities; and 156(b), which requires that the institute’s statistics arm furnish data to Congress on request. Bush’s statement also limits the new institute’s ability to impose duties on states or state education officials.

White House and ED statements can be seen under “News” at www.ed.gov/index.jsp. The Education Sciences and Reform Act of 2002 is available at <http://thomas.loc.gov> (click on “Public Laws by Law Number” for PL107279).

NSF FORMATTING: USE IT OR LOSE IT

The National Science Foundation (NSF) has specific guidelines for proposal format and content, detailed in its Grant Proposal Guide (GPG) and periodically updated. Before preparing an NSF proposal, be sure to review the most recent version at www.nsf.gov/pubsys/ods/getpub.cfm?gpg or talk to someone in R&SP.

Below is a list of formatting requirements that are often overlooked:

- Pages should be numbered; FastLane will not paginate your proposal.
- The project description is limited to 15 pages but may be single or double-spaced, unless stipulated by the individual program solicitation.
- Letter height must not be smaller than 10 point and type density no more than 15 characters per 2.5 cm; 12-point font is recommended.
- Page margins should be 2.5 cm (approximately 1 inch) on top, bottom, and both sides.
- References should be complete, including titles and page numbers, and are not part of the 15-page project description.

Grant proposals that do not follow these and other NSF formatting requirements may be returned without review.

COMPLIANCE NEWS

The R&SP website continues to improve the organization of, and access to, its content. Recently, the IRB/Compliance Management, Human Subjects Research Protection page was revised to clarify instructions for preparing an informed consent (IC).

The Informed Consent Template is now a separate document. **When completing an IRB application, follow the IC template.** It shows the required organization and all other necessary information. Failure to follow the IC template may delay IRB approval.

Human Subjects Education reminder: As stated in the December 2002 newsletter, beginning 1 January 2003, **all** researchers are requested to **review** human subjects training materials. At this time, only researchers with federal grants and contracts must complete human subjects training.

DEAR MUSH-FOR-BRAINS: RESPONDING TO REVIEWER CRITIQUES

— From *Grantseeker Tips* 103, (4 February 2003)

How best to respond to reviewer criticisms when resubmitting? **At federal agencies**, try the following template. Three pages should be adequate.

First, introduce your response: “In response to reviewer critiques, we have substantially revised our research context and approach. The summary statements were extremely valuable. Direct responses to individual questions are described below.”

Second, summarize general concerns: “All reviewers thought the project was highly significant but advised more focus and context. Accordingly, the problems and their solutions are more clearly stated; enhanced background information has been divided into subsections for clarity; the specific aims are better focused; and one has been dropped. The research design section now explains the experimental approach for each specific aim.”

Third, cite and respond to individual reviewer concerns:

“Reviewer A was concerned about the adequacy of personnel. In response, the PI has hired a laboratory supervisor and two additional graduate students.”

“Reviewer B felt the electrochemistry temperature experiments were tangential. In response, they have been deleted.”

“Reviewer C thought our assays were too risky. In response, we further explored the literature and found conformation in Smith and Smith (2003).”

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Fourth, conclude on a positive note: "In this revised proposal, a wealth of new evidence supports the utility of our aims and approach. The expanded research group is uniquely positioned to carry out the project. We thank the reviewers for their insights."

Private foundations, unlike federal agencies, usually can't provide written critiques of declined proposals. They most commonly send a form letter that says: "We receive many more worthwhile requests than we can support with our limited funds." In fact, approximately 85% are run by tax attorneys, trust officers in banks, or dedicated volunteers and lack the staff to provide detailed critiques.

Your best feedback option is the telephone. First, explain who you are and why you are calling. Then the following questions should help you to determine whether you should resubmit:

- What key factors distinguished funded proposals?
- What could be done to strengthen our next proposal?
- Should we revise and resubmit?

PLEASE, MR. POSTMAN

— From *Grantseeker Tips* 98, (25 February 2003)

Federal sponsors are asking applicants to submit proposals by express mail (e.g., UPS or FedEx) rather than traditional or priority mail. The anthrax scare is still fresh to DC employees, and express mail services are safer, because they must verify the sender.

Proposals received via traditional mail now take an additional 3-5 days to process before delivery, because they must first be irradiated. This delay can pose a problem if the sponsor's deadline is based on receipt date rather than postmark. The screening can also have side effects: laser-printed pages may become brittle; color charts melt; and CD ROMs and video tapes may be erased. Ask R&SP for assistance in mailing your grant.

ANTHROPOLOGY

Ellen Miller, *Adaptive Diversity among the First Old World Monkeys*, \$9,993, WFU Social and Behavioral Sciences Research Fund

Kenneth Robinson

- *Challenge Cost Share Agreement*, \$9,000, Caribbean National Forest/USDA Forest Service
- *Archeological Investigation, Possible Grave Site on 14th Street, Winston-Salem, NC*, \$644, City of Winston-Salem

With Joe Ned Woodall

- *Archeological Survey, 245-Acre Landfill, Catawba County, NC*, \$5,355, McGill Associates
- *Archeological Testing, Wolff-Moser House Site and Visitor Center, Bethania, Forsyth County, NC*, \$21,673, Barry Rakes, AIA
- *Archeological Assessment, Proposed Site of Interpretive Center, David Caldwell Historic Site, Greensboro, NC*, \$10,233, David Caldwell Project/City of Greensboro
- *Archeological Survey of Park Lake Borrow Pit*, \$7,183, PLT Construction Co.

Stephen Whittington

- *Archeological Survey, Oaxaca, Mexico*, \$8,223, WFU Social and Behavioral Science Research Fund
- *Ancient Mexican Ceramics Exhibit*, \$1,200, North Carolina Humanities Council

BIOLOGY

David J. Anderson, *Evolutionary Ecology of Seabird Reproductive Life Histories*, \$282,083, NSF

Douglas Fantz, *Genetic Characterization of the C. elegans Gene, T08D10.1*, \$9,326, WFU Science Research Fund

Kathleen A. Kron, *Evolution and Diversification of Azaleas and Rhododendrons*, \$350,000, NSF

Gloria K. Muday, *Regulation of Auxin Transport During Gravitropic Bending in Arabidopsis Roots*, \$95,723, NASA

Brian W. Tague, *Foundations of Biotechnology at Wake Forest University: New Core Courses in Molecular Genetics and Cellular Biology*, \$19,954, NC Biotechnology Center

CHEMISTRY

Rebecca Alexander

- *Tethered Diffusion of an Enzyme Substrate*, \$7,200, WFU Science Research Fund
- **With James F. Curran, Biology**, *Research Infrastructure in a Minority Institution (RIMI)*, \$15,515, NIH

Ulrich Bierbach, *Design of Novel Zinc-Chelating Agents as Inhibitors of Matrix Metalloproteinases (MMPs) for the Management of Pathological Conditions*, \$8,495, WFU Science Research Fund

Bernard A. Brown II, *Biophysical and Structural Dissection of Archaeal sRNPs*, \$9,860, WFU Science Research Fund

Christa L. Colyer, *Development of a Bili-Microchip Analyzer: Shipboard Determination of Phycobiliproteins in Ocean Water Samples*, \$161,711, NSF

Bradley T. Jones, with **Abdessadek Lachgar**, **Mark E. Welker**, **Richard A. Manderville**, and **S. Bruce King**, *Upgrade of a Single Crystal X-ray Diffractometer*, \$117,500, NSF

Angela Glisan King

- *Urban Systemic Program in Science, Mathematics, and Technology Education: SCIMAX*, \$87,703, Winston-Salem/Forsyth County Schools subcontract
- *The Science Behind Biotechnology: A Workshop for High School Teachers*, \$14,700, NC Biotechnology Center

COMMUNICATION

Stephen Giles, *Promoting Fidelity Using Remote and On-Site Support*, \$46,148, NIH

Ananda Mitra

- *Pilot Study To Explore the Modes of Media Advertising of Gutkha and Resultant User Behavior in India*, \$9,900, WFU Social and Behavioral Science Research Fund
- *Alcohol-Related Problems among College Students*, \$47,974, NIH

HEALTH AND EXERCISE SCIENCE

Patricia A. Nixon, *Follow-up of a Randomized Placebo-Controlled Trial of Postnatal Dexamethasone: School Performance, Growth, Blood Pressure, Pulmonary Function, and Exercise Tolerance at 8-10 years*, \$4,743, WFU Science Research Fund

MATHEMATICS

Hugh N. Howards, *Knots and 3-Manifolds*, \$4,500, WFU Science Research Fund

Robert J. Plemmons, *Postdetection Processing and Inverse Problems in Ground-Based Imaging*, \$60,000, AFOSR/University of New Mexico subcontract

PSYCHOLOGY

Deborah L. Best, with **Michael D. Hazen** and **Ananda Mitra**, **Communication**, and **Earl Smith**, **Sociology**, *Digital Bridge Initiative with Habitat for Humanity of Forsyth County*, \$47,000, Time Warner Cable

Eric Stone, *Using Cognitive Feedback to Improve the Accuracy of Judgments*, \$4,000, WFU Social and Behavioral Science Research Fund

SOCIOLOGY

Angela Hattery, *Families in Crisis: The Meaning of Masculinity*, \$2,475, WFU Social and Behavioral Sciences Research Fund

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