

Exploration & Discovery

NEWS AND INFORMATION FROM THE DIVISION OF RESEARCH AND GRADUATE STUDIES VOLUME 6, ISSUE 1

Joe Houmar & Darrell Neuffer - Strategies for Success in External Funding

Dr. Joe Houmar (Dept. of Exercise and Sport Science) and Dr. Darrell Neuffer (Depts. of Exercise and Sport Science and Physiology) are among the top earners of external grants at ECU, many for ECDOl (see ECDOl spotlight).

Because of this, E&D asked the duo to share the secrets of their success. "To be certain, we are by no means the only faculty at ECU who have had success obtaining external funding," says Neuffer. "What follows are simply some tips to keep in mind that we have learned both as grant writers and grant reviewers."

Make sure your project meets the "significance" threshold. Some grants are perfect in every way, but, from a competitive standpoint, are not funded because they focus on an area or problem considered less than significant. The project must propose aims that, if achieved, will a) address the stated hypothesis and b) provide a significant advance to the field. A project may be in a very important area of research with a ground-breaking hypothesis, but if the overall strategy, methodology, and/or analyses either do not address the hypothesis or are likely to yield only descriptive/routine results, then the significance threshold will not be achieved.



Establish your research team and advisory panel early in your process.

Research technology advances so fast that it is nearly impossible for one person to have the expertise needed to adequately and comprehensively address a hypothesis. The most successful grants enlist the expertise of collaborators to meet specific needs and/or to expand the capabilities of the project.

Similarly, form an advisory panel well in advance of your grant submission. Funding has become so competitive with limited opportunities for resubmission that it is in the best interest of every investigator, new or established, to utilize an advisory panel to ensure the best product is submitted for review.

Your panel should include individuals that are familiar with obtaining funding as well as knowledge in the area. Like

it or not, the review process is subjective. The more vetted a proposal is, the more likely its weaknesses can be identified and fixed. If the weaknesses can not be fixed, then address them up front in your proposal and provide appropriate alternative interpretations and/or approaches.

Put preliminary data in your proposal. In this competitive environment, nothing is more effective than 1) showing you can accomplish the work and 2) indicating that your approach/hypothesis has merit and is worth funding. This is effectively accomplished by providing preliminary data gathered by you and presenting this data in a meaningful way in the proposal.

Write any grant with the approach that a reviewer will be reading the proposal at 3AM after reading six other proposals. This is the reality of grant reviewers; they are busy faculty and take on this time-consuming chore as a means of providing service to the profession. If a proposal does not clearly state purpose and why this purpose is novel early in the proposal, then chances for a favorable review are diminished. Also, emphasize important statements with bold or italic fonts so they stand out to a fatigued reviewer.

Spotlight on the East Carolina Diabetes and Obesity Institute

The East Carolina Diabetes and Obesity Institute (ECDOl) was founded in 2005 with the mission to promote and support interdisciplinary research, education, and outreach/treatment programs for the people of eastern North Carolina. Recognizing the economic impact of research institutes, the Golden LEAF Foundation of North Carolina awarded \$1 million dollars in 2007 to ECDOl. A major portion of the funding has been used to complete renovation of much-needed clinical research space in Pitt County Memorial Hospital (supporting the Bariatric Surgery Research Program) and the East Carolina Heart Institute (ECHI), including a soon-to-be-completed state-of-the-art Exercise Research Center which will support exciting new studies to assess and improve surgical outcomes in patients with heart disease. Funding from Golden LEAF has also been used to purchase core research equipment for the 37,000 sq. ft.

research space on the 4th floor of ECHI, a new research facility slated to open in January 2013 that will support more than 15 basic science investigators and their laboratories from ECDOl and ECHI. In addition to Golden LEAF, ECDOl received federal awards from the Health Resources and Services Administration (HRSA) in 2008, 2009 and 2010 to purchase specific pieces of research equipment, all of which now serve as major core resources for ECU researchers. Such investments in research infrastructure give ECDOl and ECHI investigators the tools they need to research the underlying causes as well as prevention/treatment strategies for diabetes, obesity and cardiovascular disease.



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SPOTLIGHT ON ECU GRADUATE STUDENTS

Amanda McGhee

Fighting Homelessness Through Research

Ten years from now, fewer homeless persons in North Carolina, that's the goal of an initiative for which graduate student Amanda McGhee is doing research. Amanda is collecting information on 11 communities that have implemented a ten-year

plan to end homelessness. Her team will identify best practices and monitor their effectiveness in the hope that other counties can replicate them with success. They will also monitor the evolution of their relationships with partner organizations. The topic caught Amanda's interest when a former colleague became homeless, sleeping in downtown Raleigh and relying on area soup kitchens for all of his meals. While at an emergency shelter, the man applied and was admitted into a transitional housing program. He eventually transitioned from homelessness into maintaining a home. Amanda was inspired. Amanda is a recent graduate of ECU's Student Engagement and Outreach Scholars Academy and is working towards a Master of Public Administration. She hopes her research will make a significant difference that is beneficial to homeless persons. Says Amanda, "The most rewarding part of the research is the role I am playing in the endeavor to end homelessness in North Carolina."

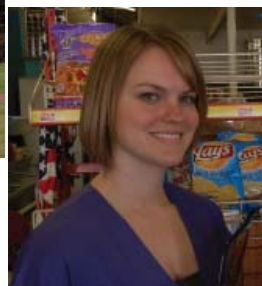


Karamie R. Bringolf

Mining Food for Nutritional Knowledge

For rural towns or urban areas whose main grocery shopping option is the local corner store, healthy food options can be limited. Graduate student Karamie Bringolf is researching ways to increase access to healthy foods into these areas.

As part of the Communities Putting Prevention to Work (CPPW) grant awarded to the Pitt County Health Department, Karamie has examined availability, pricing, and quality of foods in 44 stores; interviewed 11 corner store owners/managers



to learn more about their business, products, and customer buying patterns; and surveyed customers about their shopping habits. Bringolf and her team hope to partner with several stores to help them offer healthy food choices.

The topic is close to Bringolf's heart, who is pursuing a Master of Public Health at ECU. She grew up in a rural area with limited access to food stores and healthy food options, so working to improve this situation is rewarding. Says Karamie, "Getting people to change their eating behaviors is always a challenge, but hopefully increasing access to healthier foods will enable them to make the healthier choice in places where they might not have had that choice before."

MEET THE RGS STAFF



Suzanne Sparrow, associate administrative director in the Office for Human Research Integrity (OHRI), provides interpretation of federal regulations and consultation on those regulations to ECU investigators. "The rules

and regulations surrounding human research activities are more robust than ever," she says. "The ongoing changes/complexity in the regulatory arena can be daunting." In addition to aiding investigators, Suzanne also ensures that the public from surrounding communities as well as external research collaborators feel confident that ECU is conducting research that adheres to regulations. Suzanne holds a BS in Biology from UNC Chapel Hill and an MPH from ECU.

Robin Armstrong, director of graduate admissions, seeks to continuously improve the admissions process for students and program directors. She has taken steps to make the admissions office paperless and recently implemented the electronic Letter of Reference system, with more enhancements planned for the coming months. Robin also assists with recruiting and retention efforts, including meeting across the state with potential students and helping to develop marketing and communication plans aimed at current and prospective students.



REGIONAL ECONOMIC OUTREACH IN THE EASTERN NC REGION

From Crisis to Opportunity: ECU is Expanding Collaborations with the U.S. Military

North Carolina is experiencing a positive economic invasion as new military commands, active duty personnel, and their families move to the state, contributing to a projected economic impact of nearly \$26.3 billion in 2013. Continuing its efforts to make North Carolina the premier military-friendly state, East Carolina University is preparing itself to meet the education, training, health care, innovation, technical assistance and community development opportunities resulting from this growth. Additionally, the next Base Realignment and Closure process is scheduled for 2015, so the time to position ECU as the go-to institution for education, research, and outreach is now.

ECU's history of support to our military runs deep. Today, ECU engages with the U.S. Armed Forces' personnel, reservists, National Guard, veterans, families, bases, and communities through a variety of education, research and outreach efforts. ECU was the first state university to employ a director of its military programs, providing a "front door" to military support opportunities. ECU has an effective campus Veterans Office as well as a walk-in educational support office on Fort Bragg. ECU was awarded the Department of Defense Freedom Award in September 2010 for support to our active duty staff and faculty. Our Military Advisory Committee, comprised of active duty and retired military, supports communication between ECU and the various service branches within the state.

Today, our passion continues to fuel our service. To align with UNC SERVES (March 2011) Report to the President, ECU will adjust existing program offerings and delivery methods, policies, and procedures to more actively engage service members and dependents through new degree pathways, stronger 2+2 programs with community colleges, targeted training programs, and more online course offerings. Operation Re-Entry North Carolina (ORNC) is a university-wide initiative to address the rehabilitation and re-entry concerns of military personnel, combat veterans, and their families. A new model of partnership is in discussion between ECU and the John F. Kennedy Special Warfare Center and School (JFKSWCS) at Fort Bragg that can be extended to other units and bases. With our rapidly growing health sciences center, broad-based educational programs and nationally recognized telemedicine capabilities, ECU stands able, eager and ready to serve.

Lab Work at ECU Leads To Potential HIV Treatment

Sometimes there are some rather unexpected twists and turns on the road from exploration to discovery.

That's been the experience for **Dr. Colin Burns** (Dept. of Chemistry) and his journey of discovery about whether the naturally occurring human cellular protein prothymosin-alpha could lead to better treatments for HIV as well as cancers and other viruses.

Burns first became interested in the protein in 2004, because he suspected it was a metal-binding protein, a major area of study that his laboratory explores. **Chris Wilson**, a graduate student working in the "Burns Group" lab, undertook the task of chemically synthesizing the central portion of the protein, with the hypothesis that this was the region responsible for binding zinc ions. The process turned out to be a far more difficult project than expected, and it took a year and a half to figure out how to make and purify this piece of the protein.

When Burns and Wilson were finally able to perform some studies on the protein's zinc-binding properties, they were not all that impressed. In the summer of 2006, the pair published a paper on their method to make and purify the molecule - and considered the project closed.

Then Burns received a call from Dr. Arevik Mosoian, a

researcher at the Mt. Sinai School of Medicine in New York City. She was studying molecules released from human immune cells that combat infections and had identified prothymosin-alpha as the key player. She had tested the anti-viral activity of the entire protein and a few pieces of it, but she had not yet tested the central portion. Once she read Burns' research paper, she knew he could provide key material in her research.

Burns sent Mosoian the molecules from his lab, and it turned out that this part of the protein was indeed responsible for the majority of the anti-viral activity. In particular, it was effective at blocking the replication of HIV.

From there, the Burns lab and the Mt. Sinai lab, at the time run by Dr. Mary Klotman, now at Duke, established an ongoing research collaboration. So far, the ECU-Mt. Sinai-Duke team has published two papers together on the subject and has applied for major grant funding from the National Institutes of Health. Burns has already received funding for his research from the NC Biotechnology Center.

Wilson has graduated, so Burns is now working with PhD student **Sriramya Garapati** on the ongoing project. He remains a bit bemused by how it all started. "You could say that this was a great example of serendipity in science."



Kyle Summers, PhD

The Evolutionary Wonders of Poison Frogs

Tiny, bright, and... lethal. The poison frogs of South and Central America are charming and attractive, yet the source of their beauty is a connection between bright colors and deadly toxins in their skin. This connection is the subject of a vast scientific literature on "warning coloration," and is one of the features that originally attracted **Dr. Kyle Summers** (Dept. of Biology) to study these amphibian gems.

These frogs also often practice mimicry, morphing to resemble another species. Warning coloration and mimicry provide textbook examples of evolution, and Summers and his students have been busy studying these processes.

For the past ten years, most of this research has taken place in the Peruvian Amazon rainforest where many of these poison frogs dwell. Unlike most frogs, which only emerge from hiding after dark, these creatures are unafraid to strut their stuff during the day, thus allowing Summers and students

plenty of time to observe them in detail. The team has discovered that these frogs have very complex social lives, including intricate patterns of territoriality, mating, courtship and parenting, with some species even feeding their young with unfertilized eggs produced as food.

Summers also carries out research on how evolutionary conflicts, such as those between parasites and their hosts, influence susceptibility to chronic diseases. He believes evolutionary perspectives can yield novel insights into some of the major diseases that plague humanity.



Scott Curtis, PhD

Tracking Rainfalls to Improve Agriculture and Tourism Sustainability

From global climate change to where you are going to spend your next vacation, rainfall has an important role to play. **Dr. Scott Curtis** (Dept. of Geography) has dedicated himself to exploring that issue.

Curtis has spent much of his time at ECU as well as previously at NASA's Goddard Space Flight Center trying to figure out how much it rains all over the globe, even at the most remote locations, with the help of satellites.

"With global warming, or even during El Niño events, one question that arises is 'Is the global hydrologic cycle accelerating?' or, in other words, 'Does it rain more?' In order to fully assess that, one needs to get at the global totals of rainfall," he says.

Curtis is also concluding an NSF study of the mid-summer drought (MSD) in the Caribbean with Dr. Doug Gamble of UNC-Wilmington. "The summer rains in the Caribbean weaken in July, and Jamaican farmers perceive this decrease in rain. It is also observable in satellite-estimated images of vegetation vigor," says Curtis. The work has led the research team to include survey and interview components to better understand the implications of the MSD and drought in general to agricultural sustainability in Jamaica, which is highly vulnerable to climate change.

Finally, Curtis, as an affiliate faculty member in the Center for Sustainable Tourism, has published on the role weather and climate play in tourists' decisions. "Tourists' perceptions of weather conditions are often not realistic or are ill informed by the media, yet these perceptions drive spending and economic vitality," says Curtis. To learn more about these projects, visit: <http://personal.ecu.edu/curtisw/Welcome.html>.



Puppeteers Provide Education Outreach

How to convey health info to kids? Use your hands!

This past spring, 13 ECU honors students and three graduate students performed a puppetry program in schools or community organizations, targeting first- through third-graders at risk for developing diabetes or becoming obese.

The program was developed by **Dr. Rebecca Dumlao** and **Dr. Deborah Thomson**, both from the ECU's School of Communication. Their program also incorporated ECU faculty



guest lecturers, including **Dr. Sharon Ballard** (Child Development and Family Resources) speaking on eating and lifestyles; **Dr. David Collier** (Pediatrics), on diabetes and children; **Dr. John Howard** (Communication), on leadership; **Dr. Beth Wall-Bassett** (Nutrition), on children's nutrition; **Jessica Gagne-Cloutier** (Volunteer and Service-Learning Center) on best practices for service-learning; and **Patricia Clark** (Theatre and Dance) on children's theater.

Dumlao says that the puppet theatre serves as a university outreach that is particularly appropriate in eastern North Carolina, which has high rates of obesity and diabetes. It also uses the service learning teaching approach, which appears on student transcripts to indicate community service. Dumlao is vice chair of the faculty-led University Service Learning Committee.

Funding for the Healthy Eating program came from ECU's Engagement and Outreach Scholars Academy and the College of Fine Arts and Communication. The ECU Volunteer and Service-Learning Center staff helped set up the sites for the puppet shows.

Grad Degrees Reflect Interdisciplinary Trend

With increasing convergence and collaboration in research fields, it follows that interdisciplinary graduate degrees are developing to support this trend. Below are some of ECU's offerings in this area:

PhD in Biomedical Physics - This program's core curricula in both applied physics and biomedical areas is designed to provide training for students with diverse backgrounds in physics, applied physics, biochemistry, and engineering.

MS in Biomedical Science - This interdisciplinary research-oriented program prepares students for employment in the biomedical industry or provides research training and experience for students interested in more advanced study leading to PhD or MD degrees.

PhD in Coastal Resources Management - The program draws on faculty from some sixteen academic departments as well as external marine science faculty to provide the academic basis for students seeking resource management careers in government agencies, private firms, nonprofit organizations, and interdisciplinary educational programs.

PhD in Bioenergetics and Exercise Science - Housed in the Department of Exercise and Sport Science within the College of Health and Human Performance, this program is offered in conjunction with the Department of Physiology in the Brody School of Medicine.

MS in Sustainable Tourism - The first interdisciplinary degree of this kind in the nation, this program is overseen by a faculty committee representing the College of Business, the Thomas Harriot College of Arts and Sciences, the College of Human Ecology, and the College of Health and Human Performance.



Nocturne Showcases ECU Arts Collaboration

Yes, that's A.J. Fletcher Recital Hall center stage in *Nocturne: The Girl Who Played Debussy*, a narrative feature screening at the Breckenridge Festival of Film and the Park City Film Music Festival, among others, this summer. In fact, a host of ECU faculty, students, and facilities play key parts in the film.

"An indie filmmaker has to harness what's available, so I tapped into the resources of ECU," says **Michael Tierno**, assistant professor, cinematic arts and media production and writer/director of the film, which was largely shot in and around ECU.

While conducting his pre-production research, Tierno formed partnerships most particularly within ECU's School of Theatre and Dance and School of Music. A love story about students in a college music program, *Nocturne* stars ECU acting students **Von Lewis** and **Daniela Hart** (pictured with Tierno, center, above). Hart, who plays an aspiring pianist, was recommended by music professor **Henry Doskey**, whose own recordings of Debussy's works are also featured in the film. School of Music's **Michael LaRoche** engineered the classical music recordings for the production. Still other ECU faculty and students also act in the film, and several of Tierno's students served on the production crew. **Rudy Chu**, an assistant professor and colleague, provided a variety of support as a producer.

For Tierno, it's exciting that *Nocturne* is now traveling the festival circuit. He has also just received a grant to produce his screenplay *At the End of the Day*, which was also a finalist in the prestigious Nicholl award competition sponsored by the Academy of Motion Picture Arts and Sciences. "I can already see a lot of ECU connections for the production," he says.



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