East Carolina University

Exploration & Discovery

News and Notes from the Division of Research and Graduate Studies

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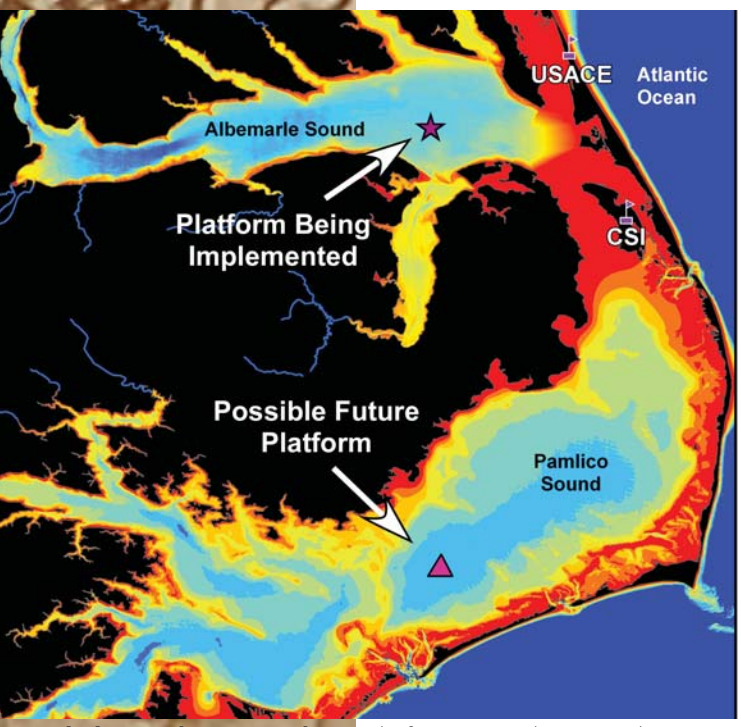
Research and Graduate Studies News



Existing and proposed observation platforms in the Carolina sounds.

Albemarle-Pamlico Estuarine System Under ECU's Watchful Eye

The coastal waters, where land and sea meet, constitute a zone that is, for numerous reasons, environmentally sensitive and critical. Our coast is not only where humans and their activities come into most frequent contact with salt waters. It is also where sediments and solutes are most prolifically exchanged, stored, and cycled. Furthermore, it is where the fullest effects, both direct and indirect, from natural perturbations (such as storms and tides) and human-induced change (such as nutrient loading and trawling) are observed—with all of these effects interacting on varying time scales. Effectively protecting and managing our coastal water bodies, which are crown jewels in the natural inheritance of all North Carolinians, requires continuous data collection.

Ocean observing systems are under construction worldwide, and they are beginning to provide us with a rich dataset on systematic and long-term changes, both on the high seas and in coastal waters. Now, two researchers at ECU are working to see that North Carolina's Albemarle-Pamlico Estuarine System receives full benefit from the latest innovations in environmental monitoring. Drs. J.P. Walsh and Reide Corbett, assistant and associate professors, respectively, in the Department of Geological Sciences and newly created Institute for Interdisciplinary Coastal Science and Policy (IICSP), have formed a partnership with Jeffrey Hanson at the U.S. Army Corps of Engineers Field Research Facility and Nancy White and Mike Muglia of the UNC Coastal Studies Institute to establish a real-time observation platform in Albemarle Sound during the next several months. Operating today with the aid of an $80,000 grant from the Corps of Engineers, the team hopes to add another platform in Pamlico Sound next year. Each observation platform will include an Instrumented TriPod (or ITPod) designed for bottom placement in the shallow sound waters to measure wave heights and the strength of currents as well as water turbidity and other quantities. The ITPod was designed, built, and outfitted through a $443,971 grant previously received from the National Science Foundation by Corbett and Walsh and by Dr. David Mallinson, assoc. professor, Geological Sciences. Also included with each installation will be an above-water meteorological package, so that wind data can be associated with observed changes in water conditions. Data will be automatically relayed to a server via cellphone. "This real-time observing system will give us a new way to watch and learn how storms impact the ocean as they occur," says Walsh.

Reide Corbett (left) and J.P. Walsh, spending a day at the office.

As the largest lagoonal system in the nation and one of the most active severe-storm regions in the world, the Albemarle-Pamlico Estuarine System offers an excellent natural laboratory to study sediment and biogeochemical cycling on multiple time scales. A significant portion of the research now occupying Corbett and Walsh is focused on source-to-sink sediment dynamics—e.g., how a given sedimentary particle gets from its point of origin to its final resting spot, and how long this journey takes. Corbett says, "This work has important implications for understanding the fate of sediments and the pollutants associated with them." Previous studies have demonstrated that the sedimentary record of the Albemarle-Pamlico system provides an excellent history of environmental changes experienced by this volatile region. Recent research efforts have brought Walsh and Corbett together with a number of other ECU faculty members, including Dr. Lisa Clough, assoc. professor, biology; Dr. Joe Luczkovich, assoc. professor/assoc. scientist, biology and IICSP; Dr. Enrique Reyes, assoc. professor, biology and IICSP; and Dr. Mark Sprague, assoc. professor, physics. The leitmotif of the work undertaken by this group is the development of a greater understanding of estuarine ecosystem dynamics. It is hoped that the time series of information relayed by the ITPod will bring new insights to the physical, chemical, and biological processes at work in our estuaries. For example, these ECU researchers have already observed physical changes coincidental with fish and mammal sound production. In the spring of 2006, as a cold front passed the Carolina coast, the temperature of the Pamlico Sound dipped and sound production was minimal. Subsequently, the Neuse River warmed and instruments placed there recorded increased nocturnal sound production. Walsh says, "Waves and currents produced by strong wind events cause mixing of the water column

(continued on page 2)

Research and Graduate Studies News

New Director of OGC Kathleen Hall Seeks to Smooth Researchers' Path to Success

"The wonderful faculty members of East Carolina University—teachers, physicians, and researchers—are rapidly transforming ECU into a major research institution. Our mission is to help improve the institution's administrative structure and atmosphere in support of their endeavors." So says ECU's new Director of the Office of Grants and Contracts (OGC), Kathleen Hall, who joined the Division of Research and Graduate Studies in June. Prior to arriving at ECU, Hall spent 15 years at Emory University as Director of Grants and Contracts; and she brings a number of years' experience working with other universities, non-profits, and public agencies in various aspects of sponsored projects administration.

Vice Chancellor Deirdre Mageean has tasked the Division with reviewing research systems at ECU and finding ways to support and increase research activity. OGC plans to be an integral part of that process.

Being new to ECU, Hall is just beginning to meet with faculty committees, individual departments, and staff groups to gather information and assess their needs and concerns about the research enterprise. Over the next several months, she intends that her office publish new or updated policies and procedures, provide more training materials and programs for campus staff, and help formulate methods of streamlining processes. OGC hopes to reduce ECU's compliance risks while relieving the administrative burdens shouldered by Principle Investigators.

Hall says, "OGC cannot eliminate regulations or each researcher's oversight responsibilities. However, in partnership with faculty members and their support staff, we can identify ways to make it easier for PIs to surmount administrative hurdles so that our researchers can be more creative and productive in their endeavors." She welcomes comments and suggestions for improving ECU's research administrative infrastructure, and hopes interested parties will email her at hallka@ecu.edu.

Don't Miss These Resources on the New RSG Web Site

The Division of Research and Graduate Studies recently re-designed its web site and urges researchers to familiarize themselves with the new layout:

http://www.ecu.edu/rgs/

We believe that one page in our suite contains items that will be of particular interest to ECU investigators as they strive to navigate the complexities of professional research—"University Policies Related to Research." Here, site visitors will find documents detailing numerous aspects of the following topics:

- Policies Affecting University Approval of Research Projects
- Policies Affecting Research Project Execution
- Safety and Environmental Policy Statements
- Ethics and Professional Activities
- Faculty Salary Buyout and F&A Cost Recovery Distribution
- Intellectual Property

To view this information, visit our subpage "University Policies Related to Research" at the following URL:

http://www.ecu.edu/cs-acad/rgs/Research-Policies.cfm

Another page in our suite, "Introduction to Research at ECU: A Tutorial," contains very helpful items ranging from advice on where to look for internal sources of research funding and how to find calloborators for your project to best practices in navigating ECU's IRB and other regulatory bodies, and much more. This web-based general handbook for new and current faculty can be viewed at the following URL:

http://www.research2.ecu.edu/SchreierBBTutorial/welcome.htm

Albemarle Research (continued from page 1)

and erosion of the seabed which likely affect crabs, fish, and other organisms in a variety of ways." But data must be collected simultaneously and brought together if interactions between wildlife and environment are ever to be comprehended.

Traditionally, earth science education and research have focused on discrete and typically long-term time scales and have concentrated on individual disciplines, such as geochemistry. Collecting and integrating observational data is what occupies J.P. Walsh and Reide Corbett for the moment as they strive to build an integrated program for examining solute and sediment dynamics in coastal systems, from present to past. But they are also opening new observational windows through which many other scientists might peer in our expanding quest for new ecological insights. The wealth of new (and new types of) data now coming online, and the multitudes of scientific minds by which that data will be examined, give some assurance that greater human understanding of our treasured coastal waters is at hand. Better informed management can then follow.

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Please contact us with your comments and story ideas.

Research Highlights

The Future of Health Disparities Research at ECU

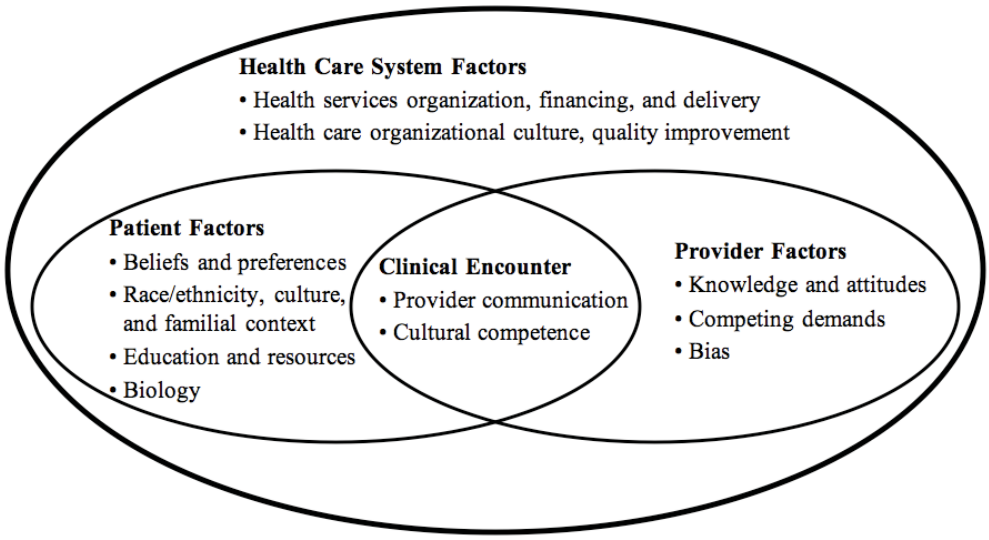
Cynda Johnson, MD, MBA, Senior Associate Vice Chancellor for Clinical and Translational Research

Over the next several issues of *Exploration & Discovery*, I will describe aspects of a new ECU initiative emanating from the Division of Research and Graduate Studies and the office of Vice Chancellor Deirdre Mageean. Its goal: to develop a Center for Health Disparities Research. Although the Center does not yet have a permanent name, each word in the working title is crucial to understanding its purpose. Most important will be the Center's focus on "health disparities."

Many definitions can describe what constitutes a health disparity, but in all cases the key is a differential in health outcomes or in access to health care between two different populations. The difference might be owing to age, race/ethnicity, gender, education, language, socioeconomic or insurance status, location of residence, or even genetics. Whatever the origin of the disparity, differentiating factors lead one population to enjoy improved health over another.

An example might be two people diagnosed with a form of cancer that is treatable by some proven chemotherapy only available at a hospital. What if both wish to receive treatment, but one is for some reason denied? Perhaps a patient cannot pay for the treatment, or cannot arrange for transportation to the hospital. Assuming the chemotherapy offers real hope for a cancer cure or remission, the comparison between the treated and untreated cases would constitute a dramatic example of a health disparity. Another example might arise if one of the patients comes from a culture in which chemotherapy is considered taboo. Here, a "health belief" can too easily result in a drastic health disparity.

The diagram below, from the *American Journal of Public Health* (December 2006), illustrates the multiple origins of disparities in health and health care within our delivery system. The barriers are many, but they are traceable.



Reprinted with permission from the American Public Health Association.

In the U.S., the most prevalent factors in the disparities equation relate to race and ethnicity. For several years, the Department of Health and Human Services has monitored our nation's progress toward the goal of reducing and eliminating race- and ethnic-based health disparities. The most recent report from North Carolina, which compared results from 2000 to 2004 with a previous report from 1997 to 2001, showed little improvement in most measures and, unfortunately, highlighted a number of deteriorating health measures, especially in the Hispanic/Latino population. These include an increasing rate of teen pregnancy and a higher death rate from colorectal cancer. We also know that many of these health disparities are especially acute in the eastern part of our state.

It falls well within the scope of ECU's societal mission to focus resources on the heath disparities that demonstrably affect our region. A research center where those disparities can be fully identified and attacked makes sense for this university. Next month: the "Center" concept.

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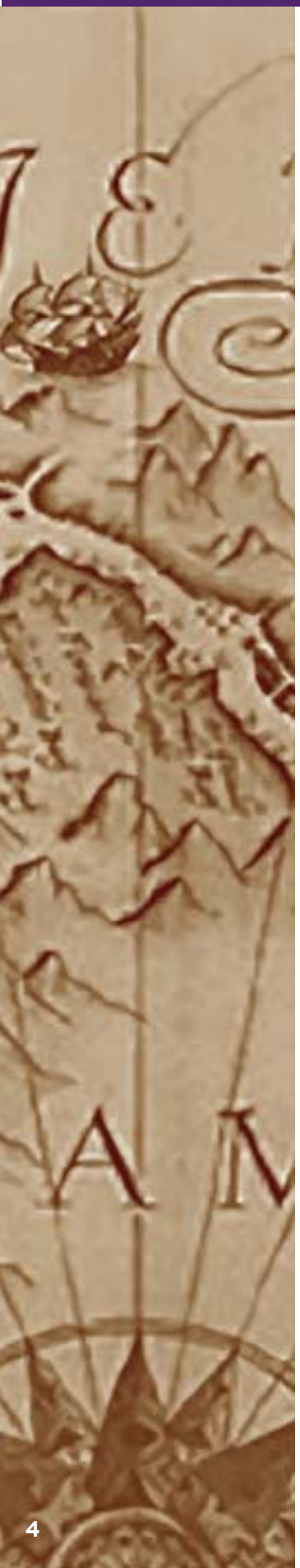

In Brief

Grant Awards Continue to Raise ECU's Research Profile

ECU's Office of Sponsored Programs has just reported submissions and awards for the fiscal year ending 30 June 2007. Many of our numbers continue to trend upward, even in a less-than-optimum federal funding climate. The year just ended saw 434 Principal Investigators[1] at ECU win awards for 388 submissions[2] totaling $38,559,802. Some notable achievements include the following reporting units:

Brody School of Medicine — $19,908357 (up 14 percent)
College of Education — $4,480,571 (up 55 percent)
Coastal Studies Institute — $530,909 (up 348 percent)
College of Technology and Computer Science — $2,388,468 (up 569 percent)

One additional datum appears to bode particularly well for the future: the university-wide number of proposals submitted during the fiscal year just completed was 620, an increase of more than 17 percent over the previous year's reported number of 529.

[1] Reported awards are for both competitive and non-competitive proposals, the latter usually being follow-on disbursements of multi-year awards.

[2] Reported submissions are for competitive bids only.

Research Development Grants: In-house Farm System for Investigators

Twenty-one ECU faculty members recently received more than $485,000 in Research Development Grants from the university's Division of Research and Graduate Studies. The awards (typically about $20,000) provide seed funding to allow faculty to develop new research ideas with an eye toward later capturing major grants from external sponsors. Past recipients have, to date, obtained 17 grants totaling almost $2.5 million.

The deadline for submitting a proposal for a FY 2008/2009 award is expected to be in the late January/early February 2008 time frame. Applicants should bear in mind that submission of a major proposal to an external sponsor is required within 18 months after the start of the RDG award.

To learn more about Research Development Grants and to keep apprised of program changes as they occur, visit the following URL:
http://www.ecu.edu/cs-acad/rgs/Research-Development-Awards.cfm

Opportunities from the North Carolina Biotechnology Center

The Science and Technology Development Program of the North Carolina Biotechnology Center solicits grant proposals to support equipment purchases, faculty recruitment, academic/industrial collaborations, and event sponsorships. In the past two years alone, the NC Biotech Center has awarded ECU researchers more than $700,000 in grants for needs ranging from laboratory equipment to work in nanoparticle therapies and biological laser research. For further information, visit the following URL:

http://ncbiotech.org/services_and_programs/grants_and_loans

Metabolic Institute Set to Expand its Reach with Golden LEAF Grant

ECU's Metabolic Institute will step up its work in the search for treatments of diabetes and obesity thanks to a $1 million grant from the Golden LEAF Foundation. The Metabolic Institute, established in 2005 to foster cooperation among scientists from various academic disciplines, will use the funds to modernize lab space and to purchase equipment and supplies.

Getting Academia and Business Together

September 25 SBIR/STTR Workshop to Highlight Funding, Partnership Opportunities

Each year the federal government awards thousands of R&D grants and contracts to small businesses performing innovative research through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. Matching small business R&D needs with faculty expertise creates opportunities for members of the academy to develop patents and to move potentially lucrative technologies and products from lab to marketplace. State matching funds are expected to be awarded to successful applicants (pending passage of the state budget). Researchers interested in learning more about how to form technology transfer partnerships with small businesses are invited to attend a workshop to be held at ECU September 25. Topics will include:

- an overview of the SBIR and STTR programs
- how to prepare a proposal
- one-on-one sessions with SBIR specialists
- networking opportunities with business leaders and fellow researchers

Time, location, and a complete agenda will be available soon at the following URL:
http://www.sbtdc.org/events/sbir/workshops2007/

The SBTDC, in partnership with ECU's Office of Technology Transfer, will host this event.