

# MINERVA



A JOURNAL OF RESEARCH AND CREATIVE ACTIVITY





Dr. Brad Bartel  
Associate Provost  
for Research  
Dean of the  
Graduate School

The last six months has been a turbulent period in the scientific and political arenas for women's health. As I write this lead commentary for *Minerva* in April, the nation has witnessed a wide range of study results and health problems directly related to females, including a public debate on whether women should or should not have annual mammogram screening, an international outcry for the banning of ritual genital mutilation led by various agencies of the United Nations (WHO, UNICEF), the under representation of women in studies concerning heart disease and depression, the controversy over estrogen replacement therapy for cancer of the uterus, and announcements of study results linking exercise with reduction in breast cancer and a general reduction in premature death in postmenopausal women.

All of these women's health issues were featured on television news, and were front-page headlines in the major newspapers and weekly news magazines during the past few months. The debate about the scientific evidence not supporting annual mammograms followed by the public and political outcry for annual screening was particularly acrimonious, and shows the difficult nature of ever being able to separate scientific evidence from a cultural milieu where women have not been well served by the health community, and have become mistrustful of a male-majority profession.

This issue of *Minerva* is devoted to the theme of Women's Health. UNCG has always been strong in health-related disciplines, and in particular, women's health issues. In its early incarnation as The Woman's College of the University of North Carolina, the mental, emotional, and physical health welfare of our female students was a primary mission through to the time before

co-education that began in 1963. Our programs devoted to health, including nursing, exercise and sports science, clinical psychology, public health, nutrition, counseling, human development, and speech pathology have worked with a large female alumnae base and current female populations within the Triad's one million person metropolitan area on comprehensive solutions to wellness and fitness. This issue highlights some of the most recent and innovative approaches.

Our faculty have been particularly focused on the health of two female populations; at-risk youth and the elderly. Examples of research on these two populations are found in this issue. We are fortunate to have an array of basic and applied health research at UNCG that spans so much from fundamental biochemical nutrition analyses through to applied health promotion and fitness programming. We are also attempting to increase the sample size of studies about women. It is also important to mention that many of these studies are conducted by female researchers; these counterbalancing objections to past studies by males.

What ties together these diverse studies on women's health is our brand new Institute for Health, Science and Society. This is featured as the last article in this issue of *Minerva*, and it will be the "glue" binding community-based health research in the Triad of North Carolina for many decades to come. This collaboration with the region's largest health-care provider, the Moses Cone Health System, is meant to unite the health research strengths of the two institutions around community-based studies of prevention and treatment. Please watch in future issues of *Minerva* for the results of studies sponsored through this new Institute.

## MINERVA

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of North Carolina  
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THE UNIVERSITY OF NORTH CAROLINA  
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# MINERVA



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On the cover: Pablo Picasso, *Maternitie*, 1963, color lithograph  
Gift of Harold O. Carpenter, Weatherspoon Art Gallery, UNCG



# BREAST CANCER

## UNDERSTANDING HOW THE CELL CYCLE GOES AWRY



Dr. Karen Katula  
Assistant Professor,  
Department of Biology

In her laboratory at UNCG, Dr. Karen Katula and her graduate student, Katherine Butler, are researching a basic mechanism of one of the most common and deadly diseases affecting women, breast cancer.

Their focus is cyclin B, a protein known to play a pivotal role in the normal growth cycle of cells. Normally, cells reproduce by dividing in two after increasing in size and replicating their genetic information or DNA. Each resulting daughter cell should include a complete complement of chromosomes containing the DNA. Failure to correctly replicate the DNA or to successfully distribute the chromosomes to the daughter cells will result in cell alteration or cell death. Orderly cell division is critical to the life of an organism. It is tightly regulated at specific points in the cell cycle.

"In cancers," Katula says, "the natural regulation of cell growth and division has broken down and the cells grow out of control. They don't know how to stop dividing." Consequently, much of the molecular based research in the area of cancer biology is focused on the cell cycle — what molecules control cell division and how do they contribute to the formation of cancer?

Cyclin B is one of a group of cyclin proteins that regulates the cell cycle, which is a progression through four phases: G1, S, G2 and M. In G1, the cell grows until it attains the size where replication is triggered. Chromosomes are replicated in the S stage. The G2 phase functions as a checkpoint for entry into M and a period of synthesis of the components required for cell division. In M, the replicated chromosomes are sorted to

opposite poles and the cell divides. The entire cycle typically takes twenty-four to twenty-six hours.

For cyclin B to do its job, another protein called a kinase is required. Cyclin B and this kinase form a complex which then functions to regulate the events in the M stage of the cell cycle when cell division occurs. Different types of cyclins and their specific kinase partners control the events in the other phases of the cell cycle. The activity of the various cyclins-kinases ensure proper progression through the cell cycle.

Katula is researching what regulates the expression of cyclin B during the cell cycle. "We want to understand the molecular mechanism turning on the gene at the proper period of the cell cycle. It is normally expressed in late S and G2. However, cyclin B has been found to be incorrectly expressed in G1 in a large number of breast cancer cell lines.

"It's showing up at the wrong time in the cycle, and it's important to know why this is happening," she says. "Cells undergo multiple changes on their way to becoming cancerous. Because cyclins are central to controlling the cell cycle, any changes

in their pattern of expression could mean that normal mechanisms of growth control are bypassed, and the cells grow uncontrollably." Katula says she thinks cyclin B, when it is misexpressed, may be contributing to uncontrolled cell growth.

To study the mechanism controlling the expression of cyclin B in both normal and breast cancer cell cycles, Katula fuses the regulatory region of the cyclin gene to the gene for luciferase. Luciferase is the enzyme that

**"IT'S SHOWING UP AT THE WRONG TIME IN THE CYCLE, AND IT'S IMPORTANT TO KNOW WHY THIS IS HAPPENING"**



Using an automatic pipetter, Dr. Katula transfers breast cancer cells into a sterile plastic flask.

enables fireflies to produce light. The fused gene is placed in tissue culture cells, normal and tumorous ones. Using an instrument called a luminometer, Katula can detect the pattern of cyclin B expression by the light generated due to the activity of the luciferase.

"We're analyzing the pattern of expression at every stage of the cell cycle," she says. "If cyclin B gene expression is altered in the tumor cells, we would expect to see relatively high levels of luciferase at all stages of the cycle. However, in the normal cells it's expected that luciferase activity will be high only at the end of S and during G2 — when it should be active."

In addition to these studies, Katula is determining if the misexpressed cyclin B is forming a functional complex with its kinase partner in the G1 phase of breast cancer cells. Katula thinks that the cyclin B-kinase complex

may be modifying the function of another protein called p53. Alterations in p53 activity have been shown to be associated with 40 percent of all cancers.

"Positive results would provide evidence that alterations in cyclin B activity may play a role in maintaining or causing the out-of-control cell growth which occurs in breast cancer, and possibly other cancers as well," she says.

"We want to know what's causing the misregulation and in what manner the inappropriately expressed cyclin B is contributing to the lack of growth control in breast cancer cells." In the process, she adds, potential molecular targets for novel cancer treatments may be identified.

— Charles Wheeler



# BREAST FEEDING

## TESTING THE TIE BETWEEN NURSING AND WEIGHT LOSS



Dr. Cheryl Lovelady,  
Assistant Professor,  
Department of Food,  
Nutrition, and Food  
Service Management

Every mother knows that the weight put on during pregnancy doesn't come off easily. For too many women, says Dr. Cheryl Lovelady, that extra weight never comes off. For some, it doesn't go away even if they breast-feed. Yet that burns off an extra 500 to 600 calories a day.

An assistant professor in the Department of Food, Nutrition, and Food Service Management, Lovelady is conducting a study to find how nursing mothers who are moderately overweight can lose weight in a way that poses no risk to their babies, themselves, their ability to nurse, or the quality of their milk. The National Institutes of Health is funding the study.

Some nutritionists have called her approach, well, "shocking." It is unusual. Not only does she have nursing mothers in her study dieting — that's unheard of, dieting while breast-feeding? — she has them exercising as well. Vigorously. They run, walk, jog, or ride bikes for forty-five minutes, four days a week. They wear heart monitors and must

exercise hard enough to push their heart rate to 60 to 80 percent of maximum capacity. During the ten weeks of the experiment, all the mothers, even those randomly selected for the control group, must be breast-feeding exclusively, no formula allowed. Mothers in the control group don't diet or exercise.

In a previous experiment that focused on exercising and non-exercising nursing mothers, Lovelady learned of an unexpected problem with the exercisers — husbands. They don't cooperate.

"Husbands aren't supportive when it comes to exercise," Lovelady says. "For some reason, they can't spare the time to look after the children when mom wants to exercise. A husband who is supportive is an exception."

Knowing this, Lovelady has organized her current study differently. "We go to the mothers," she says. Her research team includes three graduate students, three undergraduate students, and, in the summer, two school teachers. A research assistant goes to a mother's home with a heart monitor at her

exercise time. Usually, the research assistant looks after the children. "We do what we have to," Lovelady says, "and this works."

Her interest in this aspect of women's health grew out of her doctoral dissertation about lactation and weight loss and a subsequent post-doctoral fellowship at the University of California at Davis. Women between the ages of 25 and 45 gain more weight than men in this age range. Since weight by itself is not an accurate measure of obesity, scientists use a formula that takes height into consideration to determine the body mass index. It's a calculation of weight in kilograms divided by height in meters squared. A woman five feet, four inches tall with a BMI of 25 would weigh about 145 pounds. With a BMI of 30, she would weigh 165 pounds. The women Lovelady is working with fall into this 25-30 BMI category, moderately obese.

Since weight gain in women may be related to childbearing and the pounds put on during pregnancy that they never lose, most researchers investigating obesity in women have focused on pregnancy. However, a basic question remains unresolved. Are the additional pounds after childbirth the result of a change in physiology or lifestyle?

Lovelady has come up with a fresh approach. "Lactation is an integral part of the reproductive cycle in women, too," she says. "Women's bodies are not made for formula-feeding." Curiously, breast-feeding varies significantly region by region in the United States. Fewer women breast-feed in the Southeast than elsewhere; women in the West breast-feed the most. Nursing varies by ethnic group, too. African-American women breast-feed the least, and Hispanics, the most. At discharge from the hospital after childbirth, 60 percent of new mothers are breast-feeding. However, within five months, only 23 percent are. "Although breast-feeding is natural, it must be learned," Lovelady says. "A nursing mother

needs support, and often she doesn't have it."

Early research into a link between lactation and weight-loss was inconclusive. Women who identified themselves as breast-feeding were not doing it exclusively or were not doing it long enough for it to have an effect. Subsequent studies, which tracked exclusive breast-feeders and non-breast-feeders for a year, found that nursing mothers did lose more weight over a year. However, there was no difference between the two groups in the first three months. Weight-loss began to show up after three to six months of breast-feeding. At year's end, nursing mothers had lost five more pounds than non-breast-feeders. Another study by Lovelady introduced aerobic exercise as a variable in nursing mothers and the control group of mothers. After twelve weeks, the cardiovascular fitness of the research group had improved dramatically, but they had not lost any more weight than the control group. Yet with their exercise regimen they were burning off an additional 400 calories a day. What was going on? The researchers found that the exercisers' appetites increased and they were eating more.

That's why Lovelady's current research project incorporates dieting as well as exercise. Her subjects are moderately overweight mothers who are breast-feeding exclusively, exercising, and reducing their daily caloric intake by about 500 calories. The control group is composed of women breast-feeding exclusively, not exercising, and eating normally. Her preliminary findings appear to vindicate the additional variable.

The dieting group has lost an average of ten pounds, the control group, one pound. In the dieting group, the weight loss has been almost entirely body fat. The growth rate of their babies as measured by weight and body length has been unaffected compared to the babies of the control group mothers.

"I hope this trend continues," says Lovelady. — Charles Wheeler

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They run, walk, jog,  
or ride bikes for  
forty-five minutes,  
four days a week.



# FALLING

## COORDINATION AND CONFIDENCE AFFECT OLDER WOMEN



Dr. Kathleen Williams,  
Associate Professor,  
Department of Exercise  
and Sport Science



Dr. Diane Gill,  
Professor, Department of  
Exercise and Sport Science

For older women, a simple fall can lead to seriously debilitating injuries. Can such falls be prevented or at least injuries minimized when they occur? Yes, say Dr. Kathleen Williams and Dr. Diane Gill of the Department of Exercise and Sport Science, but this requires a collaborative approach, looking at both motor coordination skills and the confidence of older women.

For the last two years Williams and Gill have been researching both the biomechanical and the psychological aspects of fall prevention, comparing older women who had a history of falls with those who did not.

"Combining motor measures with psychological measures was something that hadn't yet been done," explains Williams of their unique study funded by the Andrus Foundation.

"Dr. Williams was doing related work first," adds Dr. Gill. "She was looking at older adults and motor patterns and coordination. My interest is from the psychological side, things like general sense of well-being, sense of confidence, and how those fit in with older adults' activity and fall prevention. With some older adults the fear of falling can be more limiting than physical or motor constraints. Overcoming fear and developing confidence is where I come in."

They are continuing their research with a pilot project in which a small group of older women are going through an eight-week training program of balance exercises in their homes. They hope this training will help the women improve balance, maintain daily activities, and aid fall prevention and recovery.

Earlier studies focused on nursing homes and other frail groups, which comprise only 5-10 percent of the elderly. Williams wondered about the other 90-95 percent "who might be afraid of falling, but still live independently and are fine by all appearances. But are there detectable things either psychologically or motorically that might portend

declines to come."

"A particularly unique aspect of the study," adds Gill, "is the preventive or health promotion aspect."

When considering active and inactive older women, one might think the inactive participants would be more likely to fall, but in fact, Williams asserts, "People who are more active put themselves at greater risk for falling because they are doing things." For example, adds Williams, "The couple of spills my mother's taken in the last several years have happened when she's been out walking her five miles."

Williams points out that fall prevention is complicated. "Some people become inactive because they are afraid of falling, and their balance and motor coordination may deteriorate. Others are active and relatively fearless but have problems with falls. By incorporating both specific balance training activities with psychological measures, we may better assess and meet the needs of these diverse groups of older adults."

Gill adds that they were a bit surprised by some of their findings. "We went into the study thinking we would see bigger differences than we actually saw. We thought that all the women who had fallen would probably do poorer on the motor coordination balance tests and would be lower or less positive on the confidence, psychological, and well-being measures." But that is not what they found. "The reason is basically that the people in our study who have fallen weren't really different from those who hadn't. They were falling while they were active. They weren't falling because of poor motor coordination or balance. They weren't falling because they weren't confident or were afraid."

In fact, adds Williams, "They fall for the same reasons you and I fall. We had people say, 'Well, it started raining and I was running to my car, and it was nighttime and I



tripped over those little bumps in the parking lot.' Well, we would fall then too. That doesn't have anything to do with age. We cannot prevent all of those falls."

And this gets back to the preventive aims of the study, says Gill. "We may come up with some balance and mobility exercises that will help people improve their balance. Another big thing is being able to recover when you start to fall. By staying active, then improving coordination, people might recover better if they do fall." Minimizing the severity of injuries incurred in falls is an important part of their effort.

Because the literature suggests that people do not adhere consistently to vigorous activity, the study focuses on activity in the low to moderate range. In addition, some people don't want to or cannot go to a community center to participate in group activities, says Williams. "So we put together a

home exercise program that doesn't take a lot of equipment, is inexpensive, low intensity, and focuses on balance and mobility tasks."

As they approach the end of the pilot program, they are not sure what the feedback will tell them, says Williams. "The most important thing we may find is participants' evaluations and suggestions." As a result, says Williams, "We might develop a larger project so that we can involve more people for a longer period."

Gill and Williams have been particularly impressed with the interest their research has received from the community and their participants. All the researchers have to do is express their interest in fall prevention, and the elderly line up to participate. The elderly are aware of this issue from their own experience, says Williams. "They want to help. They know it's a potential problem in their lives."

— Caryn Koplik

*"Some people become inactive because they are afraid of falling, and their balance and motor coordination may deteriorate. Others are active and relatively fearless but have problems with falls."*



## COLLEGE BOUND SISTERS

AN INNOVATIVE PROGRAM TO PREVENT TEEN PREGNANCIES



Dr. Rebecca Saunders,  
Professor, School  
of Nursing



Dr. Hazel Brown,  
Professor, School  
of Nursing

Preventing teen pregnancy is a daunting task, but Dr. Rebecca Saunders and Dr. Hazel Brown of the School of Nursing have found a way UNCG can help with this challenge. They are co-directors of College Bound Sisters, a program designed to encourage teenage girls at risk of becoming pregnant to choose a path that leads to college rather than motherhood.

"Our desire is to help these girls delay childbearing until they are at a point in their lives when they are mature enough to parent in a way that their children would have a fighting chance," says Saunders.

Both professors have maternity nursing backgrounds and have worked with adolescent mothers in clinical settings. From 1990-1995, they ran the Dollar-A-Day program, a secondary pregnancy-prevention project. After the Health Department took over the program in 1996, Saunders and Brown decided to develop a program concerned with primary pregnancy prevention. "Working with Dollar-A-Day we saw obvious problems with children parenting new kids. It seemed to us to be so much better to prevent pregnancy initially," says Saunders.

Girls have babies at young ages for many reasons, points out Joan Smith, the program director of College Bound Sisters. "Some studies indicate that young women are menstruating earlier and, if you will, they are just responding to their biological clocks."

Saunders adds, "Girls are sexually active in larger numbers at younger ages and their chances for pregnancy are dramatically increased." Low self-esteem also seems to play a part in leading girls to young motherhood. "Sometimes it is an ego boost because of the attention they receive when they are pregnant and when they have a new baby."

In addition, says Brown, research suggests that familial patterns of teen pregnancy exist. "Mothers who had babies as teens tend

to have daughters who have babies as teens. If one sister has a baby as a teen, the others tend to. To that end, we decided to approach the younger sisters of girls who had a baby as a teen."

College Bound Sisters will bring 24 girls, ages 12 to 16 onto the UNCG campus for weekly meetings. "Hopefully," says Smith, "we will be able to paint a picture of a lifestyle outside the life where an adolescent is parenting. We will bring them on campus and expose them to a variety of fun activities that young women are participating in, to help them look towards the future and see themselves in those positions in two to six years." In the weekly meetings, Smith plans to address issues that will interest the girls. She will attempt to raise their self-esteem by showing them positive ways to present themselves in social settings.

"We wanted to give the girls something positive to work toward," says Brown, "rather than something negative to prevent."

Saunders hopes the project, funded by the Adolescent Pregnancy Prevention Project of the NC Department of Environment, Health, and Natural Resources, will help the girls "develop goals that may not be typical in their families. We want their life trajectory to change. Staying nonpregnant, finishing high school, and enrolling in college—those are the three main things we are trying to accomplish."

"Our desire," she adds, "is for them to become so comfortable with the college environment that it will seem a natural thing for them to do when they finish high school."

On campus Smith plans to take the girls to everything from sporting events to the Biology Department, where they will learn about human anatomy and physiology, to the Early Childhood Education Department, "to let them look at how much work it takes to care for a child."



"Our desire," she adds, "is for them to become so comfortable with the college environment that it will seem a natural thing for them to do when they finish high school."

The first meetings of College Bound Sisters are being held this spring. Mariecia Smith, an undergraduate intern who has worked with the program since its inception, has been recruiting young women to attend those meetings. "We called all the community organizations in Greensboro and High Point that deal with youth, telling them about the program and asking their assistance recruiting girls," she says. "We sent fliers to the Health Department, to guidance counselors in high schools and middle schools, and we passed them out in different communities."

To encourage the girls to attend, College Bound Sisters is establishing college funds for each participant. The program will put \$7 in each girl's account for every meeting she attends and give her an additional \$5 to cover transportation costs.

The program is taking other steps to ensure the girls prosper once they join. Brown explains, "We will have meetings with the parents once a month, and Joan and Mariecia

will be visiting the girls in their homes quarterly. We will be checking report cards; we know that we have to keep up on academic progress in their lives if they are going to enroll in college."

The program will also familiarize the older girls, those 15 to 16 years old, with the admissions and financial aid offices to make the process of applying to college less intimidating.

The ultimate goal of College Bound Sisters is to nurture these girls so that they may grow into productive, self-assured young women. Joan Smith says, "If you become pregnant as an adolescent, you are responsible for not only your own growth but that of a child." The program will try to provide options for growth in directions these girls may never have felt were available to them.

— Lisa Harbin

"WE WANTED TO GIVE THE GIRLS SOMETHING POSITIVE TO WORK TOWARD," SAYS BROWN, "RATHER THAN SOMETHING NEGATIVE TO PREVENT."



## NEW INSTITUTE

JOINT VENTURE TO ENHANCE RESEARCH, IMPROVE LIVES



Dr. Bill Gruchow,  
Director, Institute for  
Health, Science, and  
Society

**"OUR BROADER  
MISSION HERE AT  
THE INSTITUTE  
IS TO BUILD A  
CAPACITY TO DO  
MORE RESEARCH  
IN HEALTH  
SCIENCES."**

Like every newborn, the Institute for Health, Science and Society at UNCG has made its presence known immediately.

The Institute, barely a year old, already has carried out a joint project with its partner, Moses Cone Health Systems in Greensboro, that reduced the potential for often debilitating birth defects from the disease, rubella. Clinicians at Moses Cone conducted a disturbing national survey of obstetricians. They found that one in five of them did not know the rubella immunization status of themselves or their staffs.

Rubella, commonly known as German measles, is usually an extremely mild disease in adults. In 60 to 70 percent of adult-onset cases, it's asymptomatic — you don't even know you have it. However, for pregnant women, it's a different story. Rubella can be devastating, causing severe birth defects. In fact, 40 percent of infants exposed to rubella through their mothers develop birth defects, some severe enough to be permanently disabling.

Three clinicians at Moses Cone contacted Dr. Bill Gruchow, director of the Institute for Health, Science and Society at UNCG, and wheels began to turn. Teaming up with the local March of Dimes, a public campaign soon was launched and every obstetric practice in Greensboro was contacted. A UNCG graduate student affiliated with the Institute helped out as well as staff at Cone. After all had been contacted, Cone offered free screening and immunization at cost for Greensboro obstetricians and their staffs.

"Today in Greensboro, rubella immunization is a condition of employment in an obstetrics practice," Gruchow said.

A project such as this is but one aspect of the Institute's function, but it reveals what a tremendous impact the Institute can potentially have on the people who live and work in the Piedmont Triad.

Established in 1996, the Institute provides a structure to facilitate the exchange of

resources and expertise between the University and Moses Cone. This sharing, in turn, will enhance research and teaching at both institutions, but, more importantly, will serve the Triad and improve the health and quality of peoples' lives here.

"I see the Institute's role as a kind of broker," says Gruchow. "We identify the faculty interests at both institutions and go out and find interested funding agencies. It's a way to marshal expertise to research and solve a community problem that may have state and national implications. This Institute will do significant work, I'm sure of it." Gruchow is the former chair of the Department of Public Health Education at UNCG.

As examples, he ticked off three Triad health problems that the Institute will probably address at some point:

- Infant mortality and low birth weight: Guilford County experienced a slight, but unexplained, increase in low birth weight infants last year.
- Childhood immunizations: The way the system works now is that parents are responsible for the immunization of their children until the children enter school, but there is no method of adequately monitoring the levels of immunization among preschool children in the county.

• Adult health: Local surveys have found a high level of sedentary lifestyles among Triad adults. Lack of exercise and diet, in addition to genetics, are major risk factors for heart disease, the number one cause of death among men and women.

"Our broader mission here at the Institute is to build a capacity to do more research in health sciences," Gruchow says. "Cone has clinical facilities with which we can link. Yet, it's not all one way. Their researchers can link with our faculty expertise, laboratories, and equipment. The results benefit everybody. We'll go beyond health services and health promotion to address basic research into well-



Dr. Bill Gruchow (left) confers with Dr. Don Smith, Associate Director of the Institute for Health, Science and Society, Vice President for Medical Education at Moses Cone Health System, and Director, Greensboro Area Health Education Center (AHEC).

ness, fitness, human physiology, and nutritional biochemistry."

Among the first items on the Institute agenda to enhance research capacity is to establish a survey research laboratory on campus. "This is sorely needed," Gruchow says. It will include a telephone bank and interviewers and will be reserved for research surveys by academic departments.

Collaboration between the Department of Psychology at the University and clinicians at Moses Cone is building rapidly. In the 1997-98 academic year, the Institute is sponsoring a graduate student intern in psychology at Moses Cone. Plans are actively being developed to involve graduate students and faculty in the Department of Counseling and Educational Development and other departments in joint programs at Moses Cone.

The UNCG Graduate School sponsored this past winter a retreat in which UNCG faculty and clinicians from Moses Cone sought to identify common interests. Follow-up sessions of small groups from both institutions are being held to refine the points of mutual interest and support. An interdisciplinary conference on methodologies is planned for spring 1998.

This ongoing discussion doesn't mean that the Institute's work at this stage is all talk. With the city-county school system and a coalition of health care providers, including Moses Cone, the Institute has been coordinating an effort to expand school-based health service in Guilford County. The only school-based clinic in the school system now is at Grimsley High School in Greensboro. However, there may be a second one soon at High Point Central High School.

The NC Department of Environment, Health, and Natural Resources (DEHNR) has recommended that it be funded with money DEHNR has received from the Duke Endowment. "If the funding comes through," Gruchow says, "the clinic will open at High Point Central in January."

Identifying and securing external funding for programs and research is one of the Institute's major jobs. At present, the Institute is supported jointly by the University and Moses Cone. Its goal is to be self-supporting within three years. "I'm confident we'll be able to do that," Gruchow says. "We'll be proposing significant work, and it will be supported."

— Charles Wheeler



## FACULTY RESEARCH VIGNETTES

**Andrew Dummill**, Department of Art, exhibited sculpture in three major juried exhibitions in 1996. He was one of three artists selected by the Sculpture Centre in New York City to participate in the *Emerging Artists #9* show. He also exhibited at the Chicago *Navy Pier '96* exhibition in conjunction with the 1996 International Art Exposition. Finally, he was selected by the Socrates Sculpture Park in Long Island City, New York, to be part of their *Tenth Anniversary Season Exhibition*, an international show of large outdoor sculpture.

**Susan Calkins**, Department of Psychology, received a five-year, \$504,000 award from the National Institute of Mental Health to support research on multiple factors involved in the development of socially competent and incompetent behavior. A number of studies have attempted to identify factors leading to aggressive and impulsive behaviors in childhood and have indicated that these problems develop very early in life. Dr. Calkins's research will examine this development from infancy and will consider the behavioral, physiological, and environmental factors that influence the development of these problems.

**Christopher Ruhm**, Department of Economics, is completing a one-year appointment as Senior

Economist with the President's Council of Economic Advisors in Washington, DC. Dr. Ruhm's most recent research, which focused on the relationship between macroeconomic factors and public health issues, garnered considerable national attention. Articles about his work appeared in such publications as the *Washington Post* and the *Wall Street Journal*.

A UNCG choreographer was in the spotlight recently as a new ballet was premiered by the Ballet Pacifica at the Irvine Barclay Theatre in California. **Rick McCullough**, Department of Dance, was one of four invited choreographers at the Ballet Pacifica's annual choreographic workshop last summer. The Ballet exercised its option to take *In the Ruins* into their permanent repertory. McCullough's new piece is set to Estonian composer Arvo Pärt's "Fratres."

Improvement in the quality of food safety and sanitation in school food service programs and general nutrition programs for women, infants, and children in North Carolina is due in large measure to the efforts of **Claudia Green**, Department of Food, Nutrition, and Food Service Management. For the past seven years, Dr. Green has received North Carolina Department of Public Instruction and North Carolina Department of Human

Resources funding to develop strategies, evaluate effectiveness, and train personnel for nutrition programs that affect these populations. Her 1995 *Recipes for Safety* updated curriculum in food safety and sanitation; she continues to evaluate that curriculum and provide certification of North Carolina's child nutrition workers.

Since becoming a single adoptive mother in 1992, **DiAnne Borders**, Department of Counseling and Educational Development, has conducted several studies to test the numerous and prevailing myths about adopted children and their families. She discovered that many of the negative stereotypes of adopted children were based upon faulty research. In fact, her research including adopted children and adopted adults at midlife indicates very little difference between the adopted group and the non-adopted group.

**Eric Charry**, School of Music, studies the traditional and modern music of the Mande peoples of West Africa. His research is oriented toward a holistic deep historical view of African music. His articles and reviews have appeared in national and international journals, and his research has been funded by the American Philosophical Society. Dr. Charry recently received a

Howard Foundation Merit Award to pursue his research in jazz improvisation in the 1960s.

Examining dance forms of the late seventeenth and eighteenth centuries, **Carol Marsh**, School of Music, is particularly interested in dance notation systems and period choreographies. Dr. Marsh has recently received a Fulbright Award to lecture and do research in Austria. She will examine the Ferrere Manuscript, an important theatrical dance source from the 18th century.

**George Bright** and **Nancy Vacc**, School of Education, received National Science Foundation funding for their research into and implementation of cognitively guided instruction (CGI) as the framework for mathematics instruction. Teachers throughout North Carolina are attending workshops in the use of CGI in the mathematics classroom. Preliminary evaluations indicate that this model is successful.

**Beth Barba**, School of Nursing, examines animal therapy intervention in "failure-to-thrive" elders. These individuals exhibit unexplained symptoms such as a decline in awareness and physical functioning, consistent unplanned weight loss, signs of depression, giving up or taking to bed, and feelings of helplessness. Dr. Barba uses

specially trained dogs in animal therapy intervention both in her teaching and research. While the benefits of animal therapy seem apparent, Dr. Barba seeks to find empirical evidence for this mode of treating the "failure-to-thrive" phenomenon.

A scholarly history of the Air Force Nurse Corps is being researched and written by **Patricia Chamings**, School of Nursing. Her research, funded by the Uniformed Services University of the Health Sciences, draws particular attention to aeromedical evacuation.

**Jodi Bilinkoff**, Department of History, probes issues of religion, gender, authority and the construction of identities in early modern Catholic cultures (especially Spain). Last year she was elected to the Executive Committee of the Society for the Study of Early Modern Women. This new interdisciplinary organization examines women and gender in Europe and its colonies (1400-1700). Dr. Bilinkoff's address to a plenary session at the Society's upcoming conference will appear in a volume published by the University of Delaware Press.

**Peggye Dilworth-Anderson's** (Department of Human Development and Family

Studies) four-year longitudinal study, "Structure and Outcomes of Caregiving to African American Elderly," funded by the National Institute on Aging, includes 336 caregivers and 202 elderly care recipients from five counties in North Carolina. She has discovered that caregiving to elderly African Americans is a "family affair" involving multiple caregivers and an extended kin network. Few formal services are employed in caregiving, and religion and spirituality are key to coping with related stresses. Caregiving also impacts the physical health of at least 20% of the caregivers.

"Environments for Aging Rock Stars (and other luminaries...)", the title for an interior design course taught by **Sandra Rawls**, Department of Housing and Interior Design, reflects a new line of thought about design as a prosthesis in adult day care facilities. Dr. Rawls explores the prosthetic environment, designing features that compensate for the loss of biological and physical function such as mobility, hearing, and vision. For example, dark grey carpet in a room with off-white walls decreases the potential for falls, improves the ability to hear within the space by decreasing noise, and provides a clear contrast between the wall and floor.



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