

# uncg research

spring 2008

Research, Scholarship and Creative Activity

## THE BIG DIG

Uncovering the surprising details  
of a Neolithic community page 8

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**HAVE YOU EVER KNOWN** the really bright undergraduate student who lacked focus, direction and commitment? Whose grades suffered because he or she never developed enough enthusiasm to do sufficient work to maintain them? When I was working on my doctorate at the University of Georgia, I knew such a student. And then she started working with the doctoral students in my major professor's lab. Her life turned around. Her grades soared. She put in long hours — from early morning until late in the evening — working in the labs. Her assistance was significant. In my own case, her dedication and enthusiasm was a major contribution to a difficult project. This young woman went on to complete her undergraduate degree and then her doctorate.

Her profile is not that different from a number of students who become involved with undergraduate research. A decade ago, The Boyer Commission report titled "Reinventing Undergraduate Education: a Blueprint for America's Research Universities" (1998) clearly articulated the need for research-based learning as an integral component of undergraduate education. Research shows that students who are involved in undergraduate research gain self-confidence, are more likely to complete their undergraduate education, and are more likely to go on to graduate school compared to students who did not have a research experience. Undergraduate research experiences have also been shown to lead to intellectual gains in communication and critical thinking skills, understanding multiple modes of inquiry and the application of critical thinking skills to "real world" issues.

Here at UNCG we have long valued research experiences for undergraduates. It has become one of our signature programs. Over the last 10 years we have invested almost a million dollars in the undergraduate research assistantship (URA) program and, staying ahead of a national trend, established an Office of Undergraduate Research. Students involved in undergraduate research have made considerable contributions to faculty members' research programs. In the past year alone, six faculty members have included students as co-authors on their peer-reviewed publications. Students have received very prestigious, national awards. This year we held the second Undergraduate Research Expo. More than 100 students exhibited their work and it was attended by more than 250 people. A feature article in this edition of UNCG Research further discusses the remarkable achievements of undergraduate researchers.

These students are contributors to rapidly growing research activities at UNCG. The breadth of this work is extensive and the excitement around it is almost palpable. For instance, a Center of Research Excellence in Nanobiosciences was recently created. Its mission is to develop innovative and commercially viable nanobiotechnology products. One faculty member is using dance as a medium for understanding and sharing the Latina culture. Another faculty member is pursuing ways to help those diagnosed with Alzheimer's or dementia live more engaged, productive lives. This state-of-the art research at UNCG will contribute to the transition to a global economy currently occurring. Enjoy exploring more of these activities as you peruse this edition of UNCG Research.

**Rosemary C. Wander, PhD**

Associate Provost for Research and Public/Private Sector Partnerships

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Take their hands

“ People want to be known as people, not just as people with a problem. They want to be seen as holistic beings. They want you to know about other aspects of their lives.” Dr. Mona Shattell

IN THE OLD DISPUTE BETWEEN FREUDIANS AND JUNGIANs, score one for Carl Gustav.

A recent study by a UNCG nursing professor confirms what many mental health professionals have known instinctively for years but what Freudian dogma in the field has made taboo: Clients need friendship, physical warmth, even bluntness from their therapists.

“In the past, we have separated social relationships from therapeutic relationships; we’ve tried to keep it very separate. But now we’ve found they really want you to know them as you would a friend,” says Dr. Mona Shattell, who specializes in mental health nursing.

Shattell completed the study with Sharon Starr, a PhD nursing student at UNCG, and Dr. Sandra Thomas of the University of Tennessee at Knoxville. Their article, “‘Take My Hand, Help Me Out’: Mental Health Service Recipients’ Experience of the Therapeutic Relationship,” appeared in the *International Journal of Mental Health Nursing*.

Results were based on interviews with 20 mental health clients who spoke about their relationships with their therapists. They valued several qualities in therapists: understanding, honesty, touch, sharing personal stories and taking the time to get to know them.

“What’s cutting edge is that the findings are different from what has been taught,” Shattell says. “We were asking, What is it like to have someone understand you? And many of them felt misunderstood. Really it’s about human relatedness, and with someone with a mental illness, it takes it to a different level because of that stigma.”

It all goes back to the split between Sigmund Freud and his brilliant young protégée, Carl Jung.

Freud — although he invented psychotherapy and gave names to such essential concepts as the unconscious, transference and repression — took an authoritarian stance on the therapist-patient relationship, having his patients recline on sofas without making eye contact with him, Shattell says. She characterizes his fatal error as a reluctance to admit when he was wrong and to revise his theories.

Conversely, Jung treated his clients as equals, viewing psychotherapy as a two-way process that transforms both client and therapist for the better. He liked to sit eye-to-eye with his clients, and refused to label them as “patients.” He also used the metaphor of the Greek “temenos,” or “sacred place,” to describe the therapeutic space, Shattell says.

Her study vindicates Jung’s approach, although she warns that the therapist should never lose sight of the real goal. “It’s not done to make you feel good as a provider. It’s about what’s best for the client. That’s what makes it OK. And good. Not just OK, but good.”

Shattell’s findings have raised a lot of eyebrows in the psychotherapy community, prompting her and her co-authors to complete a second study that asks the question, What is it like to be misunderstood by your therapist?

Does she see a philosophical shift in the future of psychotherapy? “There’s no real concerted effort to create change, although there are a lot of mental health professionals who would like to see change. But the dominant paradigm’s so entrenched now. I think it’s going to be difficult. But not impossible.”



## Teaming up for TRIAD

Armed with a \$6.6 million, five-year National Institutes of Health grant, UNCG is taking aim at high rates of diabetes, cardiovascular disease and HIV/AIDS among minorities in the Piedmont Triad.

UNCG’s TRIAD (Teamwork in Research and Intervention to Alleviate Disparities) Center for Health Disparities will launch projects to promote good health practices among minority and poor citizens. The center will also work to improve access

to and understanding of health care services.

Dr. Debra Wallace, a professor of nursing at UNCG and principal investigator for the project, says researchers went straight to the source to find out what the greatest health needs were across the 12-county Piedmont Triad.

“We asked the community, ‘What is it you need?’” Wallace says. She adds that TRIAD will spread its message through civic groups, churches,

Dr. Emelia Amoako, left, an assistant professor in the School of Nursing, will serve as the principal investigator on one of the pilot TRIAD projects, which will begin in the fourth year of the grant. Her project will be “health care provider communication and physical activity in foreign-born African Americans with diabetes.”



## Scientific study

TO DR. SARAH BURKE BERENSON, mathematics and science are creative arts, and parents can serve as muses for their daughters.

Berenson, Yopp Distinguished Professor of Mathematics Education at UNCG, has studied women in the math and science fields for years. Her research yielded one paramount discovery.

“One of the most important findings to date is the value that high achievers place on their parents’ support throughout their educational experiences,” she said. “These young women do not view their parents as disciplinarians, rather they trust their parents to anticipate their needs and help them towards their future goals.”

Berenson, who came to UNCG from NC State last year, was principal investigator for two of three National Science Foundation grants at State that provided funding to conduct a longitudinal study of high achieving young women from middle school through college and into their first careers or graduate school.

“Girls on Track” funded a summer math camp for middle school girls to encourage them to continue to study

advanced mathematics in high school. About 60 percent of the young women in the first three cohorts of “Girls on Track” took advanced placement calculus in their junior or senior years in high school although changes became apparent in the fourth and fifth years of the study as more choices, such as AP statistics, became available, Berenson said.

With the second grant, “Women and Information Technology,” Berenson continued to study these young women’s perceptions of careers in computer science. She found that many middle school girls chose computer science as their future careers, yet very few chose to study computer science in high school.

“As early as high school, they realized that time is a very important commodity and they perceived computer science as ‘time-greedy,’” she concluded.

“I guess I would look for a job that didn’t involve too much work,” one young woman in the study said. “Obviously every job involves work but not a job that required me to be there 12 hours a day, six or seven days a week.” The girl’s father worked in the IT industry in RTP and her perceptions were based on her experiences.

The third grant, “Markers of STEM Success,” broadens the study to examine young women’s college decisions in relation to preparation and career choices. While most of these young women reported they enjoyed and were successful studying advanced mathematics in high school, nearly all are choosing careers that involve applications of mathematics — medicine and finance are two popular choices.

The women’s shifting career choices indicate that they want to feel more connected — to the world and to other people.

“Foreign travel in high school and college has promoted global perspectives and an altruistic spirit among those who have participated in mission trips, visits to their parents’ birthplaces or study abroad programs,” Berenson said.

clinics, wellness centers and, yes, even barber shops. “We’re trying some fairly unique individualized efforts for people and not just to people.”

Many areas across the region are considered medically underserved and have much higher rates of diabetes, cardiovascular disease and HIV/AIDS than the national average.

The need is in the numbers, Wallace says. Thirteen percent of North Carolinians live in poverty. African Americans make up more than 30 percent of the population in central North Carolina, while the Latino population has increased by more than 400 percent over the past decade. According to N.C. Division of Public Health

statistics, African Americans are 1.5 times more likely to develop diabetes than whites. A 2005 NCDPH report shows that rates of new HIV infections in the state were 58.9 per 100,000 for African Americans and 20.6 per 100,000 for Latinos. The rate of new infections among whites was much lower — 7.6 per 100,000.

On the research front, Wallace says the TRIAD project will improve the health of minority citizens by expanding community involvement in research and by disseminating health information to the community. Two other outcomes will be increasing the number of, and support for, health disparity researchers from minority populations and supporting research on health disparities with

a focus on new means of intervention and prevention.

The project spans the university, involving almost 30 faculty members from the College of Arts and Sciences; the schools of Education, Health and Human Performance, Human Environmental Sciences, and Nursing; and the centers for Biotechnology, Genetics and Health Research and Youth, Family and Community Partnerships. NC Central University will partner with UNCG as a subcontractor, lending additional faculty and students to the effort.

TRIAD’s research projects will involve interdisciplinary teams led by health professionals. A total of 14 studies will be staggered over the five-year grant period.



One of the reasons I'm compelled to tell Louise's story is that she was a composer in the 20th century who, over the course of her life, wrote in all genres, received commissions and awards and, in short, 'made it' as a composer and she has — for all intents and purposes — disappeared." Sarah Dorsey

A BOOK WAS NEVER HER PLAN. But sometimes ghosts have a way of making their wishes known.

In 2006, Sarah Dorsey, head of the music library in the School of Music, took a six month research assignment to sort through composer Louise Talma's collection in the Library of Congress.

"I did not start out with the idea of writing a book," Dorsey says. "But she has possessed me from the other side, so I must!"

In sifting through the more than 70 boxes of Talma's collection at the Library of Congress, Dorsey found sketches, photographs, programs, clippings, scores of music by other composers and letters — lots and lots of letters.

"Louise was an insatiable correspondent, and I rough sorted over 7,300 pieces in less than two months. She liked staying in touch. I think if she lived now she'd be addicted to email."

Among her letters are 40 years' worth of correspondence from Nadia Boulanger, a French composer and teacher. Last summer, Dorsey traveled to Paris to examine Talma's letters to Boulanger in the Bibliotheque Nationale.

For three weeks she transcribed 265 letters preserved on microfilm, a third of which were in French. Now she is working on the letters Boulanger wrote to Talma, which are in the Library of Congress.

Boulanger taught at the American Conservatory of Music in Fontainebleau, France. Her students included the likes of Aaron Copland, Elliott Carter and Philip Glass. Talma, too, was a faithful student, traveling to the conservatory each summer from 1926 to 1939. She was an instructor in

solfege, a method of teaching music theory, for three of those years.

"They had a very close relationship," Dorsey says. "Louise — an atheist — converted to Catholicism because of Nadia. She also became her goddaughter."

But something happened in 1942 that caused the women to have a falling out. Talma continued to write Boulanger but received no replies.

The following year, Talma went to the MacDowell Colony for artists in New Hampshire instead of traveling to France to study at the conservatory.

"This ended up being a boon for her," Dorsey says. "This is where she wrote most of her music. She said in an interview it saved her life. It was her refuge, her creative place."

In 1946 and 1947, she earned two Guggenheim awards for her work. Sometime after these awards, Boulanger picked up the correspondence again.

Talma did eventually return to Fontainebleau but she also continued her work at the MacDowell Colony. She wrote solo piano pieces, chamber music and orchestral music as well as a full-length opera created with Thornton Wilder.

In addition to working on a book, Dorsey has organized concerts with Talma's works at the Library of Congress, the University of Maryland and UNCG.

"It was a success story of what a sabbatical should be," she says.



PHOTOGRAPH BY BERNICE B. PERRY

Composer Louise Talma (1906-1996) worked on her oratorio "The Divine Flame" at the MacDowell Colony in 1947, while on her first Guggenheim Fellowship. A photo of Nadia Boulanger sits on the mantel.

## Small size, big plans

YOU'VE HEARD IT SAID not to sweat the small stuff. But, ah, the small stuff has such possibilities — especially at UNGC's Center for Research Excellence in Nanobiosciences.

Dr. Yousef Haik, the director of the center, is excited about the big implications this science of the miniscule offers. "Since I encountered the first nanotechnology project for Johnson & Johnson in 1996, I realized the great potential this technology can bring to solve health and environmental challenges," he says.

In 1996, Haik and his team used the principles of nanobioscience to activate arthritis medicine in the white blood cells of patients, using magnetic bead proteins, a magnet and a beam of light. "That was the entry level for me in this nanoworld," he says.

The Center for Research Excellence in Nanobiosciences opened in September 2007 with the mission to develop innovative and commercially viable nanobiotechnology products. "The ultimate goal of the center is to bring a focal point to the Triad to be recognized for its contribution in nanobioscience," Haik says.

Haik hopes the fusion of science and businesses might one day mean a cure for cancer, a home test to indicate the presence of peanut products or byproducts in food, dramatically improved disease detection, an allergy screening that uses saliva — not blood — to make a diagnosis, to name a few of the possibilities.

"If the center is able to create start-ups — even one or two — every few years, this is a measure of success."

## Building a better mousetrap

AT WHAT MOMENT does our DNA go from "normal" and healthy to genetic mutation? What role do our diets and the environment play in those changes?

Dr. Norman Chiu, assistant professor of chemistry and biochemistry, is trying to answer these questions. "All it takes to have some diseases — including cancer — is one single DNA base mutation."

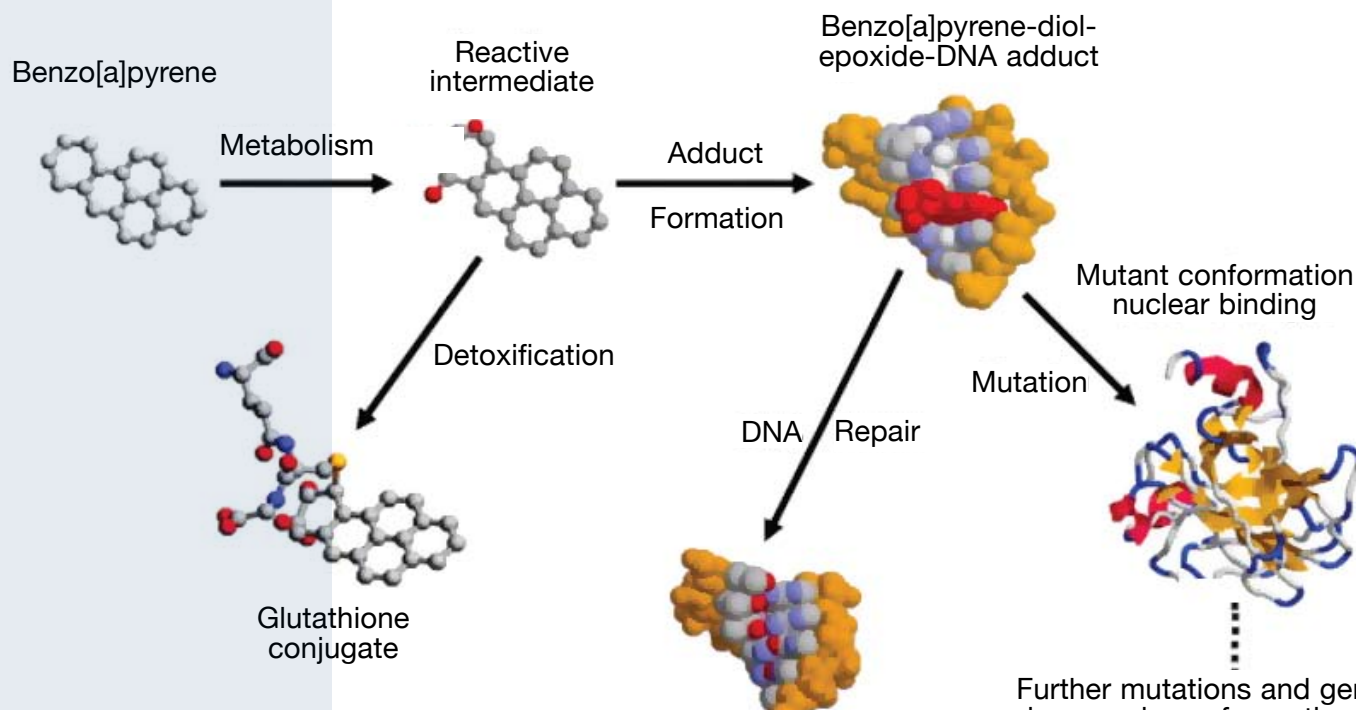
These changes can be caused by carcinogens (cancer-causing chemicals) and are found in more than just cigarettes. They are present in gasoline fumes, an overcooked steak, asbestos and asphalt fumes — just to name a few. Chiu wants to know how DNA modifications can eventually cause cancer diseases. "The relationships between environmental factors and genetic modifications have not been well established," he says.

Chiu's goal is to develop a universal method for monitoring microscopic changes in DNA. "These small changes are not easy to detect," he says. "My research group is focused on the development of new analytical methods for measuring various genetic modifications in the human genome." He hopes to make improvements to an analytical technique called mass spectrometry, which helps to analyze biomolecules such as DNA and proteins with higher accuracy and lower limit of detection.

Chiu is no stranger to the many puzzles entwined in DNA. His experience includes working with the co-founder of the Human Genome Project, Dr. Charles R. Cantor. "I have been working with DNA and the human genome for over 10 years and I find this research project particularly challenging," he adds.

Chiu is not alone on his quest for answers. He is working with former colleague Dr. Paul Vouros from Northeastern University in Boston and Dr. Bakhos Tannous from the Harvard Medical School.

As better methodology is established and answers replace the many questions, the day of decreased disease and more treatment options becomes a real possibility. "We can probably stop the disease in the first place," Chiu says. "That would be the best possible outcome a long, long way down the road."





## Orthodox thinking

Senior Research Excellence Award winner **Dr. Derek Krueger** has spent more than 20 years studying Eastern Orthodox Christianity. His current research centers on Christianity in the Byzantine Empire (324 AD to 1453 AD) and the role that ritual played in the formation of ideas about self. He is also working on other projects related to gender, sexuality and monastic friendship. Krueger joined the faculty in 1991 after completing his PhD at Princeton University. He heads the Department of Religious Studies and is on research assignment until fall 2008, funded in part by the National Endowment for the Humanities.

**AS FAR AS THE EAST IS FROM THE WEST:** I have long been fascinated by the ancient and medieval cultures of the Eastern Mediterranean, what's now known as Greece, Turkey, Syria, Lebanon, Israel, Palestine and Egypt. I realized that the study of Eastern Orthodox Christianity had been shortchanged and the field was wide open. The West had Augustine's "Confessions" to explain ideas about the Christian self, but the East had no equivalent. I took the road less traveled. I am a historian of religion; I study how religions change and grow.

**INTERIOR MENTAL FURNITURE:** Religious systems provide ways for people to understand themselves, to know who they are in relation to the divine, to each other, to society and to the state. The forms of Christianity practiced in Byzantium offered distinct ways of thinking about the self, of "knowing" who you were. Two important tools for self-understanding were the Bible and the ritual life of the church. I want to understand the role of religious life in arranging people's interior mental furniture.

**BIBLICAL MODELS:** For centuries, the Bible has provided models for the Christian life. Byzantine Christians turned to heroes and saints of the Bible like David, who became a model of humility; Job, a model of endurance; Abraham, a model for hospitality; and so forth. Their stories helped define a code of ethics and a way for Christians to gauge their moral failings.

**TIME TRAVEL:** Participating in Christian rituals like communion and marking the holidays of the Christian calendar put a person back in time as if they were reliving Christ's last days on earth. Palm Sunday inserted the participant with Jesus at the gates of Jerusalem; Good Friday placed a person at the crucifixion. Remembering historical moments through ritual brought the events to life in the present and served as a cause for reflection. Ritual reenactment helped to define participants in relation to the biblical story.

**ALL THE SENSES:** Orthodox Christianity engages all the senses. In the Byzantine Church, worshipers heard hymns, saw icons, touched relics, smelled incense and tasted the Eucharistic bread and wine. My research goes past studying texts alone to bring in art, architecture and music, to understand how the environment for such rituals formed the entirety of the person. The liturgy transported Christians to heaven while on earth.

Visual experience plays heavily in my research. Scenes from the Bible covered the walls of Byzantine churches, surrounding people with the sacred stories. When Byzantine Christians approached the Eucharist, they sang the psalm "Taste and see that the Lord is good." Some communion plates depicted the Last Supper, tying the ritual reenactment to the historical event.

A new hymn for Maundy Thursday introduced in the sixth century called on Christians not to be like Judas, but rather to identify with the thief who was crucified next to Christ. Byzantine ritual tended to encourage people to understand themselves as savable sinners.

**BRINGING IT HOME:** When I teach the history of Christianity, I am not teaching just facts, but a thought process. I want my students to learn ways of thinking about people who are different from themselves that are both critical and appreciative, to prepare them for the diverse world we live in. During the past fall, I visited medieval painted churches in Greece, Bulgaria and Turkey to think more about how religious spaces influenced worshipers to create a sense of their place in the world. I let my students in on what I am researching so they can be a part of it.



## Tracing the effects of trace elements

*Research Excellence Award winner Dr. Keith Erikson researches the effects of trace element deficiencies on the brain and how too much of these elements can leave the central nervous system vulnerable to toxicity and disease. Specifically, Erikson studies the trace elements manganese and iron. By understanding how these deficiencies put people at risk for neurodegenerative disease, Erikson's work could improve the lives of people suffering from Parkinson's and other diseases that impact the central nervous system. He earned his PhD from Pennsylvania State University in 2000. Erikson joined the faculty in August 2003 and is an assistant professor in the Department of Nutrition.*

**THE TRACE ELEMENT CONUNDRUM:** My research with trace elements began with my interest in nutrition. The lack of trace elements causes deficiencies and the over-abundance leads to toxicity. The most common trace nutritional deficiency in people is iron — the World Health Organization estimates that nearly 2 billion people suffer from iron deficiency.

According to data from the fourth National Health and Nutrition Examination Survey, iron deficiency is not a public health issue to the extent that it is in developing countries, but the percentage of toddlers, adolescents and child-bearing-aged women affected by iron deficiency remain higher than the U.S. government's Healthy People 2010 objectives.

**POPULATIONS VULNERABLE TO MANGANESE NEUROTOXICITY:** Manganese neurotoxicity most commonly occurs in workers who have been chronically exposed to aerosols or dust that contain extremely high levels of manganese. Currently, the focus on health consequences of airborne manganese respiration has increased due to the replacement of lead with methylcyclopentadienyl manganese tricarbonyl (MMT) as an anti-knock agent in gasoline.

Some occupations such as steel-making and welding have been known to cause manganese neurotoxicity due to the high concentration of the metal in fumes and dust associated with the work. Because manganese is a component of coated welding rods and steel alloys, both the welding and the steel manufacturing industry provide major occupational risks. These increased exposures to manganese have been linked with irritability, anxiety, aggressiveness and other behaviors associated with GABA (a major inhibitory neurotransmitter in the brain) neurobiology.

Environmental exposures to pesticides and toxic metals, including manganese, have been implicated in the development of Idiopathic Parkinson's disease (IPD), although not directly linked to it. Paraquat is a pesticide that is believed to be connected to Parkinson's by its targeting of dopamine (hormone and neurotransmitter) producing cells. IPD represents a common neurodegenerative disorder affecting individuals aged 65 or older. Since this age group has increased 12 percent in the past decade and is projected to increase to 20 percent by the year 2030, it is likely that the incidence rate for IPD will dramatically increase.

**BEHAVIOR AND DISEASE:** A recent study suggests that high levels of manganese in drinking water are associated with reduced intellectual function in children, likely due to altered neurochemistry. Too much manganese has proven to be toxic in humans and can be displayed as Parkinson-like symptoms. These symptoms point to the lack of dopamine which is connected to Parkinson's disease. Conversely too much dopamine can lead to schizophrenia. My interest is in these neurochemical changes once it gets into the human brain.

Dopamine is centered in the GABA regions of the body, one of which is the brain area. Researchers have started looking at the effect of manganese accumulation in the gamma region. I have also completed a study using rodents that were exposed to a drug that blocks the dopamine transporter, thereby prohibiting the accumulation of manganese cells.

**UNKNOWN CONSEQUENCES:** Although the levels of manganese in urban areas do not exceed tolerable levels set by Canada and the United States where MMT is used, it still is unknown what neurotoxic effects may emerge due to decades of chronic low-level manganese exposure. This is an obvious concern in light of the risk of iron deficiency causing increased brain manganese concentrations. 📍

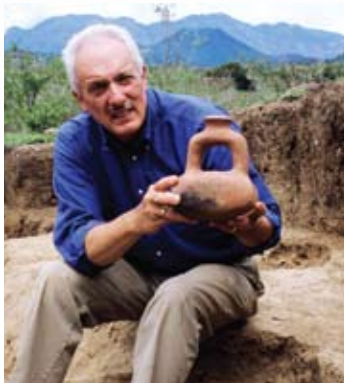




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TWO BURIAL PITS in western Mexico show the remains of skeletons both intact and broken apart as well as various artifacts interred with them. Dr. Joseph Mountjoy thinks that when this culture buried their dead, they waited for the rainy season to pass and then interred the bodies ceremoniously en masse once a year. Thus, some of the bodies were in worse shape than others — such as the skull with the mandible placed over the forehead and right eye pictured on the cover of this magazine.



NATHAN MOUNTJOY

Dr. Joseph Mountjoy had moved on. It had been years — decades, really — since his dissertation on artifacts found on the coast of Nayarit in West Mexico.

In the intervening years he shifted the focus of his studies, concentrating on ancient rock art. And there he was in Jalisco, about 75 miles east of Nayarit, recording petroglyphs, when a native guide told him about a rancher in the area who had uncovered some pots and bones on his acreage.

“I didn’t even want to go see the collection,” Mountjoy remembers, “because I was trying to finish this other study, and people find bones and pots pretty frequently in Mexico.”

But one hot summer afternoon, when he had a couple of hours to spare, Mountjoy went with the guide to the cattle ranch of Juan Jose de la Torre.

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**BY BRIAN CLAREY**  
**PHOTOS BY DR. JOSEPH MOUNTJOY**



The house was set back a couple of miles off the road, and Mountjoy and de la Torre passed each other on the dirt path. Mountjoy identified himself as an archaeologist in fluent Spanish.

"I've been looking for an archaeologist for months," de la Torre said.

"If we had been ten minutes later," Mountjoy says, "if we had found another petroglyph...."

What followed was one of the most significant finds in Mexican history — evidence of the first sedentary agricultural people in the area, dating back to 800 B.C. With it also came the suggestion of an Andean influence that could only have come from 1,800 miles away along with evidence of a primitive drug trade between far-flung cultures.

"At that moment," he says, "the rock art project stopped."

Months earlier, as de la Torre's bulldozer began pulling up pots and bones, he stopped what he was doing and went to find an archaeologist.

"This guy's one in a million, I tell ya," Mountjoy says.

When none could be found, de la Torre enlisted his wife and children to pull out the artifacts that had been exposed.

"He had them on shelves in a room in his ranch," Mountjoy remembers, "and the pots are just sort of lined up. Many of them are broken because of the bulldozer, and there are like two bags of human bones."

His body electrified with recognition the moment he laid eyes on this array.

"I had seen artifacts like this before," he says. "I had discovered the earliest agricultural site in the state of Nayarit — we're talking about a site I found in 1968. It's the same basic culture."

"He had, all told, about 17 pots and he had two figurines. The figurines were a dead giveaway because they had a number of features the other figurines had."

Only these were older. Much older.

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The figurines — a large female and a smaller male — caught his eye.

"All of the early figurines of the culture are nude," Mountjoy says. "Later ones have representations of cloaks, belts, all sorts of things. They made clothing, jewelry, [I found] one with hair for a braid. I tell people these are like Barbie dolls. The pottery was based on squash or gourd forms, characteristic of early pottery in Mexico and Nayarit; they had a way of using zoned decoration and they used a kind of pale pink paint."

He rinsed dirt and debris from de la Torre's find, studied the pieces, took pictures. He could scarcely believe it.

"I said, 'I think National Geographic's gonna be interested in this.'"



They were.

Mountjoy's first grant from the National Geographic Society came in 2000, and on his very next visit to de la Torre's ranch, on cursory examination, he pulled out 11 pieces of pottery from what he eventually deduced to be the doorway of a burial tomb. Over time he would excavate more than a hundred others from this one site.

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Hunting gear. Butchering tools. Cooking utensils. Jewelry. Water bottles. Whole, roasted freshwater turtles.

"I'm sure they thought of this community for the dead somewhat similarly to the way they thought of the community for the living," Mountjoy says. "The key to understanding the culture in this area is the contrast between the rainy season and the dry season. ... When the rains come, the earth turns from a dry, parched, brown, dusty place to lush, green vegetation within a stretch of two to three weeks. Meso-American people liken this to a snake shedding its skin. A singing shaman, at the end of the dry season, goes and stands up on a high place and sings his song to the sun, asking the sun to stop burning the earth and allow the rains to come. Water, above all else, is at *continued on page 14*

**OPPOSITE PAGE**, while Mountjoy's team excavated the site, exposed bones and offerings were protected from the sun with plastic tubs. **ABOVE**, the Mascota Valley as seen from the burial site.

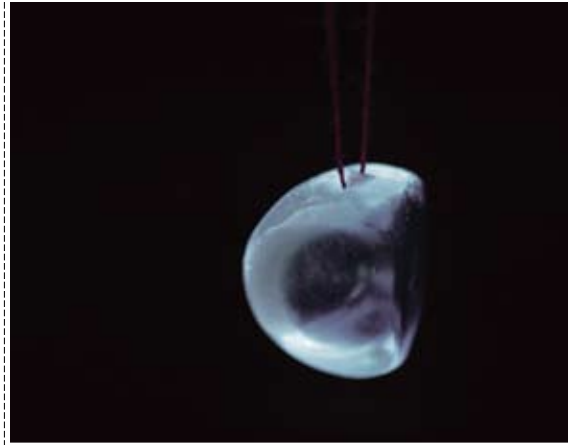
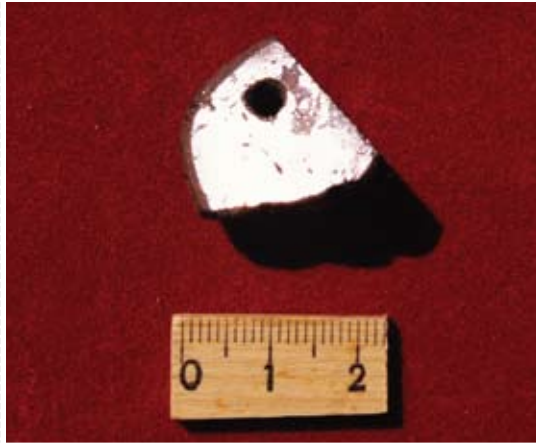




- >> A grouping of four figurines — possibly representing gods — and three bottles and a pot arranged as they were found at the entrance to the main burial pit at the cemetery.
- >> A small grinding stone with animal heads, probably for grinding area stimulants or hallucinogens into powder for snuffing.

- >> Figurine of a deity (seen in the above grouping) with characteristics of the much later Quetzalcoatl and Xipe gods of the Aztecs. The Aztec gods came about 2,000 years after this figurine was made.

- >> Two nested pots used in the “water cover” method of cooking beans in high altitudes. Mascota is 4,000 feet above sea level.
- >> An Andean-style pot. Since the Andes are 1,800 miles away from this site, this pot and others like it are a clue that far-flung trade may have happened much earlier than previously thought.
- >> Three figurines of women in mourning, two with dead infants on their laps. The group was found above the burial of an adolescent female and infant.
- >> Partially hollow figurine with holes in the nose and ears for attaching ornaments. It possibly represents a singing shaman.



- >> An Andean-style pot, the only vessel of its kind ever reported from Mexico. The tubes represent male and female forms. Such vessels may have been used in marriage ceremonies — the groom drinking from one tube and the bride from the other.
- >> Atlatl dart points of obsidian, probably for hunting deer. The neutron activation analysis of obsidian indicates that about 90 percent of the pieces tested come from a source in the mountains of southern Nayarit, linking the El Pantano people to the area where Mountjoy first discovered evidence of this culture.

- >> Iron pyrite pendant, with surface polished. The pyrite and jadeite jewelry found at the site indicate trade with other cultures because there is no evidence it was made locally. Mountjoy thinks the El Pantano people were trading local plant materials for jewelry and other items.
- >> Jadeite jewelry, a symbol of fertility.
- >> Hollow animal pot — possibly a dog — with a human-like face and holes in the nose and ears for attaching ornaments. The local Huichol Indians believe the dog carries the soul of the deceased across the waters into the other world.

- >> Quartz pendant, showing faceting dating more than 2,000 years before faceting was used for jewelry in Europe.
- >> Iron pyrite jewelry. When polished, pyrite jewelry looks like silver.



**ABOVE,** Joseph Mountjoy excavates an “original pair” set of figurines, seen in the photo at right. The figures — Father Sun and Mother Earth with a child representing humanity on her lap — are something like the concept of Adam and Eve, the original pair who started it all.

**RIGHT,** Nathan Mountjoy, Joseph’s son, painstakingly excavates one of the burial pits. A diagram listing the findings appears below in Spanish.

the center of their thoughts. If the rains don’t come, it would be an absolute calamity for these people.”

Mountjoy surmises that the community, perhaps 150 strong, would hold on to their dead through the rainy season, when the ground was too muddy for burials, and inter them ceremoniously en masse once a year.

“I think there’s some ethnographic backing for this,” Mountjoy says. “They thought of this ceremony as a planting ceremony — by planting the bones of the dead, they were participating in the cycle of the living society. It was an act of regeneration.”

>>

Mountjoy’s lab is on the third floor of the Graham Building on UNCG’s campus. He’s been with the university since the fall of 1969.

Maps of Mexico hang on the walls, along with a chart of arrowheads found in North Carolina. There’s a guitar case underneath a long table and an ancient personal computer — a Micron — atop it. Shelves that line the long, narrow room teem with cases of slides, each brimming with hundreds of images of artifacts and bones. All are from the sites in Jalisco, and each provides a clue to the way the people lived.

Burial sites are more revealing, archaeologically speaking, than actual village sites — villages are abandoned, looted, wiped away. Burial sites from this period are like time capsules, snapshots, frozen records of the way things were.

“This is not a ‘civilization’ in world-wide terms,” Mountjoy says. “This is a Neolithic farming society where the only status difference we can see are between adults versus children or a person with special skills. One could achieve a certain status because of abilities during life.”

Potters, he says, were buried with their equipment. A flint knapper was interred with a bag of stone flakes.

Jewelry, he says, hinted at a most startling possibility.

“The jewelry was in two forms,” he says, “iron pyrite, which looks like silver when polished, and jadeite or similar green stones, a superb symbol of fertility. I think all of the jewelry was imported — traded for a very specific local product.”

The jewelry, and the pottery as well, is similar to pieces found near Peru, some 1,800 miles away. One artifact, a cask with two tubes and a spout, Mountjoy calls “typically Andean” in style. And he also realized immediately upon seeing it that this piece of pottery, influenced by cultures a continent away, had no business in the mountain valleys of western Mexico.

“There is the possibility that some Andean people came into this area,” he says, “lived here, and died here. If we can prove that, it will be sensational.”

The community, he says, was a wealthy one.

“The thing that allowed them to acquire these valuable objects from a long way away is that there were these exotic plant resources that they had that were easily available to any adult who wanted to go and get them.”

There was — and still is — wild oregano, a topical anesthesia; “flesh of the gods” hallucinogenic mushrooms; a type of tuber the locals call “peyote;” and agave lechuguilla.

“Probably several more,” Mountjoy says. “We can’t be sure from our modern-day perspective what plants were highly desirable. [But] there is nothing else logically in this area that would be of such high value and so easy to transport.”

>>

Since meeting Juan Jose de la Torre in 1999, Mountjoy has secured three grants from the National Geographic Society and one from UNCG. He has registered and studied 430 archaeological sites in this general area, and the base of knowledge, he says, has increased tremendously. All due to the bones uncovered by Juan Jose de la Torre’s bulldozer.

And Mountjoy almost missed it.

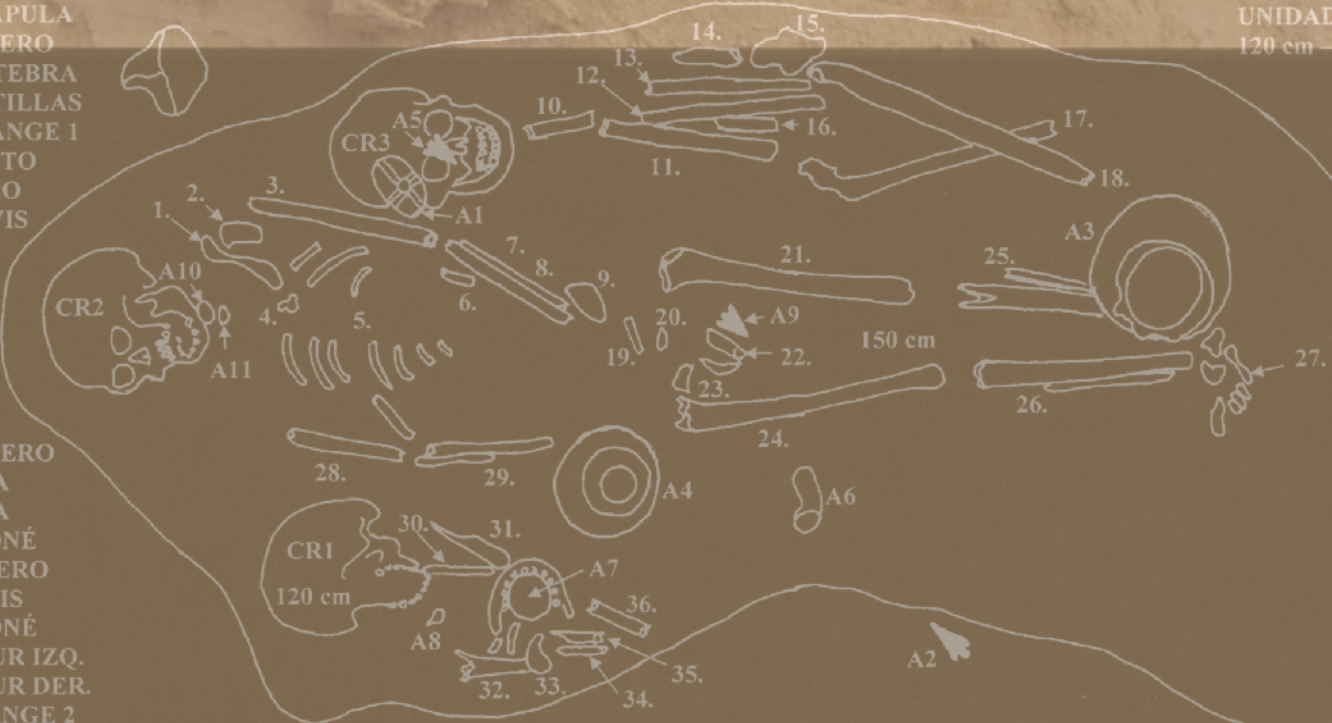
“For this area,” he says, “it’s almost like looking for the source of the Nile. We now know that this valley was the absolute center of this culture. I’d been looking for this stuff since I first found (evidence of) it in 1968. It is spectacular. I mean, I will never ever find a site so special if I live to be 90. It’s just amazing.”





EL PANTANO  
POZO #24  
UNIDAD #3  
120 cm - 150 cm

1. CLAVÍCULA
2. ESCÁPULA
3. HÚMERO
4. VÉRTEBRA
5. COSTILLAS
6. FALANGE 1
7. CÚBITO
8. RÁDIO
9. PELVIS



10. HÚMERO
11. TIBIA
12. TIBIA
13. PERONÉ
14. HÚMERO
15. PELVIS
16. PERONÉ
17. FÉMUR IZQ.
18. FÉMUR DER.
19. FALANGE 2
20. FALANGE 3
21. FÉMUR
22. FALANGE
23. PELVIS
24. FÉMUR
25. TIBIA/ PERONÉ
26. TIBIA/ PERONÉ
27. HUESOS DEL PIE
28. HÚMERO
29. CÚBITO
30. RÁDIO
31. TIBIA
32. RÁDIO
33. TIBIA
34. RÁDIO
35. TIBIA
36. RÁDIO

- |                             |                        |
|-----------------------------|------------------------|
| A-1 PIEDRA CON DISEÑO SOLAR | A-7 PIEDRA/MARTILLO    |
| A-2 PUNTA OBSIDIANA         | A-8 LASCA OBSIDIANA    |
| A-3 OLLA GRANDE             | A-9 PUNTA OBSIDIANA    |
| A-4 OLLA CHICA              | A-10 DOBLETE DE PIRITA |
| A-5 PUNTA OBSIDIANA         | A-11 DOBLETE DE PIRITA |
| A-6 ASTA DE VENADO          |                        |

CRÁNEO 1 - CR1 PROBABLE MUJER. TIENE EL 3<sup>ER</sup> MOLAR ERUPTIDA PERO SIN DESGASTE; 18 - 25 AÑOS.

TIRO/



PRIZED

IF

# POSSESSIONS

BY MARIA JOHNSON

PHOTOGRAPHY BY DAVID WILSON,  
STAFF PHOTOGRAPHER

HEATHER HOLIAN DOESN'T WEAR A LOT OF jewelry. She does, however, spend a lot of time studying the role of jewelry in art — particularly Renaissance art.

Last summer, Dr. Holian, an assistant professor of art history, traveled to Europe to examine jewelry in portraits of Medici women first-hand.

The Medici family ruled the Tuscany region of Italy during the second half of the Renaissance and beyond. During most of their reign, they were the country's most powerful family, and they were major patrons of the arts.

Michelangelo lived with Medicis when he was young, and the family commissioned Donatello's sculpture of David, which now stands in the Bargello National Museum in Florence.

"It's hard to go more than 20 feet in Florence without encountering a building, a painting, a sculpture, a chapel — something that the Medicis commissioned," Holian says. "They really put their stamp on that city."

The Medici patriarchs also stamped their women, Holian believes, with diamonds and rubies.

"I think the women were being marked in a proprietary way," Holian says. "In some ways, it was about being another Medici item."

Holian's interest in the symbolism of jewelry was piqued about five years ago, when she was teaching part-time in UNCG's continuing education division and working her way up the academic ladder. A colleague urged her to join a panel about works in North Carolina art collections.

Holian learned the North Carolina Museum of Art in Raleigh owned a Renaissance portrait painted by an artist she had written about in her dissertation. At that time, it had never been displayed.

Holian drove to Raleigh to see the three-quarter length painting of Lucrezia de' Medici, who holds a brooch set with a table-cut diamond and a table-cut ruby, along with a pearl to symbolize purity. Her headdress is studded with rubies. She wears a drop-waist belt studded with diamonds and more rubies and pearls.

"The color was unbelievable," says Holian. "The rubies just leapt off the panel at me."

The painter had emphasized the jewelry by placing it front and center with Lucrezia's hands leading the viewer's eye to the pieces, Holian said. He also had used color to highlight the jewelry, which pops out against Lucrezia's black dress and the gray background.

She checked the internet and books to find other portraits of Medici women. They were loaded with diamonds and rubies, too.



"I started thinking about diamonds and rubies. They're found in a lot of portraits of Medici women. It's almost exclusively diamonds and rubies," she says.

But why these stones?

Diamonds weren't the most valuable gem during the Renaissance — they ranked third behind rubies and emeralds — but the diamond ring was a symbol of the Medici family, perhaps because diamonds represented eternity. The family's motto was *semper*, or always.

Holian believes that Lucrezia's father, Cosimo I, added rubies to the family jewelry for several reasons. One was to mark his ascent to duke. Red was a royal color, and the ruby was considered the "lord of stones."

Also, the ruby was associated with the astrological sign Capricorn, and Cosimo — like Augustus, the first emperor of the Roman Empire — was a Capricorn ascendant. "Cosimo made the most of the connection between himself and Augustus," says Holian.

Another influence might have been the Hapsburg family, who put the Medicis in power and supported their initial rule. They favored diamonds and rubies, and Holian believes that Cosimo might have been imitating the most powerful family in Europe by decking his women in the same stones.

"Cosimo was trying to bolster himself and legitimize himself through every means possible," she says.

Holian wanted to do more research on the Medici and Hapsburg women. That meant going to Italy, home of the Medicis, and to Austria, where a branch of the Hapsburgs lived. She assembled travel money from a New Faculty Grant, a Kohler Fund Award, a UNCG Summer Excellence Research Award and funding from the UNCG College of Arts and Sciences.

For 10 weeks, Holian trekked through museums, libraries and villas. She viewed about 150 Medici portraits spanning the family's ducal and grand ducal rule from 1532 to 1743.

She also inspected about 120 Hapsburg portraits, many of them at Schloss Ambras, a former Hapsburg palace in Innsbruck.

In Italy, she spent much time at the Uffizi Gallery and the Pitti Palace in Florence. She also ventured out, under the Tuscan sun, to rural areas where portraits still hung in old Medici homes.

Once, she and her husband Dave, an associate professor of political science at UNCG, spent half a day getting to a former Medici palace. The trip required an hour-long train ride, a 30-minute bus ride on winding roads, and a 20-minute uphill walk along a country road with no sidewalk.

When the Holians arrived, their female escort, who wore four-inch spike heels, was unenthusiastic about showing the paintings. She seemed more interested in the small TV she carried around.

"It had this giant antenna on it, and I was afraid that she was going to bang into a painting," says Holian. "It was one of those moments in research."

Another moment occurred in the Uffizi Gallery, where Holian and a staffer sorted through portraits in storage. Working together, they moved 8-foot paintings, which leaned in stacks against the walls. Holian stood eye-to-eye with the Medicis.

She left the gallery covered in dust and drenched in awe.

"I'd never seen portraits like that," she says. "I really felt the presence of these people."

Holian's research strengthened her view that the Medicis marked their women with diamonds and rubies in state portraits, which were often painted at important times in the women's lives. The portrait of Lucrezia in the North Carolina Museum of Art was painted when she was about to move from Florence to her husband's hometown.

Christine of Lorraine, a French noblewoman, was painted after she married into the Medici family. She wears diamonds and rubies in a portrait that hangs in the Uffizi.

"She's wearing what the Medicis told her to wear," says Holian. "They

want to make sure everyone knows she's allied with the Medicis now. We don't know of any Medici women wearing the jewels they came into their marriage with."

Women such as Christine were valued for two things: the money they brought to the union and their ability to produce heirs. Sometimes, the Medici women were painted with their children, but female children rarely wore diamonds and rubies. The jewels usually appeared on women after they were engaged, and the adornment became more pronounced after marriage. Sometimes, the stones were quite large.

Holian cites a portrait of another Medici woman, Maria Maddalena of Austria, who wears a 138-carat diamond about the size of an egg. The stone hangs from a gold stem attached to her headdress.

"It makes you wonder how she held her head up straight," says Holian.

The Medici women probably wore heavy jewelry only for portraits and for state functions. Aside from identifying the women as Medicis, the gems represented ready cash. The jewelry could be liquidated in case of war.

The message would have been clear to dignitaries who saw the portraits in Medici palaces or villas. Sometimes, the portraits were sent as gifts to foreign courts.

"One thing that Cosimo did very well was use portraits as propaganda," Holian says. "The great motivation of sending a portrait would be to show the power and wealth of the Medicis."

Medici men rarely wore jewelry in portraits, though they were sometimes pictured with crowns encrusted with diamonds, rubies and emeralds. The presence of emeralds is understandable, Holian says. Emeralds worn near the brain were supposed to impart wisdom to the wearer.

"The proximity was important," she says. "Wearing an emerald around your ankle wasn't going to make you smarter."

Some scholars have asked Holian how she can be sure the Medicis used actual diamonds and rubies instead of, say, paste stones and garnets. Few pieces of Renaissance jewelry survive intact. Most were dismantled, and the gems were re-set. Holian is confident that the Medicis wore real stones because inventories of the family jewels are dominated by references to diamonds and rubies. Also, she believes the Medicis would have used the more expensive gems because they could have.


"These courts were not going to be putting women in paste stones for state portraits. They were going to be putting them in their most expensive, impressive sets of jewelry," she says.

Holian is not the first scholar to examine the jewelry of the Medici women, but she says she has studied the subject in more depth than others. She hopes to return to Europe to expand her research. She would like to look at other ruling families. Did they mark their women with jewelry? Did that change over time? How was that reflected in portraits?

Drawing on her research, Holian has written an article about the Medicis that will appear later this year in the journal *Mediterranean Studies*. In April, she presented a paper at the annual meeting of the Renaissance Society of America. Her subject: the appearance of the grand ducal crown in portraits of Medici women.

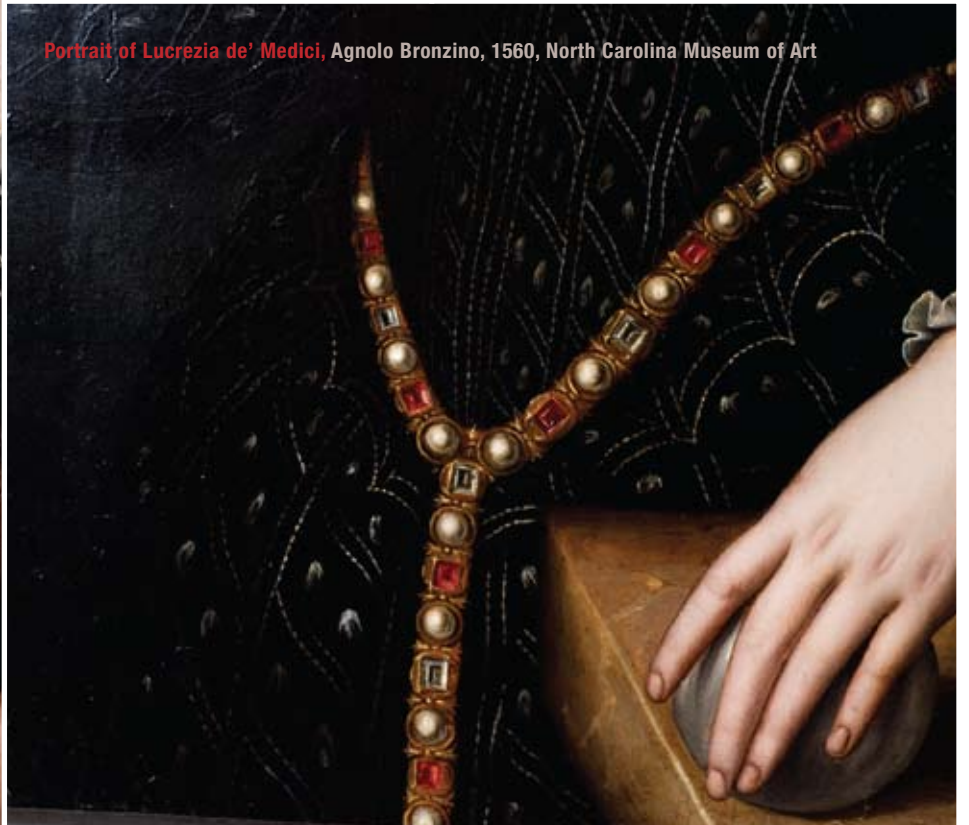
Though her ancestry is German and Native American, Holian is an Italiophile by study and by spirit. She gets homesick for Florence. Her new cat's name is Leonardo. Her home office is packed with books and papers about the Medici women.

"It sounds corny, maybe, but I think people who work on the lives of historical individuals would understand this — I feel I know these people, that these are people I would meet for coffee or something," she says.

"I love the idea of getting to know what these women's lives were like in the Renaissance — how they were limited, but also what they had the opportunity to achieve. It's exciting to me to learn about these women on a personal level." 



Portrait of Lucrezia de' Medici, Agnolo Bronzino, 1560, North Carolina Museum of Art





the **life** of the **mind**

*Holding off symptoms of  
Alzheimer's and dementia*

BY KELLI RUSH  
PHOTOGRAPHY BY DAVID WILSON, STAFF PHOTOGRAPHER



Mrs. S. believes that a thief has broken into her house and stolen a cherished piece of china. Mr. M., a loving husband of 40 years, has recently begun to follow his wife menacingly around the house. Mr. B., a former landscaper, becomes physically aggressive when his caregiver tries to help him dress.

All three people show symptoms of either dementia or Alzheimer's disease, symptoms so common to these diagnoses that they're often accepted as an inevitable part of a progressive decline. But Dr. Linda Buettner, a professor of gerontology and therapeutic recreation, doubts that assessment. She is searching for — and has found — ways to treat these symptoms and, in many cases, stave them off.

"One of the big problems in advanced Alzheimer's and dementia is that, commonly, people can't explain to you what they want and what they need. And that converts into behavior problems," she says. "We think, 'Oh, that person won't stay in the room, they're pushing a chair away, they're angry.' But, in fact, they're trying to meet an unmet need. If we could just pinpoint that unmet need ..."

Buettner and researchers at Pennsylvania State University are working on a way to meet some of those needs — by giving patients a chance to do what they love and letting them respond. This NIH-funded project, now in its third year, relies in part on a questionnaire filled out by a spouse or child that details a patient's past personality. Patients then engage in activities they like, based on their talents, passions and daily habits. A former homemaker might get a chance to cook; a retired coach might play sports or exercise; an extrovert might greet guests at a party; a creative person might decorate the party room.

Patients are videotaped in their activities so that their level of engagement can be measured objectively. Their faces are studied and

coded. "We're looking at how involved they are; are they just sleeping through this or are they actually doing it?" Buettner says. "It boils down to the fact that these people can't verbalize. We have to measure, and this is one of the ways." The results are compared with those of a control group to help document the project's level of success.

#### A CASE FOR RECREATION THERAPY

Buettner is motivated in part by stories of individual triumph. She recalls a patient named Merle, a healthy, astute 92-year-old who had always lived in the upstate New York farmhouse where she was born — until the day she fell and had to undergo hip-replacement surgery. Afterward, while in hospital rehab, Merle began to show signs of delirium, seeing tiny people on the ceiling sweeping with brooms. She was discharged to a nursing home with the injunction that, because of her mental state — which was mistakenly considered dementia — she "wasn't a rehab candidate."

At the urging of her family, the nursing home's rehab team began to try again. A therapist asked Merle about her interests, and Merle revealed that she had always wanted to learn to tap dance but had been too poor as a child to take lessons.

Tap shoes were promptly purchased, and the lessons began — from the bed. Merle began to practice basic tapping twice each day while sitting on the bed's edge, where she could concentrate safely. Within days,



Tap shoes were promptly purchased, and the lessons began — from the bed. Merle began to practice basic tapping twice each day while sitting on the bed's edge, where she could concentrate safely. Within days, the recreation therapist began to help Merle take steps with her walker as she tapped.

the recreation therapist began to help Merle take steps with her walker as she tapped. An occupational therapist also began to help her with hygiene independence. Within two weeks, Merle was walking everywhere in her walker and could do most of her own personal care. She proudly danced in a local seniors' talent show and was featured in the nursing home's newspaper.

"This case study is personally important for me," Buettner says. "Merle was my grandmother, and because of this recreation therapist, she was able to live the life we all wanted for her, until she died at age 95."

The story is also important on another level. It directly ties to Buettner's work on the ARROW Initiative (Active Recreational Resources for Optimal Wellness). With a grant proposal in to the Retirement Research Foundation, Buettner hopes to establish training for nursing home recreation therapists to prepare them for federal changes coming in 2009. Those changes will include coverage for recreational therapy for Medicare patients — those who may have been hospitalized for strokes or hip fractures and need rehabilitation.

Ultimately, Buettner would like to see the training expand to other universities and become a national model. UNCG would become the national headquarters.

#### THINKING AHEAD

For those who do have Alzheimer's, the diagnosis can be psychologically devastating. "These people are like you or me," Buettner says. "They have jobs, they drive, they have kids and grandkids, and all of a sudden the rug is pulled out." Depression often sets in, and people feel out of control as caregivers seem to take over their lives.

To counteract that sense of helplessness, Buettner worked on a project funded by the Retirement Research Foundation to create a 12-week health-promotion course for new Alzheimer's patients. The goal: to keep them thinking and educate them about their own health needs.

"They studied what it means to promote your own health, what it means to have a diagnosis of Alzheimer's," Buettner says. "For the first part of the unit, people were horrified. They had no idea about the disease, the changes in the brain. The good news is, research shows you can do something about it with lifestyle changes — nutrition, exercise, home safety and driving. There are a lot of things that people can be empowered to change."

Each module of the course covered some of those things, and students had homework, tests and a course textbook.

"They also had to go home and teach their family," Buettner says. And that's a reversal of the norm. Often with Alzheimer's, it's the family rather than the patient who gets the education and support because it's presumed that the patient isn't thinking clearly.

"It becomes the person fighting with the caregiver about giving up the keys, for example. But we ask, 'Would you feel safe taking your grandchildren for a ride?' They learn there is something they can do about this — 'I can use the bus or I can buddy up with my neighbor to go to church.' It's about problem-solving," Buettner says.

An objective test of students' cognitive skills measured the course's success. Now, the curriculum has been translated into Norwegian and is being translated into Spanish. It's also being used in naturally occurring retirement communities, or NORCs, in New York City.



"It's not like we did the research and it died on the vine," Buettner says. "It's actually being translated and used all over. It's kind of neat."

### AN ACTIVE LIFE

Buettner took the winding road to her current career. She formerly coached women's soccer and men's and women's track and field at the college level. Though she had a winning record, she got burned out on being judged by that. "It seemed like there was more to life," she says.

So she took a job in upstate New York as a recreation therapist and had a chance to work with geriatric psychiatrists from Columbia University. She had found a calling. She went back to Penn State and got her doctorate in gerontology and leisure studies.

A UNCG faculty member since August, Buettner is focusing on the future. She hopes to continue her study of people with early-stage Alzheimer's in the Triad. She also plans to work with the Defense Department to apply early-stage dementia and Alzheimer's treatments to soldiers who have traumatic brain injury. In addition, she's working with three students to study animal-assisted therapy in a project that will link a local animal shelter with a nursing home. There's also her involvement in a study group being put together by Newt Gingrich and John Kerry that will map out the agenda for Alzheimer's treatment in the future. "They're looking at all aspects of the disease, early to late, and what families need to support the patient," she says.

For Buettner, the work is all about giving patients a chance to remain fulfilled. "This is what life in and out of a nursing home needs to focus on — the wishes of the older adult for an active life worth living." 🍷



# working knowledge

## Undergraduates join faculty in (re)search for new understanding

CONDUCTING RESEARCH AS AN UNDERGRADUATE CAN be a life-changing experience.

Just ask Dr. Mary Crowe, director of the Office of Undergraduate Research at UNCG. Not only has she seen undergraduate research inspire hundreds of students, she has felt its power herself as a student at Eureka College in Illinois.

Although her college didn't have a formal undergraduate research program, she found a professor at the University of Miami who studied how young lemon sharks find food. She spent three summers in the Florida Keys and even traveled to the Red Sea doing related research.

She resolved to help others have similarly rewarding experiences. When she became a faculty member she advised and taught student researchers while conducting her own research into crab behavior.

Research demands the application of lessons learned in the classroom. Crowe puts it succinctly: "Lectures are about giving answers. Research is about asking questions."

She came to her current post at UNCG in 2006 and now oversees a dizzying number and variety of projects. Last year her office evaluated proposals from 62 students and their faculty mentors and provided stipends to 42 of them. These student researchers can receive academic credit and stipends of \$1,000 or \$2,000 for projects that typically last four or eight months (one or two semesters).

Dozens more students pursued their projects with other funding,

such as a stipend from a faculty member's grant, or solely for academic credit. Some students value the experience so much that they volunteered their time to conducted research.

Despite the huge commitment of time and effort required by these projects, more than 100 students presented their work at UNCG's second Undergraduate Research Expo this year. But that's just the beginning. Crowe hopes that all academically qualified students will have the opportunity to conduct research.

Students have recently investigated substance abuse, aging honeybees, noise-induced hearing loss and activism in Sudan. They have choreographed dances, composed songs and written poems. "These research projects strengthen graduate school applications, connect students to the larger community and help students plan the next step in their careers," Crowe says.

The experience is valuable regardless of what students plan to do after graduation. Crowe points out that the skills emphasized by her office are the same skills emphasized by two high-profile business leaders who recently visited the campus — Robert McDowell, a vice president at Microsoft, and David J. Bronczek, president and CEO of FedEx Express.

"Both of them said we're looking for students who have the ability to think critically, to communicate clearly and to work independently," Crowe says. "Undergraduate research gives students an opportunity to cultivate those skills."

### a sampling of projects

Influence of intensive pine management on the diversity and abundance of Dipteran families in coastal North Carolina, David Allgood working with Dr. Matina Kalounis-Ruppell, Biology

Knee and ankle injury risk associated with anatomical malalignment, Rachael Ashworth working with Dr. Randy Schmitz, Exercise and Sports Science

Participation in inclusive recreation: Perspectives of parents with children with disabilities, Amanda Badgett working with Dr. Stuart Schleien, Recreation and Parks Management

Essential oil effects on cytochrome P4502B6, Maria Bahawdory working with Dr. Gregory Raner, Chemistry and Biochemistry

Individual differences in the development of emotion understanding among preschoolers, Jennifer Butler working with Dr. Esther Leerkes, Human Development and Family Studies

Connecting schools to student identity: The role of culture, Ryan Downing working with Dr. Beverly Faircloth, Education

How green are the hotels in Guilford County?, Peyton Eggers working with Dr. Yu-Chin Hsieh, Hospitality and Tourism Management

Children's socioemotional functioning and maternal psychopathology: The moderating role of gender and family support, Brandon Garner working with Dr. Alysia Blandon, Psychology

Synthesis and evaluation of novel ligands for use in catalysis, Hassam Hamoush working with Dr. Terry Nile, Chemistry and Biochemistry

Measuring accessibility of bicycle riders in Greensboro: Searching for a more sustainable transport system, Nicholas Harrell working with Dr. Selima Sultana, Geography

Effect of psychological status on exercise program drop-out, Maia Holmes

working with Dr. Paul Davis, Exercise and Sports Science

A visual analysis of North Carolina's immigrant communities, Jennifer Horton working with Dr. Stephen Sills, Sociology

Somatic mutation rate in mitochondrial DNA in honey bee queens, Javier Luzon working with Dr. Olav Rueppell, Biology

Developing an interactive environment for lighting design, Leah Rowland working with Dr. Tina Sarawgi, Interior Architecture

Policies and economics: Concerns of Carteret County commercial fishermen, Patrick Wood working with Dr. Susan Andreatta, Anthropology



< Cloning of the *Drosophila* CG16792 gene using a plasmid rescue technique, ZIMUZOR UGOCHUKWU working with Dr. Dennis LaJeunesse, Biology

## ingenious

Discovering a gene before your 20th birthday isn't something most sophomores do. But Zimuzor Ugochukwu, a biology major working with Dr. Dennis LaJeunesse, her undergraduate research mentor, has done just that — and more. She may have discovered a link between cells found in the digestive system of the tiny fruit fly and a rare genetic disorder.

It all began deep within the anterior mid-gut of the drosophila, the common fruit fly. The LaJeunesse lab, including Zimuzor, or Zim as she's called, is examining a region called the Superior Cupric Autonomic System or SCANS. Within the SCANS region lies a cluster of neuron-like cells called lettuce head cells. They function as pacemaker cells controlling peristalsis, or muscle contractions, in the gut. These cells express a number of genes found in nervous system tissue. One of these genes, CG16972 to be exact, was found by Zim.

"CG16972 is my baby," says Zim. "You can't directly study a person's heart or intestines so we study the fruit fly. We're trying to tag these genes and see where they go."

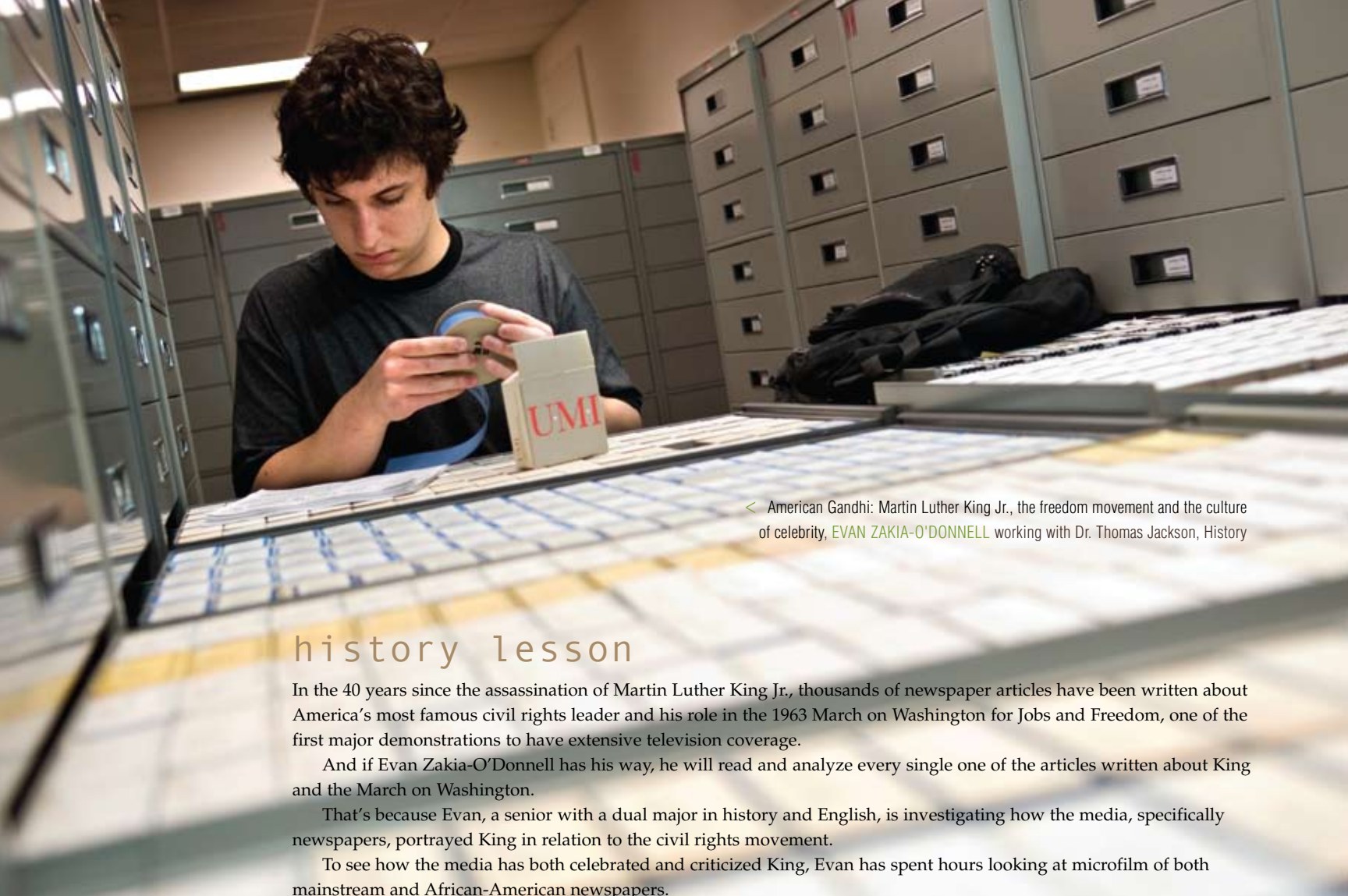
During her research, Zim says she fortuitously found another clue about "her gene": CG16972 is similar to a gene associated with Treacher Collins Syndrome, a genetic disorder that causes facial deformities.

Identifying "her" gene wasn't easy. In fact, it could have been like looking for a needle in a haystack. But clues from the Human and *Drosophila* Genome Projects helped.

After extracting DNA from fruit fly larvae, Zim sent her sample to a lab to get the DNA sequence. She then compared her drosophila DNA sequence against the fly genome which has identified all the approximately 14,000 genes in drosophila. This allowed Zim to pinpoint the location of her gene in the drosophila genome. Since more than 70 percent of fly genes have a human counterpart, she was able to find that the Treacher Collins gene, a human gene, was similar to CG16972.

"Since CG16972 encodes a protein of unknown function, this type of information will allow Zim to figure out what this gene does in the fly and perhaps how the Treacher Collins gene is required for facial development," LaJeunesse says. "It will be very interesting to see what she discovers about this gene."

Zim, who hopes to become an oncologist, says she plans to continue her genetic research while at UNCG. "I've got two more years to go. I can do a lot in that time." <



< American Gandhi: Martin Luther King Jr., the freedom movement and the culture of celebrity, EVAN ZAKIA-O'DONNELL working with Dr. Thomas Jackson, History

## history lesson

In the 40 years since the assassination of Martin Luther King Jr., thousands of newspaper articles have been written about America's most famous civil rights leader and his role in the 1963 March on Washington for Jobs and Freedom, one of the first major demonstrations to have extensive television coverage.

And if Evan Zakia-O'Donnell has his way, he will read and analyze every single one of the articles written about King and the March on Washington.

That's because Evan, a senior with a dual major in history and English, is investigating how the media, specifically newspapers, portrayed King in relation to the civil rights movement.

To see how the media has both celebrated and criticized King, Evan has spent hours looking at microfilm of both mainstream and African-American newspapers.

He believes he's gone through every newspaper reference to King in UNCG's Jackson Library along with combing through the Tuskegee Institute's newspaper archives and other databases. In the coming months he will go through all of the African-American newspapers in the United States and even segregationist papers to amass data.

"I was surprised at the amount of fear and concern prior to the March on Washington," says Evan. "There was a fear that the protest could turn violent. Afterwards there was a lot of praise because it was peaceful. There is a lot of misunderstanding about what the March on Washington was on many sides." He notes that African-American newspapers focused on the march's agenda of jobs and economic issues while mainstream newspapers concentrated on the potential for violence.

Evan is conducting qualitative research under faculty mentor Dr. Thomas Jackson, a history professor whose book "From Civil Rights to Human Rights: Martin Luther King Jr. and the Struggle for Economic Justice" received the Liberty Legacy Foundation Award given to the best book on any historical aspect of the struggle for civil rights in the United States.

According to Jackson, part of King's media legacy involved the manipulation of his own image. "Martin Luther King was very conscious of his image," Jackson observes. "He was very media savvy." Understanding how both the media and the people it depicts exploit each other is part of the lesson Evan is learning in delving into King's legacy.

"Doing the research has helped me realize the power of the media," says Evan, who plans to pursue a graduate degree in history. "It makes you realize that you have to dig for the truth." <

## bridging the divide

For young couples from Mexico, the language barrier is only one of many challenges in the United States. Cultural differences and distance from family can put an enormous strain on marriages as couples attempt to raise children in a new land.

Despite the rapid growth of the Spanish-speaking population in the United States, little research has been published about these issues. Senior Monsy Bonilla and Dr. Heather Helms, associate professor of human development and family studies, have been working during the past several years to change that. Funding has come from a UNCG Regular Faculty Grant and an Agricultural Research Service Award.

Monsy, who was born in El Salvador, has interviewed dozens of couples with young children, often spending two hours in one-on-one interviews with each husband and each wife. She has conducted the interviews in the couples' homes

and, with only one exception, in Spanish.

Helms hopes the research can offer insight into how best to support poor immigrant families. The payoff would be healthier, better educated children. If that goal is realized, much of the credit will belong to Monsy, Helms says.

"Monsy has been an invaluable member of the research team and played a major role in subject recruitment, retention and interviewing," says Helms. "Ours is a story of a truly collaborative student-faculty mentor endeavor."

Siler City is home for Monsy and her parents. Latino immigrants are often reluctant to be interviewed or to seek out services for their families, but Monsy has been able to recruit families in the Siler City area through word of mouth.

Since the interviews began in fall 2006, Monsy and others have interviewed more than 100 parents. Husbands and wives are interviewed separately in their own homes.

Some things aren't surprising. "The interviews with dads take more time," she says. "They struggle with the open-ended questions because they're men. They don't want to discuss some issues in their marriage with a stranger."

Other findings are far more serious. "There are many families that don't have a lot of information about education for their children, especially when those children have special needs."

Her experience has modified her career plans. She had wanted to be a classroom teacher, but now wants to educate families by working with a community service agency. Monsy and another student researcher presented their findings, based on data collected from the first 25 couples interviewed, at the second annual Undergraduate Research Expo April 3. <



## five songs, one perfect recording



"Research isn't just people in lab coats with test tubes," says Braxton Sherouse. Braxton's project in the School of Music, completed with the support of an undergraduate research assistantship, required a trained ear, difficult artistic choices and expertise with state-of-the-art sound editing equipment.

Braxton worked with his mentor, assistant professor of composition and electronic music Dr. Mark Engebretson, to create a flawless recording of Engebretson's "Five Songs of Passion." Composed for the Eastwind Ensemble, the work premiered at Carnegie Hall in 2005.

"Research in music composition is a decidedly public process: Our experiments are on display in concert

halls," Braxton says. "We are constantly writing, performing, recording and revising our hypotheses about sound."

Braxton started with four hours of material recorded by the quartet — an oboe, a clarinet, a bassoon and a piano — in the School of Music Recital Hall. The musicians recorded multiple versions of every passage in the work. Hypersensitive overhead microphones, the aural equivalent of microscopes, recorded every sound: the shift of a performer's foot, the subliminal hum of fluorescent lights, even the flow of air through vents.

He and Engebretson listened to all the takes and chose the best version of each passage. The professional-quality editing equipment in the School of Music allowed Braxton to blend together the best takes, sometimes even alternating recordings mid-note.

Mixing sound is somewhat like a painter mixing colors to achieve just the right tint. There are infinite choices, many so subtle as to be undetectable to the layman, and all of those choices contribute to the final product. Engebretson describes the process this way: "To relate it to more traditional scholarly activity, it is akin to being the co-author on a chapter of a book. My ability to promote this composition artistically depends on the success of his work. I supervised closely, but also trusted Braxton's growing expertise."

The 16-minute final recording sounds as if the ensemble played the piece straight through perfectly. It will be archived, circulated to composers and performers, and shared with listeners around the world via commercial CD.

Braxton, a percussionist and composer, graduated in December and is preparing to attend graduate school where he will study music composition. 🎧

Ethics on the battlefield



No modern war is going to be fully just.”

Dr. David Lefkowitz

On a cold winter’s day in which the morning’s news has reports of warfare and deaths in Iraq, Pakistan, Gaza and Algiers, Dr. David Lefkowitz, assistant professor of philosophy, describes some of his current research. It concerns the knowing but unintentional harming of innocent victims while waging war — so-called collateral damage. It is based on a simple argument.

“It’s practically impossible to avoid collateral damage when fighting modern wars. This means that if you cannot provide a justification for collateral damage, then all modern wars are fought unjustly,” he says. What if you find it hard to articulate why it’s okay to unintentionally kill innocent people, even in pursuit of a good end? “If you can’t come up with a justification for this killing, then in practice you must be a pacifist.”

What do military personnel think of this?

He explains that, while a guest of the U.S. Naval Academy, he has urged serving U.S. military officers to consider this issue. “They are very interested in these matters. All midshipmen must have an ethics class,” he points out.

“They bring in people like me to talk about ethical ways of fighting wars. They have to face themselves in the mirror. They take it very seriously.”

Do you see eye to eye?

“There is resistance [from them]. If you accept the claim that in practice all modern war is fought unjustly ...” His voice trails off.

“At Annapolis, the officers are open to conversation. [But] they tend to employ the Doctrine of Double Effect to justify acts of war that inflict collateral damage.”

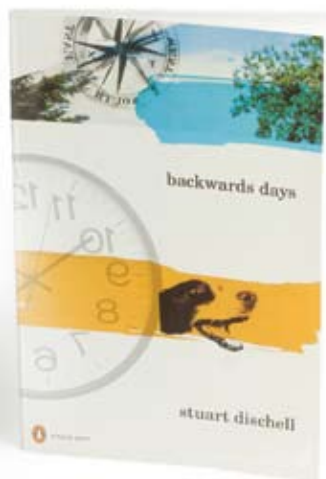
This doctrine, based on traditional Catholic thought, hinges on intention. An action — such as dropping bombs with the goal of destroying a tank — may be justified even though it risks unintended, though foreseeable, harm to nearby civilians. It is all about intention.

Lefkowitz rejects this line of thinking, arguing that whether an act is morally permissible does not depend on the intentions of the person who does it.

He acknowledges the possibility that some modern wars should be fought, even if they will be fought unjustly. However, he urges a renewed focus on St. Augustine’s view that military personnel need to be absolved for the wrongs they almost unavoidably commit when waging war.

Lefkowitz has written several papers on morality and war, and has a chapter on collateral damage in “The Cambridge Companion to War and Political Philosophy.” He recently received invitations from both Harvard and Princeton universities to spend a year as a research fellow at their respective Ethics Centers.

He hopes that discussing these issues will lead to greater scrutiny of the decision to go to war. “Might we fight fewer wars, a little less bloody in terms of non-combatant deaths? That’s a realistic possibility. That seems to me to be an advantage over the status quo.”



Backwards Days

Stuart Dischell  
Penguin Group (63 pp.)

In Stuart Dischell’s fourth full-length poetry collection, “Backwards Days,” he relives both real and imaginary life experiences. He hopes readers will do the same.

“I want people to be moved deeply by the work and to maybe — in some ways — chime in with their own experiences,” says Dischell, an English professor at UNCG. “I want to write poetry that is accessible, that doesn’t push them out of the experience.”

The title makes reference to “opposite days,” which some readers might have experienced in school.

*My son’s teacher holds backwards days in class  
Where the students come to school in pajamas,  
Eat dessert for breakfast, say good night  
When they mean good morning. \**

Dischell calls his latest collection of poems “very intense and personal” and having much in common with his earlier works. Many of the poems are inspired by his travels — including Paris, a city he has visited 26 times.

*I really did meet a blind girl in Paris once.  
It was in the garden of a museum  
Where I saw her touching the statues.  
She had brown hair and an aquamarine scarf. \**

The collection includes 48 poems and took more than three years to complete. “After writing a number of poems, I sense a coherence forming,” Dischell says of his writing process. “Once I begin to get that coherence,

## Data insecurity

It's an all too common occurrence. You are in the checkout line and the clerk asks for your ZIP code or swipes a card that records your purchases. Where does that seemingly innocuous data go and what is it used for? If you think the answer doesn't matter, then Dr. Hamid Nemati, associate professor of Information Systems and Operations Management, wants you to think again.

**"The average American is in about 50 different databases,"** says Nemati, who recently edited "Information Security and Ethics: Concepts, Methodologies, Tools and Applications," a 3,987 page, six-volume work containing more than 300 chapters. "I don't think people are aware of how much information is known about them.

**Even a simple email bounceback can contain your internet provider's address. And because these addresses are unique, they can contain information about credit card purchases and the places those purchases were made."**

Protecting the security and privacy of personal data is critical, says Nemati. But ensuring cyber privacy and security is almost impossible. Every person who uses the internet, charges items using a credit card, takes money out of an ATM or plugs an address into a GPS leaves an increasingly larger electronic footprint.

Following Sept. 11, Americans' attitudes toward computer security shifted dramatically. "Even though Americans value privacy, because of security fears people have been willing to part with their privacy, especially when it comes to disclosing information such as ZIP codes and even more personal information."

The more information technology becomes a part of our daily lives, the harder it will be for people to have control over their personal data, says Nemati, who believes that technology is causing people to redefine what is considered private. The explosion of social networking sites where people post intimate data is just one example of how what used to be considered private is now well-accepted within the cyber public domain.

Existing laws that protect an individual's right to privacy such as the Sarbanes-Oxley Act and the Health Insurance Portability and Accountability Act are helpful, but people shouldn't rely solely on legislation to maintain their privacy. While more stringent laws and penalties for companies that do not adequately protect data can help, Nemati says that, ultimately, individuals are responsible for making choices about how they control their personal information. When it comes to disclosing data, even something as seemingly harmless as a birth place or birth date, in the hands of a data miner, can be the linchpin for revealing a host of other, more critical personal information.

"We are the first generation of humans where the capabilities of the technologies that support our information processing activities are truly revolutionary and far exceed those of our forefathers," says Nemati. "Although this technological revolution has brought us closer and has made our lives easier and more productive, paradoxically, it has also made us more vulnerable to breaches in personal security."

I begin to get the shape of a book," he says. "I write what I write because I have to write it. It's my way of transforming experiences or imaginative experiences."

Dischell is working on his next collection of poems as well as a nonfiction work about his travels. His other poetry collection titles include "Good Hope Road" (1993), "Evenings and Avenues" (1996) and "Dig Safe" (2003). His work has appeared in a variety of journals and he has received awards from the National Poetry Series, the National Endowment for the Arts and the North Carolina Arts Council. He is a 2004-05 John Simon Guggenheim Fellow.

\*Excerpts taken from "Backwards Days" and "She Put on her Lipstick in the Dark." These poems can be found in their entirety in "Backwards Days."





**BELOW LEFT**, Dargan Frierson, filmmaker Michael Frierson's father, was a special agent for the FBI in Greensboro. **BELOW RIGHT**, George Franklin Dorsett led a double life as chaplain of the United Klans of America and as an FBI informant for Dargan Frierson.



UNDATED FBI PHOTO



GREENSBORO NEWS&RECORD







## Strange bedfellows

The 1960s was a turbulent time for the South. The civil rights movement was pushing for equal rights for African Americans, but the Ku Klux Klan — dormant for decades — was revitalized by this push. The Klan was reborn, fiercely anticommunist, hoping to maintain segregation, and inciting hatred of blacks, Jews and Catholics.

**At the junction of these two opposing forces stood two unlikely allies: Dargan Frierson, a special agent in the FBI, and George Franklin Dorsett, the national kludd, or chaplain of the United Klans of America.**



Dorsett, a house painter and preacher, delivered fiery injunctions against integration at Klan rallies across North Carolina. Dorsett was even arrested in 1967 for hanging an effigy and burning crosses outside the house of a black minister who had recently moved into an all-white neighborhood in Greensboro.

But Dorsett had a secret: For years he was a paid FBI informant whose handler was Dargan Frierson. "Growing up, I had some idea of what my dad was up to because Dorsett would come over, pull his car behind the house where no one could see it and meet at the dining room table with my dad," says Dr. Michael Frierson, a professor of broadcasting and cinema who is finishing "FBI-KKK," a documentary that traces the intertwined stories of his father and George Dorsett. Dargan Frierson's anti-Klan activities were part of the FBI's counter intelligence program called COINTELPRO: White Hate, directed by J. Edgar Hoover to disrupt the Klan.

"I made this movie not only as a way of understanding what my father went through in the 1960s, but to also explore how attitudes about race, particularly for Southerners of my father's generation, aren't easy to explain or to pigeonhole," Frierson says. "Especially for young people today, the Klan seems like something from another era. And in some ways it is. But it's important to remember that Klan rallies in North Carolina used to attract thousands of people. Even though North Carolina was regarded as a progressive state, it had the largest active Klan organization in the world in the 1960s."

The film depicts Frierson's father as a man who held contradictory views on race. Dargan Frierson often used his own family history — the fact that his grandfather was an early member of a Klan group in South Carolina — as a way to relate to Klan members and to win their trust. As the 1960s progressed, he came to understand the hostility and abuse that civil rights demonstrators faced; his career in the FBI forced him to come to grips with his own Southern past and the racial views held by many Southerners.

Handling an informant was a difficult task. The fact that Dorsett actively organized Klan rallies throughout the state and often walked the line in inciting violence had to be weighed against the invaluable information he furnished about Klan activities. Dorsett believed that violent acts were a sin and it was the Klan's mission to be a patriotic, Christian organization that fought communism and integration. He died in Asheboro on Feb. 10, 2008.

The film moves between archival footage of Dorsett in his robes addressing crowds at Klan rallies, and shots of Dargan Frierson, now 86, walking through his family's ancestral graveyard in South Carolina and talking about his family's "house slaves."

"This film is also my story, because that historical and familial racism has been handed down to me," says Frierson. "Like some sort of genetic trace, it's a kind of DNA embedded in me and in my children. I believe that each generation moves closer to racial harmony — that the moral arc of the universe is long, but that it is tending toward acceptance."

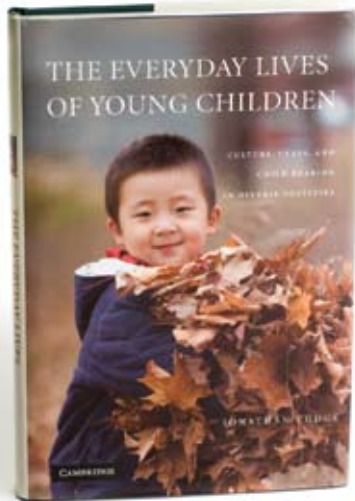


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## The Everyday Lives of Young Children

By Jonathan Tudge  
Cambridge University Press (172 pp.)



**CHILDREN IN ALL PARTS OF THE WORLD** have more in common than you might think.

Dr. Jonathan Tudge, professor of human development and family studies, has spent 20 years researching the everyday lives of pre-school age children, starting at the age of 3. Think culture determines how families interact? Think again.

Tudge and his collaborators observed children here in Greensboro, as well as in similar sized cities in Russia, Estonia, Finland, Korea, Kenya and Brazil. He also studied children in both

working-class and middle-class families in each city.

A lot of research has compared the way children are raised in cities in the United States with children in the developing world, particularly in rural areas. "As much as I like that work, I thought if culture is important, you should see its influence even when comparing children's experiences in similar sized cities."

In his new book, "The Everyday Lives of Young Children:

Culture, Class, and Child Rearing in Diverse Societies," Tudge explains that the class differences within cities were as revealing as society differences.

For example, in each city, middle-class children were more encouraged to have autonomy. Working-class children were raised more often to follow the rules.

"It's partly the ways in which we're used to doing things," Tudge said. "Those who have working-class jobs need to follow the rules in order to keep their jobs, and they pass those ideas on to their children."

Some class differences were particularly clear. Researchers have reported that Kenyan children are involved in work very early in their lives. Tudge found that this was the case in the working-class Kenyan families. "But the middle-class children there actually worked less than the children in Greensboro," Tudge said.

He also examined parents' roles in children's lives. "In every place, mothers were more involved. Mothers were more likely to be around the child, but if you take into account the amount of time dads spent with children, dads still did less than mothers."

The one exception was Brazil, where parents were much more evenly involved.

Overall, whether spending time in child care or working or hanging out with parents, children had one major thing in common.

"The kids all played more than they did anything else."

## Life project

IF YOU PLAN ON TALKING TO DR. ELUZA SANTOS about her research, clear your calendar first. Dancing, choreographing, mentoring and writing are all part of her search for knowledge.

The associate professor in the Department of Dance performs with the Latina Dance Project, of which she is a founding member. The four members, originally from three different countries and now living in four different states, explore what it means to be a Latina.

They perform in locations even more far flung than their homes. Early in the spring semester they danced to full houses in Davenport, Iowa. The program included "Coyolxauhqui ReMembers," one of their signature works.

In Aztec legend, Coyolxauhqui feared that something evil was growing in her mother's womb and attempted to kill her mother, the earth goddess Coatlicue.

The child, Huitzilopochtli, sprang from Coatlicue's womb as a grown warrior and murdered Coyolxauhqui, tossing her remains into the sky, where she became the phases of the moon. The Latinas re-interpret the myth as a modern story of violence against women and empowerment through action.

Later in the semester, Santos traveled to Helsinki, Finland, to teach workshops based on her dance "Invocada." The subject of the dance is a Brazilian professional woman experiencing conflict over her self-empowerment. It explores the dilemma faced by a woman who must be assertive at times to be successful, but who lives in a culture where such outspokenness is deemed unfeminine.

Santos is a native of Vitoria, an island city on the coast of Brazil, and this research has helped her feel at home in both Brazil and the United States.

"With time, I started to understand the two different cultures in my life," she says. "I have things in me that come from both cultures, but I am strongly rooted in my place of birth."



WHEN YOU'RE AN AMERICAN WOMAN walking up to the front desk of the immense Ayatollah Khomeini's Archives in Iran, you stand out.

"They were shocked. I was the first female American researcher they could remember," says Dr. Elizabeth Bucar, assistant professor of religious studies. How did she get access? "It involved a lot of tea, a lot of trips." But ultimately, the archivists grew to trust her and provided her the access she needed.

Becoming very familiar with the issues, with people, with cultures — that is an essential part of Bucar's approach to research.

Bucar became interested in reproductive rights as a political science major at Harvard University. She grew less interested in a top-down approach, and instead, looked at what people were really doing in their societies. The reality can be surprising, she says.

She has found that progressive Iranian women are not after the same things American feminists are after. "For example, veiling is not a big issue," she says. Veiling is the practice of modestly covering most of the woman's body. "It's compulsory in Iran, but it's not a top-five issue among women there."

#### What are the hot-button issues for women in Iran?

**Custody of kids after divorce** Traditionally, in divorce, women have kept girls until age 7, but young boys only until age 2. Women have worked diligently on this issue in recent years. As a result, both boys and girls are now kept by women until age 7.

**Economic opportunities** There are just not enough jobs in a

stagnant economy — for women or their family members.

**Divorce** Everyone has a contract when marrying. Women are using these contracts as a way of negotiating with their husbands for better treatment.

**Charities** Traditionally, alms giving has been male-dominated, through mosques. But women are taking leadership positions in NGOs (non-governmental organizations) and addressing taboo subjects such as domestic violence and HIV/AIDS.

As a doctoral student at the University of Chicago, she co-edited a book about what religion and faith may add to human rights discussions. Her research there and a post-doc year at Georgetown's Berkley Center for Religion, Peace and World Affairs led to a different track of thinking about human rights issues.

The resulting research is part of the book she hopes to finish this summer, tentatively titled "Creative Conformity: The Tactics of Catholic and Shia Women." In it, she groups interviews with Catholic and Shii women under themes such as assisted reproduction, veiling and religious roles.

Getting another visa for prolonged research in Iran may take a while, so her next research trip will likely be to Tajikistan or perhaps Afghanistan — places where she can put her Persian language skills to use. (She also reads Arabic.)

She also plans a more in-depth look at veiling and what different forms of Islamic dress convey in various parts of the Muslim world. "They say different things."



We expect feminist politics [in all cultures] to look a certain way. That neglects an important realm of feminism. Most women are not trying to rebel. They are making a difference, but in ways that may be subtle. It's often a matter of creative conformity."  
Dr. Elizabeth Bucar



**LOOKS CAN BE DECEIVING.** This unassuming tree is actually the oldest longleaf pine in the world. Jason Ortegren '05 MA, a doctoral student in the geography department, estimates the tree to be more than 459 years old, based on a study of its rings. Finding a living tree dating back to 1548 helps scientists understand cycles of drought and other climatic episodes. During times of environmental stress such as drought, tree rings show narrower growth.



JOSEPH RODRIGUEZ/NEWS&RECORD



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