TOAD TRACKER

ALSO INSIDE:
• Student superstars
• Tift Merritt talks
• Top-notch teachers
• Inside the White House
How learning and discovery can change the world

Spring is in the air in Chapel Hill, which means the azaleas will soon be blooming around the Old Well and another crop of Carolina seniors will leave to make their mark on the world.

In the pages of this magazine, you will read about five stellar students, who already have tackled infectious diseases, environmental challenges, human rights violations and quantum field theory — and that’s just for starters. Two of the students will head to Oxford University on Rhodes Scholarships.

You’ll also see how faculty and other students are changing their campus, their state and their world through learning and discovery.

Biologist Karin Pfennig received a $1.5 million “new innovator” award from the National Institutes of Health to support her research on the mate selection practices of spadefoot toads. Her findings shed light on how an organism’s genes interact with the environment to affect species diversification, a central element of evolution.

Psychologist Abigail Panter and sociologist Ted Mouw have recently been named Bowman and Gordon Gray Professors in honor of their extraordinary undergraduate teaching. Mouw believes most students crave engagement in the classroom, and he expects every student to actively participate. In Panter’s advanced undergraduate research methods course, she “gets into the trenches” with her students to show them how the research process works from start to finish.

We also profile singer/songwriter Tift Merritt, now based in New York City, who recalls how Carolina helped her to become an artist; and graduate student Jason Sewall, who is studying the power of high-speed computers.

With a new president in the White House, the air is also filled with politics. You can read about two Tar Heel alumni who have been tapped for high-level posts in the Obama administration, or get an insider’s view from presidential transition expert Terry Sullivan about who gets to spend the most time with the commander-in-chief.

The air is also pungent with dire economic news. Eminent presidential historian William Leuchtenburg looks back at Herbert Hoover’s struggle with an even greater economic meltdown, in a timely new biography noted on our books page.

We also share exciting news about new gifts to support American studies, and physics and astronomy. As always — and now more than ever before during these challenging economic times — we are grateful to our donors and friends for the private funds that make many of our academic opportunities possible. With your help, our students and faculty will continue to show how the seeds of learning and discovery in Chapel Hill can bear fruit beyond our campus.

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(Too Good to Be True?)
Nope, the Carolina seniors we profile in these pages are the real thing.

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“New innovator” Karin Pfennig wins major award to support her research on spadefoot toads.

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Abigail Panter and Ted Mouw (pictured at right inside the UNC Bell Tower) earn high marks for great teaching.

18 • **A New Chapter for Tift Merritt**
It’s been an exciting year for the Carolina-bred singer/songwriter now based in the Big Apple.

Cover photo: UNC biologist Karin Pfennig studies the mating habits of spadefoot toads.
(Photo by Steve Exum)
Two win top N.C. Book Awards

Michael Chitwood and Daniel Wallace, members of UNC’s creative writing faculty, have won the top awards for poetry and fiction from the N.C. Literary and Historical Association.

Chitwood, a lecturer in the English department, received the Roanoke-Chowan Award for Poetry for Spill (Tupelo Press, 2007), his sixth collection of poems. Carolina faculty have won the Roanoke-Chowan award six times out of the past nine years. It’s the second Roanoke-Chowan Award for Chitwood; he won in 2003 for Gospel Road Going (Tryon Publishing, 2002).

Wallace, the J. Ross Macdonald Professor of English and Creative Writing, received the Sir Walter Raleigh Award for Fiction for Mr. Sebastian and The Negro Magician (Doubleday, 2007).

Chitwood’s Spill was also named as a 2008 finalist for ForeWord Magazine’s poetry book of the year. In addition to his six books of poetry, Chitwood is the author of a collection of essays and a book of essays and short stories.

Wallace is the author of four novels and one children’s book. His 1998 book Big Fish was made into a movie of the same name in 2003 by Tim Burton; in the film Wallace plays the part of a professor at Auburn University. He was featured in the fall 2008 issue of Carolina Arts & Sciences.

Language Association recognizes Gura

UNC American literature scholar Philip F. Gura received the 2008 Distinguished Scholar Award from the Modern Language Association (MLA). The division on American literature to 1800 honored Gura for career-long distinction in his field.

The William S. Newman Distinguished Professor of American Literature and Culture, Gura has been teaching at UNC since 1987. He holds appointments in English, American studies and religious studies.

In 2007, he was a nonfiction finalist for a National Book Critics Circle Award for his book, American Transcendentalism: A History. He is also a fellow of the Society of American Historians.

Winning state’s highest honor

UNC chemist Maurice Brookhart and 1973 English alum and best-selling author Charles Frazier won 2008 North Carolina Awards, the highest civilian honor the state can bestow. Brookhart won the award for science; Frazier shared the honor for literature with author Margaret Maron.

Brookhart, the William Rand Kenan Professor of Chemistry, is a nationally recognized researcher and an award-winning teacher and mentor. His advances in organometallic chemistry and polymerization have provided practical solutions to complex problems, with commercial applications. For example, he discovered one of the building blocks of Nylon-66, a thermoplastic resin with wide use in automotive, electronic and industrial components. Brookhart is an elected member of the National Academy of Sciences, among the highest honors accorded to American scientists.

Frazier looked to what he knew best — the mountains of North Carolina — to write his first novel, Cold Mountain, a National Book Award winner later adapted for a major motion picture in 2003. The epic masterfully evokes the Appalachians of the 19th century. His second novel, Thirteen Moons, highlighted the intertwining of Appalachian and Cherokee Indian heritage.
Chemist Joe DeSimone was named the 2008 Tar Heel of the Year by The (Raleigh, N.C.) News & Observer.

DeSimone is the Chancellor’s Eminent Professor of Chemistry in UNC’s College of Arts and Sciences and the William R. Kenan Jr. Distinguished Professor of Chemical Engineering at N.C. State University.

Since arriving at UNC in 1990, DeSimone has become one of the nation’s premier scientists — the youngest member of the National Academy of Engineering and winner of the Lemelson-MIT Prize, awarded for his innovations in polymer chemistry.

He has founded companies, received more than 100 U.S. and international patents, pulled in millions of dollars in federal grants and led the University into entrepreneurial ventures.

The News & Observer wrote: “Friends and colleagues say DeSimone’s genius lies in applying complex science to solve everyday problems. It’s what caught the attention of the Lemelson-MIT Prize committee, which cited DeSimone for the breadth of his innovations, from green manufacturing to medical devices to nanomedicine …” •

AMERICAN CHEMICAL SOCIETY RECOGNIZES PARR

Robert G. Parr, UNC professor emeritus of chemistry, received the 2009 award in theoretical chemistry from the American Chemical Society, in recognition for his widely cited innovative research.

Parr has been a pioneer in the field of quantum chemistry since the 1950s. He has influenced how thousands of chemists, physicists and other scientists use quantum chemistry in their work. His book, Quantum Theory of Molecular Electronic Structure (1963), was one of the first to apply quantum theory to a broad range of chemical systems.

In 1988, Parr and colleagues published an improved method of approximating correlation energy (a mathematical expression that accounts for how electrons in a many-electron system interact with one another). The Lee-Yang-Parr (LYP) method, the most widely used in the field, has been cited more than 22,000 times, making it one of the most highly cited papers in chemistry. LYP has been used in research ranging from nanotechnology developments to the synthesis of antibiotics. •

MURRAY RECEIVES SOUTHERN CHEMIST AWARD

Royce W. Murray, UNC Kenan Professor of Chemistry, received the 2008 Southern Chemist Award.

Sponsored by the Memphis, Tenn., section, the award acknowledges outstanding achievement in chemistry and contributions to the field that have brought recognition to the South. Murray’s research has impacted fields ranging from renewable energy to medical sensing technology.

He is recognized internationally for his advances in electrochemistry. He introduced the concept of chemically modified electrodes, tools that are important as chemical sensors, fuel cells and in solar energy conversion.

Murray came to UNC in 1960 as an instructor just weeks after earning his Ph.D. in chemistry from Northwestern University in only three years.

He is a member of the National Academy of Sciences, a fellow of the American Academy of Arts and Sciences, and editor-in-chief of the journal Analytical Chemistry.

During his 48-year career at Carolina, Murray has mentored about 140 graduate and postgraduate students, published more than 450 research articles, nearly 200 editorials and four books, and holds four patents. •
Two music scholars win competitive NEH fellowships

Two scholars in UNC’s music department, Annegret Fauser and Mark Evan Bonds, have won highly competitive fellowships from the National Endowment for the Humanities (NEH).

“It is rare enough for a single colleague in a department to receive one of these,” said Tim Carter, chair and David G. Frey Distinguished Professor of Music. “For two to do so in the same year is truly remarkable.”

Fauser also received a fellowship from the Institute for Advanced Studies in Berlin, Germany, for 2009-2010. Both awards support the final steps of writing and research for Sounds of War: Music in the United States during World War II, a book that explores the interface of music and American life during the war. Fauser’s research was designated an NEH “We the People” project, and she recently gave a lecture at the Library of Congress about her new work.

Musicians, like other Americans, volunteered for service during the war, Fauser said. American composer Marc Blitzstein signed up for the U.S. Air Force, and he was even given a year off of active duty to compose the “Airborne Symphony,” which he wrote during 1943-44. American composer Samuel Barber also created a number of works while in the Air Force, including his “Commando March.”

Other musicians, such as Henry Cowell and Kurt Weill, used their musical skills in the propaganda missions of the Offices of War Information. Many classical composers became involved in promoting America through their art. Aaron Copland composed “Lincoln Portrait,” “Appalachian Spring” and “Fanfare for the Common Man,” among other works.

“Amercians were very much responding to and involved in a culture war,” she said. “I have discovered how music and politics were intertwined in an international context.”

Bonds, the Cary C. Boshamer Distinguished Professor of Music, will use his NEH fellowship for his book project, The Myth of Absolute Music.

The term “absolute music” was coined by Richard Wagner in 1846 as a pejorative to characterize instrumental music “as pure abstraction, cut off from the broader realms of life,” Bonds said. The Viennese critic Eduard Hanslick embraced the term in 1854, instead celebrating instrumental music’s qualities of abstraction that had been so distasteful to Wagner.

“Hanslick argued that form was the essence of all beauty in music, and that music’s freedom from representational content set it apart from (and above) all other arts,” Bonds said.

Bonds’ book will trace the origins and changing perceptions of the idea of “absolute music.”

ONLINE EXTRA: Listen to a Webcast of Annegret Fauser’s Library of Congress talk at college.unc.edu.

Melody Barnes, who received a B.A. with honors in history from UNC in 1986, is heading the White House Domestic Policy Council, and Rob Nabors, who received an M.A. in political science in 1996, has been designated deputy director of the Office of Management and Budget.

Barnes is the president’s top adviser on a range of issues. “We know that rebuilding our economy will require action on a wide array of policy matters — education and health care to energy and Social Security,” Obama said in announcing the appointment.

Barnes, a native of Richmond, Va., served as co-director of the Agency Review Working Group for the Obama transition team, and she was a senior policy adviser during the presidential campaign. Before that she was executive vice president for policy at the Center for American Progress, and she spent eight years as chief counsel to Sen. Edward M. Kennedy on the Senate Judiciary Committee. She earned a law degree at the University of Michigan.

Obama said that Nabors, who was staff director of the House Appropriations Committee, has the ideal combination of professional and political experience to help lead the OMB. “Rob will bring to this post experience in the executive branch, at the OMB, where he helped the Clinton administration achieve balanced budgets, as well as in the legislative branch, where he led the appropriations committee staff.”

As a graduate student at UNC, Nabors co-authored a paper with political scientist Thomas Oatley. “Redistributive cooperation: Market failure, wealth transfers and the Basle Accord,” was published in the journal International Organization in 1996.

President Barack Obama has tapped two UNC College of Arts and Sciences alumni for high-level posts in his administration.

Melody C. Barnes

Melody Barnes
UNC Davie Award honors five College alumni and friends

Five UNC College of Arts and Sciences alumni and friends received the William Richardson Davie Award for extraordinary service, the top honor conferred by the University’s Board of Trustees.

- Peter Grauer, English ’68, has spent his career in the financial industry, most recently as chairman of the board for Bloomberg LP, the worldwide media company. At UNC, he chairs the external advisory board for the Honors Program, and a new endowed faculty chair in the College has been named for him. Grauer and his wife, Laurie, have supported the Carolina Excellence Fund and the College’s European Study Center at Winston House and James M. Johnston Center for Undergraduate Excellence.

- Six generations of James “Jim” Winston's family have been Carolina students and leaders. Winston, business ’55, provided the leadership gift to name the College’s European Study Center in London, which serves faculty, students and alumni from across the University. He chairs LPMC Inc., a real estate investment firm in Jacksonville, Fla., and is president of White Oak Land and Development Co. and Omega Insurance Co.

- Vaughn and Nancy Bryson, pharmacy ’60, served on the Carolina First Campaign Steering Committee and made the first major gift to support the new Kenan Music Building. Vaughn Bryson served as president and CEO of Eli Lilly & Co. Nancy has served on the Arts and Sciences Foundation Board and the UNC Board of Visitors.

- C. Knox Massey Jr., business ’59, is a retired advertising executive who has long supported UNC and the College. He led C. Knox Massey & Associates, the Durham advertising firm founded by his father (a 1925 UNC alumnus and supporter), which merged with the Atlanta firm Tucker Wayne & Co. Massey served as president, chair and CEO of the merged company, which became the largest advertising firm in the Southeast. At Carolina, Massey has served on numerous boards, including the Carolina First Campaign Steering Committee, the UNC Board of Visitors, the Arts and Sciences Foundation Board and the Institute for the Arts and Humanities External Advisory Board.

Sociologist elected national science fellow

Sociologist Kenneth Bollen was named a fellow of the American Association for the Advancement of Science for his distinguished contributions to social science research.

Bollen is the H.R. Immerwahr Distinguished Professor of Sociology and director of the Odum Institute for Research in Social Science. The association cited him for his “important work on latent variable structural equation models and major contributions to liberal democracy studies and to social science measurement.”

Bollen has helped develop statistical models for analyzing difficult-to-measure social science concepts such as socioeconomic status. He also researched the determinants and measurement of political democracy.
Nope, these Carolina seniors are the real thing.

There’s no way to capture the amazing achievements of Carolina undergrads in the simple text message above, so we decided to introduce just a few of our College seniors in these pages ...

Their academic and service accomplishments would make any parent proud. They are definitely superstars by our standards. These amazing students have tackled infectious diseases, environmental challenges, human rights and quantum field theory — and that’s just for starters. And as they wrap up their final semester, they are already making a difference in their campus community, the state of North Carolina and the world.
Barack Obama made becoming a community organizer cool. At 21, UNC senior Nick Anderson shares that passion, and he already has a world of experience in student activism — with a particular focus on energy and the environment.

The Robertson Scholars Program has allowed the public policy major (who’s pursuing an environmental concentration) to explore that focus and to make a difference.

The full four-year merit scholarship provides students at rivals UNC and Duke with the resources to take classes at both schools and to participate in summer community projects in the U.S. and abroad. The program was created in 2000 through a gift from 1955 UNC graduate Julian Robertson and his wife, Josie.

“As a Robertson Scholar, I attended classes about renewable energy and public policies to facilitate the transition to a low-carbon economy,” says Anderson, a UNC Honors Program student who is fluent in Spanish and conversationally adept in Portuguese.

Fascinated by the challenging issue of global warming and the link between tropical forests and climate change, he traveled to Brazil’s four largest cities in summer 2008 (Rio de Janeiro, Brasilia, Salvador and Sao Paulo), interviewed scholars and business executives, and bunked with an indigenous tribe in the rain forest of Rondonia, Brazil.

The trip was research for his Honors thesis, which will focus on the implications for indigenous tribes in Brazil of incorporating deforestation into the international climate treaty.

“The design of incentives for tropical forest conservation to reduce greenhouse gas emissions is one of the most important and as yet unresolved issues of global climate change policy, and I am hopeful that Nick’s thesis will make a valuable contribution to this,” said Richard “Pete” Andrews, chair and Thomas Willis Lambeth Distinguished Professor of Public Policy.

In summer 2007, Anderson fused his environmental and educational ideals at a remote school in Argentina, and he returned there again in August 2008.

“I lived at a small rural school and installed solar equipment for heating water,” says Anderson.

Studying abroad with the School for International Training in Chile in fall 2007, Anderson investigated the copper mining sector’s impact on the Chilean economy and prepared a 30-page policy report in Spanish.

Closer to home, Anderson serves as UNC chapter president of the Roosevelt Institution, the nation’s first student think tank focused on advancing pragmatic policies and fostering public debate. He also founded its Center on Energy and Environmental Policy.

His journalistic ambitions originated in his hometown of Weston, Conn., where he started his high school newspaper. He moved on to work for UNC’s Daily Tar Heel, launched Rival Magazine (between Duke and UNC) with four friends, and reached an international readership with a Christian Science Monitor essay on mountaintop-removal coal mining.

The mining essay resulted from summer 2006 work with a community organizing group in rural Kentucky, where “the violations of nature and human dignity” awakened Anderson’s environmentalism. He hopes to go to law school to pursue a focus on environmental law.

“The design and impact of well-targeted environmental laws are crucial policy questions for my generation,” says Anderson.

“My energy comes from identifying problems, bringing people together and generating entrepreneurial, policy-oriented solutions.”

A crystal ball reveals Anderson’s future as a rosy shade of green.

More on Nick Anderson:
* Co-founder of nonprofit Crayons2Calculators in Durham, N.C., a store where teachers can select free school supplies
* Co-founder of Coalition for Community Access (advances college access for disenfranchised and undocumented students)
* Campaign adviser for UNC student body president campaigns
Senior Aisha Saad has been living her own National Geographic adventures since her family moved from Egypt to North Carolina when she was 6 years old. The hundreds of yellow magazines lining the walls of her Cairo home were a glimpse into her future.

Growing up as a Muslim woman in Greenville, N.C., thrust Saad into the role of mediator early. It is a skill she has embraced passionately. It has thrived at Carolina in her roles as president of the Interfaith Alliance and as outreach committee chair for the Muslim Student Association.

She has moderated a campus forum on "Jihad in America," co-chaired a Jewish-Muslim Arts Festival and helped to organize a winter break relief trip to New Orleans.

"We have the critical mass of diversity on this campus, but from my experience that’s not enough to bridge these really isolated spheres that coexist," Saad said. "My tagline this year has been moving from coexistence to community … integrating these very rich and diverse heritages toward collective goals."

In summer 2008, the Morehead-Cain Scholar and Honors Program student traveled to Bhopal, India, where she came face-to-face with an opportunity to use her ability to mediate across cultural chasms.

Saad was working as an intern with Cherokee Investment Partners in Raleigh, N.C., a leader in redevelopment of contaminated land. Cherokee had offered to clean up the Union Carbide site in Bhopal, the location of a disastrous chemical leak 24 years ago. After repeated e-mails and phone calls brought no resolution, Saad stuffed her blue backpack and headed to India, where she was able to bridge the perspectives of Cherokee’s team with that of the cynical activists in Bhopal.

"Many of the slum-inhabited, marginalized communities in Bhopal were Muslim, [yet] I was also an American that could connect to them,” she said. “I rode on the back of a motorcycle through these slums, climbed the actual location of the disaster and met with women activists.”

Saad returned to the United States to present a comprehensive report of her recommendations on the Bhopal cleanup to Cherokee executives.

When she graduates from Carolina in May, the environmental health science and Spanish major will head off on another adventure. As a Rhodes Scholar, she'll pursue a master’s in nature, society and environmental policy at Oxford University. She is interested in environmental law.

A summer 2006 study abroad project volunteering in the blood diseases ward of a Cairo hospital was an eye-opening experience; it taught Saad that education alone is not a cure-all to global health problems.

“It can pave the road toward answers, but knowledge is not power without voice or money to give it value,” she wrote in an article in the policy journal, Health Affairs. “I realized that the drive to educate others had to give way to my own perceiving and understanding.”

Biology lecturer Jean deSaix, a health professions adviser, said she has seen Saad grow in her ability to understand global challenges and how to create solutions.

“Aisha is one of the most remarkable women I have met in my three and a half decades teaching at Carolina,” DeSaix wrote in a Rhodes letter of recommendation. “She will, I believe, be an instrument of powerful change in this world, not just because she wants to, but because she is so well equipped to.”

More on Aisha Saad:
• More UNC study abroad: climbing a volcano in Peru, trekking the Amazon, volunteering in hospital labor rooms in Hyderabad, India
• Public Service Scholar
• Martin Luther King Jr. Bridge-Builders Award
UNC senior David Sneed begins a law-school application quoting theologian John Piper: “I don’t want to waste my life.”

Not to worry. With a Robertson Scholarship, admission to UNC’s Honors Program, and responsibilities as deputy student attorney general, and president of a Christian fraternity and a campus ministry, Sneed has no time to waste.

To what end does he direct such ambition? The deeply religious son of a pastor finds the answer in Proverbs: “Speak up for those who cannot speak for themselves.”

Sneed knows it takes both hard work and opportunity to succeed in life. When he was in middle school in Burke, Va., his mother made him enroll in an academic enrichment program for minority students. That meant extra classes on Saturdays and during the summer.

The academic overtime paid off: He was admitted to Thomas Jefferson High School for Science and Technology, a magnet school in Alexandria, Va., where he would be one of three African Americans in the 2005 graduating class.

Soon after Sneed got to Jefferson, he started reaching out to others. He tutored middle-school students through the same program that had prepared him for high school. And as soon as he arrived at Carolina, he continued helping others through elementary school tutoring and counseling in the student Honor System.

Sneed says Carolina was always at the top of his college wish list. But the clincher was the Robertson Scholarship, supporting four years of study at UNC and Duke, and support for three summer field experiences. The program is funded by a gift from Julian ’55 and Josie Robertson.

After Sneed’s first year at Carolina, he spent the summer in Indianola, Miss. He taught computer skills to children and recorded the stories of community leaders for the local library’s archives.

Sneed also traveled to Memphis to see the National Civil Rights Museum, located at the site where Martin Luther King, Jr. had been assassinated.

The next summer, Sneed traveled abroad for the first time. He worked in Durban, South Africa, where he taught computer skills to blind children. He also visited Soweto where Nelson Mandela had lived.

“It was mind boggling ... I saw the connections between the struggles the people of South Africa had been through and the history of my own culture in the United States,” said Sneed, a political science major, with minors in African and Afro-American studies and religious studies.

It was his third summer experience that cemented Sneed’s desire to “speak up” for others. He served as an intern for a human rights organization in Accra, Ghana, where he learned of a man who had been in prison for two years without access to an attorney.

“After considerable effort, I found myself inside a Ghanaian jail, on a bench next to two handcuffed men, interviewing our client through the bars of a common cell holding about 20 other inmates,” Sneed wrote.

He learned that the man’s court date was set for the following day. Despite the short notice, Sneed helped the lawyers gather information to protect the man’s right to a fair hearing.

“I started seeing on a practical level how law really in essence can help people,” he said. This inspired him to pursue a legal career, “to advocate for my understanding of justice.”

More on David Sneed:
- Honors Semester in London
- Campus Alcohol Task Force Policy Committee
- Order of Omega Honor Society
- Black Student Movement Umoja Award for service to Freshman Class Council
In the “office” of the Society of Physics Students (translate: slightly dingy spare room in the basement of Phillips Hall), senior Jonathan Toledo picks up a mechanical pencil and draws the carbon atoms of graphene, the molecule he’s been studying. Graphene may have applications in electronics and is a form of graphite, which makes up the lead in pencils.

“These are the carbon atoms; they’ve all bonded together in this honeycomb structure,” he says, sketching. Then his pencil point breaks. He stops. “Actually what I’m writing with here is what happens when you take this sheet of atoms and put many more on top of it,” he says. “They are just sitting on top of each other; there is some attraction, but it’s not a chemical bond. That’s actually why graphite writes so well; because the sheets just flake off onto the paper.”

He makes a mark on his notebook’s green graph paper. A typical pencil mark contains graphene sheets of many different thicknesses. “Like here, maybe 10 sheets flaked off.” Another mark. “And then over here, maybe only one layer flaked off.”

Toledo plans to make a career out of figuring out the hidden world behind ordinary things like pencil marks. He got hooked on theoretical physics in high school at the N.C. School of Science and Mathematics, when he first learned about Einstein’s theory of special relativity — that time and space are not absolute concepts but must be different for observers in relative motion. In 2007, Toledo won a Goldwater Scholarship, a distinguished national scholarship awarded to college students who demonstrate a strong commitment to careers in mathematics, natural sciences or engineering.

“Things behave a lot differently when they travel near the speed of light. And that really made me realize that behind the things around us that we can see, like behind the light that’s coming from the bulbs there,” he says, pointing to the ceiling, “there’s actually very fundamental, beautiful processes going on. That’s when I started to realize that I could spend a life studying this.”

Toledo grew up in Sylva, N.C., west of Asheville, and as a child he spent many days “just running around in the woods.” As a college student, he’s run a marathon and is training for another. How does he have time for that while also doing his class work and research, tutoring high school students in math and science, co-teaching a sophomore class with physics professor Sean Washburn and serving as president of the student physics society?

“If I go out and just run for an hour, when I come back, my head feels completely cleared out, and I feel ready to think,” he says.

And, by the way, when he graduates with a B.S. in spring 2009 he’ll have also finished all the coursework for a master’s in physics.

In summer 2008, a Burch Fellowship enabled Toledo to travel to Spain to study quantum field theory at the Madrid Institute of Materials Science. In addition to being his first trip outside the United States, the experience humbled him academically.

“It taught me that I need a lot more school before I’m ready to dive into the really hard problems in research. Everyone that I worked with in Spain was so highly trained,” he says. “It’s exciting because it’s good to know that there’s so much more to learn.”

More on Jonathan Toledo:
- UNC Shelton Award for outstanding research in physics
- William P. Smallwood Undergraduate Research Fellowship
- Attorney general staff, UNC Honor System Office
- Published work in journals Molecular Physics and Physical Review E
A relationship with a young HIV-infected Rwandan girl who had lost both of her parents to the disease transformed Lisette Yorke’s dreams and aspirations. She wanted to do more to help her new friend and other HIV-positive children in their fight for survival.

The Morehead-Cain Scholar counts her summer 2006 experience as a volunteer at Shyira Hospital in a remote region of northern Rwanda as among her most memorable Carolina experiences.

“Sometimes I close my eyes and try to remember that overwhelming breath I took when I first arrived, with a cocktail of smells, like rich earth, coffee plants and banana trees,” she wrote in a UNC student magazine.

While there, Yorke helped the doctors and nurses, collected information from HIV patients, taught English lessons and conducted surveys in the malnutrition center. She also organized donations of goats and watering cans to families.

“With something as tragic as genocide and war, you look at the lives of the young generations in Rwanda and what they’ve had to go through and you’d think these people would be bitter,” she said. “But I was inspired to see the hope and the work they were doing in their own lives to rebuild and to carry on.”

Now Yorke, a senior biology major and chemistry minor, can add this to her list of accomplishments: She was one of two UNC students chosen last fall for prestigious Rhodes Scholarships. As a Canadian Rhodes Scholar, she’ll pursue a master’s degree in immunology at Oxford University. She also hopes to earn a medical degree.

Yorke returned to UNC from her Rwandan summer with a passion for learning everything she could about HIV research. She took a graduate-level course on the biology of blood diseases and is pursuing an honors thesis in molecular biology and immunology. Her volunteer work at UNC Hospitals’ Jaycee Burn Center also has a connection to her HIV research.

“One of the direct similarities between HIV patients and burn patients is that both have suppressed immune systems,” she said. “They are both susceptible to opportunistic diseases and infections. [In my honors thesis work] through the Burn Center lab at the UNC School of Medicine, I’m looking at cytomegalovirus, which is one of these opportunistic infections.”

In summer 2008, Yorke headed to Thailand and Cambodia, where she worked for the American Foundation for AIDS Research.

Her voyager spirit has been a thread throughout her life. She has climbed the Yukon Mountains, founded an International Student Ambassadors Program at UNC and been a volunteer firefighter in her hometown of Cape Breton Island, Nova Scotia.

Organic chemistry professor Bessie Mbadugha said Yorke “has the brightest future ahead.”

“Lisette’s analytical and academically inquisitive nature leads me to borrow a cliché,” Mbadugha wrote in a Rhodes recommendation letter. “The sky is the limit for this exceptionally talented and intelligent individual.”

There also seem to be no boundaries for Yorke’s athletic pursuits. She’d never done rowing before, but made the women’s varsity rowing team her first year. When she found out there was no women’s ice hockey team at UNC, she joined the men’s team, and later founded a club for women. The women’s team is growing strong in its second year.

“If you have the passion and the drive and the opportunities we have at Carolina, there’s really nothing that’s going to hold you back,” she said.

More on Lisette Yorke:
- N.C. Fellows Leadership Program, four-year leadership development program at UNC
- Student Advisory Committee to the Chancellor
- Volunteer, Interfaith Council Homeless Shelter
biologist Karin Pfennig was watching the news and checking her e-mail at home one evening when a single in-box message got her undivided attention. Someone at the National Institutes of Health was seeking more details on the grant proposal Pfennig had submitted for a $1.5 million award. She knew what this meant.

“I jumped up yelling, ‘I made the short list! I made the short list!’,” Pfennig recalled. Her excitement spread to her husband, David, a distinguished professor of biology at UNC, and their 3- and 5-year-old girls.

A few weeks later, Pfennig got the big news. She was one of 31 winners of the NIH 2008 New Innovator Award, given to early-career scientists “to nurture out-of-the-box ideas,” according to NIH Director Elias Zerhouni.

She knew the recognition and financial support would not only bolster her research, but make it possible for her to collaborate more with peers on and off campus.

“I don’t see these funds as coming just to me,” she said. “I want to initiate a lot of collaboration, and this provides the resources to build bridges to other people in my department and in the Triangle.”

The prestigious award could ratchet up Pfennig’s research on the subtle dance of interactions between genes, environment and behavior. Up to this point, she has focused on how behaviors in two closely related species of spadefoot toads affect mate selection, and how these behaviors are impacted by cues from both the environment and an individual toad’s health. Her findings shed light on how an organism’s genes interact with the environment to affect species diversification, a central element of evolution.

Consider hybridization, or how mating affects species development and diversification. The two spadefoot species that Pfennig studies (Spea bombifrons and S. multiplicata) are found in southwestern Arizona, where the edges of the Chihuahuan and Sonoran deserts intermingle. Rain is unpredictable, and tadpoles need ephemeral ponds to grow. Water in a roadside ditch will do, if it stays wet for long enough. In this arid landscape, tadpoles that can develop rapidly and hop the banks of their watery nursery have a clear survival edge over those with longer development periods, who risk being left high and dry.

Pfennig found that whom the adult toads mate with may make a difference in how the species evolves. She discovered that S. bombifrons toads favor cuddling up to S. multiplicata when the two species use the same habitat and water levels are low. Why? Because the first species — which typically produce slower developing tadpoles — capitalize on the second species’ genetic bent toward more rapid development. But that’s not all. Pfennig’s experimental laboratory manipulations of this scenario revealed a second, very important, key element: Only the less fit S. bombifrons females consistently chose to hybridize with S. multiplicata males.

“Their behavior was not random,” Pfennig said. “The same individual female toads, the ones who were less fit, repeatedly favored hybridization.”

Somehow the animals were acting on two cues — one from the harsh environmental conditions, and one from their own health status — leading them to change their mating behavior to favor S. multiplicata in order to increase their own offsprings’ chances of survival.

“What we found is an example of a behavior that changes based upon an individual’s health status,” Pfennig said. “And our next step, under the NIH grant, is to begin trying to isolate the genetic...
The prestigious award could ratchet up Pfennig’s research on the subtle dance of interactions between genes, environment and behavior. Her findings shed light on how an organism’s genes interact with the environment to affect species diversification, a central element of evolution.
and neural pathways that are activated when the toads are processing these cues, and to look at how brain functions that are involved in processing stimuli may change depending upon the toad’s health status or their environmental conditions.”

Pfennig cautioned that future findings in her spadefoot toad research will not translate directly to humans, but she said that developing a model for how the toads process cues from both the environment and their own health status could help biomedical researchers look for a similar system in humans.

“What I’m hoping to do is pinpoint the processes and how it works in this system, which can then serve as a model for how the environment and genes interact, and maybe it’s a similar process for humans,” she said. “Because one of the things we don’t understand about behaviors, in animals or humans, is how behavior changes depending upon health and disease.”

Being able to tease apart the different brain processes has many implications for humans in terms of developing appropriate medical or behavioral interventions, Pfennig said.

“So what I want to do next is start asking, ‘How are our behaviors dependent upon environmental sensitivity? And how do individuals take in information from their environment, and how does that affect their behavior? And how does their health affect their behavior?’”

Pfennig is also interested in probing the effects of environment upon the toads during different life phases, to determine if there is a certain point when they are more sensitive to its influences, or if there is a point at which their behaviors may become fixed. She also plans to span her research parameters across generations to find out if environmental effects upon a toad can be passed down to its offspring. For example, if a certain S. bombifrons female experiences a series of harsh droughts or food shortages while she’s undergoing sexual development, or even gestation — might her poor physical condition result in behavioral changes in her offspring?

“We’re going to try to tease all of that apart,” Pfennig paused, then laughed. “It’s going to be a lot of teasing things apart.”

When he was chair of the biology department, Steve Matson encouraged Pfennig to be bold in her research. He said her work ethic and her ability to identify important problems in evolutionary biology set her apart from others in her field. “I was absolutely delighted to hear she had won the award,” said Matson, who is now dean of the Graduate School. “There is no greater reward for a department chair than to see a young faculty member succeed.”

William Kier, the current biology chair, said that Pfennig’s NIH award brings to light the “absolutely crucial and central nature” of basic scientific research.

“The vast majority of significant breakthroughs in science do not come from applied research efforts,” Kier said. “Instead, they are the result of the curiosity of scientists who are attempting to answer basic questions that often appear to lack ‘relevance’ to society. But it is invariably these basic research efforts that produce the most significant insights.”

It was Pfennig’s passion for basic research that led her to become a biology professor. She was always drawn to science, she said, confessing that she watched endless nature shows when she was young, and dreamt of becoming “the dashing biologist, running across adventurous places, studying big cats in Africa.”

Pfennig has had plenty of adventure studying small tadpoles instead of big cats. After earning a B.S. degree in ecology, behavior and evolution from the University of California at San Diego in 1990 and a Ph.D. in biology from the University of Illinois at Urbana-Champaign in 1999, she did postdoctoral work at the University of Bristol in the United Kingdom.

She then did postdoctoral research in bioinformatics at the University of Texas at Austin until 2002, when she came to UNC to participate in SPIRE (Seeding Postdoctoral Innovators in Research and Education). In 2004, she became an assistant professor of biology in UNC’s College of Arts and Sciences.

Pfennig said one of the true surprises was discovering how much she loved to teach.

“I love the one-on-one interactions,” she said. “I love when a student asks a question and you can see that not only have they ‘gotten’ a new concept, but they’re applying it to creative inquiry or problem solving.”

Pfennig said she enjoys getting undergraduates involved in lab work and mentoring graduate students who are enthusiastic about their research.

Elizabeth Wojtowicz, one of the four graduate students Pfennig oversees, said that she sought out Pfennig as an adviser because of her prominence in the field.

“I could tell when I met her that she would be a good mentor,” Wojtowicz said. “Not just a boss or a friend, but someone who could guide me along that path the whole time — which she has done. She’s also very good at pulling us back to look at the big picture and where our research fits in, so we don’t get too boxed into looking at just our little corner of the problem.”

For Pfennig, the pleasure of scientific research is apparent: “coming up with cool questions and trying to figure out how to answer them.”

“It’s like this fun puzzle,” she said, “where the more you discover, the more interesting it gets.”

**Online Extra**

More on Karin Pfennig’s research at college.unc.edu.
For teaching to take hold, it takes a mysterious combination of intellect, intensity and joy. Ted Mouw and Abigail Panter (pictured on top of the UNC Bell Tower) have a combined 30 years of inspiring students. These Bowman and Gordon Gray Professors for Excellence in Undergraduate Teaching have clearly mastered the art.
To understand Ted Mouw the teacher, it’s helpful to observe Ted Mouw the athlete. On the soccer field, it’s all-out. He plays with passion and skill, taking obvious pleasure at being in the game. So too in the classrooms of the associate professor of sociology, where a premium is put on thought and action. Every student is expected to actively participate. In exchange, he vows they will never be made to feel they’ve offered a dumb answer.

Consider the First Year Seminar designed by Mouw, “Globalization, Work and Inequality.” Discussions he leads are alternately thought-provoking and humorous, veering seamlessly from the theories of Nobel Prize-winning economist Joseph Stiglitz to sweatshops, tariffs, pizza pies, free-trade protests, catfish from Vietnam and manhole covers made in India.

Reflection follows in a logical and dynamic progression, with every student called on to answer a question or express an opinion whether their hand is raised or not. Mouw’s creed: “The learning process should be stimulating and challenging, but never humiliating.”

Mouw believes most students crave engagement in the classroom. Student testimonials written in support of Mouw’s successful nomination in 2007 for the university’s Tanner Award for undergraduate teaching excellence, confirm his theory. “Amazing.” “Engaging.” “Ted Mouw rocks!”

In searching for words to describe her experience in Sociology 58, Carolyn Treasure, who’s majoring in biology and economics, said Mouw’s active learning style “really changed my perspective in a way that no other class has. We discuss issues that are extremely relevant to today, and he has high standards for participation, yet his class is so intellectually stimulating that participation is not a problem.” She added, “Dr. Mouw seems to genuinely care about all his students.”

He also respects them. “I’m always impressed by how smart students are, but you don’t always get that first in class,” Mouw said. “You have to talk to them one-on-one during office hours or over coffee. That’s when they show you who they really are, and how you as a teacher become approachable.”

Mouw was born in Ann Arbor, Mich., to two lifelong learners. His father taught physiology at the University of Michigan, and his mother taught German at a local high school. The family’s travels, most especially a year spent in the Pacific Rim, opened the young Mouw’s eyes to cultural and societal differences, laying the foundation for a lifelong interest in the social sciences. And his parents’ mid-career moves (father to medical doctor, mother to Methodist minister) illustrated the value of risk and reward.

High school experiences helped Mouw appreciate the importance of examining all sides of an issue. An Advanced Placement history teacher integrated classroom discussions of war with the beliefs of pacifists.

Mouw learned another important pedagogy lesson at Oberlin College, where as an English literature major he was at first “terrified to speak out in class.” This convinced him of the necessity of cultivating an atmosphere where every student is encouraged to participate.

Mouw joined UNC’s sociology faculty in 1999, after earning a master’s degree in economics and a Ph.D. in sociology at the University of Michigan.

Howard Aldrich, chair of UNC’s department of sociology, has enjoyed watching Mouw evolve as a teacher and a researcher studying human migration patterns.

“When you talk about Ted, you’re talking about a whole scholar,” Aldrich said. “He is universally praised for his research. He’s a rising star in the profession, but I’m delighted he continues to think of himself first as a teacher.”

Below: Ted Mouw believes most students crave engagement in the classroom.
Thanks in large measure to attentive educators, Abigail Panter’s life has been shaped by “aha!” moments. Now, the UNC psychology professor is giving her students similar opportunities for clarity of thought and purpose.

Panter grew up in Rockland County, N.Y., north of New York City. She said her father, a physician, and her mother, a professional pianist and writer, instilled in her a deep appreciation for the arts, concern for others and enthusiasm for life. A talented cellist, Panter played in ensembles and orchestras from an early age through college. Starting in the seventh grade, she traveled to Manhattan every Saturday for music classes at Juilliard under the tutelage of an “incredible teacher.”

As an undergraduate at Wellesley College, Panter studied psychology, French and music. “It was class after class of accessible professors who were willing to mentor me, who were caring yet rigorous with the academics, who had a true passion for what they were doing,” she recalled. She especially remembers two psychology professors with whom she learned lifelong lessons about the importance of a collaborative approach — and how teaching occurs inside and outside the classroom.

Panter earned her doctoral degree at New York University, where she studied social/personality psychology with a “kind and gifted mentor” who sparked her interest in quantitative psychology, research design and psychometrics. In 1989, at age 25, she joined the UNC faculty in the psychology department’s L.L. Thurstone Psychometric Laboratory, where she continued with a wide range of research interests including: developing new measures and designs in social/personality psychology; testing the effects of educational diversity; evaluating the effectiveness of HIV/AIDS treatment and educational programs; and exploring issues related to the status of women.

She teaches quantitative and research methods to undergraduate and graduate students. In her classes, Panter asks students to step into the researcher role to gain a clearer view of the process and to apply the learned concepts and skills in settings beyond her courses.

“I like to get into the trenches with my students and show them how the research process works from start to finish,” she said. “It gives them the support they need to do their work, and it tends to alleviate any fears they might have about generating ideas, conducting research or analyzing and presenting data.”

Panter’s advanced undergraduate research methods course can be daunting at first, even for senior psychology majors such as Nick Bailey and Cerina Buchanan.

“The first day of class, Dr. Panter went over what we were going to cover over the semester and what was expected of us,” recalled Bailey. “Everything sounded much harder and more in depth than anything I had done before in psychology classes. There was even the possibility that [our] experiments … could be published in a scholarly journal. I thought this would be much more difficult than it has been, and that is because she has shown us what to do each step of the way.”

Buchanan, who is planning a career in optometry, believes as a result of her time with Panter that she has the skills necessary to “conduct an experiment related to vision impairment prior to my acceptance into optometry school.”

“I did not anticipate research being so interesting, but it was,” Buchanan said. “That’s because Professor Panter always makes sure students are engaged. She gets excited about the subject, and that keeps students attentive.”

In a letter he co-wrote in support of Panter’s nomination for the distinguished professorship, Donald Lysle, chair of the department of psychology, noted, “although Professor Panter has excelled in each of the traditional components of academic life — research, service, and teaching — it is her devotion and accomplishments in undergraduate teaching that are truly remarkable.”

While flattered by such affirmation, Panter insisted what she does “is really just a part of what we’re about here. It’s just a matter of getting all the pieces working in synch so everyone involved can thrive.”
Tift Merritt in front of The White Horse Tavern in Greenwich Village, N.Y., once frequented by Jack Kerouac and Dylan Thomas.

A NEW CHAPTER FOR
A postcard from singer/songwriter Tift Merritt might read like this: Released a new album to rave reviews. Found a new home in New York City. Sang at the Grand Ole Opry and on Letterman and Leno. Launched a public radio show. Getting hitched.

At press time, Merritt was planning to marry longtime boyfriend, drummer, business partner and UNC alumnus Zeke Hutchins ’00 in March in a simple family ceremony. They met in an American Studies class at Carolina, where Merritt studied in the 1990s. He graduated with a degree in elementary education, and she left school as her music career began heating up with only nine credits left to fulfill her degree.

After her second album “Tambourine” was nominated for a Grammy in 2004, life became anything but simple for Merritt, who was born in Texas but grew up in Raleigh. The album was an artistic but not a commercial success. Critics said she was too rock for country, too country for rock. Merritt had been on tour for a long time. Life on the road — filled with dirty laundry, suitcases, hours in a van and airplane ticket stubs — was wearing very thin.

She wasn’t even sure that she wanted to stay in the music business.

One day while sipping a glass of wine at her computer, she Googled “Paris, apartment, piano.” Three places popped up, and after consulting a friend who lived in the French capital about which flat to choose, she decided to take herself there. The initial plan was to stay for two weeks. She ended up staying four months.

“You can really find anything you want on the Internet,” Merritt laughed while sipping a cup of lemon ginger tea in her spartan third-floor walkup in the West Village. Her guitar, piano and 15 pounds of audio equipment for her radio show sit in a corner by the window, which is cracked open on this unseasonably warm December afternoon. A drawing of the Eiffel Tower hangs above her couch. “I felt completely burned out, directionless, aimless and lost. All of a sudden I just started to write, and copies of a new live CD she recorded on a grand piano last fall at the Radcliffe Centre, an old converted church in Buckingham, England.

Merritt has come a long way from her days at Carolina, playing gigs, taking poetry and songwriting classes, waiting tables. She insists on coming clean right off the bat about something she regrets — not finishing her degree.

She left UNC in 2000, in the middle of a “rebellious phase,” when her career was taking off and “the engine had started,” she said, as a taxi horn blared outside her New York apartment window. She finished all the requirements for an American studies major, focusing heavily on creative writing courses. One thing still hanging over her head — a dreaded General College biology course and lab.

In fact, she has recurring nightmares about it, joking that “science hurts.”

“Stay in school!” she yelled playfully. “I love school, especially now that I’ve been working for 10 years. There will be a time when I go back, and I’m going to take French classes and literature classes … I’m looking forward to when I can do it, but it’s really hard to find a pocket of time where that’s possible right now.”

“My mother wants to kill me! But I’ve never done things by the book,” added Merritt, who is part Southern rebel, part steel magnolia.

She counts creative writing professors Michael McFee, Bland Simpson and Doris Betts, and American studies professor Towny Ludington among her Carolina mentors.

“I never thought someone could teach you how to be an artist, but I ended up learning a whole heck of a lot about how to be an artist from the people at Chapel Hill,” she said.

“I found a way to fit in, in my own way, and to really be a part of this...
community, to be a free spirit and to belong at the same time, and that’s such a gift,” she added.

McFee and Merritt used to have breakfast once a week at Ye Olde Waffle Shop on Franklin Street, where he would torment the health-conscious, farmer’s market-loving Merritt with a fatty side order of bacon.

“What I admire most about Tift is how she has a vision of what she wants to do and how she wants to do it, and she doesn’t like to compromise,” said McFee, the poet, essayist and director of the creative writing program in UNC’s College of Arts and Sciences.

No “real artist” compromises, noted Robert Smith, senior vice president at Concord Records, the parent company of Merritt’s label, Fantasy. She calls Smith her mentor in the music business. The two share an appreciation for writer Eudora Welty.

“Eudora Welty’s writing allows for an intimacy with the reader that is so often missing from the craft of writing. Tift’s songs have a similar quality: She doesn’t mask herself through artifice or simply good craft,” Smith said. “There is an openness and honesty; there is no defensive barrier between her art and her audience.”

“She could be cranking out songs with the sheen and polish of the hit factories, but she has something to say that sets her apart. And in the end, that kind of artistic integrity and determination has a better chance of succeeding.”

IGNITING THE SPARK

Merritt calls “The Spark,” her public radio show, “American studies at work.” The program was launched in January 2008 on a Marfa, Texas, station and online at www.marfaspark.com.

She got the idea for the show when she fell in love with the work of painter Cy Twombly at an art museum in Paris. “What’s his favorite color?” she wondered. “How much time does he spend at his studio?”

Merritt met American studies professor Ludington for coffee and told him she really wanted to have a conversation with Twombly, to find out what makes him tick. Ludington pushed her to pursue the idea further. She has interviewed pianists, poets, journalists and photographers about their work, opening each show with the phrase: “where you meet the real people behind great works of art.” Ludington helped to connect her with painter Wolf Kahn, and McFee suggested she contact poet and fellow Paris resident C.K. Williams.

“I don’t pretend be a journalist,” said Merritt, who edits the show herself. “I’m an artist talking to another artist; it’s a conversation.”

“C.K. Williams said, ‘There is this moment sometimes … when you think, there’s no path; I’m lost. And it’s really not about looking up and doubting yourself. It’s about keeping your head down and finding the path.’”

LIFE IN THE BIG APPLE

Merritt moved to New York City in October 2007, to be closer to the heart of her business. She has already interviewed some of her Greenwich Village neighbors for her radio show.

She spent much of 2008 on the road, but when she is home she enjoys playing tourist — visiting art galleries in Chelsea, taking a carriage ride through Central Park, shopping at the Union Square Market, having dinner at a good local restaurant like Blue Hill on Washington Place.

The area’s twisting streets, cozy cafes and high-rent townhouses are filled with an artistic history. Photographer Annie Liebovitz is Merritt’s next-door neighbor. The White Horse Tavern is right down the street, where Welsh poet Dylan Thomas drank himself to death, Jack Kerouac was a regular, and the Village Voice was born.

“I don’t know that I’m going to be a New Yorker forever,” said Merritt, who confesses that she misses “green, her mom and dad, and her tomato plants.” “But we’ve always been of a mind that it’s really important to be growing, and this was how we saw it necessary to take things to the next level. … There will be a time in our lives when we don’t think it’s great to live in 250 square feet, but [right now], we think it’s cool.”

WHAT SHE’S LOOKING FOR NOW

Merritt, who considers herself a “writer first, a musician by good luck and a performer way down at the end,” will spend the first part of 2009 on the road again. She hopes to avoid getting burned out like she did on the “Tambourine” tour.

“I think I’m still at this point in my career where I do have to push myself to the limits. I just think everybody’s eye is on the same ball now, and that really helps,” she said. “Experience is a great teacher.”

One of the songs on “Another Country” is “I Know What I’m Looking For Now:”

“All of these miles I’ve come, All of these dreams I’ve chased in my mind, All for something small and simple to find… So does she know what she’s looking for now?

“What I’m looking for is trying to build a place where I can really live in the heart of my work as much as possible … where everyday life is filled with lots of surprises and adventures, and the small things are really a joy,” Merritt said.

“It’s not about the big things. It’s about living in that good place where you really are enjoying every moment.”

ONLINE EXTRAS

Listen to highlights of our interview with Tift Merritt, see her perform on Letterman, visit her Web site and more at college.unc.edu.
As long as my laptop doesn’t take too long to load Facebook, I don’t give its “dual cores” too much thought. But computer science Ph.D. student Jason Sewall ponders processing power every day. On a whiteboard in Sitterson Hall, he tweaks equations, finding new ways to write programs that harness the power of “many-core” computers—those with multiple processors on a single chip.

Computers with as many as 16 processors are around now, and as they become more commonplace, you can have significant computing power at your desktop. But all those processors won’t do you any good if your software can’t recognize and use them. That’s what Sewall, who is scheduled to graduate in 2009, will figure out for his dissertation.

“I think there’s really fertile ground here,” he says. “How can you slightly modify the way you’re handling these algorithms to take advantage of these multiple cores?”

Animators, especially, seek the maximum “flops per watt”—the most computing bang for their electricity buck.

“People that are trying to render, say, a Pixar movie, have thousands and thousands of computers that are rendering these animations,” Sewall says. “The amount of computing power they get per electric bill is really a bottom line for them. If you have four processors in your computer and you’re only using one of them, you’re still running the other three, and they’re using power.”

Many-core systems will require a complete revolution in programming and algorithm design, says Sewall’s adviser, Ming Lin. “Jason’s work is important because it’s looking toward the future and contributing to this new paradigm in computing,” explains Lin, Beverly W. Long Distinguished Professor of Computer Science.

Sewall worked as a research intern for Microsoft in summer 2008 and Intel in summer 2006 and 2007. He writes prototype programs for animations that simulate things that happen in the real world, such as fluid simulation and shockwave propagation during an explosion. He says that the algorithms currently used in programs that model gases such as air, for example, work just fine, but they don’t fully take advantage of the speed offered by multiple processors. He has also begun using the same principles to model how traffic moves on a highway.

“There’s actually some pretty surprising but useful similarities between the way that gas flows in a pipe and the way that traffic flows on a highway,” he says. “You can think of stopped traffic as being like a shockwave; as one car pulls in and stops, another car comes in and has to stop. So this wave of stopping is moving backwards.”

Sewall talks fast, jumping from the speed at which waves travel to the compressibility of fluids to the reason why the term “dual core” processor is confusing (a core is really just a small processor). He double-majored in math and computer science as an undergraduate at the University of Maine, and Lin says he understands the math behind the shockwaves he is modeling at a depth that’s impressive for a computer scientist. His facility with all kinds of ideas translates to an interest in research other than his own. For instance, he helped with graphical rendering and animation for postdoctoral fellow Jur van den Berg’s study of crowd movement and traffic reconstruction.

“He’s a good team player who’s willing to contribute to our research group in more ways than just conducting his own research. That’s rare among graduate students and really puts him in a different league,” Lin says.

ONLINE EXTRA
More on the research of graduate student Jason Sewall at college.unc.edu.
A passion for archaeology and ancient art
Honoring a beloved professor

By Joanna Worrell '06

For decades in Room 111 of Murphey Hall, the seats were too close together, the lighting and acoustics were terrible, and the steeply banked rows of seats were a hazard for anyone walking among them. But that didn’t stop thousands of students from crowding in the lecture hall over the years to take courses in archaeology, mythology and ancient art with Professor James Penrose Harland.

While his classroom may have been stuffy and dark, J.P. Harland, who died in 1973, was anything but. Armed with a legendary combination of wit and knowledge of classical archaeology, he was one of the most popular and well-liked professors at UNC for many years.

Harland, who taught UNC’s first course in classical archaeology, served on the classics faculty continuously from 1927 to 1963, teaching an estimated 25,000 students over his 36 years in the classroom. Among those students were North Carolina icons such as Terry Sanford and Andy Griffith.

Bill Williamson ’53 of Charlotte says that although he majored in business administration, his best memories of his education were the liberal arts courses he took, especially Harland’s class.

“Through his course in classical archaeology, Professor Harland instilled in me a love of art and material culture that I have been able to enjoy throughout my life,” Williamson said. “It was one of the greatest and most valuable lessons I learned from my liberal arts education at Carolina.”

Harland made such an impact on his life that in 1993 Williamson memorialized the legendary professor by establishing the J.P. Harland Endowment Fund in Classical Archaeology. The fund supports classical archaeology at UNC by helping graduate students — the next generation of professors — participate in archaeological fieldwork throughout the world.

“Through my gifts to the Harland Fund, I hope to ensure that the experience I had as a student is available to future generations of UNC students,” Williamson said.

In the classroom, Harland’s lectures were laced with illustrated slides and witty comments. By all accounts he was engaging, lively, funny and genuinely interested in his students.

Georgia Carroll Kyser ’70 of Chapel Hill, widow of big band leader Kay Kyser, took several classes with Harland. She was so inspired by Harland’s classes that she later traveled to the Greek Islands to see firsthand what she learned in the classroom.

“I looked forward to his class because his sense of humor was a relief from the heaviness of some of the other classes,” Kyser said. “People enjoyed his class because instead of just learning, he made everybody laugh.”

Harland was internationally known for his archaeological explorations in Greece and the Middle East. It is fitting, then, that the fund in his name supports field experiences abroad for graduate students in the department of classics.

Donald Haggis, professor of classical archaeology and the Nicholas A. Cassas Term Professor of Greek Studies, said the Harland Fund supports one classical archaeology graduate student each summer. He wishes to expand the fund to support more student field experiences.

“The Harland Fund has been essential in supporting the teaching of students in the field, and providing them with experiences that are not only critical to their practical training, but also vital for their ultimate professional success and impact in the discipline of classical archaeology,” Haggis said.

Professor Harland wouldn’t recognize the highly polished classrooms of Murphey Hall today, thanks to a massive and historically sensitive renovation, made possible by revenues from the N.C. State Bond Referendum. But he would recognize the need to do more to support future classical archaeologists.

To support the Harland Fund, contact Margaret Costley, Arts and Sciences Foundation, (919) 843-0345, or margaret.costley@unc.edu. Give online at college.unc.edu/foundation/makeagift and note “Harland Fund” in the designation box.
American studies at home and abroad

By Pamela Babcock

For 40 years, American studies in UNC’s College of Arts and Sciences has enhanced understanding of U.S. art, culture, geography, history, religion, literature, folklore and more through interdisciplinary study.

New gifts have brought to UNC a world-renowned expert in Southern material culture and provided opportunities for more undergraduates to travel abroad to learn how others perceive the United States.

Honoring one giant, attracting another

The George B. Tindall Distinguished Professorship in American Studies honors the renowned Carolina scholar and alumnus who died in 2006. Tindall ‘48 (M.A., Ph.D. ’51) was a leading expert on the American South.

John A. Powell (A.B. ’77) of San Francisco established the professorship, which is augmented by the C.D. Spangler Foundation Challenge Grant Initiative and the North Carolina Distinguished Professors Endowment Trust Fund. Powell also created the John Shelton Reed Distinguished Professorship and the Joel R. Williamson Distinguished Professorship, two funds that support Southern studies.

Following a national search, Bernard L. Herman, a leading expert on Southern material culture, became the first Tindall Professor in January.

“The Tindall Professorship brings to campus an outstanding specialist in Southern material culture, which will make Carolina the premier place in the Southeast for the study of material culture, architecture, craft, folk art and food ways,” said Joy Kasson, chair of the American studies department.

“UNC is an extraordinary university that has long ago figured out the dynamics of interdisciplinary study and public engagement in ways which are truly wonderful,” said Herman, who previously chaired the department of art history at the University of Delaware.

Herman received a B.A. in English from the College of William and Mary in 1973 and a Ph.D. in folklore and folklife from the University of Pennsylvania in 1978.

Herman has taught courses in material culture, vernacular architecture, visual culture, folk and ethnic arts, historic preservation, art of the quilt, and critical approaches to the history and interpretation of objects. A forthcoming book from UNC Press focuses on a group of women who create bold and dynamic quilts in the isolated African-American hamlet of Gee’s Bend, Ala.

Her parents, Edwin T. and Nancy Sims Preston of Chapel Hill, wanted more American studies students to have opportunities to broaden their perspective. They completed the fund with a planned gift via an IRA rollover provision that allows donors starting at age 70½ to make tax-free charitable gifts totaling up to $100,000 per year from their IRAs directly to eligible charities, including universities.

Julia’s former teacher, American studies professor emeritus Towny Ludington, who proposed the creation of the fund to honor Julia, made the initial gift, followed by many gifts from family and friends.

The fund ensures that each year one or more American studies majors can study abroad. Chirdon was the first recipient. He explored American studies at King’s College in London last fall.

Among his many classes, Chirdon took one on the development of New York and Los Angeles as major metropolitan centers. He said it was enlightening to learn about these American cities “through a different lens.”

After graduation, Chirdon plans to head to New York to pursue writing, acting and directing. He says his UNC degree will be “invaluable.”

“The American studies program has taught me to connect critically with the world, and specifically with the problem of being an American in an increasingly globalized world,” Chirdon said. “This connection is the basis for my artistic life — as a writer and actor, I’m increasingly dealing with the problems and promises of being an American, and as I head out of college and into the ‘real world,’ it’s important to be aware of these issues.”

Seeing America from abroad

Chris Chirdon ’10, a double major in American studies and drama from Charlotte, N.C., traveled abroad to learn more about the U.S. Julia Preston Brumley ’83 would have understood.

The Julia Preston Brumley Travel Scholarship honors the memory of the American studies graduate who died in a plane crash near Nairobi, Kenya, in 2003, with her husband, two of their children, and eight other family members. They were on a trip organized by her father-in-law George Brumley Jr., a retired physician.

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The e-mail Patricia Parker received shortly after New Year’s Day seemed like a dream. She and members of the Chapel Hill youth action group that she founded were invited to celebrate the presidential inauguration of Barack Obama on Jan. 20 — for free.

Parker, an associate professor of communication studies in UNC’s College of Arts and Sciences, founded the Ella Baker Women’s Center for Leadership and Community Activism. The nonprofit center’s flagship project is Striving Sisters Speak!!! (S³), a group of young minority women in low-income neighborhoods working to create coalitions of social justice in their communities.

Five teenagers and several volunteers and chaperones with the group attended the inauguration celebration in Washington, D.C., thanks to The Stafford Foundation’s People’s Inauguration Project and other UNC donors and friends. The group attended a prayer breakfast, a luncheon featuring Martin Luther King III and an inaugural ball, among other festivities.

The foundation was started by Earl W. Stafford, founder of a Centreville, Va., technology company.

Parker was joined on the trip by Striving Sisters community organizers Cassandra Lloyd, 18; Bianca Webb, 14; Ashley Webb, 16; Tiara Denning, 15; and Kendall Weaver, 14. Volunteers with UNC connections included senior Alysa Campbell, a public policy major from Lithonia, Ga.; and UNC alumna Stacey Ellen Craig of Durham, N.C., who graduated in 2006 with a degree in international studies.

Parker won a competitive Kauffman Fellowship from the Carolina Entrepreneurial Initiative to create the model center. This spring, through a grant from the Robertson Scholars Collaboration Fund at UNC and Duke University, Parker will partner with Duke colleagues to convene a conference on “Sharing the Mantle: Strategies for Creating Youth and Adult Partnerships.”

“Striving Sisters” and UNC adviser invited to inauguration

By Kim Weaver Spurr ’88

“I helped to organize a community festival encouraging youth activism in my neighborhood. I am proud to say that, like the president, I am a community organizer,” said Kendall Weaver, 14.

“My goal was to bring together youth in vulnerable communities with the idea of creating a different model of adult-youth interaction,” said Parker, who spent time volunteering and getting to know youth at the Trinity Court and Pritchard Park public housing neighborhoods in Chapel Hill, not far from campus. “This is not providing services to the youth, but creating a collaborative partnership, encouraging self-empowerment.”

Weaver, a ninth-grader at East Chapel Hill High School, was excited about the inauguration.

“I helped to organize a community festival encouraging youth activism in my neighborhood,” she said. “I am proud to say that, like the president, I am a community organizer.”

The inauguration trip was also supported by William Keyes, founder of the Institute for Responsible Citizenship in D.C. and a member of the UNC Board of Visitors. Support was also provided by the College of Arts and Sciences, the communication studies department and the Office of the Vice Chancellor for Public Service and Engagement at UNC. Community sponsors included Dillard’s Inc., the department store, and Strowd Roses Inc., a Chapel-Hill based foundation.

ONLINE EXTRAS

$1.5 Million Physics Professorship

Melchors have been helping others for 50 years

By Del Helton

High-tech pioneer Jack Melchor ’48 (M.S. ’50) and his wife Norma, a former nurse, have spent the past 50 years helping others live in good health — and still more live their dreams.

They’ve made gifts to construct, then expand, El Camino Hospital in their beloved hometown of Los Altos, Calif., where Norma began volunteering in 1957 before there was even a hospital building. Supporting a range of needs, from education and conservation to human services, the Melchors have been generous with their time and money. Jack Melchor, a prolific entrepreneur with six patents and a long career with Hewlett-Packard, aided in the start-up of more than 100 companies as a venture capitalist, many in the Bay Area.

Their latest gift for the Melchor Distinguished Professorship in Physics in the College of Arts and Sciences continues that tradition of service — this time benefiting Jack’s alma mater and future generations of physics scholars and teachers. The $1.5 million endowment will include $500,000 from the N.C. Distinguished Professors Trust Fund supported by the state General Assembly.

When a letter from physics and astronomy chair Laurie McNeil arrived in his mailbox in 2006, Jack was impressed that Carolina named a woman to chair the department.

“There was only one girl in my physics program in the 1940s,” Melchor said.

And though he estimates it’s been 30 years since he was in Chapel Hill, his Tar Heel connections remained strong.

A native of Mooresville, N.C., just north of Charlotte, Melchor was raised by family in the nearby mill town of China Grove after his mother died when he was 6 months old. An excellent student, Melchor focused on schoolwork and developed a special interest in math and science. He credits Paul Huffman, his high school science teacher, who inspired him with an early love of physics and scientific inquiry. Melchor’s potential was recognized with an invitation to Carolina’s Navy V-12 program in 1943, which prepared military officers for service during World War II.

While on leave from military duty in late 1944, Melchor met Norma at a USO event in South Bend, Ind. In 1946, they married and moved to Chapel Hill — living in a 14-foot-wide trailer in Carolina’s famed Victory Village — so Jack could complete his bachelor’s and master’s degrees in physics, and Norma could work at Duke University Hospital.

After earning his Ph.D. in physics in 1953 at Notre Dame (the Melchors also created a professorship there), the couple moved to California where Melchor had a job at Sylvania Electronic Defense Labs. Within three years, he’d started his own company, Melabs, and by 1959, with six patents in microwave technology, he “retired” — the first of four times. Until he retired for good in 1990, Melchor’s talent for business development kept him in demand as a consultant worldwide.

Today, the couple enjoys keeping up with their four children, seven grandchildren and one great-grandchild.

They can also look forward to news from Chapel Hill when the first Melchor Distinguished Professor is named, and a top physics scholar and teacher inspires future scientists.

“The Melchors are giving us the opportunity to attract an outstanding scientist and educator at the most exciting stage in her or his career, when the early promise has borne fruit but there are still many exciting discoveries to come. Their gift will also help us attract excellent graduate students, the lifeblood of all science research,” said McNeil.

“Private support makes the difference between hiring people whom we hope will become excellent and those whom we know already are.”

- THE V-12 PROGRAM

Jack Melchor was among more than 20,000 men who attended special naval training programs at Carolina during World War II.

Early in the war, the U.S. Navy scheduled a massive shipbuilding program that would extend over a number of years. The Navy knew it would need college-educated junior officers to help man these ships. Through nationwide testing and from enlisted applicants already serving on active duty, 120,000 men were selected for the V-12 Navy College Training Program, and 131 colleges and universities — Carolina among them — hosted the program. The sailors took regular college courses, with an emphasis on math and science.

The Chapel Hill campus also aided war efforts with a preflight center for training navy pilots and a Reserve Officers Training Corps (ROTC). Along with the V-12, these programs required “an armory, an infirmary and extensive barracks,” wrote William Snider in Light on the Hill. “The U.S. Navy brought the war to Chapel Hill in a sizable wave of expansion.”

For more history on the V-12 program, visit www.navymemorial.org.

ONLINE EXTRA

To read more about the Melchors, named Los Altars of the Year in 2007 by the Los Altos Town Crier, visit college.unc.edu.
ENZYMES ARE ESSENTIAL TO LIFE

All biological reactions within human cells depend on enzymes. Their power as catalysts enables essential reactions to occur in milliseconds, instead of millions or billions of years.

One scientist who has been studying enzymes for years is Richard Wolfenden, Alumni Distinguished Professor of Biochemistry and Biophysics and Chemistry in UNC’s College of Arts and Sciences and the School of Medicine.

In 1995 Wolfenden discovered that without a particular enzyme, a biological transformation he deemed “absolutely essential” in creating the building blocks of DNA and RNA would take 78 million years.

Now he’s discovered that without the enzyme called uroporphyrinogen decarboxylase, a reaction essential for the production of hemoglobin and chlorophyll in cells would take 2.3 billion years, equivalent to about half the age of the Earth, Wolfenden said.

“This enzyme is essential for both plant and animal life on the planet,” Wolfenden said. “What we’re defining here is what evolution had to overcome, that the enzyme is surmounting a tremendous obstacle, a reaction half-life of 2.3 billion years.”

“Without catalysts, there would be no life at all, from microbes to humans,” he added.

Wolfenden and co-author Charles A. Lewis, a postdoctoral fellow at UNC, published their findings in the Proceedings of the National Academy of Sciences.

Celebrating the Eizenstat Professorship in Jewish Studies

Among the dignitaries and friends at a fall dinner in Washington, D.C., celebrating the campaign for the new Ambassador Stuart E. Eizenstat Distinguished Professorship in Jewish History and Culture were: co-host David M. Rubinstein, co-founder and managing director of The Carlyle Group, pictured with Eizenstat (bottom), and Israeli Ambassador Sallai Meridor with Eizenstat (top). Other co-hosts were: UNC President Erskine Bowles, UNC College of Arts and Sciences Interim Dean Bruce Carney and Eizenstat’s law firm of Covington & Burling LLP, represented by Timothy C. Hester, who chairs its management and executive committees.

Rubinstein pledged a $500,000 lead gift to help establish the $2 million professorship in honor of his longtime friend and former Carter White House colleague. Eizenstat, who graduated from UNC with a degree in political science in 1964, served as chief domestic policy advisor and executive director of the White House domestic policy staff during the Carter years, and as under secretary of commerce, under secretary of state and deputy secretary of the treasury in the Clinton administration. Under Clinton, Eizenstat was also a special representative of the president and secretary of state on Holocaust-era issues and successfully negotiated major reparations agreements with Austria, France, Germany Switzerland and other European countries.

For additional information on the Eizenstat Professorship, please contact Rob Parker, associate director of the Arts & Sciences Foundation, at (919) 962-6182 or rob.parker@unc.edu.
Environmental studies and sciences courses are increasingly popular at Carolina as students seek to be involved in finding “green” solutions to global warming, fossil fuel depletion, freshwater availability, environmental pollution and economic challenges.

In response, the University has re-organized the environmental educational landscape (previously called the Carolina Environmental Program) to strengthen both teaching and research. One result is that the College of Arts and Sciences is now responsible for administering undergraduate degree programs in environmental sciences (B.S.) and environmental studies (B.A.).

These undergraduate programs and the graduate curriculum in ecology are part of a new academic unit in the College called the Curriculum in the Environment and Ecology.

The curriculum is chaired by David H. Moreau, a professor of city and regional planning and an expert on water resources and environmental management. He recently completed work on a peer review committee that examined an assessment by federal agencies on performance of the levees around New Orleans during Hurricane Katrina.

Moreau also serves on two committees of the National Academies’ National Research Council: the Committee on Independent Scientific Review of Progress Toward Restoration of the Everglades, and the Committee on the Mississippi River and the Clean Water Act. Moreau is former director of the Water Resources Research Institute of the University of North Carolina system, and a member and former chair of the N.C. Environmental Management Commission.

The new Institute for the Environment, a separate academic unit outside of the College, will foster environmental research and engagement, and partner with the College in undergraduate and graduate education by providing field study and research experiences, internships, and other experiential learning opportunities.

The Institute is directed by Lawrence Band, the Voit Gilmore Distinguished Professor of Geography in the College of Arts and Sciences. He is an expert on the hydrology and ecology of watersheds. He has recently completed service on two National Academy of Sciences’ National Research Council committees on the national capacity for hydrologic observations, and on urban stormwater components of the Clean Water Act, and on committees reviewing restoration planning in the Everglades and the Chesapeake Bay Watershed.

“We’re excited that the College and our faculty will be even more involved now in teaching and conducting research on vital issues that affect our environment,” said Karen Gil, senior associate dean for social sciences and international programs. “David Moreau and Larry Band have the vision and experience to help Carolina continue to lead in this critical area for North Carolina, the nation and the world.”

The UNC Gillings School of Global Public Health will continue to oversee undergraduate (B.S.) and graduate (M.S.) degree programs in environmental sciences and engineering.

Grants give Asian studies a $513,000 boost

Asian studies at UNC received two new grants totaling $513,000.

Grants to the Carolina Asia Center from the Freeman Foundation and the Thai Ministry of Foreign Affairs will further increase faculty, graduate and undergraduate student opportunities for engagement in Asia.

The Center in the College of Arts and Sciences promotes cutting-edge research, enhances teaching and learning, and facilitates strategic partnerships. The Center also works with organizations to coordinate Carolina’s broad Asian studies agenda — facilitating multidisciplinary approaches to Asian studies, embedding Asian languages and area studies in the curriculum, and enhancing Carolina students’ experience of Asia.

A $400,000 grant from the Freeman Foundation will help to increase the number of undergraduates taking Asian studies courses.

In support of the 175th anniversary of Thai/U.S. diplomatic relations, the Center also received a $113,000 grant from Thailand’s Ministry of Foreign Affairs, provided through the Royal Thai Embassy in Washington, D.C.

The Ministry grant will enable the Center to enhance course offerings on Thailand and Southeast Asia through curriculum and course development grants, expand library holdings, support study abroad, host a visiting Thai scholar and coordinate a public workshop on contemporary Thailand.

Andrew Chen
IMPROVING PROSTATE CANCER TREATMENT

A UNC spin-off company has been awarded a $2 million grant to commercialize a new technology designed to improve radiation treatment of prostate cancer.

The grant from the National Cancer Institute will enable Morphormics Inc. to market its proprietary technology for constructing anatomical “roadmaps” of individual patients. The roadmaps are critical navigational aids that help physicians keep a radiation beam focused on the tumor, while at the same time avoiding nearby parts of the body that could be harmed by radiation exposure.

Morphormics, also known as Mx, was co-founded in 2001 by UNC radiation oncologist Edward L. Chaney, with Stephen M. Pizer, UNC Kenan Professor of computer science and radiation oncology, and Sarang Joshi, then assistant professor at UNC (now at University of Utah).

All of the intellectual property on which the Morphormics system is based was developed at UNC and is licensed to Morphormics.

FRED BROOKS’ LEGACY

Family and friends celebrated the dedication of the Frederick P. Brooks Jr. Computer Science Building on campus in October. The state-of-the-art facility, part of the new science complex built with a combination of public and private funds, is named for the architect of IBM’s supercomputers in the 1950s, who founded the computer science program in UNC’s College of Arts and Sciences and chaired it for 20 years. Pictured, back row, from left: Jan Prins, chair of computer science; Chancellor Holden Thorp; Fred Brooks; Roger Perry, chair, UNC Board of Trustees. Grandchildren, front row, from left: Marie Brooks (15), Phil Brooks (12), Henry Brooks (11), Annie Brooks (6), Roger Brooks Jr. (3) — all from East Irvington, N.Y.; and Jeffrey La Dine, Jr., (8); Anna La Dine (10); and Arwen La Dine (13) — all from Little Eriswell, Suffolk, England.

Don’t blame the borrowers

Risky credit products, not risky borrowers, are the root cause of the mortgage default crisis. That’s the conclusion of research by the Center for Community Capital in UNC’s College of Arts and Sciences that attracted widespread media attention as the national credit crisis worsened.

An editorial in The New York Times cited the research to refute critics of the Community Reinvestment Act, designed to help low-income families own their own homes.

The UNC researchers studied default rates of two similar groups of low-income borrowers: those who received sub-prime mortgages and others who received loans through an affordable home mortgage program called the Community Advantage Program. The borrowers with sub-prime mortgages defaulted at much higher rates.

“These results show clearly that mortgages made using traditional affordable housing guidelines are holding up much better than subprime mortgages,” said center director Roberto Quercia, professor of city and regional planning. “Homeownership can remain an important and primary path to financial security for Americans, even among those of modest means, as long as home buyers have access to safe-and-sound mortgage products.”
How salmon and sea turtles find their way home

How marine animals find their way back to their birthplace to reproduce after migrating across thousands of miles of open ocean has mystified scientists for more than a century. But UNC marine biologists think they might have unraveled the secret.

At the beginning of their lives, salmon and sea turtles may “read” the magnetic field of their home area and “imprint” it on their memory, according to a new theory in the journal *Proceedings of the National Academy of Sciences*.

The Earth’s magnetic field varies predictably across the globe, with every oceanic region having a slightly different magnetic signature. By noting the unique “magnetic address” of their birthplace and remembering it, animals may be able to distinguish this location from all others when they are fully grown and ready to return years later, researchers believe.

Previous studies have shown that young salmon and sea turtles can detect the Earth’s magnetic field and use it to sense direction during their first migration away from their birthplace to the far-flung regions where they spend the initial years of their lives.

The new study seeks to explain the more difficult navigational task accomplished by adult animals that return to reproduce in the same area where they themselves began life, a process scientists refer to as natal homing.

“What we are proposing is that natal homing can be explained in terms of animals learning the unique magnetic signature of their home area early in life and then retaining that information,” said Kenneth Lohmann, professor of biology and first author of the study.

If the new theory is correct, he added, it could lead to new ways of helping save sea turtles and salmon.

UNC researchers Catherine Lohmann, lecturer of biology, and Nathan Putman, a graduate student, co-authored the paper.

**ONLINE EXTRA**

More on Kenneth Lohmann’s sea turtle research at college.unc.edu.
The Anatomy of a Presidency

By Terry Sullivan

In 1991, a reporter for the Wall Street Journal called looking for comment as to whether then President George H.W. Bush spent more time on foreign policy than any previous president. Like so many questions having to do with the American presidency, this had only one real answer: “We have no earthly idea.”

That moment launched a research program and eventually a multi-institutional project that came to fruition when I published the first-ever research on what presidents actually do all day. This report is part of the project I co-founded in 1997, a multi-institutional consortium called the White House Transition Project (WH-TP), which lends technical support to presidential campaigns, to presidents-elect and to sitting presidents and their staffs to properly organize the presidential transition and carry out White House work. We have now directly assisted two presidential transitions (those of George W. Bush and Barack H. Obama), the two smoothest and most effective transitions in our history. In the most recent transition, I and my WH-TP partner, Towson University political scientist Martha Kumar, sat as invited consultants on the President’s Transition Coordinating Council — which coordinated the activities of the outgoing and incoming administrations.

This one project transformed the paper records kept in the presidential libraries of the National Archives system into detailed, minute-by-minute data accounting the activities of eight presidents, from Dwight Eisenhower through George H.W. Bush — all of the evidence of this sort currently available. Over the last 10 years, I have produced descriptive information for some 67,000 activities and programmed some 8 million calculations just to create the data necessary to answer questions about how the president works during the first hundred days.

Here are a few lessons from the data:

- Presidents try hard to be different from one another. But, in the end, the requirements of the presidency turn those individual choices into similar work patterns.
- Presidential workdays differ very little from one another. Modern presidents (after Lyndon Johnson) average within 30 minutes of each other around a 14-hour work day.

Presidents encounter anywhere from 450 to 1,900 people a day in meetings and on the phone but they see only a few people — except their immediate family — on a regular basis.

- Presidents in the modern era work just as long on the weekends as they do during the week.
- The time commitment of individual presidents to specific responsibilities also becomes virtually identical. The more central a presidential responsibility, like commander-in-chief, the more time presidents spend on it.
- Though we see them the most in their role as communicators, presidents spend almost no time (5 percent or less) communicating. Thus, parsing presidential speeches and responses to press inquiries tells one almost nothing about presidential decision-making or leadership.
- Presidents’ workdays get longer as their 100 days progress, mostly because their staffs don’t properly anticipate demands on presidential time.
- The president’s time is too valuable an asset to allow the president to control; thus, the importance of having a Chief of Staff.
- Presidents with Chiefs of Staff have more efficient meetings, see more people, and over time undergo less lengthening of their work days.
- Presidents encounter anywhere from 450 to 1,900 people a day in meetings and on the phone but they see only a few people — except their immediate family — on a regular basis.

The time commitment of individual presidents to specific responsibilities also becomes virtually identical. The more central a presidential responsibility, like commander-in-chief, the more time presidents spend on it. Most presidents spend almost no time (5 percent or less) communicating. Thus, parsing presidential speeches and responses to press inquiries tells one almost nothing about presidential decision-making or leadership. Presidents’ workdays get longer as their 100 days progress, mostly because their staffs don’t properly anticipate demands on presidential time. The president’s time is too valuable an asset to allow the president to control; thus, the importance of having a Chief of Staff. Presidents with Chiefs of Staff have more efficient meetings, see more people, and over time undergo less lengthening of their work days. Presidents encounter anywhere from 450 to 1,900 people a day in meetings and on the phone but they see only a few people — except their immediate family — on a regular basis.

- No one officially sees the president very much. White House Chiefs of Staff see the president during an average 6 percent of the president’s day. And everyone else’s average time with the president is much less.
- All presidents become isolated. The average amount of time a president spends during the first hundred days with outsiders is 1 percent of the day. The most over the past 50 years was 3 percent.
- But, more importantly, because of this isolation, presidents must become their own best advisors.

Terry Sullivan has been on the political science faculty in UNC’s College of Arts and Sciences since 1988. An expert on mathematical theories of governing and leadership, he is executive director of the White House Transition Project, which has also assisted the transitions of nine emerging democracies, including those in Mexico, Argentina, East Timor and Poland. More at whitehousetransitionproject.org.
Back to the present?

From a recent account of the president’s response to the monumental economic crisis:

"[He] summoned … leaders of industry, finance, construction, public utilities, agriculture, labor, and the Federal Reserve system…. he implored manufacturers to maintain wage rates…. He asked unions to … withdraw pending demands for wage increases.

‘The fundamental business of the country … is on a sound and prosperous basis,’ he declared. ‘Any lack of confidence in the economic future … is foolish.’

…. He [contacted] governors to encourage states and counties to accelerate construction. He urged Congress to appropriate $150 million for public works and to approve a tax cut. He coaxed the Federal Reserve Board to expand the money supply and to make more credit available; for the first time in the history of the republic, discount rates fell to under 2 percent.”

— Excerpted from Herbert Hoover by William E. Leuchtenburg.

Andy’s record

“I had a wonderful time — and a horrible time — in Chapel Hill. I went through every day hoping, just hoping, they wouldn’t find out how little I knew, but sometimes they did. I failed Political Science 41 twice. My counselor … said: ‘Andy, very few people fail political science once, but nobody fails it twice.’ I guess that was the only record I ever broke at Chapel Hill.”

— Andy Griffith ’49, in Hark the Sound of Tar Heel Voices, edited by Dan Bare.

• Herbert Hoover: The 31st President 1929-33 (Henry Holt & Co.) by William E. Leuchtenburg. The eminent presidential historian helps us recall the other president who baffled Congress as the economy tanked big-time.

• Franklin D. Roosevelt and the New Deal (HarperCollins) by William E. Leuchtenburg. This timely classic has been re-issued as America seeks lessons from the president who turned an unprecedented economic debacle into an opportunity for positive change. Leuchtenburg is UNC professor of history emeritus.

• Democracy Denied (Harvard University Press) by Charles Kurzman. The wave of democratic revolutions that swept the globe in the decade before World War I (in Russia, Iran, the Ottoman Empire, Portugal, Mexico and China) ultimately failed when democratic rights were not upheld. Kurzman, UNC professor of sociology and an expert on political movements, discusses why.

• If Beale Street Could Talk (University of Illinois Press) by Robert Cantwell. The Townsend Ludington Professor of American Studies explores the vernacular culture of everyday objects — a photograph, a poem, a blues recording — to draw intimate connections among our public, political and personal lives.

• The Summer the Archduke Died (University of Missouri Press), by Louis Rubin. The distinguished publisher and UNC English professor emeritus shares erudite essays on the First World War and its impact.

• The Scary Mason-Dixon Line (Louisiana State University Press) by Trudier Harris, the J. Carlyle Sitterson Professor of English. The Southern-born writer and UNC scholar of African American literature explores why black writers, no matter where they were raised, have a love-hate relationship with the South. She considers native-born black southerners such as Edward P. Jones, Yusef Komunyakaa and UNC’s Randall Kenan, as well as non-southerners James Baldwin and Octavia E. Butler.
• Jewishness and the Human Dimension (Fordham University Press) by Jonathan Boyarin. Thoughtful reflections on the connections and tensions between what it means to be a Jew and what it means to be a human in perilous times. Boyarin is the UNC Leonard and Tobee Kaplan Distinguished Professor of Jewish Thought.

• Adventures in Penland: One Writer’s Journey from Inklings to Ink (University of Missouri Press) by Marianne Gingher. In a characteristically wry disposition on her uphill slog to artistic respectability, the UNC creative writing professor intersperses tales of soul-sucking day jobs, ’60s pop culture and blasphemous reading preferences with insights on southern literature and the writing life.

• Territories of Difference (Duke University Press) by Arturo Escobar. The Kenan Distinguished Professor of Anthropology offers a detailed account of the visions, strategies and practices of a group of Afro-Colombian activists in the Pacific rainforest region as they struggle for autonomy, territory, justice and cultural recognition.

• Crusader Art (Lund Humphries) by Jaroslav Folda. One of the least known aspects of the so-called Holy War was the art commissioned by the Crusaders in the Holy Land. Folda, UNC professor emeritus and a leader in the field, examines manuscript illuminations, frescoes, mosaics and icons of the period.

• Dancing with the Dead (Duke University Press), by Christopher Nelson. The UNC anthropologist examines how contemporary residents of Okinawa use various forms of storytelling to come to grips with the legacies of the brutal Japanese colonial era, the devastation of World War II and the long U.S. occupation.

• Hark the Sound of Tar Heel Voices (John F. Blair) edited by Dan Bare. The UNC political science and law alumnus, a former state legislator, chronicles 220 years of University lore through the personal stories of Tar Heels, from James Hinton and Thomas Wolfe to Frank Porter Graham, Andy Griffith, Dean Smith, William Friday and many more.

• That Infernal Little Cuban Republic (UNC Press) by Lars Schoultz. A leading Latin American studies expert ponders the failed attempts by 10 U.S. administrations to end the Cuban Revolution. (Remember the plot to assassinate Castro using a rigged ballpoint pen?) Schoultz is the W.R. Kenan Jr. Distinguished Professor of Political Science.

• The World Is Fat (Avery) by Barry Popkin. The UNC professor of nutrition and economics exposes the fads, trends, policies, and products that have caused a global obesity epidemic (notably sodas, burgers, super-sized fries and other sugar-rich processed food. So many empty calories and so little time for exercise.

• Reading Hemingway’s ‘Men without Women’ (Kent State University Press) by Joseph Flora. The UNC American literary scholar analyzes how Hemingway’s short stories test old ideas of family, gender, race, ethnicity and manhood.

• Drugs: America’s Holy War (Routledge, Taylor & Francis) by Arthur Benavie. The UNC economics professor emeritus provocatively suggests that criminalization of drugs has increased violent crime and the spread of AIDS while wasting tax dollars that could be more effectively spent on prevention and treatment of addiction.

• Positivity (Crown) by Barbara Fredrickson. A leading expert on positive psychology reveals the scientific evidence showing that positive thinking leads people to achieve what they once could only imagine. Fredrickson is Kenan Distinguished Professor of Psychology.
MUSIC’S NEW DIGS

TOP: The UNC Wind Ensemble, directed by assistant music professor Evan Feldman, rehearses in the large rehearsal hall in the new Kenan Music Building. The hall is large enough to accommodate practice by the Marching Tar Heels. The new building is set to be officially dedicated on April 1. The William R. Kenan Jr. Charitable Trust gave $4 million to complete funding for the building. BOTTOM: Sophomore music major David Davis plays the euphonium.