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## Scientific Analytical Institute, Inc. – A UNCG Connection

*By Nathan Durham, Owner SAI*

Has there ever been a time in your career when you've wanted to start out on your own, but wasn't sure if it was worth the risk? The founders of Scientific Analytical Institute (SAI) had a moment just like that 11 years ago, where they weighed the risks of starting out on their own and decided it was worth it.

The four founding partners (three of whom are graduates of UNC-Greensboro) wanted to have more control over their future than what their present company offered. With no funding and managing sales from a dining room table, the partners scrapped together their resources, contacts and favors owed. They broke away from one of the largest environmental contract laboratories in the country.

Slowly momentum started to grow for SAI, after they secured funding, found a small space for a laboratory and acquired a transmission electron microscope (TEM) from Dartmouth.

Acquiring the piece of equipment and moving it turned out to be two very difficult tasks. The instrument was so large, they couldn't fit it through Dartmouth's standard loading dock and had to take it piece by piece through the morgue at night and during a blizzard. The team then drove the equipment back to North Carolina where the sensitive scientific jigsaw puzzle was reassembled and readied for action.

Nathan Durham led the team as director of the lab while other partners managed various departments. Nathan turned to Ian Bunker, another UNCG graduate who had also been his college roommate, to head business development. Shortly after, the company began to grow by expanding into new regions and then new service lines such as silica, materials ID and metals. Within 5 years, SAI's clients and services reached all the way from British Columbia to the Florida Keys.

It wasn't long before the team outgrew the 1500 square feet they leased on Pomona Drive in Greensboro. By 2012 they had knocked out as many walls as they could and needed to move. Shortly before the move, they purchased a building a block away and expanded the lab to 15,000 square feet on a 3 acre site.

Now the company that started with four partners and on a backyard deck in Greensboro, NC has grown to over 25 employees and is one of the major providers of lab services in North America. Employees come from varied backgrounds and a number of UNCG grads work in the company. In his role as lab director, Nathan not only maintains the overall quality control of the lab, but also directs its growth within the industry.

Geologists and mineralogists work in the asbestos and silica departments. Similar to the other departments they execute analytical methods established to keep children, workers and the environment safe. The main distinction between these professionals and the other departments are the types of materials that they examine and the equipment utilized. This team applies itself by using a variety of instruments including the electron microscope, x-ray diffraction and polarized light microscopes to examine asbestos, silica and nano-particles.


Biologists and microbiologists apply their trade by growing fungal and bacterial cultures while also analyzing direct exams and air samples for commercial, industrial and private facilities. The chemists at SAI play a vital role to the company's success and continued growth. As industrial hygiene develops into a bigger market, regulations should continue to drive the need for numerous types of analysis. Presently, the chemistry department uses Inductively-Coupled Plasma spectroscopy (ICP-AES), Ion Chromatograph (ICS) and Atomic Absorption Spectroscopy (AAS) to perform and modify analytical methods established by several government agencies. Its practical applications are utilized in things like monitoring arsenic and mercury levels in fly ash or in scenarios like you may have seen in the movie Erin Brockovich.

The company's future is wide open as SAI continues to grow. With more clients and employees added every year, the ability to open branch laboratories across North America or expand service lines make the options seem virtually endless. Although many changes have occurred in the lab, the group continues to operate with the goals set forth at its founding, which is to provide an environment where employees enjoy their jobs while sharing in the success of the company. So successful these goals have been, that when the founders look back at their decision to breakaway 11 years ago, they cannot help but smile at their accomplishments and the happiness they found.



# Symbiosis

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## Meet our Staff

### Laura Fondario Grubbs - Microbiology Lab Manager



Laura Fondario came to UNCG as an undergraduate student in 2001. She worked as the microbiology lab assistant and did undergraduate research with Dr. Paul Steimle in 2005 and 2006. After graduation in 2006 with a BS degree in biology with a concentration in biotechnology and a minor in chemistry, she was hired as the microbiology/ biotechnology research specialist within the Biology Department. She continued her education during the subsequent years and obtained her professional certificate in computer programming and in 2014 obtained her master's degree working in Dr. Parke A. Rublee's Lab. Her thesis was titled, "Quantification of Select Cyanobacteria and Cyanotoxins in Piedmont North Carolina Lakes Using Real-Time PCR." Her research was presented at both the North Carolina Academy of Sciences and the Water Resources Research Institute meetings in 2014. During this period she also was coach of the Biology Department graduate student intramural soccer team for two years and served on the Staff Council for two terms. She is currently involved in an interdisciplinary project with Dr. Martina Oberhofer, a postdoc in Dr. Stan Faeth's lab, with pending publications that focus on identifying bacterial endophytes in *Echinacea purpurea*. After graduation in May she hopes to continue her career in science and research and travel abroad.

## Biology Seminar Series

UNCG Biology Department seminars are held on Wednesdays, whenever classes are in session, from 4-5 PM in room 200 of the Sullivan Science Building.

The biology department seminar series is open to the public and we invite alumni to attend.

Parking is available in the McIver Street Parking Deck and refreshments are served at 3:45 PM prior to seminar.

The current semester's seminar schedule can be found at the biology department website:

<http://biology.uncg.edu/bioseminars.html>

For directions to the department or other general inquiries about the seminar series please email the Biology department:

[bio@uncg.edu](mailto:bio@uncg.edu)



## A Message from the Head - Stan Faeth

Welcome to the third edition of the rejuvenated Symbiosis, the newsletter for the Department of Biology at UNCG. The past few years have been both challenging and exciting for the department. All UNC campuses have endured statewide budget cuts in the past 5 years, and UNCG and the Department of Biology are no exceptions. Biology has one of the largest number of majors (about 875) on campus plus provides instruction to thousands of other students every year, either to fulfill requirements for their major, or as their general education credit in the sciences. During these budget reductions, we have endeavored to maintain class sections and numbers of available seats in classes, while simultaneously maintaining the high quality of instruction for which the department is well-known. Thanks to the dedication, hard work and ingenuity of our faculty, staff and graduate assistants, we have been successful doing both during these lean budget periods.

As evidence of the high quality of teaching and research, it has been a banner year for teaching and research awards for faculty in biology. Robin Maxwell won the Anna Maria Gove Award for Teaching Excellence for her long-standing dedication to undergraduate student learning. Bruce Kirchoff is the recipient of the 2014 Board of Governors Award for Excellence in Teaching, a statewide honor for innovation and quality in instruction. Zhenquan Jia was awarded the Candace Bernard and Robert Glickman Professorship in the College of Arts & Sciences for his outstanding research contributions as an assistant professor. Stan Faeth was awarded the 2013-2014 Senior Research Excellence award for UNCG.

Also, we have forged ahead with our fledging Environmental Health Science PhD program, began in 2009. We expect our first cohort of EHS students who matriculated in 2010 to earn their PhD's in 2014-2015. Each subsequent incoming class is represented by highly talented young scientists who have continually strengthened our PhD program, and have acted as research mentors for our Master's and undergraduate students.

This semester marked some other significant milestones. First year assistant professor Tsz Ki Tsui and his wife Angel, are the proud new parents of twin girls. Rada Petric, currently a lecturer in biology, will become an EHS PhD student in the Fall. Marc Milne, currently a lecturer, will move into a faculty position at the University of Indianapolis.

And contrary the last newsletter, long-time and beloved professor, Rob Cannon, is indeed in phased retirement but will be with the department for the next two years.

I wish all our alumni, students and friends an enjoyable summer.  
*Stan Faeth, Head of Biology*

## Alumni News Connection

*Check back here regularly for updates from UNCG Biology alumni. Do you have news to share? See the form on page 7 or send an email to [bio@uncg.edu](mailto:bio@uncg.edu).*

Ms. Jane Walz, Undergraduate Class of '65 with Ms. Sands as her advisor, has retired from her position as a medical technologist. She previously worked in the Peace Corps as a science and math teacher and then moved into the medical technology field afterwards. She now mentors students in the Homework Club.

Dr. Gary S. Davis, a graduate of the UNCG Biology Department (MA), enjoyed a career as a professor of Physiology and Poultry Science at North Carolina State University. He is now retired from NCSU and living in Hillsborough, NC and working as a consultant in the poultry and upland wild game bird industries.

Robin Maxwell graduated with a BA in Biology in 1978, and again in 1982 with an MA in Biology. She then began work as a lecturer here in Biology at UNCG in 1982, where she has continued to teach Fundamentals of Microbiology lectures and labs, Invertebrate Zoology labs, and General Biology lectures and labs for majors and non-majors. Her 3 children were born in 1984 (Brad), 1986 (Nicki), and 1991 (Phillip). While at UNCG Biology she has also taught Microbiology in the Physician Assistant program at Wake Forest University, worked on a research grant on microbial modification of tobacco, and taught Microbiology in the Medical Technology program at Moses Cone Memorial Hospital. She has been involved in the College of Arts and Sciences Advising Center since its conception and has since become a Master Advisor. She also reviews Microbiology and General Biology texts and wrote a Microbiology lab manual, which is now in its 5th edition for use in our BIO 280 class. In 2013, she was promoted to the position of Senior Lecturer and received the Anna M. Gove Award for Teaching Excellence in 2014. In May 2014 Robin became the Chairman of the UNCG Health Careers Advisory Committee, and Director of the Post-Baccalaureate Pre-Medicine program.



# Symbiosis

## From the Associate Head...Dr. John Lepri

Science education in our schools and universities, along with scientific literacy in our communities, need an urgent boost if we are to maintain our high quality of life here in North Carolina and throughout the USA. The people and resources in your Department of Biology are committed to that enterprise. What do we mean by this?

Neil DeGrasse Tyson, and astronomer who now hosts the television program "Cosmos: A SpaceTime Odyssey," has emerged as a leading commentator on scientific literacy. At a recent panel discussion, he stated: *'This enterprise we call science, I think, might be mislabeled. We call it science and then people get to say, oh, that's science, I'm going to do something else. Maybe we should recall the enterprise of science 'REALITY,' because...the methods and tools certainly have demonstrated themselves as being the most successful way to come to understand reality.'*

What is our REALITY at UNCG? Our undergraduate biology curriculum makes it certain that student will gain hands-on experience using the methods and tools of science.

There are seven science practices that biologists are especially prone to use in their work, whether focused on molecular studies of developmental gene expression or on mercury contamination in ecosystems. I summarize here parts of a chapter I co-authored for students studying for the Advanced Placement Biology exam. These practices are more fully listed in the Advanced Placement Biology Curriculum Framework published by the College Board.

Science practice one specifies that using models and other representations is required to explain complex information in biology. Cartoon versions of cells with receptor proteins and transport proteins and "ATP factories" (mitochondria) are used in many of our courses. There probably not a single student learning about evolution who has not seen photos of light-colored and dark-colored moths on soot-covered trees. Ecosystems are portrayed by their interactions using double-headed arrows. Drawings quickly focus viewers on the topic of interest, increasing the efficiency of communicating the intended information, but we try to make sure that a student can reproduce and explain various models.

Science practice two is the appropriate use of mathematical operations in science. From the analysis of enzyme activity to rates of evolutionary change to population growth, our students are constantly applying empirical methods to extract and analyze scientific knowledge. Our lab-intensive curriculum, likely the most lab-intensive in the Southeast, assures that outcome.

Science practice three is about making sure you ask scientifically appropriate questions when seeking a scientific understanding of a phenomenon. Inquiry-based instruction, where students get to design lab investigations and solve problems, provide many opportunities for students to see if they are asking questions that can reasonably be answered in our reality. It is OK to learn that answers to one question often lead to further investigations that could more completely resolve the problem. Once again, our lab-intensive curriculum, where students work together to find their own solutions to problems, helps provide training and experience in asking the right questions.

Science practice four directs attention to data collection strategies. How do we get the information that can help us answer our questions? Labs again, in our curriculum, are part of our focus on science practices. Students have to figure out what are going to measure, gather the data, and communicate their findings by constructing and explaining graphs and flow charts.

Science practice five represents an effort to gain confidence in one's finding. How are statistical tests used in biology? Rare is the biology lab where statistical approaches are not key to successful progress in understanding and solving biology problems.

Science practice six refers the students' capacity to explain scientific observations, to formulate solutions, and to expand biological knowledge. This practice relates to the fit between data and a scientific theory, and how new data allow a theory to be revised and refined to greater accuracy. What would you do next to solve this biology-lab problem or to understand it better?

Science practice seven requires students to connect biological phenomena across lots of different scales, many different concepts, and in diverse areas of scientific theory. "Putting it all together" is what practice seven is all about. It is the difference between memorizing how a particular genetic cross works to being able to predict how related crosses will come out, and how those organisms influence their communities. The problem of scale, especially concerning geological time, is a particular challenge for many students to comprehend, but practice in biology classes and labs, once again, help us assure that our graduates will be competitive.

It is my hope that this short tour of the science practices resonates with your experience at UNCG, and that our alumni are using these practices in your own REALITY, every day. Send us a note and tell us about it!

### BIOLOGY DONATION OPPORTUNITIES

Make an impact. Support the Biology department by using our online form and your Visa or MasterCard to make a gift.

<http://biology.uncg.edu/gifts/>

Help UNCG forge new possibilities for students, faculty, programming and research.

## What's growing in our Greenhouse?



**Dutchmen's Pipe, *Aristolochia grandiflora***  
Family: Aristolochiaceae



**Frangipani, *Plumeria* sp.**  
Family: Apocynaceae



**Staghorn Fern, *Platycerium* sp.**  
Family: Polypodiaceae



## Dr. Amy Adamson

Associate Professor,  
UNCG Biology

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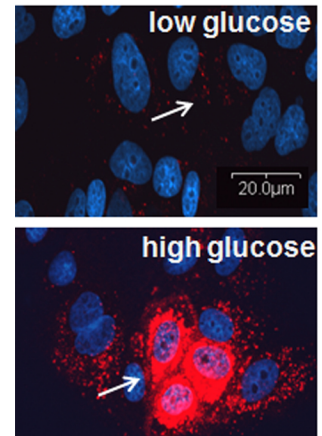
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[http://biology.uncg.edu/  
faculty/Amy\\_Adamson/](http://biology.uncg.edu/faculty/Amy_Adamson/)

## Faculty Spotlight: Dr. Amy Adamson

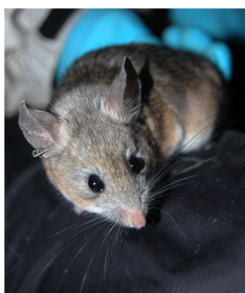
Viruses infect all known organisms, and diseases resulting from such viral infections can actually shape the evolution of those organisms. On the other hand, as these organisms evolve, their viruses evolve right along with them. Dr. Adamson studies the intracellular interactions between viral proteins and host proteins, in order to understand how such interactions benefit viral infection and replication, and at the same time, how these interactions impair the host cell. Dr. Adamson studies two different viruses: the human Epstein-Barr virus and Influenza A virus. With Influenza, she is interested in identifying novel ways to inhibit viral infection and replication, and has identified cellular proteins and metabolic pathways that mediate viral infection. Notably, Dr. Adamson has found a correlation between glucose levels and influenza viral infection: the more glucose that cells are exposed to, the more likely they are to be infected with the influenza virus. Along these lines, she has been able to treat cells with inhibitors of glucose metabolism, and thus suppress viral infection. Epstein-Barr virus is a human Herpesvirus that infects a large majority of the world's population, and can enter a dormant state within a subset of our cells. This virus is associated with various cancers, including Burkitt's lymphoma and nasopharyngeal carcinoma. Dr. Adamson studies how host cellular signaling pathways (that respond to growth factors, nutrient levels, and stress) can be manipulated by this virus to promote viral replication, and conversely, how these pathways can be altered by us to control Epstein-Barr virus replication within cells. Dr. Adamson's goals with her work are to first understand the basic biology of viruses, and then to apply this knowledge to control viral infection and subsequent disease.

*Dr. Adamson received her Ph.D. from Johns Hopkins University.*



*Influenza virus (in red) infects cells grown with high levels of glucose.*

## Faculty Spotlight: Dr. Matina Kalcounis-Rueppell



*Wild Deer Mouse,  
Peromyscus spp.*

In the Kalcounis-Rueppell lab, we are interested in how behaviors of individual animals influence population processes and community structure. Our research program is both basic and applied with two current themes. The first involves understanding ecological and mechanistic determinants of acoustic communication in wild deer mice (*Peromyscus spp.*). In other words, how and when do wild mice communicate using ultrasound? The second involves understanding how anthropogenic changes in North American forests influence the biodiversity of bats and mice. In other words, how do human activities influence the biology of mammals that live in forests? These research areas overlap because for both, we examine the bioacoustics of forest-dwelling mammals. Because bats and mice are nocturnal and elusive, we use a suite of direct (capture mark release and recapture) and remote approaches (radio-telemetry, thermal video, acoustic recording using arrays of microphones) to measure individual behaviors and population processes in the field. All of our projects are field based and students spend several months at a time at field sites in North Carolina, Mississippi, and California.

Current projects involve determining the local distributions and winter behavior of rare and threatened bats species in North Carolina. This is an important project because North Carolina is the southern extent of species impacted by the devastating White Nose Syndrome. We also are part of a large, landscape level, project in Mississippi that examines how second generation biofuel production influences the behaviors of rodents and how those influences scale up to populations and communities. A current project in California examines how behavioral decisions to communicate and take care of offspring are made in the wild by deer mice. If you have any questions or are interested in graduate or undergraduate work in our lab, please visit our website ([www.mckalcounisrueppell.org](http://www.mckalcounisrueppell.org)) for more information. If you are an educator interested in our outreach program called "Bats and Mice in Your Backyard" please visit the outreach page on our website.

*Dr. Kalcounis-Rueppell received her Ph.D. from Western Ontario University.*

## Dr. Matina Kalcounis-Rueppell

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## Who's Who Amongst Our Undergraduate Students – Dominick DeFelice



If you have visited the UNCG Homepage within the last 4 years, chances are at some point you've seen UNCG Biology Major, Dominick DeFelice gracing its front pages. Dominick graduated this spring with the BS in Biology, with a concentration in Human Biology, and minors in Chemistry and Spanish. His first appearance on the UNCG website was on our very own Biology site in 2012 when he received the Barry M. Goldwater Scholarship Honorable Mention, and the North Carolina Governor at the time, Beverly Purdue, stopped by the Rueppell Lab to congratulate him.

His second appearance was on the UNCG Research page when he was interviewed about his research in Dr. Rueppell's lab with honeybees. And Dominick's research in the Rueppell lab has been busy, busy, busy...almost bee-like himself. He has worked on two different research projects: the first - '*Geographic Variation in Polyandry of the Eastern Honey Bee, Apis cerana*' - was submitted for publication earlier this year. Not one to waste time, Dominick then started another project - '*An Investigation of Genome Features and Their Effect on Meiotic Recombination Rates in Apis mellifera*' - which is still being investigated.

Dominick's third web appearance was for the UNCG Chancellor's 2013 Holiday Greetings, where he is the first featured student and praised for his scholarship achievements. Dominick was the recipient of the UNCG Guarantee Scholarship for the entirety of his education here at UNCG. During his tenure here on campus he also received the UNCG Science, Technology & Mathematics Preparation Scholarship for all 4 years, and received a second Barry M. Goldwater Scholarship Honorable Mention in 2013. The list of his awards is quite lengthy as well -- he was on the UNCG Lloyd International Honors College Dean's List for 6 semesters, the UNCG Chancellor's List for 6 semesters, and the UNCG Dean's List for 7 semesters. He won the second place poster presentation at the North Carolina Academy of Sciences meeting in 2014 and also took second place for his oral presentation at the UNCG Undergraduate Research Expo that same year. And while doing all this he also maintained a 4.0 GPA.

Dominick's most recent appearance on the UNCG Homepage was this January, 2014. Dominick plans to attend medical school this fall and hopes to go on and serve under-represented populations here in North Carolina. But that's after he plans to get a summer job, do some traveling and relaxing, which he's probably earned.

When asked what brought Dominick to UNCG, he mentions that he did in fact visit other schools. But the thing that stood out about UNCG for him was that UNCG had the best mix of programs, people and campus. It wasn't just that we had a pretty campus, or a diverse student body and university community, or that we offered the best academic programs. It was that UNCG offered the best of all of these and found harmony and balance in their integration. UNCG also recognized his potential and was able to offer him the UNCG Guarantee Scholarship, which enabled him to come to school without having to take on the burden of costly loans.

He was especially impressed with the Biology Department, specifically our availability of research opportunities. At many other universities Dominick noticed that research opportunities available to undergraduates are difficult to obtain and often the competition between undergraduates for these opportunities is intense. But here at UNCG, we have the faculty, resources, and facilities to offer research opportunities to more of our undergraduate population. This allows many students to have their own research project and also the autonomy to do that project as they see fit. Thus teaching them valuable hands-on lessons about the scientific method and preparing them for secondary education or jobs in a way that students at other universities may not gain. To that end, Dominick thanks Dr. Olav Rueppell, UNCG Biology Professor, for his many years of direction and research opportunities. He also would like to thank Dr. Rob Cannon, Dr. Parke Rublee, Dr. David Battigelli and Dr. Jeremy Ingraham for their advice and service.

Believe it or not Dominick does have hobbies and he enjoys running and going to baseball games.

## UNCG Biology Faculty Publications

The publications  
authored by the faculty  
in the UNCG Biology  
Department range in  
topics from molecular  
biology to ecology and  
everything in between.

The biology website  
keeps a comprehensive  
list of the current and  
past publications  
published by faculty.

web:  
[http://biology.uncg.edu/  
publications.html](http://biology.uncg.edu/publications.html)



## Did you know?

The Biology Faculty & Staff have over 600 years of combined experience here at UNCG.

Professor, Rob Cannon volunteers for the Alamance County Dispute Settlement Center.

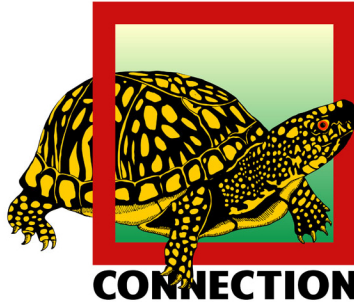
We have 2 triathletes in the faculty that regularly compete in competitive events: Associate Professor, Karen Katula & Lecturer, Elizabeth Tomlin.

Lecturer, John Sealy, is a herpetologist specializing in the conservation management of timber rattlesnakes and provides workshops to the Blue Ridge Parkway staff on timber rattlesnake ecology and conservation.

Staff Member, Paul Hidalgo, coaches the UNCG Men's Lacrosse Club.

## What is The Box Turtle Connection?

### THE BOX TURTLE



Winning Logo Design by C. Bannerman

The Box Turtle Connection is a long-term study on Box Turtles (*Terrapene carolina*) in North Carolina headed by UNCG Biology Senior Lecturer, Ann Somers. The purpose of the project is to learn more about the status and trends in Box Turtle populations, identify threats, and develop strategies for long term conservation of the species. The project relies on volunteer lay-scientists who make a long-term commitment to the project and are willing to be trained in data collection become Project Leaders. Each Project Leader (PL) manages data collection at a specific site, often these are places where they work, like state parks, but also include several private properties. Turtles are permanently marked and measured by the PLs and the data is then entered into a password protected database managed by the NC Wildlife Resources Commission. The database is available to interested parties who submit requests to the Collaborative.

But you may be asking yourself 'How long is long-term?' The project leaders are hoping the project will outlive the youngest person in the project so that 100 years from now our turtles and their offspring will be educating the next generations of scientists, lay-scientists, and other folks who care about the natural world.

The Box Turtle (*Terrapene carolina*) is not considered Endangered or Threatened or a Species of Special Concern in North Carolina. They are, however, thought to be in serious decline throughout their range. Box Turtles have a life span similar to humans and scientists think that they maintain the ability to reproduce throughout their lives and may need a half a century or more to replace themselves in the population. Turtles are likely not living as long as they once did because of road mortality and habitat destruction. Also, when found on roads, well meaning people move them to places they think are better for them rather than simply placing them on the side of the road where they were headed. When moved, turtles may spend the rest of their lives trying to get back to the place they were moved from.

### How can you help?

Get involved! Visit the Box Turtle Connection website: <http://boxturtle.uncg.edu>, and Like the facebook page: [www.facebook.com/BoxTurtleConnection](http://www.facebook.com/BoxTurtleConnection)

Questions? Email the project at [boxturtleproject@uncg.edu](mailto:boxturtleproject@uncg.edu)



Carolina Box Turtle, *Terrapene carolina*

Want to receive this Newsletter? Have any noteworthy information to share? Fill out the form below and return to the Biology Department or visit the Symbiosis website: [biology.uncg.edu/newsletter/](http://biology.uncg.edu/newsletter/)

Name: \_\_\_\_\_  
First Middle Last Maiden

Address: \_\_\_\_\_  
Street City State Zip

Class of: \_\_\_\_\_, Undergrad\_\_ or Grad\_\_ Advisor: \_\_\_\_\_

Present Occupation \_\_\_\_\_ Firm, Institution, etc \_\_\_\_\_

Feel free to attach a sheet with more detailed information or send an email to the department at [bio@uncg.edu](mailto:bio@uncg.edu)



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## 2014 Think Tank Chautauqua

Every year the University sponsors a year long "Think Tank" Class for undergraduates and for the Fall 2013 - Spring 2014 academic year, the focus was on Ecology and was taught by UNCG Biology Senior Lecturer, Ann Somers, and Dr. Catherine Matthews from the School of Education. The culmination of the class, the students presented a Chautauqua in the spring semester to address many of the ecological ideas and perspectives discussed.

What is a Chautauqua? Chautauqua was a popular movement in adult education that flourished in the U.S. during the late 19th and early 20th centuries. By 1900 there were hundreds of traveling tent chautauquas, which offered diverse activities including symphony concerts, operas, plays, university short courses, and lectures. Intellectual enrichment, moral self-improvement and civic involvement were centerpieces of Chautauquas. "Chautauqua" became short hand for an organized gathering intended to introduce people to the great ideas, new ideas, and issues of public concern.

The Think Tank Chautauqua was an environmental awareness/action event focused on undergraduate higher education with contributions from the arts and humanities. It included music, poetry and science with the focus being: The Role of Undergraduate Education in Meeting the Demands of Planetary Change in the 21st Century.

The event was held over 2 days and garnered much attention from both the University and outside communities. Several notable speakers presented: Dr. Stuart Pimm, the Doris Duke Professor of Conservation Ecology from Duke University addressed *The State of the Planet*; Jean Beasley, Director Karen Beasley Sea Turtle Hospital and winner of the Animal Planet Hero of the Planet Award and Ocean Hero Award spoke about *Thinking Like An Ocean*; Dr. David Orr, Paul Sears Distinguished Professor of Environmental Studies and Politics and Senior Advisor to the President of Oberlin College discussed *Education for a Sustainable World*; and Dr. John Grim, Senior Lecturer and Research Scholar at Yale University talked about the *Role of the University in the 21st Century*. The Think Tank class also presented their final project *Undergraduates Reimagining Education* and have had 2 offers to publish. Overall the event had over 600 attendees and Dr. Aaron Allen, UNCG Academic Sustainability Coordinator said the students "knocked the ball out of the park" with the event.