



NCAS Annual Meeting Reflection

Report by: Ms. Shana Lee McAlexander



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*What's going on in
the North Carolina
Academy of Science:*

- Reflections on the Annual Meeting
- Announcing CASCAS Derieux Award Winners
- Featured Scientist: Ms. Lauren Askew

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“Research not communicated is research not completed.” Dr. Emlyn Koster shared this quote from Susan Glover (Chief Science advisor to the President of the European Commission) as he introduced the plenary address speaker, Dr. Randolph Nesse. I can’t think of a better place for an exchange of ideas and research findings than the 2014 NCAS Annual Meeting at the North Carolina Museum of Natural Sciences. The meeting facilitated communication that spanned a wide range of science disciplines between research students, science professionals, and museum goers.

At the Friday evening poster session, I spoke with Taylor Spillman and Finn Fürstenwerth from Catawba College about their research examining the mycoheterotrophy of *Burmannia*. When I first approached their poster and asked them to share about their research, I was a bit overwhelmed by all the three- and four-syllable terms.

I couldn’t let them go on. “Whoa, I don’t know much about nutrient uptake in plants or radioisotopes or mycorrhizae.” Taylor and Finn began again, adjusting their presentation and sharing about their awesome work at a level I could comprehend.

I have the confidence to admit, that the level of discussion in a number of the specialized research areas was over my head. Brian Malow, Curator of the SECU Daily Planet, addressed this point in his special session “A Science Comedian’s Guide to Communicating Science”. Brian encouraged researchers to watch out for their “specialty blind spot.” He suggested that many scientists have more success when teaching outside their field of expertise, because it frees them of the minutiae, jargon, and baggage that cloud their point. So true, and rather unfortunate.

Brian advises speakers to start with “Why do **I** care about this?” and, “Why should **you** care about this?” Dr. Rob Dunn’s keynote address about the evolution of species within human dwellings was a great example of this technique. Dr. Dunn even shared why face mites matter. He adapted his presentation for a broad audience, focusing on the big picture and easing into any technical content. Whether you’re preparing a keynote or a research talk, it is always a good idea to think to yourself, “What is our level of shared knowledge?” The audience will walk away thinking that you know your stuff well enough to explain it at all levels.

The NCAS meeting provides an excellent opportunity to practice communicating science, especially boosting the confidence and competence of new or nervous speakers. To prepare, practice discussing your work with research peers, with scientists from other fields, with kids, and with your grandparents. Any person you share with may lead you to an unexpected breakthrough. In the words of Dr. Nesse, “By communicating our work, we advance the collaboration.” Thanks to all who participated in the 111th NCAS Annual Meeting. Keep sharing and creating.

Shana Lee McAlexander is a proud supporter of NCAS. She serves as a moderator and judge for the CASCAS oral sessions and currently works as a Product Developer at Carolina Biological Supply Company.

NCAS 111th Annual Meeting hosted by the the North Carolina Museum of Natural Sciences

Report by: Dr. Julie Horvath, NC Museum of Natural Sciences and NC Central University, Chair, Local Arrangements Committee

We are thrilled to have completed another successful NCAS Annual Meeting! The theme of this year's meeting was "Applying Evolution to Medicine and the Environment" and highlighted how evolution impacts many aspects of our lives. By holding our meeting at the museum, we were able to expand our interaction and engagement with the public, a shared mission of both NCAS and the museum. We opened the meeting Friday evening with a well-attended poster session by students and faculty. This was followed by an excellent Plenary Address from Dr. Randolph Nesse, Professor and Director of the Center for Evolution, Medicine, & Public Health at Arizona State University on "Evolution and Medicine: The Great Opportunity." Dr. Nesse's talk is available at: <http://livestre.am/4PDqa>.

On Saturday, the audience was engaged by the Keynote Address from Dr. Rob Dunn, Associate Professor at NC State University, on "Understanding the Ecology and Evolution of Human Bodies and Homes -- Lessons from Students, Solenodons and Face Mites." Since the Keynote was delivered in the museum's Daily Planet Theater and was part of the NC Science Festival, it was experienced by meeting attendees and the visiting public. Dr. Dunn's talk is available at: <http://livestre.am/4PzHI>. One of the highlights of the meeting was observing Dr. Gerhard Kalmus, Professor Emeritus at East Carolina University, being presented with the highest award granted by the Academy, an Honorary Life Membership. We concluded the annual meeting with an engaging awards banquet in the main wing of the museum. Congratulations to the student award winners!

We are grateful to the North Carolina Museum of Natural Sciences, under the leadership of Dr. Emlyn Koster, for providing us with fabulous facilities, dedicated staff and volunteers, and the opportunity to highlight the history of the NCAS. The Museum's founders, the Brimley brothers, were also founding members of NCAS. Across our history of 111 annual meetings, many generations of students have experienced their first scientific meeting at one of these events. Many of these students became faculty members and scientists who have, in turn, mentored their own students in their first scientific meeting experience at NCAS. In talking with NCAS colleagues, I learned that this tradition has continued on to the present day. We are proud of this uniquely rich and actively living history of NCAS. We are indebted to all of our sponsors and donors, especially the Museum, LabCorp, and the NC Biotechnology Center for their outstanding contributions. We are especially thankful for the hard work and dedication of the members of the local arrangements committee from the museum and NCCU who sacrificed their time and talents to make this an excellent meeting: Antonio Baines, Cindy Bogan, John Clamp, Sarah Council, Carla Davis, Heather Farrington, Seth Howe, Cathy Silver-Key, Julie Urban, Kari Wouk and Lisa Yow. We look forward to seeing you next year in Winston-Salem!

We Just Updated the Listserv!
If you know of someone currently not receiving the newsletter and other materials through the listserv, please let us know so we are not missing anyone! Feel free to also forward the newsletter to your friends and colleagues from all areas of science.

Memories from the Annual Meeting

Thank you to photographers: Dr. Matt Clark (Elon University) and Andy Steele (LRU)



Profile of Future Scientist and Derieux Award Winner Lauren Askew

Report by: Dr. Jessica McCann, Duke University

In this issue, we are pleased to introduce undergraduate student and first time NCAS annual meeting presenter, Lauren Askew.

A sophomore at UNC Chapel Hill, Lauren presented her work studying responses to glucose starvation in yeast. When asked about her experience attending NCAS, Lauren told us that her favorite part about the meeting was the atmosphere.

“I was surrounded by undergraduate and graduate students who were very passionate about their research and eager to share their experiences,” she said. Presenting her poster gave her the chance to get experience and feedback on presentation skills.

Everyone comes to his or her chosen career via a different path, and Lauren credits her love of reading to her first inclination that she might want to be a scientist. “My desire to pursue science matured in my senior year of high school when I started reading medical novels,” Lauren said. But even after starting college, preparing for a research career was not one of her goals. “My mind was set on becoming a doctor,” she told us. But she started lab work during her freshman year and then con-

tinued research work during the summer. She also took a course titled Infectious Disease in the Developing World, and after that class she realized that she, wanted to become an infectious disease specialist and do clinical work in Latin America. It’s obvious that Lauren has a passionate interest in infectious diseases. “I find it so fascinating how a pathogen transmitted by a cough from a tuberculosis carrier or a single bite from an insect can manifest into a condition that gradually deteriorates an entire organ, the lungs in the case of TB or the heart in the case of Chagas disease,” she said. Lauren now plans to apply to MD –PhD programs after completing her undergrad coursework. She is also planning to spend a gap year doing research and clinical work in Latin America.

A Virginia native and youngest of 6, Lauren has close ties with her family, despite being in college in a different state. “My family has always been supportive of my goals, especially because I have always dreamed big and have a lot of schooling ahead of me to reach my long-term goals,” she said. But in 2010, her mother suffered a severe stroke and remains incapacitated. Lauren told us that her mother’s



stroke, “has brought my entire family closer together and her positive attitude motivates us all.”

Thanks for sharing your inspiring story, Lauren, and good luck into the future! We hope to see you next year at NCAS.



Here are the members of the Publications Committee that work behind the scenes to prepare your newsletter. We hope you are enjoying the newsletter!

Left to right: Beth Overman, Karen Guzman, Jessica McCann

CANCAS Derieux Awards 2014

Report by: Dr. Michelle Malotky, Guilford College



Chemistry, Physics, Biotechnology and Behavioral Science

1. ***Conte, Juliana**, Thomas Benton, Carmony Hartwig and Mark Sabo (Catawba). *Investigating Peroxidation of Lipid by Heme-Artemisinin Adducts in vitro*
2. ***McCormick, John**. (UNCG) *Inhibition of Peroxynitrate-Induced DNA Damage by Caffeine*
3. ***Kinney, Garrison**.(Campbell) *Synthesis of Peropyrene Derivatives*

Posters: Zoology, Botany, Ecology and Environmental Science

1. Spillman, Taylor, ***Finn Furstenwerth**, Duncan Cameron, Jay Bolin. *Isotopic Investigation of Myco-heterotrophy in the Southern Blue Thread (Burmammia capitata) (Catawba)*
2. ***Akers, Nathaniel T.** and David A. Beamer. *Does the Northern Two-Lined Salamander (Eurycea bislineata) occur in North Carolina?(NCC)*
3. (Tie) ***Crocker, Chelsea L.**, Zachary W. Privette, Ismael Gomez, Sean P. Graham* and David A. Beamer. *Independent Nuclear Markers Reveal Cryptic Diversity within Seepage Salamanders (Desmognathus aeneus) (NCC)*
3. (Tie) ***Stewart, Anthony C.**, Martin Tsz-Ki Tsui, and Parke A Rublee. *Development of Mercury Methylating Communities in Contaminated Sediments (UNCG)*

Posters: Cell & Development, & Physiology (9)

1. ***Baba, Kayla**, Brittani Hodges*, Karen Guzman. (Campbell) *Expression of Oxidative Stress Markers in Zebrafish After Acetaminophen Treatment*
2. ***Rahman, Meredith**, Michael C. Granatosky, and Daniel Schmitt. (Duke) *Effects of habitual loading on bone material properties in the mammalian post-cranial skeleton*
3. (Tie) ***Askew, Lauren**, Claire Gordy, and Mara Duncan (UNC-CH). *Glucose Starvation Induces Microautophagy in Yeast Cells*
3. (Tie) ***Fuller, Rachelle**, Melissa Macias, Karen Guzman. (Campbell) *Expression of Chondrocyte Markers in ATDC5 Cells Exposed to Osmotic Stress*

Posters: Microbiology, Molecular Biology and Genetics

1. ***Neal, Aaron J.**, Lauren E. Chun, & Robert L. Spencer. (NCAT) *Basal mRNA Expression of Clock Gene Bmal in the Hippocampus and the Amygdala of Male and Female Rats*
2. (Tie) ***Fowler, Conner**, Morgan Packer, Michael Wisniewski, Gregory Buhrman, and Taek You. (Campbell) *Engineering and Expressing an Upstream Insulin Promoter-binding Fusion Protein*
2. (Tie) ***Corona, Armando**, P.M.P. Quizon, H. Romine, W. Kelly, V. Naidoo, S. Ruiz, S. Suggs, B. Mbugua, R. Jackson, L. Elliott, C. Long, J. Ellerbe, K. Stephens, J. Showers, A. Makriyannis, and B.A. Bahr. (UNCP) *Drug Discovery Efforts to Enhance Neuroprotective Endocannabinoid Signaling through Dual Inhibition of FAAH and MAGL Enzyme*
3. ***Long, Christopher, H.** Romine, J. Hwang, S. Ruiz, B. A. Bahr, and U. S. Ikonne. (UNCP) *A Clearance Pathway for Treating Age-related Diseases: Enhancing the Lysosomal Pathway with PADK Promotes Protein Clearance in Models of Alzheimer's and Parkinson's Disease*

CANCAS Derieux Awards 2014 Continued

Report by: Dr. Michelle Malotky, Guilford College

Orals: Zoology, Botany and Ecology

1. ***Patton, Austin**, J.J. Apodaca, Lori Williams and Alan Cameron. (WW) *Conservation Genetics of the Green Salamander, A. aeneus in Western North Carolina*
2. (Tie) ***Moore, C. Travis** and Megan White. (GC) *A Tale of Two Gardens: Comparing the Aquatic Ecosystems of Two Public Gardens, Greensboro, NC*
2. (Tie) ***Dunbar, Matthew G.**, Nathalie Fortin, Guillaume Meisterhans, Christine Michel, Thomas L. King, Charles W. Greer. (GC) *Bioremediation of Oil in the Arctic Sea by Indigenous Bacteria*
3. ***Caine, LaShonda** and David A. Beamer. (NCC) *Extreme genetic homogeneity: Phylogeography of the red and mud salamanders*

Orals: Physics and Engineering and Environmental Science

1. ***Thompson, Marc**, Pinar Huri and Warren Grayson. *Printing Cell-Laden Alginate Fibers (NCAT)*
2. ***Overbey, Katie** and Jill Stewart. (UNCCH) *Sewage Impacts on Water Quality and Antibiotic Resistance in Beach Waters in the Galápagos Islands*
- 3 (Tie) ***Macklin, Bria**, Sravanti Kusuma and Sharon Gerech. *Encapsulation of Derived Bicellular Vascular Population in Type I Collagen Gel*
- 3 (Tie) ***Brown, Jazmine**, (NCAT) George Anderson and Ellen Goldman. *Thermal Stability and Refolding Capability of Shark VNAR*

Orals: Microbiology, Chemistry, Health and Behavioral Science

1. ***Healey, Mark**. (Campbell) *Solvent Effects on the Copper(I)/TEMPO-Catalyzed Aerobic Oxidation of Primary Benzylic Alcohols*
2. ***Dietrich, Sarah**, Steven Cartier, Langdon Martin, David Ellum, Katherine A. Borkovich, Johnathon R. Blahut, Loren E. Prudhomme, Patrick C. Schacht, Ilva E. Cabrera. (WW) *Phenotypic Analysis of Transcription Factor Mutants in Neurospora crassa*
3. ***Pannier, Katie**. (WW) *An Epidemiologic Exploration of Tobacco Smoking at Warren Wilson College*

Orals Genetics and Molecular Biology

1. ***Worthy, Kelsey**, Zhong Fang and Patricia C. Dos Santos. (GC) *The Role of Cysteine Desulfurase (NifS) of Bacillus subtilis in the Assembly of the [4Fe-4S] Cluster of Quinolinate Synthase (NadA)*
2. (Tie) ***Thomas, Phillip**, Richard Graveline, Seyun Choi and Gregory David. (NCAT) *An Unbiased Screen Identifies New Pfl Interactions, with Biological Significance in Chromatin Modification and Transcriptional Control*
2. (Tie) ***Harrison, Krystal**, Sowjanya Kallakuri and Zhaoxia Sun. (NCAT) *Dissecting the underlying mechanisms involved in brain hemorrhage in cilia mutants*
3. (Tie) ***Khayat, Michael**, James W. Brown, Melanie Lee Brown and Robert Whitnell. (GC) *Modeling and Mutagenesis of the FMN Riboswitch*
3. (Tie) ***Clarke, David**, Tiffany Kennedy and Robert H. Newman. (NCAT) *Development of an in vitro Assay Platform for the Characterization of Genetically-encodable Fluorescent Biosensors of Kinase Activity*

CONGRATULATIONS,
WINNERS!

Job Openings in the Scientific Community

For more information on how to apply, go to <http://www.ncacadsci.org/NCAS/jobOpportunitiesRegistration.html>

1. Scientist (Biotechnology), KBI Biopharma, Durham NC

KBI Biopharma, Inc. is a contract services organization committed to reducing process development time and decreasing production costs for biopharmaceuticals. We are seeking an experienced scientist, with strong background in the analysis and characterization of proteins and peptides, to perform contract development services.

2. Assistant Editor, Nature Biotechnology

Nature Biotechnology seeks an Assistant Editor for its editorial team. Members of the research editorial team evaluate manuscripts, oversee the peer review process, and interact extensively with the scientific community. **Deadline to apply:** May 2, 2014. **For more info & to apply:** <https://home.eease.adp.com/recruit2/?id=8952401&t=1>

3. Instructor (Biology), Villanova University, Villanova PA

We will be hiring an instructor to teach a second semester General Biology course this summer.

4. Part-Time Instructor Positions (Chemistry), Bryn Mawr College, Bryn Mawr PA

The Department of Chemistry at Bryn Mawr College invites applications for three part-time temporary positions for the academic year 2014-2015. **Deadline to apply:** Applications will be reviewed starting Apr 22, 2014.

5. Part-Time Lecturer (Neuroscience), Bryn Mawr College, Bryn Mawr PA

The Department of Biology at Bryn Mawr College seeks applications for a part-time, interim position to teach one or two neuroscience courses in Fall 2014. Applications will be accepted immediately and will be considered until the position is filled.

6. Part-Time Visiting Assistant Professor (Chemistry), Haverford College, Haverford PA

The Chemistry Department (<http://www.haverford.edu/chemistry/>) seeks part-time Visiting Assistant Professor(s). **Deadline to apply:** all materials should be received by Apr 22, 2014.

7. Principal Investigator Positions (Biochemistry), DuPont Central Research and Development, Wilmington DE

The Biotechnology Division of DuPont Central Research & Development has multiple openings for Biochemistry Principal Investigators. These positions are located at the Experimental Station research facility in Wilmington DE.

8. Principal Investigator Positions (Microbiology), DuPont Central Research and Development, Wilmington DE

The Biotechnology Division of DuPont Central Research & Development has multiple openings for Microbiology Principal Investigators. These positions are located at the Experimental Station research facility in Wilmington DE.

9. Principal Investigator Positions (Molecular Biology), DuPont Central Research and Development, Wilmington DE

The Biotechnology Division of DuPont Central Research & Development has multiple openings for Molecular Biology Principal Investigators. These positions are located at the Experimental Station research facility in Wilmington DE.

10. Research Position (Security and Cryptography), Protegrity Products, Stamford CT

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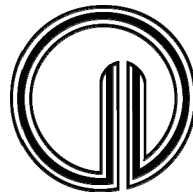
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The **objective** of the North Carolina Academy of Science is to *encourage the advancement of science within the state of North Carolina by promotion of scientific research and by the fostering of education in the sciences*". The North Carolina Academy of Science meets these objectives by...

- Publishing a peer reviewed scholarly journal, the *Journal of the North Carolina Academy of Science*.
- Fostering and encouraging student involvement in the sciences through support of the Collegiate (CANCAS) and Student Academies (NCSAS).
- Promoting interactions among scientists and students throughout North Carolina.
- Providing a forum for exchange of ideas for solving issues important to North Carolina.

The Academy members include individuals from academia, industry, government, and all others who support the objectives and goals of the Academy.

North Carolina Academy of Science

Our Mission

The North Carolina Academy of Science promotes public appreciation of science, science education, scientific research and a meaningful role for science in public policy.

Our Goals:

Promote public appreciation of science

- Partnership with Science Centers
- Public Lecture Series
- Newsletter

Promote science education

- NCAS Webpage
- Academic Lecture Series
- NCAS Publications: Journal, Educational Publications
- Student Academy - Middle & High School

Promote scientific research

- Yarbrough and Bryden Research Grants
- CANCAS Undergraduate Research Workshop
- Presentation Opportunities at Annual Meetings

- Journal of the North Carolina Academy of Science

Promote science in public policy

- Symposia
- News Releases
- Position Statements
- Interactions with Public Officials

