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The North Carolina Scientist

A Letter From our President, Dr. Mickael Cariveau

What an exhilarating year for the North Carolina Academy of Science, but it seems like it went by way too fast. We are excited about everything that is happening within the Academy and anticipate another successful year. We are launching our online version of the Journal of the North Carolina Academy of Science soon and our [website](#) has a brand new look that was launched last year. You can now pay your dues or renew your membership online as well as gain access to the archives of the Journal. You can also read about the exciting things happening in the Collegiate (CANCAS) and Student Academy's (NCSAS) as well. If you're not yet a member, I would encourage you to peruse our website to see all of the benefits that come with being a member of the North Carolina Academy of Science. We are working fervently to advance the mission of the Academy and our past leadership has been diligent in paving the way for the great things that are happening with the Academy. And, our Committees have worked tirelessly to ensure that we are true to that mission: "to promote public appreciation of science, science education, scientific research and a meaningful role for science in public policy." I am excited that I have the opportunity to serve as the President of the North Carolina Academy of Science and look forward to a productive year that will continue the advancement of the Academy. I have set the following goals for this year to continue moving the Academy forward and to promote our Mission:



- Identify funding sources and agencies to increase the Academy's endowment and financial support for the annual meeting
- Further address the needs of the Collegiate and Student Academy
- Realign committee responsibilities to continue advancing the mission of the North Carolina Academy of Science
- Continue to promote and maintain Academy visibility

We still have a lot of work to do and look forward to the opportunities and challenges that lie ahead of us. It's not too late to get involved and take advantage of the opportunities we have available. Our next big event will be the CANCAS Undergraduate Research and Career Workshop at Bennett College on Saturday, October 27th, 2012. Our annual meeting next year will be at UNC Pembroke and our Keynote speaker will be Dr. Erik Greene, Director of the National Human Genome Institute at the National Institutes of Health. It is shaping up to be another wonderful event.

While I don't want to end on a sad note, I would like to conclude by honoring the memory of Sue Stephenson, who passed away on May 25th, 2012. Sue was a loyal supporter and true matriarch to the North Carolina Academy of Science. Her contributions and endless support of the Academy have helped shape us into who we are today. You can read more about Sue on the Memoriam page of our website.

If you are interested in getting involved or would like to serve on any of our standing committees please feel free to contact [myself](#) or [Dr. Jim Fuller](#), Chair of the Membership committee. You can also visit our website for a list of our current committees.

CANCAS Fall Undergraduate Research and Career Workshop: Bennett College, Greensboro, NC, October 27, 2012

The CANCAS/NCSAS Fall Undergraduate Research and Career Workshop is scheduled for October 27, 2012 at the new Global Learning Center on the Bennett College Campus in Greensboro. The workshop, which is co-hosted by three area institutions, Bennett, Greensboro, and Guilford Colleges, will run from 9:00 am to 5pm, followed by a social gathering on the Guilford College Campus. The workshop will

include sessions related to research skills, internship/study abroad opportunities and career preparation. Students will have the opportunity evaluate resumes and participate in mock interviews. College preparation sessions will also be available for NCSAS participants. Two discussion panels consisting of students and professional school admissions representatives will provide an open forum for career and

research questions. There will be plenty of networking opportunities with peers and faculty during the Luncheon, CANCAS Business Meeting and evening social. Please pre-register online at the CANCAS website to save your spot at the CANCAS/NCSAS Workshop!

North Carolina Academy of Science Annual Meeting 2013

The 110th Annual Meeting of the North Carolina Academy of Science will be held on the campus of the University of North Carolina at Pembroke in Pembroke from April 5-6, 2013. As always, there will be a significant gathering of scientists, graduate students, and undergraduates from all over the state. The theme for this year's meeting is "Science in the? Genomics Era." The plenary speaker, Dr. Eric Green M.D., Director of the National Human Genome Research Institute (NHGRI) at the National Institutes of Health (NIH) will give a presentation on the Human Genome landscape on Friday night, April 5. On Saturday morning, Mr. David Micklos, Executive Director of the DNA Learning Center at Cold Spring Harbor Laboratory, will deliver a keynote

address on the lessons of eugenics. Saturday afternoon, we will have three concurrent workshops. The first will be presented by Dr. Rosenwald on the Genome Solver, a collaborative effort she has developed along with Janet Russell, genomics experts at the J.Craig Venter Institute, and educators from Simmons College in Boston to generate a community of new genome analysts within classrooms and between schools and experts by capitalizing on the wealth of microbial DNA sequencing the Human Microbiome Project (HMP) has created. At the second workshop, Dr. Jeff Coker, Associate Professor of Biology at Elon University will speak on the theme of evolutionary stewardship and how biodiversity, sustainability, and

hands-on biotechnology are shaping life's future. The third workshop will be on the now popular among our students "Graduate and Professional School". Special sessions will include a talk by Mr. Miclos on the iPlant collaborative project, and other topics ranging from sustainable agriculture to the microprobe concept, a special electron microscope that can enlarge images up to 300,000 times.



*The theme for
this year's
meeting is
"Science in the
Genomics Era."*



Science Events and News Around the State

Science Talks at the Science Café, held Thursdays at 7 PM at the Daily Planet in the Nature Research Center at the NC Museum of Natural Sciences.

Science Café is an event where, for the price of a cup of coffee or a glass of wine, anyone can participate in topical discussions with leaders in the fields of science and technology. Hosted by local Sigma Xi chapters and the Museum, these monthly talks are located in coffee shops, bars and restaurants around Raleigh and promote discussion of sci-

ence in an informal community setting. See the upcoming schedule at <http://naturalsciences.org/programs-events/science-talks>. Presentations in September and October include one by National Geographic Explorer Mark Moffett (“Dr. Bugs”), The Science of Cheese with Chapel Hill Creamery, and Documenting New Species, from Bacteria to Bears, in the Great Smokey Mountains.

Natural Science Center of Greensboro’s Carolina Sciqarium

Construction has begun on the Natural Science Center of Greensboro’s Carolina Sciqarium, (<http://www.natsci.org/attractions/sciqarium/index.shtml>). The new facility, approved by a \$20 million dollar bond in 2009, is scheduled to be completed and open to the public in summer of 2013. Exhibits in the Sciqarium include a stingray touch tank, a 4D submarine, otter and penguin habitats, and a shark tank. All of the exhibits will be designed to provide interactive learning experiences.

Featured Scientist: Dr. Michael Kingston, Elon University

“Dr. Mike Kingston: developing an undergraduate research program from the ground up.”

We recently asked longtime board member and current President-Elect Dr. Mike Kingston about his research interests and his sponsored undergraduate research projects at Elon University. Dr. Kingston completed his master’s degree studying marine seaweed, or macroalgal, communities on the California coast. But when he started his PhD at the Duke University Marine Lab, he started working on a much smaller scale and fell in love with the microalgal community that can be found in the mudflats, sandflats and protected beaches on the Carolina coast. As a science faculty at Elon, his main research now focuses on the microalgal species *Euglena*, but Dr. Kingston has a curiosity about all types of science that has served him well. Elon has a strong tradition, in large part due to the work of Dr. Kingston, in fostering undergraduate research. He has mentored Elon undergraduates

experimenting with everything from feeding behavior in fiddler crabs to grouper recruitment in the Caribbean.

When Dr. Kingston started at Elon in 1991, undergraduate research was not as prominent as it is today. In fact, Dr. Kingston says that during those early days, undergrad research could only be, “found in closets and laboratory prep areas that were not heavily used that semester.” That year, one of Dr. Kingston’s first assignments was to advance and support undergrad research at Elon. Within two short years, a working group was formed from faculty across all campus to develop what has become Elon’s annual Spring Undergraduate Research Forum (SURF). Classes are cancelled on this day, and all students are encouraged to participate in a campus wide celebration and exhibition of undergrad research. Since then, student-led research on campus has grown by leaps

and bounds, and Elon is considered a model university for support of undergraduate research. Elon now hosts the online journal “Perspectives on Undergraduate Research and Mentoring.” This journal focuses on best practices, student perspectives, and dialogs between undergrad researchers and their mentors.

Dr. Kingston has since refined his own approach to mentoring undergraduates. When asked about how students decide on research topics, he said, “some are guided by my own research focus and many are driven by student interest.” What Dr. Kingston emphasized, though, was that, aside from the topic, “the most important aspect of any undergraduate research project is that the student be strongly engaged which requires some degree of ‘ownership.’” And Dr. Kingston has helped to foster an environment at Elon that encourages students to



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**Welcome
2012-2013
CANCAS
Officers:**

President-
Jennifer
Floyd, Mount
Olive College

VP- Sam Kelly-
Guilford College

Secretary- Katie
St.Clair- Campbell
University

Historians-
Michael Khayat
and Tatum Lemly-
Guilford College

Campus Liasons:
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Elon University
Canna Zheng-
Guilford College
Leah Sigmon-
Lenior Rhyne
University

Featured Scientist, Dr. Michael Kinston

take on challenging projects, but also encourages faculty to take time from their busy teaching load and mentor undergraduates. One the programs Dr. Kinston highlighted was one that the Elon administration developed to convert time spent mentoring independent undergrad research into teaching credit, "which drew the interest of faculty in some departments who taught many independent studies courses which do not carry

teaching credit."

For those faculty who want to start undergraduate research but aren't sure where to begin, Dr. Kinston has some advice. "Approaching a department chair or dean for seed money might be a way to design a "proof-of-concept" project that will develop wider interest in undergraduate research. What we did at Elon was to just begin small and support like-minded colleagues who recog-

nized the importance of this activity and wanted to expand undergraduate research on our campus."

Dr. Michael Kinston is a Professor in the Biology and Environmental Studies Departments as well as the curator of the Roger W. Barbour Collection at Elon University. He is also the President Elect of the NCAS board of directors.

Job Openings in the Scientific Community

See complete job descriptions in the "Opportunities" section at our website: <http://www.ncacadsci.org/NCAS/NCAS.html>

1. Faculty Positions, J Craig Venter Institute, La Jolla Ca and Rockville MD
2. Multiple Open Positions, Synergy Pharmaceuticals Inc., Doylestown PA
3. Manager-Level Strategic Consultant (MSC) and Medical Writer Positions, Ethos Health Communications, Newtown PA
4. Science Editor (Biology), American Institutes for Research (AIR), Washington DC
5. Research Scientist (R & D), Stryker, Malvern PA
6. Assistant Dean for Faculty Development, Johns Hopkins School of Medicine, Baltimore MD
7. Senior Design Researcher, Insight Product Development, Chicago IL
8. Associate Director of International Programs, American Society for Cell Biology, San Francisco CA
9. Research Scientist Position (Pharmaceuticals), Kelly Scientific, RTP NC
10. Relationship Manager Position, Versatile PhD
11. Senior Quality Assurance Investigator (Chemistry), Kelly Scientific, RTP NC
12. Tenure-Track Assistant Professors in Microbiology or Cell Biology / Immunology, Kalamazoo College, Kalamazoo MI
13. Product Manager I, Bio-Rad, Hercules CA
14. Formulation Chemist (Pharmaceutical), Lab Support, Baltimore MD
15. Associate (Biopharmaceuticals), CBPartners, New York City NY



North Carolina Continues to Move Toward Legalizing Fracking and Horizontal Drilling for Natural Gas Deposits

The North Carolina General Assembly has taken several steps during the past several months toward legalizing hydraulic fracking and horizontal drilling for natural gas in the state. The recent discovery of possibly large deposits of natural gas deep underground beneath shale deposits in the central part of the state has stimulated interest in the possible development of these resources and related economic benefits. Most of the gas deposits are believed to lie under Lee, Orange, and Chatham counties but estimates of the amount of gas have varied and the most recent estimate from the US Geological Survey is much less than previous estimates. Estimates have been reduced from the

equivalent of a 40-year supply of the current annual state consumption to about a 5-year supply. Any anticipated economic benefits from exploitation of the gas deposits would be similarly reduced.

The General Assembly has passed several bills to explore the feasibility of allowing these new drilling techniques to be used in this state in its most recent session. Several of the legislative sessions attracted great public attention and were well attended. Several citizens offered testimony for and against the proposed legislation. Governor Perdue vetoed three of the proposed bills, but those vetoes were overridden by the legislature. Senate bill 820 established a new state

panel, the Mining and Energy Commission, in the NC Department of Natural Resources to conduct three studies of the drilling practices and to develop regulations to ensure safe practices and to minimize environmental impacts. The Commission held its first meeting September 6 in Raleigh. Information on the Commission, its charge and a list of its 15 members may be found at the following web site: <http://portal.ncdenr.org/web/mining-and-energy-commission/home>

The General Assembly has passed several bills to explore the feasibility of allowing these new drilling techniques to be used in this state in its most recent session.

Thank you!

NCAS Thanks our Academy Headquarters for their sponsorship



2012 Yarborough Grant Recipients

NAME	INSTITUTION	ADVISOR	DISCIPLINE	RE-QUEST	AWARD	TITLE
Marlon Barber	Catawba	Mark Sabo	Chemistry	\$803	0	Creating a Volatile Organic Compound Profile for Rattus Norvegicus under Aerobic Conditions
Grace Fox	Lenoir-Rhyne	Marsha Fanning	Physiology	\$197	\$100	The Effects of Dobutamine on the Hearth Rate of the Xenopus Embryo
Jeremy Gfittin	Gardner Webb					
Chelsea Kay	Warren Wilson	Paul Bartels	Invertebrate Zoology	\$161	\$100	Sexual Determination in Freshwater Jellyfish Medusae, Craspedacusta sowerbii, Captured in Lake Fontana, North Carolina
Mary Podgorak-Lagro	Catawba	Jay Bolin	Ecology	\$482	\$147	Evaluating Hybrid Intermediacy in the Germination Ecology of the Ashe's Sumac, Rhus asheii (Rhus michauxii x Rhus glabra)
Nebiyou Mandefro	Warren Wilson	Dean Kahl	Chemistry	\$175	\$175	Optimal conditions for L-Proline Catalyzed Direct Enantioselective Crossed Aldol Reactions
Tabitha Ndung'u	Warren Wilson	Stephen Cartier	Chemistry	\$200	\$200	Quantification of Active Pharmaceutical Ingredients in Malaria Drugs Used in Malaria Endemic Areas of Kenya
Marie Orton	Warren Wilson	Mark Brenner	Env. Science	\$427	\$125	Effectiveness of a Mycofilter on Pathogen Removal from Agricultural Runoff as Indicated by Fecal Coliform Prescence
Melissa Rhoney	Lenoir-Rhyne	Dale Burnside	Microbiology	\$174	\$100	The Effect of Vitamin C on Escherichia coli
Leah Sigmon	Lenoir-Rhyne	Stephen Scott	Immunology	\$578	\$200	The Effect of Vitamin E on the Antibody Responses of Older Horses
Amelia Snyder	Warren Wilson	John Brock	Env. Chem	\$89	\$89	Atmospheric Coal Ash Composition Near a Coal Ash Pond





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Check us out on the web!
<http://www.ncacadsci.org/home.html>

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

