



Volume 1, Issue 2

December 2012

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

- Sneak peak at the NCAS Annual Meeting, p2-3
- New Partnerships with PKAL, p4
- Featured Future Scientist: Katie St. Clair, p4-5
- New Partnerships with PKAL, p6
- Science Trivia at the Daily Planet, Nature Research Center, NC Museum of Natural Sciences, p7

Inside this issue:

Message from Membership	1
Annual Meeting	2-3
Featured Future Scientist	4-5
PKAL Conference	6
Jobs and NC Science News	7
Call for NCAS Judges	8
CANCAS Workshop	8

The North Carolina Scientist

A Message From Membership

Jim Fuller, Chair of the Membership Committee

The 110th annual meeting of the North Carolina Academy of Science is quickly approaching, and it looks like it will be another great meeting with opportunities for all people who are interested in science. The diversity present and the opportunities to learn, educate, mentor, and network for all who are interested in science is rare in today's culture of scientific specialization. The notion that science is an exclusive club too complicated for most to understand needs to be changed. It drives future scientists away instead of welcoming them and highlighting the fun and excitement of a field that impacts every day of our lives. This is what makes the Academy special. It can bring together all the diversity present in science and help everyone grow. But to continue to provide quality support to our members and fulfill our mission of promoting science in the state of North Carolina we need to do more than the status quo. We are a member based organization and you, our members are our greatest resource. Every member of the academy is a potential ambassador. We all know colleagues that aren't currently members. Maybe all it would take is mentioning the opportunities over lunch or coffee. If everyone makes a small effort towards recruiting and retaining members, then growth will happen. The North Carolina Academy of Science is one of the best kept secrets of the North Carolina scientific community. Let's spread the word to our network of colleagues, friends, and students. Help us grow and invite everyone interested in science to attend the annual meeting and become new members. I hope to see all of you at the 110th annual meeting!



For membership information or questions, contact: fullej1@labcorp.com

North Carolina Academy of Science Annual Meeting 2013

Report by: Dr. Maria S. Santisteban

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. UNCP "Where the learning gets personal" is home to approximately 6,200 students.

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." Highlights of the meeting include a plenary address on the Human Genome landscape, a keynote address on Eugenics, and a series of workshops and special sessions from which to choose.

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 Genomics Landscape: Bringing Genomic Medicine into Focus**" on Friday night, April 5. While directing an independent research program for almost two decades, Dr. Green was at the forefront of efforts to map, sequence, and understand eukaryotic genomes, including significant, start-to-finish involvement in the Human Genome Project.

On Saturday morning, Mr. **David Micklos**, Executive Director of the DNA Learning Center at Cold Spring Harbor Laboratory, will deliver a keynote address on "**Engineering Society: The American Eugenics Movement**". David Micklos is founder and executive director of the DNA Learning Center (DNALC) at Cold Spring Harbor Laboratory. The nation's first science center devoted to public genetics education, the DNALC operates six teaching laboratories that provide hands-on science experiences to 30,000 students per year.

Early Saturday afternoon four workshops will take place concurrently:

- Dr. **Anne Rosenwald** from Georgetown University and co-founder of the NSF funded, Genome Solver will speak on "**The Human Microbiome Project: An Opportunity for Student Learning**".

- Dr. **Jeffrey Coker**, Associate Professor of Biology at Elon University, will speak on "**Teaching Science for Global Citizenship**". Dr. Coker, who recently published the book entitled, *Re-inventing Life: A Guide to Our Evolutionary Future*,

will sign copies of his book.

- Dr. **James Fuller**, Director of DNA Identification Testing for the Laboratory Corporation of America will be talking on the important and contemporary subject of "**Human Cell Line Authentication**".

- The **fourth** workshop will be on the, now popular among our students, "**Graduate and Professional School**", which will include a panel discussion followed by breakout sessions. This will be the third year in a row that the Annual Meeting hosts the workshop.

On Saturday afternoon, four concurrent special sessions will feature stimulating and exciting themes including research and outreach projects of the NC Museum of Natural Sciences, the iPlant collaborative project, sustainable agriculture, and the microprobe concept.

"Highlights of the meeting include a plenary address on the Human Genome landscape, a keynote address on Eugenics, and a series of workshops and special sessions from which to choose."



Featured Future Researcher: Katie St.Clair, Campbell University

Report by: Dr. Beth Overman

The North Carolina Academy of Science is teeming with faculty, graduate students, and undergraduate students engaged in innovative research. One of these such students is Katie St.Clair. Katie is currently a senior at Campbell University majoring in Biology with a Pre-Physical Therapy concentration, and hoping to attend PT school in the fall. Among her other many activities, including being a TA and tutor in Chemistry and Physics, serving as a Freshmen Peer Mentor, offering at home PT aid to those in need, and serving as the Secretary for the Collegiate Academy of the North Carolina Academy of Science, Katie also found her way to an independent undergraduate research project under the tutelage of Dr. Karen Guzman.

Undergraduate research has consistently been part of Katie's college career. While at Charleston Southern University, she studied the antibiotic resistance of *Staphylococcus aureus* with interest in the detrimental effects of staph on synthetic materials, such as plastic joint implants. In addition to this scientific research, Katie surveyed her peers on

their knowledge of stem cells and stem cell treatments to encourage her fellow students to expand their knowledge of innovative treatments. When Katie transferred to Campbell University to complete her degree, she again sought out an innovative research opportunity.

Working with Dr. Guzman, Katie conducted a research project with intent to help students better understand gene expression and biotechnology. In this project, she cloned the mouse Calpain 2 gene into an expression vector and helped develop lab exercises to be used in biology courses at Campbell. Hopefully, her work will help students learn scientific content while exploring new biotechnological techniques. In addition, Katie is piloting a new project of her own design, studying the ability of chondrocytes to function under stress. Katie is very aware of the impact of these research experiences on her future career, and fully intends to stay involved with research as a physical therapist. Katie shares, "Physical Therapy is a quickly evolving field, treating patients in less invasive manners rather

than automatically suggesting surgery. I would like to participate on research teams or studies for developing braces or techniques that would aide a patient in healing before resorting to a surgical procedure."

Students, like Katie, who are interested in pursuing a career in medicine sometimes find it difficult to participate in research, even though the experience can be transformative. According to Katie's mentor, Dr. Guzman, "For a busy undergraduate student, reserving time for research in one's busy schedule can be challenging but last year Katie set herself ambitious goals for her research and then presented her results in an on-campus symposium, at a regional conference and at the NCAS Annual Meeting." Participating and presenting at conferences, Dr. Guzman reflects, is not only important for professional development and growth, but also the mark of a successful researcher. "Presenting ones results is an important aspect of science but another hallmark of a true researcher is the ability to ride the waves of



"While structured courses provide an atmosphere for learning, I have learned much more from individual lab work."

“I would like to participate on research teams or studies for developing braces or techniques that would aide a patient in healing before resorting to a surgical procedure.”

both successful and failed experiments and Katie was able to do this without becoming discouraged,” Dr. Guzman says. Not only does Katie succeed in meeting these research challenges, but she does so with enthusiasm and drive. With this experience, Katie hopes to bring the skills she learned while researching into her career as a PT. When reflecting on her experience as an undergraduate researcher, Katie says, “Research and the development of skills for proposing research properly have greatly impacted my undergraduate

education. While structured courses provide an atmosphere for learning, I have learned much more from individual lab work. In research situations, experiments often run awry. In those cases, one must draw on their own knowledge of the subject to correct their mistakes. These skills apply directly into the workforce, especially the healthcare profession. As a physical therapist, I will spend quite a bit of time with each patient, much more so than a physician. I must be able to assess the patient's condition on my

own, without supervision, and correctly prescribe a rehab program to improve their condition. Mistakes must be identified and corrected, just as with research.” Critical thinking, asking questions, problem solving, trouble shooting, and communicating findings to others, all will be critical as she navigates physical therapy school and works with patients in her future career. These skills, learned in undergraduate research and paired with her enthusiasm and positive spirit, will take her far.

Dr. Melanie Lee-Brown Chosen as a Vision and Change Leadership Fellow

Report by: Dr. Karen Guzman

Immediate Past President of the North Carolina Academy of Science, Dr. Melanie Lee-Brown, was recently honored when she was selected by the Partnership for Undergraduate Life Sciences Education (PULSE) program as one of forty Vision and Change Leadership Fellows. Together, these Fellows hope to identify ways to implement reform that will improve undergraduate education in the life sciences. Susan Musante, Education Programs Manager for the American Institute of Biological Sciences, described the appointment in this way: “Dr. Lee-Brown is now part of a team of forty Leadership Fellows who were competitively selected from an application pool of over 250. The Leadership Fellows team is embarking on a year-long initiative integral to the goals of the Partnership for Undergraduate Life Sciences Education (PULSE). PULSE is a joint effort by National Science Foundation (NSF), National Institutes of Health/NIGMS (NIH/NIGMS) and Howard Hughes Medical Institute (HHMI) to stimulate systemic changes within biology departments at all types of post-secondary educational institutions, based upon the findings from the 2011 report Vision and Change in Undergraduate Biology Education: A Call to Action and other similar calls for transformation of undergraduate life sciences education. It would be wonderful if you could let the NCAS community know this good news about Dr. Lee-Brown's selection and encourage others invested in undergraduate biology education to become involved in PULSE.”

If you would like to know more about this program and their goals, you can visit their website at <http://pulsecommunity.org>

North Carolina Project Kaleidoscope Network and NC Academy of Science Form an Alliance

Report by: *Dr. Michael Kingston*

Project Kaleidoscope (PKAL) has been one of the leading advocates in the United States for building and sustaining strong undergraduate programs in the fields of science, technology, engineering, and mathematics (STEM) since 1989 (<http://www.aacu.org/pkal/>). With an extensive network of faculty members and administrators from over 1,000 colleges, universities and organizations, PKAL has developed far-reaching influence in shaping undergraduate STEM learning environments that attract and retain undergraduate students. PKAL accomplishes its work by engaging campus faculty and leaders in funded projects, national and regional meetings, community-building activities, leadership development programs, and publications that are focused on advancing best practices in STEM education. Since forming a partnership with the Association of American Colleges and Universities, PKAL has made forming regional and state-wide networks with disciplinary societies a central component of its continuing work. New emphases on interdisciplinary and integrative learning will be explored while an increased emphasis on STEM access, retention, and achievement for all students, including those traditionally underrepresented in the STEM fields, will be pursued. Given their overlapping missions, the alliance of a North Carolina Project Kaleidoscope network (NC-PKAL) and the NC Academy of Science should constitute a beneficial partnership that will enhance both organizations and engender creative synergies.

The inaugural meeting of the North Carolina Project Kaleidoscope network (NC-PKAL) entitled “High Impact Teaching, Engaged Learning, and Assessment in STEM” was held at Elon University on Friday, October 12, 2012. This meeting attracted over 95 scientists, educators and administrators representing 21 North Carolina colleges and universities. The highlights of the morning sessions included a keynote address by Lee Willard, Associate Vice President for Undergraduate Education at Duke University, on PKAL and the changing face of science and a morning panel discussion entitled “What Works: Effective Pedagogy and Assessment.” The panel discussion included presentations on the use of the case method of instruction (CMI) in undergraduate science education, on-line delivery of science courses, student-centered active learning environment for undergraduate programs (SCALE UP), and the role of pedagogy in developing the 21st century workforce. The afternoon agenda included disciplinary break-out sessions and a business meeting to develop an action plan. One of the highlights of the afternoon was a presentation on the development of the Elon Environmental Education Center

and the role of STEM in the emerging field of sustainability studies. The meeting ended with a networking social.

NC-PKAL and the NCAS have agreed to meet jointly each spring. The first joint meeting will convene on the University of North Carolina Pembroke campus. On Friday, April 5, 2013, the NC-PKAL meeting will run from 10 AM until 4 PM and feature a two-hour morning workshop focusing on Scale-Up and a two-hour afternoon workshop focusing on the flipped classroom. All NCAS members are invited to attend the NC-PKAL meeting but must pay a modest registration fee (\$25.00) to cover the costs of a catered buffet luncheon and printed materials. Following the afternoon workshop, NC-PKAL attendees can check-in at the NCAS Annual Meeting registration desk and attend the Friday evening poster session. NC-PKAL and NCAS members will be given the opportunity to present their work in developing innovative instructional methods and their pedagogical research at a contributed paper session on Saturday, April 6. The official joint meeting announcement and on-line registration information will be made available in January 2013.



Science Events and News Around the State

E.O. Wilson's Global Town Hall

The North Carolina Museum of Natural Sciences is hosting E. O. Wilson, a pioneer in the field of biodiversity and University Research Professor Emeritus at Harvard in a unique town hall setting on December 13th at 1pm. All are welcome to either tune in live online or visit the museum's Daily Planet Theater to view the 30 minute presentation and question and answer session, as he answers questions from audience members or twitter. Come join them, either virtually or in person, for this one-of-a-kind event! For more information, check out: <http://naturalsciences.org/eowilson>

mation, check out: <http://naturalsciences.org/eowilson>

The **Museum of Life and Science in Durham** is hosting the traveling exhibit, "Nano", where museum-goers can interact and engage in nanoscale science, engineering and technology and discover what happens when things get smaller. Explore the societal and ethical implications of this new technology by balancing blocks on a tippy table, which represents the challenge of working together to build a stable nano future. Play "I Spy Nano," and search a complex image for examples of real nano products and phenomena. Build a giant model of a carbon nanotube and compare the relative

effects of static electricity and gravity on different size beads. Nano was created by the Nanoscale Informal Science Education Network (NISE Network) with support from the National Science Foundation. This exhibition is in both English and Spanish. Get more information at <http://www.ncmls.org/visit/events>.

Science Trivia Night

The North Carolina Museum of Natural Science is hosting monthly trivia nights at the Daily Planet Café on the first Thursday of every month. Trivia begins at 7:00 pm, and prizes are awarded to the winning team. In addition, the museum stays open on these evenings until 9:00pm, and you are free to come and enjoy!

Job Openings in the Scientific Community

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

- 1. Biology Position:** Full-time, tenure track position for an organismal biologist, with molecular and biotechnology expertise, beginning August 2013. Major interest must be in teaching undergraduates, both majors and non-majors, mentoring undergraduate research and assisting in the development of a proposed Biotechnology major. Primary teaching responsibilities include Integrative Biology (Organismal), a biotechnology course and a field biology course. College expectations also include advising and teaching General Education courses, as needed. Ph.D. required. Submit a cover letter that includes a statement of specialty areas, statement of teaching philosophy and experience, research plan, CV, academic transcripts, and three letters of recommendation by January 15, 2013 to the Department of Biology c/o Human Resources at <https://guilford.peopleadmin.com>. Hard copies will not be accepted.
- 2. Strategy Consultant, Access Scientific, New York NY:** Access Scientific specializes in placing BS through PhD level scientific, laboratory and engineering talent for the pharmaceutical, biotechnology and medical device industries.
- 3. Senior Scientist (Assay Development), Merck, North Wales PA:** Merck is a global health care leader with a diversified portfolio of prescription medicines, vaccines and consumer health products, as well as animal health products.
Deadline to apply: Dec 7, 2012.
- 4. Assistant Professor of Biology (Microbial Geneticist), Shippensburg University, Shippensburg PA:** The Department of Biology at Shippensburg University invites applications for a tenure track Microbial Geneticist position starting August 2013. Review of application materials will begin on November 30, 2012 and will continue until the position is filled.
- 5. Senior Analyst (Life Sciences), Catalyst Advisors, New York NY:** Our client is a prominent, well-established and highly successful life sciences investment firm based in Manhattan. The firm, which wishes to remain confidential at the moment, is seeking to recruit a Senior Analyst to join their team. This firm focuses exclusively on investing in public and private life sciences companies and takes substantial equity positions in their chosen investments.
- 6. Equity Research Associate (Biotechnology), JMP Securities:** JMP Securities is a full-service investment bank that follows companies in four broad growth industries: Technology, Healthcare, Financial Services and Real Estate—and produces specialized equity research that enables investors to understand and invest in complicated growth stocks profitably. JMP is presently searching for an equity research associate to support its senior analyst covering biotechnology.

Call for Judges at Annual NCAS Meeting 2013

Report by: Dr. Michele K.H. Malotky

Judges are needed for undergraduate research poster and oral presentations that are being considered for Derieux Awards for Research Excellence. Poster and Presentation sessions are divided into subject areas such as; Microbiology, Zoology/ Botany/ Cell/Molecular, Ecology and Health Sciences. A minimum of two judges are needed for each subject area within a session. A grading rubric for posters and presentations will be provided. For more information on the Derieux Award please go

to: <http://www.ncacadsci.org/cancas/Derieux.html>.

Poster papers will be presented and judged on Friday, April 5 from 6:00-7:30pm.

Oral papers will be presented and judged on Saturday, April 6 from 8:30-9:45am (Session I) and 9:50-11:05am (Session II). There will be a mandatory judges and moderator meeting prior to either the posters or oral sessions.

If you are willing to serve, please contact Michele Malotky (mmalotky@guilford.edu), lead Co-director of CASCAS and Maria Santisteban, Chairperson for the NCAS Annual Meeting Planning Committee (maria.santisteban@uncp.edu).

CASCAS Workshop Update

Report by: Dr. Michele K.H. Malotky

The annual CASCAS Career and Research Workshop was held on October 27, 2012 at Bennett College in Greensboro NC. Jointly hosted by Guilford, Bennett and Greensboro Colleges, the workshop brought together students, faculty and administrators from eight institutions from across the state. Events included mini workshops on Bioinformatics, study abroad opportunities, resume, interview and presentation skills. Student and professional school panels provided participants with the opportunity to ask questions related to research experiences, strategies for entrance exam preparation and applying for graduate/professional school. The Keynote speaker was Dr. Julie Horvath, Director of the

Genomics and Microbiology Research Laboratory at the Nature Research Center in Raleigh. Dr. Horvath provided an overview of the Center's mission and related research, volunteer and internship opportunities for students. The local organizing committee sends their thanks to all of the participants and look forward to seeing you all at the Annual NCAS meeting at Pembroke in the spring!



YARBROUGH GRANTS

The Yarbrough Grants Committee would like to fund high quality undergraduate research projects for the 2013-2014 year. If you have a motivated student with good ideas but need funding for the project, the application requirements and details are available at <http://www.ncacadsci.org/cancas/Yarbrough.html>.

VOLUNTEERS NEEDED TO ASSIST WITH ASTRONOMY DAYS CELEBRATION IN RALEIGH JANUARY 26 and 27

Report by: Dr. Charles Lytle

Astronomy Days celebration has been moved back to January. Good news for the Academy since the May dates tried the last two years proved difficult for us, and attendance at the event was much less than the previous January dates.

The Astronomy Days celebration at the NC Museum of Natural Sciences is the largest public celebration of Astronomy and Space Science in the country, and it attracts several thousand people to the annual event including many families with children as well as college and precollege students. Numerous exhibits are provided by NASA, as well as many state and local organizations, which work to support science and science education and increase public understanding of science.

The Academy joined this event several years ago as part of our continuing partnership with the Museum and as an important component of our effort to gain greater public recognition of our efforts to take a more active role in focusing attention on the importance of science to the economic development of North Carolina and the health and welfare economy of its citizens.

We need academy members to assist with our public exhibit at this Astronomy Days Celebration on Saturday and Sunday January 26 and 27 at the North Carolina Museum of Natural Sciences. This is your chance to help the Academy and to do something positive to increase public appreciation of Science. Volunteers work three-hour shifts and help greet visitors to the exhibit and chat with them about science and Academy programs. Many families with children attend so we have some simple hands on science activities to engage children and need help from members of the Student and Collegiate Academies to assist with these activities. Training, materials, and support will be provided for volunteers who can spend a few hours during the weekend assisting with the exhibit. Please contact Dr. Charles Lytle at [919-389-1845](tel:919-389-1845) or lytle_bio@ncsu.edu for more information or to let me know when you can give a few hours to increase public appreciation of science on January 26 or 27, 2013.





The North Carolina Academy of Science
Meredith College Department of Biological Sciences, 3800 Hillsborough St., Raleigh, NC 27606-5298

Phone: 919-760-8189
Fax: 919-788-0956
ncacadsci@email.meredith.edu

“Like” us on Facebook and follow us on Twitter (@NCAcadofSci) to get the latest updates and information on what’s happening at your North Carolina Academy of Science!



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

