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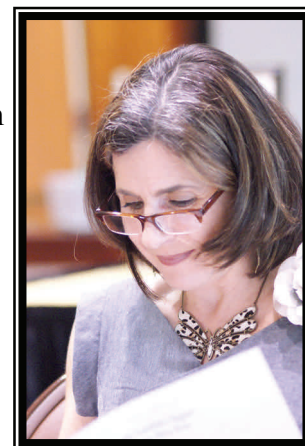
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The North Carolina Scientist

A Message From our Hosts

Dr. Maria S. Santisteban, University of North Carolina at Pembroke

The 110th Annual Meeting is around the corner. Unbelievable! When the University of North Carolina at Pembroke was identified as a potential site for the meeting more than two years ago, it seemed like we had an eternity to get ready. These days it seems like time literally flies, and I (as the Chair of the local arrangements committee) and an outstanding group of people from the Biology and Chemistry Departments at UNCP are working very hard to plan and deliver the best meeting we can. “The best meeting we can”, has often been a subject of conversation for me recently. Does this mean we are trying to do better than previous meetings? No. I like to joke and say we are just hoping to live up to expectations. The truth is that every year each local arrangements committee has the help of the previous year’s organizers, the benefit of prior experiences, and the support from the great group of people who compose the board of directors. Yet, each year is not a clone of the previous one. Every year the uniqueness of the meeting -- the invited speakers, the workshops, the special sessions, and the location -- makes it a new, exciting, and inspiring event to attend. Of course, what makes the meetings more unique than anything else are the oral and poster presentations made by faculty and students, and for some of them, this will be their first time to present, and hopefully that experience will leave them with a lasting, positive impression. For these reasons, I encourage you to consider a submission.



In this newsletter, you can read all about the interesting sessions we have planned for the meeting, which under the theme “Science in the Genomic Era,” takes place April 5-6, 2013. This will be the first time UNC at Pembroke hosts the annual meeting, and we are excited that it will coincide with the celebrations for the 125th anniversary of the founding of the University. The leitmotif for the celebration is “Honoring Our Heritage, Soaring Toward Our Future!” The local arrangements committee is proud to contribute to that future by bringing to UNCP a quality meeting. We are doing our best and I am personally enjoying the journey. As I told a colleague from the board of directors last week, seeing the pieces of the puzzle come into place is invigorating and encouraging. We hope you will be invigorated and encouraged by the 110th Annual Meeting. See you at UNC at Pembroke!

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 from April 5-6, 2013. The University of North Carolina at Pembroke is a public institution located in a rural community within Robeson County. This county is the political and cultural center of North Carolina's largest Native American tribe—the Lumbees. Opened as a normal school for Indians in 1887, the school started offering college classes in 1930 and was named Pembroke State College for Indians in 1941. In 1972, Pembroke State University became a constituent of the University of North Carolina system, and its name was changed to UNC at Pembroke in 1996. Today it still serves a large American Indian population. 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. We will also feature the panel "Preparing

Students for Colleges Science", which will be of interest to high school students and teachers.

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. Now as director of the NHGRI, Dr. Green is responsible for providing overall leadership of the Institute's research portfolio and other initiatives; this requires significant coordination with other NIH components and funding agencies. Most recently, Dr. Green led NHGRI to the completion of a strategic planning process that yielded a new vision for the future of genomics research, entitled *Charting a course for genomic medicine from base pairs to bedside* (Nature 470:204-213, 2011).

On Saturday morning, Mr. **David Micklos** will deliver a keynote address on "**Engineering Socie-**



ty: 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. The DNALC's Internet portal hosts 21 proprietary content and bioinformatics sites, which receive 7.4 million visitors annually. Mr. Micklos is author of two popular textbooks, *DNA Science* and *Genome Science*. He received the 1990 Dana Award for Pioneering Achievement in Education, the 2011 *Science* Prize for Online Resources in Education, and the 2012 Genetics Society of America Award for Excellence in Education. He is the only CSHL staff member to receive an honorary doctorate from its Watson School of Biological Sciences.

Another leader in undergraduate genomics education, Dr. **Anne Rosenwald** from Georgetown University will lead one of the four concurrent workshops on "**The Human Microbiome Project: An Opportunity for Student Learning**", early Saturday afternoon. Dr. Rosenwald along with Janet Russell (CNDLS), genomics experts at the J.Craig Venter Institute, and educators from Simmons College in Boston have developed

the Genome Solver project, funded by NSF, which seeks to train faculty in using data from the Human Microbiome Project for teaching and research (genomesolver.org).

At the second workshop, Dr. **Jeffrey Coker**, Associate Professor of Biology at Elon University, will lead a workshop entitled "**Teaching Science for Global Citizenship**" challenging participants to connect the teaching of science with important contemporary issues. As an example, he will explore evolutionary stewardship and how human actions related to the environment and biotechnology are shaping life's future. Dr. Coker, who recently published the book entitled, *Reinventing Life: A Guide to Our Evolutionary Future*, will sign copies of his book.

The third workshop will be by Dr. **James Fuller**, Director of DNA Identification Testing for the Laboratory Corporation of America. He will be talking on the important and contemporary subject of "**Human Cell Line Contamination: Denial, Acceptance, and Authentication**". Cross contamination and misidentification of human cell lines, first recognized in the 1960's with HeLa cells, has been a growing concern for researchers with some estimates on misidentified and cross contaminated human cells lines being as high as 18 to 36%. In 2007, the NIH released a notice (NOT-OD-08-017) regarding the importance of cell authentication. A growing number of journals now require authentication before publication.

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 seed industry, the microbe concept and applications, and the iPlant collaborative project.

Dr. **Julie Horvath**, Director, Genomics & Microbiology Research Laboratory at the Nature Research Center of the North Carolina Museum of Natural Sciences will lead the special session on "**Research and Outreach at the Nature Research Center: What Can We Learn About Human Health From Primate Genomics and Armpit Microbes?**" Dr. Horvath is a comparative evolutionary genomicist interested in understanding the evolutionary forces that have shaped primate genomes and that cause human disease.

Dr. **Deborah Hanmer**, Assistant Professor of Biology at UNC at Pembroke, will facilitate the special session on "**Seed Industry Consolidation and Its Consequences,**" and **Kristina Hubbard**, director of advocacy and communications for Organic Seed Alliance, will be addressing the audience via internet. Kristina

has worked for a decade as an organizer, researcher, and writer on projects involving agricultural biotechnology and antitrust issues in the seed industry.

Dr. **Lee Philips**, Associate Professor at UNC at Pembroke, will present the session entitled "**Beyond the Naked Eye: Scanning Electron Microscopy and Electron Probe Micro-Analyses**". The microprobe, one of a handful in the world, is a special electron microscope that uses a field emission gun to enlarge images up to 300,000 times, which is a significant research tool with a variety of applications that reaches across multiple disciplines.

In addition to his keynote address, Mr. David Micklos will talk at one of the special sessions on the iPlant collaborative project. The iPlant platform brings together "Grand Challenge Teams" — cross-disciplinary, community-driven research groups — to work collaboratively to develop a cyberinfrastructure foundation that supports the computational needs of the research community and facilitates progress toward solving major problems in plant science.

For more information on the meeting, such as where to stay and to access online registration, you can go to <http://www.uncp.edu/ncas/>. Registration opens February 1st. Register early since some space (e.g. banquet tickets) may be limited. Looking forward to seeing all of you in April!



Featured Researcher: Dr. Francie Cuffney, Meredith College

Report by: Dr. Beth Overman

“Teaching through research was a natural extension in the type of personal experience at Meredith.”

The North Carolina Academy of Science is home to a diverse group of scholars, from institutions all over our state. One of these scholars, Dr. Francie Cuffney, is a professor at Meredith College and chair of their Biology and Chemistry, Physics, and Geosciences Department. Her research at Meredith heavily involves undergraduate student researchers, who work on field studies and lab projects investigating Pharmaceuticals and Personal Care Products (PPCP's) in surface waters and their effects on the freshwater clam *Corbicula*. She, like many researchers in the academy, became interested in science at a very young age. “I became interested in ecology at an early age, inspired by my father's work.” Dr. Cuffney shares, “As a chemical engineer he took great interest in preserving the environment and reducing pollution from chemical manufacturing processes. I accompanied him on field excursions to collect samples from streams. When I went to college I knew I wanted

to enter the field of ecology and specifically freshwater ecology.” This interest led her to the University of Georgia, where she completed her PhD in entomology. Instead of going into industry, she became interested in working with undergraduates at academic institutions and encouraging undergraduate students to be active in the lab. “I started teaching part time and eventually came to Meredith College where the small class size and personal interaction with students was encouraging, Dr. Cuffney states. “It felt like real teaching and was very rewarding. Teaching through research was a natural extension in the type of personal experience at Meredith.” At Meredith, her research area provides the perfect framework for students to experience original undergraduate research, developing hypotheses and testing these hypotheses in the lab. “In my research lab, students have the opportunity to select a pharmaceutical to research. We

look at the effects of pharmaceuticals on freshwater organisms.” What’s most rewarding, she reflects, is watching the students explore and be curious. “Watching students begin the process and end up with more questions than when they started is exciting and rewarding. The students become excited about developing new questions and are anxious to continue their projects. That is very rewarding.” Though undergraduate research can prove to be incredibly challenging, Dr. Cuffney strongly encourages her students to give it a try, and to use the failures as a learning experience. On providing advice to those students interested in starting an undergraduate research project, she states, “My advice is to be open to failure - failure can often provide the seeds of more exciting questions to answer.” As starting an undergraduate research program as a faculty member comes with its own share of challenges, Dr. Cuffney also shares from her experi-

ence of starting a research program. “I recommend development of a program that is group oriented, allowing students to work together, each with their own small piece. It is also important to think in terms of short term goals, things that potentially can be accomplished in a semester.” From hearing Dr. Cuffney’s experiences, the work put into developing and maintaining a research program for undergraduates is well worth the time,

both for the faculty member and the student. “The most rewarding experience was one of my very first research students,” she reflects. “She started research as a freshman, non-traditional, and continued for a summer and fall. She was enthusiastic in the field and lab, even though she was not a top achiever in the classroom. She went on to graduate with a major in Sociology. At her graduation, her parents came to me and thanked

me for the time she was doing research. They credited that experience with keeping her in school, leading to her success as she went on to graduate work.” Not only is undergraduate research thriving at Meredith, but with the help of faculty like Dr. Cuffney, it’s providing a transformative experience for students in the sciences.

“My advice is to be open to failure - failure can often provide the seeds of more exciting questions to answer.”

North Carolina Project Kaleidoscope Network and NC Academy of Science Hold Joint Meeting

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/>). 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. The recently formed North Carolina PKAL network’s spring meeting will precede the NCAS Annual Meeting on April 5 at UNC Pembroke. The PKAL meeting will feature a two-hour morning workshop focusing on Student-Centered Active Learning Environment with Upside-Down Pedagogies (SCALE-UP), a networking luncheon, disciplinary meetings, and an afternoon workshop on the flipped classroom. NC-PKAL welcomes all Senior Academy members. The national PKAL office will host a separate on-line registration site for the NC-PKAL meeting but a link will be provided on the NCAS Annual Meeting web site. A separate registration (\$25.00) will include lunch, snacks, and materials for the NC-PKAL meeting. 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 NCAS contributed paper session on Saturday, April 6.



Science Events and News Around the State

Astronomy Days

Astronomy Days is eastern North Carolina's premier astronomy and space celebration event. Held this year on January 26th-27th, Astronomy Days features a wide range of presentations, exhibits, activities, and workshops. The event, held at the North Carolina Museum of Natural Sciences and Nature Research Center is free of charge, and fun for all ages. This year's theme is Mars! For more information, check out: <http://astronomydays.org/>

Groundhog Day

On February 2nd, come to the North Carolina Museum of Natural Sciences to meet our very own groundhog: Sir Walter Wally! Come celebrate as he predicts the coming of summer. For more information, check out: <http://naturalsciences.org/programs-events/groundhog-day-4>

The Science of Eats

The Durham Museum of Life and Science is hosting this event, exploring the science of food! Local chefs, bartenders, and scientists will join the Museum to demonstrate the techniques of culinary physics, spherified cocktails and ancient ways of preserving foods. Foodies and scientists alike will rejoice as you sample and create your own culinary creations. The event is February 7th, and further information and ticket pricing, check out: <http://lifeandscience.org/visit/events/museum-afterhours>

Science Café is a monthly 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 of Natural Sciences in Raleigh, these monthly talks are located in coffee shops, bars and restaurants around Raleigh and promote discussion of science in an informal community setting. Upcoming talks include "Science Poetry" on Jan 24th, "Invasive Pythons in the United States" on Jan 31, and "Major Themes in Evolutionary Medicine" on March 18th. For more information, go to <http://naturalsciences.org/programs-events/science-talks>

2nd Annual Cirque de Sciences

Morehead Planetarium and Science Center is hosting the second annual Cirque des Sciences on Friday, Feb. 8, 2013 from 7:30 p.m. to midnight. This evening event for adults ages 21 and up combines the artistry and fun of the circus with amazing science demonstrations! Enjoy fine food and drinks followed by dessert and dancing under the stars of the GlaxoSmithKline Fulldome Theater. Proceeds from Cirque des Sciences support Morehead Planetarium and Science Center programs.

Darwin Day

Join the North Carolina Museum of Natural Sciences to celebrate Darwin Day on February 16th. Come investigate how Darwin's theories 150 years ago have shaped modern research and meet some scientists working hard in this field! For more information, check out: <http://naturalsciences.org/programs-events/darwin-day-1>

SciWorks in Winston-Salem has a new executive director.

Paul Kortenaar, formerly the Director of Education and Weston Family Chair of Innovative Education for the Ontario Science Centre in Canada, officially began his new role as Executive Director on January 3 and will guide SciWorks into a new phase of growth and development. "After an extensive search for a new Executive Director, we are thrilled to announce Paul Kortenaar's acceptance of the position and arrival at SciWorks," says Michael A. Myers, Chair of the SciWorks Board of Directors. "With his experience and vision for moving science education toward inquiry models of learning, SciWorks will transform into the place where innovation truly begins for the children of Winston-Salem and North Carolina."

Originally established as the Nature Science Center by the Junior League of Winston-Salem in 1965, SciWorks is a non-profit Science Center and Environmental Park of Forsyth County that includes 25,000 square feet of exhibits, a planetarium and a 5-acre environmental park. Located just off University Parkway at 400 W. Hanes Mill Road in Winston-Salem. For more information, visit www.sciworks.org

NCAS Annual Meeting: Call for Judges and Moderators

Report by: *Dr. Michele K.H. Malotky*

We are asking for volunteers willing to serve as judges for undergraduate research posters and oral presentations that are being considered for Derieux Awards for Research Excellence during the Annual Meeting of the North Carolina Academy of Science. 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). A grading rubric for the poster and oral papers which was adopted by CASCAS at the 2011 Annual Meeting will be provided and sent out to you prior to the meeting if you confirm to serve as a judge. For more information on the Derieux Award please go to: <http://www.ncacadsci.org/cancas/Derieux.html>.

We also need moderators to lead each oral paper session. Moderators can be faculty or students.

Please contact Michele Malotky (mmalotky@guilford.edu) if you are willing to serve as either a moderator and/or judge. Please include your area of expertise so that we can assign you to an appropriate section.

Academy Exhibiting at Astronomy Days January 26-27

Report by: *Dr. Charles Lytle*

The Academy will again have an exhibit at the Astronomy Days program at the North Carolina Museum of Natural Sciences in Raleigh Saturday and Sunday January 26-27. The annual event is one of the largest celebrations in the country for astronomy and space science and attracts several thousand people, including many families and students. The exhibit is hosted by volunteer from the three sections of the Academy, Senior, Collegiate, and Student, and displays several of our programs and opportunities. We also offer science activities for younger children and provide information on science and science-related public issues of importance to citizens of North Carolina.



PULSE Leadership Fellows Update:

Report by: Dr. Melanie Lee-Brown

In the October workshop the PULSE Leadership Fellows developed working groups with the following foci:

Raising the PULSE – This group is devoted to raising awareness of Vision and Change, celebrating the good work already underway around the country, and inspiring other departments to embrace the challenge.

Taking the PULSE – This group is devoted to helping departments/institutional use existing assessment evidence and is designing new tools to evaluate progress in departmental institutional efforts to implement Vision and Change.

Faculty Networks – This group is devoted to building regional and national faculty networks and disseminating a blend of new and existing resources for faculty development.

V & C Ambassadors – This group is devoted to recruiting and training PULSE members to work as departmental Vision & Change facilitators through departmental visits.

Since October we have been working hard building our toolboxes and getting feedback from the PULSE Community. Please become a part of the conversation and join the PULSE Community at www.pulsecommunity.org. *See also our article about PULSE fellows in the previous issue of the newsletter.*

Job Openings in the Scientific Community

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

1. Research Investigator, Stiefel (a GSK Company), RTP NC

The purpose of this position is to provide cell biology, molecular biology, pharmacology, expertise and support for the design, execution, monitoring, data review, and reports preparation related to translational and preclinical research in the acne care area.

2. Pharmacologist 2, RTI International, Durham NC

The Pharmacology & Toxicology (PT) group at RTI International is engaged in both basic and translational research in collaboration with other research groups within the Center for Discovery Sciences (DS). Reporting to the Director of PT, the research pharmacologist will be responsible for building and maintaining an extramurally funded research program.

3. Embryology Instructor (Spring 2013 Semester), Arcadia University, Glenside PA

The Arcadia University Genetic Counseling Program is the second largest genetic counseling program in North America, accepting 15 students annually. The students participate in a two-year program that is composed of basic science courses, counseling coursework and clinical practice throughout the greater Delaware Valley.

4. Assistant or Associate Professor (Physiology), American University of Antigua, Antigua

American University of Antigua (AUA) is seeking an Assistant or Associate Professor of Physiology. This is a teaching position of first and second year medical students within an integrated, systems-based basic science curriculum.

Job Openings in the Scientific Community

5. Staff Strategic Consultant, ETHOS Health Communications, Newtown PA

An ETHOS Staff Strategic Consultant (SSC) works in a supporting role to the experienced Associate Strategic Consultants (ASCs) and Strategic Consultants (SCs), with the goal of progressing to the role of SC over time.

6. Medical Writer, ETHOS Health Communications, Newtown PA

The core responsibility of the Medical Writer is to develop evidence-based content that adheres to the established ETHOS standards, is in accordance with all client and ETHOS policies, and meets the strategic objectives of our clients. For day-to-day direction, the Medical Writer works under the direct supervision of the Strategic Consultants (SCs) and/or Scientific Director(s), who direct the client team to which the Medical Writer is assigned.

7. Researcher Positions (Cancer Immunotherapy), Jounce Therapeutics, Boston MA

Jounce Therapeutics is a biotech start-up that is in the process of launching. Jounce is founded with the mission of mobilizing the immune system to treat cancer. Our aim is to harness these recent understandings in the field, and build a broad-based company with a product engine focused in this area to discover and develop novel therapeutics to treat cancer. More specifically we have a goal to “raise the tail” of the current immunotherapy response—such as with Ipilimumab, but also to expand immunotherapy therapy to other tumor types as well.

8. Nano-Biotech Applications Engineer/Scientist, Optofluidics Inc, Philadelphia PA

Optofluidics, Inc. has an opening for a Nano-biotech Applications Engineer/Scientist with a background in life sciences, physics, engineering or comparable field.

9. Assistant Professor– Biological Sciences, Public Health Meredith College NC seeks qualified candidates for an Assistant Professor position in the Department of Biological Sciences with expertise in epidemiology and public health. The position will begin August 2013.

Ph.D. in related field and demonstrated teaching at the undergraduate level. Responsibilities include teaching introductory biology, epidemiology and public health. Applications will be reviewed beginning January 2013 and continue until the position is filled. Application should be made online at: <https://meredith.hiretouch.com/default.cfm?page=joblist>

Three recent letters of support should be mailed to: Biology Search Committee, Attn. Dr. Karthik Aghoram, Department of Biological Sciences, Meredith College, 3800 Hillsborough Street, Raleigh, NC 27607.



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“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

