

Keynote Lecture: *Out on a Limb: Using Research Discoveries as a "Hook" to Inspire the Public about Science*



Margaret D. Lowman (a.k.a. "Canopy Meg") will present this year's Scope Lecture. Lowman is the director of the Nature Research Center at the North Carolina Museum of Natural Sciences and a research professor of natural sciences in the College of Physical and Mathematical Sciences, where she focuses on initiatives involving science communication to the public.

Affectionately known as the mother of canopy research for her 30 years of dedication to the science, Lowman has designed hot-air balloons and walkways for treetop exploration to solve mysteries in the world's forests, with special expertise on the links between insect pests and ecosystem health. Lowman's academic training includes Williams College

(B.A., Biology); Aberdeen University (M.Sc., Ecology); Sydney University (Ph.D., Botany); and Tuck School of Business (Executive Management).

Her numerous awards include the Margaret Douglas Medal for Excellence in Conservation Education from the Garden Club of America; Girls Inc. Visionary Award; Mendel Medal for achievements in science and spirit; Lowell Thomas Medal for discoveries in the canopy; and election as a Kilby Laureate and an Aldo Leopold Leadership Fellow.

Lowman has authored more than 100 peer-reviewed scientific publications, and her first book, *Life in the Treetops*, received a cover review in the *New York Times* Sunday Book Review.

Working tirelessly on sustainability initiatives at home and abroad, she recently received the Achievements in Canopy Ecology Award from her peers at the 5th International Canopy Conference in Bangalore, India.

At this year's Scope Academy and throughout the coming year, PAMS will be celebrating the 125th anniversary of NC State's founding and honoring the university's proud legacy of transformational research, teaching and service.

NC STATE UNIVERSITY

College of Physical and Mathematical Sciences

North Carolina State University
Campus Box 8201
Raleigh, North Carolina 27695-8201

Join us Saturday, April 14!

Seminars led by our world-class faculty
Keynote by "Canopy Meg" Lowman
BBQ lunch by Backyard Bistro

Space is limited—register early!

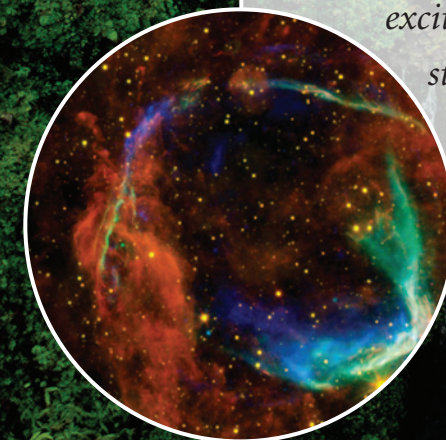
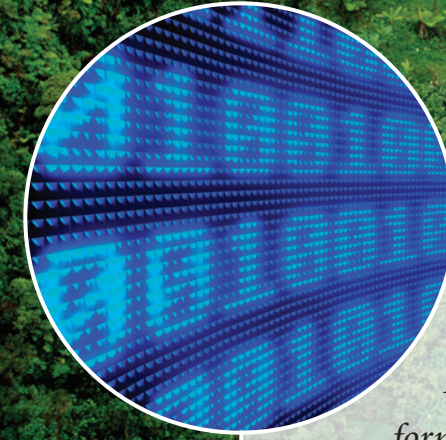
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NC STATE UNIVERSITY

The College of Physical
and Mathematical Sciences presents

SCOPE academy

Join Us in Discovery
April 14, 2012



Scope Academy invites you to celebrate NC State's proud tradition of transformational research and explore today's exciting frontiers in mathematics; physics; statistics; marine, earth and atmospheric sciences; and more.

Sponsored by the NC State University Physical and Mathematical Sciences Foundation

Event Schedule

Saturday, April 14

SAS Hall

North Campus

- 9:00 am **Scope Seminar Registration**
Meet PAMS students and faculty as you browse posters highlighting some of their exciting research projects. Light refreshments will be served.
- 9:30 am **Welcome Remarks: Dean Daniel L. Solomon**
- 10:00 am **Scope Seminars**
Engage your brain in intriguing discussions on today's most thought-provoking scientific topics, led by the outstanding faculty in each of our five academic departments. Pick the seminar you wish to attend from the list on the next panel. And, don't worry, there are no pop quizzes!
- 11:00 am **Scope Lecture—Out on a Limb: Using Research Discoveries as a "Hook" to Inspire the Public about Science.**
North Carolina's new Nature Research Center (NRC), with its diverse array of partners—including PAMS—has the potential to change science education and communication and inspire kids to seek careers in science, technology, engineering and mathematics (STEM). With its "rock-star" staff of scientists passionately engaged in research that affects our daily lives, its cutting-edge technologies for local and global connectivity to classrooms, and its innovative new learning platforms, the NRC puts North Carolina at the forefront of teaching and talking about STEM. As a pioneering scientist herself, NRC Director Meg Lowman spent three decades dangling from ropes in tropical trees to discover that half of the earth's biodiversity lives there. Now down from the treetops, Lowman will explain how scientific discovery can change how adults think and talk about science and inspire the next generation to pursue STEM careers, which will continue to advance science literacy and propel our economy.

Riddick Hall

North Campus

- 12:30 pm **BBQ Lunch**
Now that your brain is fully fed, feed your body as well. Join us for a buffet of traditional North Carolina BBQ as you share your thoughts on the morning with your fellow attendees. Catering provided by Raleigh's own Backyard Bistro.

Scope Seminar Topics

Seats for each seminar are limited and will be assigned in the order registrations are received (both by mail and online).

1. Molecular Spintronics: Can Chemists Put a New "Spin" on Electronic Devices?

Current flow in devices can be controlled, not only by the charge of an electron, but by its "spin." Learn how chemists and physicists are working together to better understand this property, which is responsible for magnetism, and could eventually drive the development of a new generation of molecule-based devices that power up faster, generate less heat and consume less energy. — *David Shultz, Chemistry*

2. Future Weather: North Atlantic Storms on a Warmer Planet Credible projections of future weather require physical understanding as well as computer simulations. The generation of "vortex charge" by clouds and rain drives the development of storms over the oceans. This process will be stronger on a warmer, and thus rainier, Earth, leading to changes in weather that cannot be captured by the current generation of climate models. — *Walt Robinson, Marine, Earth and Atmospheric Sciences*

3. Rolling the Dice on Big Data What do Facebook, the Large Hadron Collider and health care have in common? They are each producing massive amounts of data. Get a close-up look at how mathematicians use the Monte Carlo method and other tools to wrestle with this deluge. — *Ilse Ipsen, Mathematics*

4. The Origins of Mass What is mass and where does it come from? Take a journey from the Higgs boson to the confinement of quarks. Explore the cutting edge of theoretical physics and the fundamental building blocks of our universe. — *Dean Lee, Physics*

5. Novel Study Designs for Treatment Strategies that Reflect Actual Clinical Practice

In actual clinical practice, physicians make a series of treatment decisions over time, where each decision depends upon certain patient outcomes up to that point—outcomes such as laboratory measures, adverse events, physical characteristics and prior treatment history. This presentation discusses the challenges and opportunities inherent in designing and analyzing clinical trials and observational data for studying "sequential treatment strategies" with the ultimate goal of finding the optimal such strategy that leads to the best clinical outcome. — *Anastasios "Butch" Tsiatis, Statistics*

Registration and Housing

Register online at www.pams.ncsu.edu/weekend or complete the registration form in this brochure. Keep the rest of the brochure for your reference. If you need more information (including information on local hotels) please contact the PAMS Office of College Advancement at pams_info@ncsu.edu or 919-515-3462.

Scope Academy is proud to be a partner event of the North Carolina Science Festival, the nation's first statewide science festival, taking place April 13-29.



www.ncsciencefestival.org

Registration Form

1 Please PRINT all names as you would like to see them on a name badge.

Registrant's name _____

If an alumnus—class year/major _____

Address _____

City/State/Zip _____

Daytime phone _____

E-mail _____

List name(s) of all guest(s):

Registrant	Guest 1
_____	_____
Guest 2	Guest 3
_____	_____

2 **Scope Seminar Topic:** (List topic number for each registrant's preference)

Registrant	Guest 1
_____	_____
Guest 2	Guest 3
_____	_____

3 **Select Your Events:**

- Scope Seminars**
No charge Number _____ Total \$ _____ 0.00
- Scope Lecture**
No charge Number _____ Total \$ _____ 0.00
- BBQ Lunch**
\$10 per person Number _____ Total \$ _____

4 **Total Registration:**

Grand Total \$ _____

5 **Payment:** (Choose one)

Enclosed is my check for the total registration amount, payable to PAMS Foundation. Please mail it with this form to PAMS Foundation, Campus Box 8201, NC State University, Raleigh, NC, 27695-8201.

Charge my credit card: Visa Mastercard American Express

Card number _____ Exp. date _____

Name as it appears on card _____

Daytime phone number _____

This form may be photocopied. You may also register online at www.pams.ncsu.edu/weekend.

The registration deadline is April 9, 2012.

TEAR ALONG PERFORATION