



**Sigma Xi, The Scientific Research Society  
Chapter Annual Report for Fiscal Year 2007  
July 1, 2006 – June 30, 2007**

**Chapter Name:** Research Triangle Park  
**Region:** SE      **Constituency:** Area/Indus/State&Fed Labs (MI)  
**Chapter ID Number:** 302  
**Date Report Closed:** 8/6/2007

**Statistics on 4/19/2007**

Number of active members: 159  
Number of inactive members: 171  
Number of initiates elected from July 1, 2006 June 30, 2007: 1

**Statistics on 4/5/2006**

Number of active members: 160  
Number of inactive members: 164  
Number of initiates elected from July 1, 2005 June 30, 2006: 4

**Good Standing status**

Officers on file: Yes  
Delegate to one of the last three annual meetings: Yes  
Last year's chapter annual report on file: Yes  
One initiate over last two years: Yes

**Local Support Payments from Sigma Xi this year:**

6/30/2007 = \$32.50  
1/31/2007 = \$605.00  
9/29/2006 = \$1,749.98

**Chapter Web site:** <http://www.rtp-sigmaxi.org/>

**Chapter Listserv:** [ch302@listserver.sigmaxi.org](mailto:ch302@listserver.sigmaxi.org)

**Chapter Officer Requested New or Updated listserv:**

**Chapter Officer Revitalization Contact with Staff:**

**Grants and Funding Received from Sigma Xi:**

no records found

**Sigma Xi Awards Received:**

no records found

**Chapter Address:**

PO Box 13068  
Research Triangle Park NC 27709

**Chapter Officers reported for FY2008 July 1, 2007 June 30, 2008****President:** Term: FY2008**Name:** Dr. Kurt Preston**Home Number:****Business Number:** 919-549-4234**Fax Number:****E-mail Address:** kurt.preston@us.army.mil**Vice President:** Term: FY2008**Name:** Mr. Robert Wright**Home Number:** 919-932-3517**Business Number:** 919-541-4502**Fax Number:** 919-541-0496**E-mail Address:** wright.bob@epa.gov**Secretary:** Term: FY2008**Name:** Dr. Rajagopal Vijayaraghavan**Home Number:** 865-406-9281**Business Number:** 865-974-3461**Fax Number:** 865-974-5483**E-mail Address:** rvijayar@utk.edu**Treasurer:** Term: FY2008**Name:** Dr. Robert Weimer**Home Number:** 919-969-9241**Business Number:****Fax Number:****E-mail Address:** rfweimer@mindspring.com**Annual Meeting Delegate for Fiscal Year 2008****Name:** Dr. Kurt Preston**Home Number:****Business Number:** 919-549-4234**Fax Number:****E-mail Address:** kurt.preston@us.army.mil**Chapter Operations:**

Identified new chapter leaders: Yes

Increased the number of members involved in/or attending chapter activities? Yes

Sent a student to the Sigma Xi Student Research Conference? No

Developed or maintained a chapter web site? Yes

Sent a newsletter or regular communication to members? No

Sent Electronic newsletter? Yes

Communicated with inactive members? No

Nominated new faculty or institutional leaders for Sigma Xi membership? Yes

Paid initiate fees for new members? Yes  
Promoted Associate Members? No  
Created new chapter program? Yes  
Worked on revitalizing the chapter? Yes  
Worked with another Sigma Xi Chapter? Yes

### **Past Fiscal Year Chapter Activities:**

**ActivityName:** Science Cafe with NC Museum of Nat. Sciences

**Participation:** 506

**Participants:** Some Sigma Xi members

**Cost:** 1424

**ChapterFunds:** Yes

**YearDone:** 1st year

**Description:** Science Cafe: 10/10/06

Speakers: Dr. Lori Hudson, Duke Human Vaccine Institute and Department of Immunology

Description: ('Tis the Season) The Truth about Bird Flu. Come and learn about what bird flu is, how it differs and is similar to the influenza viruses we are more familiar with. Learn about how influenza is transmitted, how it causes disease, and what scientists are doing to prevent it.

Participants: 37

Cost: \$200

Science Cafe: 11/28/06

Speakers: Dr. Fred DeJarnette and Dr. Andre Mazzoleni, North Carolina State University Department of Mechanical and Aerospace Engineering

Description: Human Space Flight: Return to the Moon and Mission to Mars. NASA's Vision for Space Exploration plans for a return to the moon by the end of the decade to pave the way for eventual Mars colonization. This Science Café will explore the technical aspects of the human species' next steps off planet Earth. These steps may include following a wave of robotic probes that will prepare the way for a permanent human presence and garner resources needed to secure the survival of our future generations.

Participants: 42

Cost: \$200

Science Cafe: 1/16/07 (co-sponsored with NCSU ACS chapter)

Speakers: Dick Fields, University of Montana Department of Chemistry

Description: A clock's pendulum and the child on a tire swing are common examples of periodic oscillations that are ubiquitous in our world. These types of oscillations are echoed in many chemical, physical and biological dynamic systems described by nonlinear differential equations. Sometimes, such oscillations become aperiodic, that is, they have random periods and amplitudes - imagine the tire swing suddenly stopping or wrapping itself twice around the tree limbs, such seemingly odd

events occur in chemical, physical and biological dynamic systems. The source of this apparent randomness is, however, not itself random (stochastic) and the aperiodic dynamics itself can still be accurately described by deterministic differential equations. What is not possible, however, is to predict behavior of the randomness in systems beyond a few cycles. Accurate weather predictions are limited to a few days because it is just such a system. These systems exhibit extreme sensitivity to initial conditions so that identical systems in very similar states evolve in very different ways. This phenomenon is referred to as Chaos. Dick Fields will start our conversation with some basic dynamics, e.g., the flight of a projectile, and then define and illustrate more advanced dynamical concepts including trajectories, attractors, limit cycles, and bifurcations. We finally reach the concept of a chaotic trajectory approaching a strange attractor. Various routes from periodicity to chaos, e.g., the period-doubling sequence, are described. Experimental examples are presented throughout the talk.

Participants: 45

Cost: \$67.09

Science Cafe: 2/20/07- Global Warming

Speakers: Dr. Gary Lackmann, associate professor of meteorology at North Carolina State University, and Greg Fishel, Chief Meteorologist at WRAL-TV

Description: Global Warming! Those two words usually get a reaction out of most people for various reasons. But, there are a lot of misconceptions when it comes to climate change, and scientists are still wrestling with the complexity of this topic. What is the greenhouse effect, and is it all bad? Does "global warming" mean that the entire globe is uniformly warming? What is the evidence for warming, and are humans responsible for all of the warming, or just part of it? Was the record breaking 2005 hurricane season tied to global warming, and if so, what can we do about it?

Participants: 87

Cost: \$350

Science Cafe: 3/28/07- CSI: The Hunt for the Irish Potato Killer

Speaker: Dr. Jean Beagle Ristaino, Professor in the Department of Plant Pathology, North Carolina State University, Raleigh, NC

Description: More than 150 years ago, blight struck the Irish potato crop, leading to famine. The Irish people were dependant on potatoes as a primary food source and when the crop failed, more than one million people died and another two million emigrated from Ireland. Using a forensic DNA technique pioneered in her laboratory, Dr. Jean Beagle Ristaino at NC State University has been studying historic collections of infected plant material to identify the specific strain of "late blight" pathogen - also known as the fungus *Phytophthora infestans* - and to track its migration. The evidence suggests that *P. infestans* is alive and well, and causing disease today in many areas of the world. This Science Café is a great way to learn about the links between history, modern agriculture practices and emerging plant diseases.

Participants: 42

Cost: \$191.49

Science Cafe: 4/17/07- Green Architecture

Speakers: Bob Kingery, Southern Energy Management, and Randall Lanou, BuildSense, Inc.,

Description: Discover why "building green" has the potential to help avert global climate change and what measures you personally can take to help lead the country to a creative solution to this immense problem. We'll focus on pragmatic and immediate ways to build green. As always, you will have a chance to ask questions and to voice your opinion. Come join us for what we're sure will be a lively and informative evening!

Participants: 92

Cost: \$178.41

Science Cafe: 5/15/07- The Ivory-billed Woodpecker: Searching for Proof in the Choctawhatchee River Basin

Speakers: Dr. Gregory Lewbart, North Carolina State University College of Veterinary Medicine, and Dr. Diane Deresienski, Bowman Animal Hospital

Description: Join us to learn about the natural history and recent detections of the ivory-billed woodpecker. Drs. Lewbart and Deresienski will tell about their recent travels to the Florida Panhandle in search of this elusive bird, hoping to find evidence that it is not extinct. They will tell about the logistics of undertaking searches in a swamp forest and discuss conservation and politics related to this fascinating animal.

Participants: 23

Cost: \$166.96

Science Cafe: 6/19/07

Speaker: David R. Tarpy, PhD, North Carolina State University

Description: Ever wonder how many flowers a bee needs to visit in order to make one teaspoon of honey? Do you understand the "birds and the bees" for bees? Did you know that honey bees have the only abstract language in the animal kingdom besides our own? Indeed, honey bees are among the best studied--and most intriguing--animals on the planet. Honey bees are also an integral component of agriculture, providing pervasive and largely under-appreciated pollination benefits to crops and wild plants, as well as the economies and ecosystems that depend on them. Recent history shows that this asset is dynamic, prone to perturbations, and itself worthy of conservation efforts. The introduction and spread of exotic honey bee parasites beginning in the 1980s, a newly characterized phenomenon termed Colony Collapse Disorder (CCD), and the imminent spread of Africanized bees from Florida are all significant challenges that beekeepers face every day to maintain the indispensable contribution of honey bees to human society.

Participants: 138

Cost: \$80.00

**ScienceEducPubUnderS:** Yes

**ScienceGenPublic:** Yes

**actstatus:** Complete



**ActivityName:** Annual Banquet

**Participation:** 54

**Participants:** Mostly Sigma Xi members

**Cost:** 1488

**ChapterFunds:** Yes

**YearDone:** Please Choose

**Description:** Speakers: Dr. Betsy Bennett, Director, North Carolina Museum of Natural Sciences

Description: Exciting News from the North Carolina Museum of Natural Sciences

Participants: 54

Cost: \$1488.84

**Recognition:** Yes

**AwardCommService:** Yes

**HostedSiteVisits:** Yes

**actstatus:** Complete



**ActivityName:** Science Fair Judges

**Participation:** ~5

**Participants:** All Sigma Xi members

**ChapterFunds:** Yes

**YearDone:** 1st year

**Description:** This is an intermittent activity. The chapter supplies science fair judges to school that send requests to us. We have done that activity in some years and not in other years. In 2006, I believe that we supplied judges to Broughton High School, but I'm not sure if the school is correct.

**HSResSymp:** Yes

**actstatus:** Complete

