Fiftieth Annual Briefing

NEW HORIZONS IN SCIENCE

October 28 and 29, 2012
Raleigh, North Carolina

CASW *Council for the Advancement of Science Writing, Inc.*

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SCIENCEWRITERS**2012**

October 26 through October 30, 2012
Research Triangle, North Carolina

Sponsored by Triangle Universities Center for Advanced Studies, Inc.

Hosted by the Science Communicators of North Carolina

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SCIENCEWRITERS2012

Friday, October 26th

11:30 a.m. to 5 p.m.

Research Triangle Park Headquarters Open House

1:30 p.m. to 4:30 p.m.

Tours: University of North Carolina,
Duke University, Research Triangle Park

5 p.m. to 7 p.m.

Reception • RTP Headquarters

9 p.m. to 11 p.m.

Afterglow • Marriott City Center

Saturday, October 27th

9:15 a.m. to 5 p.m.

NASW Workshops • Raleigh Convention Center

6:30 p.m. to 10 p.m.

NASW–CASW Awards Gala • Nature Research Center, 121 W. Jones Street

Join us for the presentation of NASW's Science-in-Society Awards, CASW's Victor Cohn Prize for Excellence in Medical Science Reporting, and the Evert Clark/Seth Payne Award for young science journalists.

New Horizons resources online

The New Horizons permanent website, **http://www.casw.org/new-horizons,** offers background papers, speaker contact/website information and slides. Use the **Member login/register** link on any page to register for access. The Program and Speakers buttons take you to speaker profiles and session pages. These will display available information and links to downloadable files **if** you are logged in as a member. Not all New Horizons speakers supply background material.

www.casw.org/ new-horizons

NEW HORIZONS IN SCIENCE

Raleigh Convention Center

Sunday, October 28th

7:30 a.m. to 9 a.m.

Continental Breakfast • Room 305AB

7:30 a.m. to 12 noon

Check-in • 3rd floor hallway south

8:30 a.m. to 9:30 a.m.

Plenary Session • Room 306ABC

FINDING EVOLUTION'S FOOTPRINTS IN THE "REGULOME"

Greg Wray, Professor of Biology, Duke University

9:30 a.m. to 10:30 a.m.

Parallel Sessions

CAN FAT-DERIVED STEM CELLS REBUILD BONE AND MUSCLE?

Room 301AB

Elizabeth Loboa, Associate Professor of Biomedical Engineering and Materials Science and Engineering; Director, Cell Mechanics Laboratory, NC State University and University of North Carolina at Chapel Hill

POVERTY, HEALTH AND INDUSTRIAL HOG PRODUCTION

Room 302BC

Steve Wing, Associate Professor of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

10:30 a.m. to 11 a.m.

Coffee break • Room 302A

11 a.m. to 12 noon

Parallel Sessions

EVOLUTION-BASED GENETIC PEST CONTROL

Room 301AB

Fred Gould, University Distinguished Professor of Entomology and Genetics, NC State University

WHAT'S THE UNIVERSE MADE OF? I. DARK PARTICLES AND DARK STARS

Room 302BC

Katherine Freese, George E. Uhlenbeck Professor of Physics and Associate Director, Michigan Center for Theoretical Physics, University of Michigan

12 noon to 2 p.m.

Lunch with a Scientist at NC State University's Centennial Campus
Shuttle buses leave from Salisbury Street, front of Convention Center

Sunday, October 28th, continued

2 p.m. to 3 p.m.

Parallel Sessions

SMART MATERIALS TO TREAT UTERINE FIBROIDS

Room 301AB

Phyllis Leppert, Professor of Obstetrics and Gynecology and Professor of Pathology, Duke University School of Medicine

Darlene K. Taylor, Assistant Professor of Chemistry, North Carolina Central University

WHAT'S THE UNIVERSE MADE OF? II. HIGGSMANIA

Room 302BC

Mark Kruse, Fuchsberg-Levine Family Associate Professor of Physics, Duke University

3 p.m. to 3:30 p.m.

Coffee break • Room 302A

3:30 p.m. to 4:30 p.m.

Parallel Sessions

COGNITIVE AGING: USING GAMES TO EXPLORE STRATEGIES TO KEEP BRAINS HEALTHY

Room 301AB

Maribeth Gandy, Senior Research Scientist and Director, Interactive Technology Center, Georgia Institute of Technology

Anne Collins McLaughlin, Assistant Professor of Psychology, NC State University

SYSTEMS, SUSTAINABILITY AND HOW WE DO (AND TALK ABOUT) SCIENCE

Room 302BC

Paul T. Anastas, Director, Center for Green Chemistry and Green Engineering, and Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment, Yale University

4:30 p.m. to 5:30 p.m.

Plenary Session • Room 306ABC

PREDICTING AND UNDERSTANDING THE 2012 ELECTION WITH THE SOCIAL WEB
David M. Rothschild, Economist, Microsoft Research

6:30 p.m. to 11:00 p.m.

SCONC Halloween Party • The Oxford, 319 Fayetteville Street

Monday, October 29th

7:30 a.m. to 9 a.m.

Continental Breakfast • Room 301AB

8:30 a.m. to 9:30 a.m.

Parallel Sessions

NEW ENERGY SOURCES I: SOLAR FUELS

Room 305AB

Thomas J. Meyer, Arey Distinguished Professor of Chemistry and Director, UNC Energy Frontier Research Center, University of North Carolina at Chapel Hill

NEW VACCINES I: SYNTHETIC BIOLOGY AND THE FIGHT AGAINST PATHOGENS

Room 306ABC

Ralph S. Baric, Associate Research Professor of Microbiology and Immunology, School of Medicine, and Professor of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

9:30 a.m. to 10:30 a.m.

Parallel Sessions

NEW ENERGY SOURCES II: MICROBIAL FUEL CELLS

Room 305AB

Bruce E. Logan, Kappe Professor of Environmental Engineering and Director, Penn State Hydrogen Energy Center, Pennsylvania State University

NEW VACCINES II: DELIVERING ORAL IMMUNIZATION IN A SOYBEAN

Room 306ABC

Ken Bost, Belk Distinguished Professor of Biology, University of North Carolina at Charlotte, and Chief Scientific Officer, SoyMeds

Kenneth J. Piller, Adjunct Research Associate Professor of Biology, University of North Carolina at Charlotte, and President and Co-Founder, SoyMeds

10:30 a.m. to 11 a.m.

Coffee break • Room 301AB

11 a.m. to 12 noon

Plenary Session • Room 306ABC

FROM MAURITANIA TO MARS: EARTH SCIENTISTS INVADE THE RED PLANET

Linda C. Kah, Kenneth R. Walker Associate Professor of Earth and Planetary Sciences, University of Tennessee, Knoxville

12 noon to 1 p.m.

Parallel Sessions

TO MAKE NEW NANOTHERAPEUTICS, JUST PRESS PRINT

Room 305AB

Joseph DeSimone, Chancellor's Eminent Professor of Chemistry; William R. Kenan, Jr. Professor of Chemical Engineering, University of North Carolina at Chapel Hill and NC State University

ONE MEDICINE: HOW DOGS ARE ACCELERATING HUMAN CANCER RESEARCH

Room 306ABC

Matthew Breen, Professor of Genomics, Department of Molecular Biomedical Sciences, College of Veterinary Medicine, NC State University

1 p.m. to 2 p.m.

Buffet luncheon and chemistry demo • Room 301AB

MONDAY AFTERNOON FIREHOSE SESSIONS: ALL IN 306ABC

2 p.m to 2:50 p.m.

MELDING MIND AND MACHINE: ROBOTIC LIMBS CONTROLLED BY THOUGHT

Miguel Nicolelis, Professor of Neurobiology, Biomedical Engineering, Psychology and Neuroscience; Co-Director, Center for Neuroengineering, Duke University

Monday, October 29th, continued

2:50 p.m. to 3:30 p.m.

AIR POLLUTION, BRAIN DEVELOPMENT AND BEHAVIOR

Kimberly Gray, NIEHS Program Director for the Centers for Children's Environmental Health and Disease Prevention Research, Environmental Protection Agency and National Institute of Environmental Health Sciences

3:30 p.m. to 3:40 p.m.

Coffee break • Room 301AB

3:40 p.m to 4:30 p.m.

HOW LIVES UNFOLD: THE CHILDHOOD ROOTS OF ADULT HEALTH AND LIFE SUCCESS

Terrie Moffitt, Knut Schmidt Nielsen Professor of Psychology and Neuroscience, Duke University

4:30 p.m. to 5:20 p.m.

Plenary Session • Room 306ABC

DARK ENERGY, ZOMBIE STARS AND HOW ROBOTS CONTROL THE FUTURE OF ASTRONOMY

Andy Howell, Staff Scientist, Las Cumbres Observatory Global Telescope Network

6:30 p.m. to 11 p.m.

Dinner with a Scientist or dinner on your own
Buses depart from Marriott City Center

SCIENCEWRITERS**2012**

continues

Tuesday, October 30th

7:30 a.m. to 4 p.m.

Piedmont Tour

7:30 a.m. (overnight)

Coastal and Marine Science Tour

8 a.m. to 12 noon

Triangle Tour: Smart Energy

8 a.m. to 12 noon or 5 p.m.

Triangle Tour: Vaccines, Plants and Biotech (half-day or whole-day)

Tours depart from the Marriott City Center and drop off at RDU Airport.

With thanks to our hosts and sponsors

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Triangle Universities Center for Advanced Studies, Inc.

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NIEHS National Institute of Environmental Health Sciences

Sea Grant North Carolina

EPA United States Environmental Protection Agency

North Carolina Biotechnology Center

REACHNC research, engagement, and capabilities hub of north carolina

MARK YOUR CALENDAR NOVEMBER 1–5

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SCIENCEWRITERS2014 THE OHIO STATE UNIVERSITY, COLUMBUS

SCIENCEWRITERS2015 MIT • CAMBRIDGE, MASSACHUSETTS

SCIENCEWRITERS2016 SAN ANTONIO, TEXAS

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NEW HORIZONS IN SCIENCE 2012 Speakers

Paul T. Anastas

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Director, Center for Green Chemistry and Green Engineering, and Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment, Yale University

Paul Anastas trained as a synthetic organic chemist, earning his PhD at Brandeis. Focusing on sustainability science and moving among academia, industry and government, he established the field of green chemistry, articulating its principles in books that include *Benign by Design* and *Green Chemistry: Theory and Practice* (John Warner, co-author). He served in the White House Office of Science and Technology Policy 1999-2004 and as the Assistant Administrator for the Environmental Protection Agency's Office of Research and Development and Science Advisor to the EPA 2009–12 before returning to Yale.

Ralph S. Baric

rbaric@email.unc.edu

Associate Research Professor of Microbiology and Immunology, School of Medicine, and Professor of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

After Ralph Baric attended NC State University on a swimming scholarship, he stuck around to complete a PhD in microbiology in 1983, the year the human immunodeficiency virus (HIV) was isolated. He is known for his research on the replication and pathogenesis of coronaviruses, which include SARS, and more recently of noroviruses such as the Norwalk virus. His work has crossed the boundaries of microbiology, virology, immunology and epidemiology, looking especially at the population genetics of viruses to find the molecular building blocks for more effective vaccines.

Ken Bost

klbost@uncc.edu

Belk Distinguished Professor of Biology, University of North Carolina at Charlotte, and Chief Scientific Officer, SoyMeds

Ken Bost grew up near Concord, NC, and received his undergraduate degree from UNC-Chapel Hill in 1979. He left the state to pursue a doctoral degree in immunology from Ole Miss Medical School. After rising through the academic ranks at UTMB-Galveston, then UAB Medical Center, and finally Tulane Medical Center, where he was a professor of microbiology and immunology, he returned to North Carolina in 1998 as the Belk Distinguished Professor of Biology at UNC-Charlotte. In 2005 Ken Bost and Kenneth Piller co-founded SoyMeds, Inc. as a UNCC startup company. This small business uses transgenic soybean seeds as a platform technology for expressing recombinant proteins that have pharmaceutical and diagnostic applications.

Matthew Breen

mbreen3@ncsu.edu

Professor of Genomics, Department of Molecular Biomedical Sciences, College of Veterinary Medicine, NC State University

Trained at the University of Liverpool, Matthew Breen launched a career in molecular cytogenetics in the UK and Australia, where he helped develop techniques to analyze the genomes of horses and humans. After extending his comparative genomic studies to dogs, he relocated his lab to NCSU's College of Veterinary Medicine as part of a genomics initiative in 2002. He now co-directs the clinical studies core in the NCSU Center for Comparative Medicine and Translational Research and serves on the board of the Canine Comparative Oncology and Genomics Consortium. He spends much of his time working with dog breeders, who, he reports, are broadly committed to reducing the burden of genetic disease in purebred dogs by careful controlled breeding.

Joseph DeSimone

desimone@email.unc.edu · @Joseph_DeSimone

Chancellor's Eminent Professor of Chemistry, University of North Carolina at Chapel Hill; William R. Kenan, Jr. Professor of Chemical Engineering, NC State University

Joe DeSimone is a prolific and creative inventor, entrepreneur and scientific collaborator. Among his inventions are an environmentally friendly manufacturing process that relies on supercritical carbon dioxide for the creation of fluoropolymers and high-performance plastics; a bioabsorbable, drug-eluting stent; and a roll-to-roll particle-fabrication technology that borrows photolithographic techniques from semiconductor manufacturing to deliver high-performance, cost-effective vaccines and medicines. The new fabrication technology is the foundation of Liquidia Technologies, which DeSimone launched in 2004. Liquidia now employs roughly 50 people in Research Triangle Park. Trained in chemistry, DeSimone is a member of the National Academies of Engineering and Sciences.

Katherine Freese

ktfreese@umich.edu

George E. Uhlenbeck Professor of Physics, University of Michigan; Associate Director, Michigan Center for Theoretical Physics

Katherine Freese earned her physics degrees from Princeton (where, as far as she knows, she was the second woman to major in physics), Columbia and Chicago, then did postdocs at the Harvard-Smithsonian Center for Astrophysics, the Kavli Institute for Theoretical Physics and UC Berkeley. She has held faculty positions at MIT and Michigan, and been a visiting faculty member at the Max Planck Institute für Physik, Columbia, Berkeley and the Perimeter Institute for Theoretical Physics. She works on a wide range of topics in theoretical cosmology and astroparticle physics. She has been working to identify the dark matter and dark energy that permeate the universe as well as to build a successful model for the early universe immediately after the Big Bang. She has shown that most of the mass in galaxies does not consist of ordinary stellar material, and has proposed ways to look for alternatives such as supersymmetric particles. Recently she has proposed that "dark stars" were the first stars to form in the Universe.

contact details, websites and briefing background materials available with CASW site registration · follow links at casw.org/conference/488/speakers

Maribeth Gandy

maribeth.gandy@imtc.gatech.edu

Senior Research Scientist and Director, Interactive Technology Center, Georgia Institute of Technology

A computer scientist focusing on human-computer interaction, Maribeth Gandy develops novel and scientifically validated games for purposes such as training, rehabilitation and cognitive training. She is currently collaborating with Anne McLaughlin and colleagues at NC State on an NSF-funded project to develop cognitive games for older adults. The goals are to isolate what components are necessary in an activity for it to have general cognitive benefits and to craft a custom game that is accessible and compelling for an older player. For seven years Gandy worked in the fields of disability and accessibility as a project director in the Wireless RERC (through the Shepard Center in Atlanta and Georgia Tech) and generated guidelines for universal design and user-centered design with disabled individuals. In consulting work she has built commercial games, designed a home medical device for older adults, enhanced live rock concerts,and worked with startup companies to develop augmented reality business models and products.

Fred Gould

fred_gould@ncsu.edu

University Distinguished Professor of Entomology and Genetics, NC State University

Fred Gould began studying how insects adapt to plant defenses and insecticides after completing his PhD at SUNY Stony Brook in 1977. This work took him to North Carolina, where he began to focus on how transgenic crops can be deployed to suppress the evolution of pest resistance. He now focuses on how insects and other pests might be engineered to protect endangered species, reduce crop losses, restore island ecosystems and suppress diseases such as malaria. He was elected to the National Academy of Sciences in 2011 and now leads an effort to cross-train graduate students in genomics, ecology, molecular biology, ethics and policy to better inform the use of genetically modified organisms in pest management.

Kimberly Gray

gray6@niehs.nih.gov

NIEHS Program Director, Children's Environmental Health and Disease Prevention Centers (EPA-NIEHS)

Kimberly Gray received her B.S. degree in behavioral neuroscience and a Ph.D. in epidemiology from the University of Pittsburgh, where as a graduate student she worked on a project examining the long-term effects of prenatal exposure to alcohol, marijuana, and tobacco. During a postdoctoral fellowship in the NIEHS Epidemiology Branch, she examined the long-term effects of polychlorinated biphenyl exposure during pregnancy and childhood development. In August 2001 she returned to NIEHS, where she now is now the NIEHS director for a nationwide collaborating network of "Children's Centers"—the NIEHS and EPA Centers for Children's Environmental Health & Disease Prevention Research.

Andy Howell

ahowell@lcogt.net · @d_a_howell

Staff Scientist, Las Cumbres Observatory Global Telescope Network

Andy Howell leads the supernova group at Las Cumbres. He's also an adjunct professor of physics at UC Santa Barbara and was a host of the third season of the National Geographic Channel series *Known Universe*. He's been a member of three teams that have found and followed thousands of explosive and transient events in the universe, providing our best measurement of the mysterious dark energy. Earlier he worked with the Supernova Cosmology Project, led by 2011 Nobelist Saul Perlmutter. Howell also does popular science writing and reviews movies under the name Copernicus at Ain't It Cool News. He's been known to get into boxing matches with NASA conspiracy theorists.

Linda C. Kah

lckah@utk.edu

Kenneth R. Walker Associate Professor of Earth and Planetary Sciences, University of Tennesee, Knoxville

Linda Kah has been pursuing her love of science since kindergarten, when she announced her intention to become a geologist. She received concurrent BS and MS degrees from MIT in 1990, followed by a PhD from Harvard in 1997. In her research, Kah combines her knowledge of geology, isotope geochemistry and biology to decipher how ecosystems arise on planets, and how biological processes fundamentally interact with, and even change, geological systems. Her research has taken her to some of the most remote places on Earth, including the Canadian Arctic, Saharan West Africa, and the high Andes of Argentina, and continues to take her to even more remote localities, as she begins exploration of Gale Crater on the surface of Mars with NASA's Mars Science Laboratory mission. "I was brought into the mission seven years ago for the express reason that I knew almost nothing about Mars," she recalls.

Mark Kruse

mkruse@phy.duke.edu

Fuchsberg-Levine Family Associate Professor of Physics, Duke University

Mark Kruse is an associate professor specializing in experimental high-energy physics at Duke University, where he holds the Fuchsberg-Levine Family Chair for excellence in teaching and research. Kruse led the CDF Higgs discovery group at Fermilab from January 2007 to January 2009 and continues to play an active role in searches for the Higgs boson. In addition, he has developed a global analysis to search for new physics using events containing a high-energy electron and muon. Kruse is also interested in silicon detector design for high-energy particle physics experiments and is part of a group developing the next generation of silicon detectors for the ATLAS experiment at the Large Hadron Collider.

Phyllis Leppert

phyllis.leppert@duke.edu

Professor of Obstetrics and Gynecology and Professor of Pathology, Duke University School of Medicine

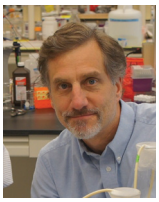
Phyllis Leppert started out as a nurse-midwife in the 1960s, then took a turn toward medical school, earning an MD in 1973 and a biology PhD in 1986. She developed a research interest in the biology of the uterine cervix, and specifically its elastin fiber network. After a stint as chief of the Reproductive Services Branch of the National Institute of Child Health and Human Development, she joined Duke University's obstetrics and gynecology faculty in 2006. There she focuses on issues in reproductive health and primary and preventive reproductive medicine for women. She has written for women's magazines and today focuses on uterine fibroids, a health scourge that affects 7 of 10 U.S. women of childbearing age.

Elizabeth Loboa

egloboa@ncsu.edu

Associate Professor of Biomedical Engineering and Materials Science and Engineering, NC State University and University of North Carolina at Chapel Hill; Director, Cell Mechanics Laboratory, NC State

As a Stanford mechanical engineering graduate student, Elizabeth Loboa worked with a craniofacial surgeon on challenges such as repairing cleft palates and separating conjoined twins. She continues to be motivated by the chance to help repair severely wounded bodies. After completing her PhD in mechanical engineering in 2002 and doing a postdoc, she headed to North Carolina, where the breadth of her understanding of mechanics, modeling, materials and regenerative biology has landed Loboa adjunct appointments in physiology, textiles and orthopedics. "Engineers do things differently from biologists," she says. "If it's not solving the problem, then as an engineer, it's not important to me. I want to do the most clinically relevant thing. I want to solve the big problems."



Bruce E. Logan

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Kappe Professor of Environmental Engineering and Director of the Penn State Hydrogen Energy Center, Pennsylvania State University

Environmental biotechnologist Bruce Logan's research focuses on novel technologies that produce energy from microbial processes and on developing a global water infrastructure for both industrialized and developing countries that is sustainable in energy terms. The author or co-author of over 300 refereed publications and several books, he collaborates around the world and has been a visiting researcher in England, Saudi Arabia and China. He received his PhD in 1986 from UC Berkeley and served on the University of Arizona faculty prior to joining the faculty at Penn State in 1997. He established and directs the Penn State Hydrogen Energy Center.

Anne Collins McLaughlin

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Assistant Professor of Psychology, NC State University

Anne McLaughlin received her psychology PhD in 2007 from Georgia Tech. She has studied motivation in a number of contexts, including hand-washing in healthcare settings, before focusing on individual differences in cognition in adults over the age of 65 and in particular on maintaining mental abilities at older ages via cognitive exercise. She collaborates with Jason Allaire, a lifespan developmental psychologist at NC State, and computer scientist Maribeth Gandy at Georgia Tech. She maintains the Human Factors Blog, **http://humanfactorsblog.org/**.

Thomas J. Meyer

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Arey Distinguished Professor of Chemistry and Director, UNC Energy Frontier Research Center, University of North Carolina at Chapel Hill

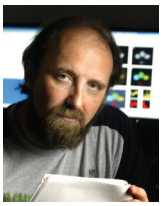
Tom Meyer's pioneering work on converting sunlight to chemical energy laid much of the groundwork for the fast-moving field now called artificial photosynthesis—the search for technologies that capture and store solar energy. A National Academy member who is one of most highly cited and honored chemists in the world, Meyer returned to the University of North Carolina faculty in 2005 after five years as Associate Director of Los Alamos National Laboratory. He now focuses on the renewed search for solar fuels.

Terrie Moffitt

terrie.moffitt@duke.edu

Knut Schmidt Nielsen Professor of Psychology and Neuroscience, Duke University

"People are curious about how lives unfold," says Terrie Moffitt, describing the public interest that has created a worldwide audience for her research. Moffitt studies how genetic and environmental risks work together to shape the developmental course of abnormal human behaviors and psychiatric disorders. She is associate director of the Dunedin Longitudinal Study, which follows 1,000 people born in 1972–73 in a New Zealand town, and also directs the Environmental Risk Longitudinal Twin Study, which follows 1,100 British families with twins born in 1994–95. Moffitt is an internationally renowned clinical psychologist who completed her hospital training in 1984 at the UCLA Neuropsychiatric Institute. Topping her long publication list is a 1972 feature film about stock car racing legend Richard Petty, where young Temi Moffitt had a small part. Moffitt and her collaborator and husband Avshalom Caspi joined the Duke faculty in 2007 and also hold faculty positions at the Institute of Psychiatry in England.



Miguel Nicolelis

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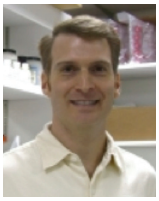
Professor of Neurobiology, Biomedical Engineering, Psychology and Neuroscience and Co-Director, Center for Neuroengineering, Duke University

Miguel Nicolelis is a neurophysiologist and physician best known for his work using brain-machine interfaces and "neuroprosthetics" to restore motor function to paraplegics, amputees and others who have lost function to disease or injury. In addition to this work, widely honored and reported in US and international media, his research aims to develop an integrative approach to neurological and psychiatric disorders. He remembers that he was led to science by long childhood afternoons of backyard exploration with his grandmother in his native Brazil, where "I discovered the joy of probing the unknown on voyages that only our imagination can plan and track." Author of the book *Beyond Boundaries*, Nicolelis holds both an MD and a PhD from the University of São Paulo and is co-founder and scientific director of the Edmond and Lily Safra International Institute for Neuroscience of Natal.



Kenneth J. Piller

kjpiller@uncc.edu

Adjunct Research Associate Professor of Biology, University of North Carolina at Charlotte, and President and Co-Founder, SoyMeds Inc.

Kenneth Piller received his PhD in plant molecular biology from the University of Illinois-Chicago and completed a postdoctoral fellowship in parasitology at The Johns Hopkins University School of Medicine. Before relocating to Charlotte, NC, in 2001, he worked at Monsanto for four years, serving as team leader for projects in the biotech pipeline. After joining the Department of Biology at UNC-Charlotte as a Research Associate Professor, Piller co-founded SoyMeds, Inc. with Ken Bost. The focus of Piller's research is the development of soybean as a platform for the production of therapeutic proteins that can be used to diagnose, prevent, treat and potentially cure a variety of diseases.

David M. Rothschild

david@researchdmr.com · @DavMicRot

Economist, Microsoft Research

David Rothschild is a founding member of Microsoft Research's new New York City lab, having joined after a postdoc stint as an economist at Yahoo! Research. He has written extensively, in both the academic and popular press, on polling, prediction markets and predictions of upcoming events; most of his popular work has focused on predicting elections and an economist's take on public policy. Various projects, including Yahoo!'s The Signal, act as online laboratories dedicated to prediction, interest and sentiment models, polling and prediction games. David jumped into politics while working on degrees in civil engineering and history at Brown, spending a summer interning at the White House. He earned his PhD in applied economics at the University of Pennsylvania's Wharton School, studying under Justin Wolfers, who gave a briefing on prediction markets at New Horizons in Science in 2006. Rothschild is also a fellow of the Applied Statistics Center at Columbia.

Darlene K. Taylor

dtaylor@nccu.edu

Assistant Professor of Chemistry, North Carolina Central University

Darlene Taylor jumped off the pre-med track as a student when she discovered her gift for chemistry. She earned a PhD in polymer physical chemistry at the University of North Carolina at Chapel Hill and stayed at UNC-CH for postdoctoral work on the design and characterization of polymer materials for novel applications, collaborating with fellow New Horizons speakers Joe DeSimone and Tom Meyer. In 2005 she joined the faculty at North Carolina Central. Her work focusing on structure-property relationships in oligomers and polymers has brought her back to medicine, where some of her innovations in chemistry hold potential as smart materials for drug delivery.

Steve Wing

steve_wing@unc.edu

Associate Professor of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Epidemiologist Steve Wing conducts research on occupational and environmental health. His recent work has focused on environmental justice, the health effects of ionizing radiation, community impacts of industrial swine production and the built environment. He has collaborated on health and exposure studies with communities and workers affected by the nuclear industry, industrial animal production and other environmental and occupational threats.

Greg Wray

gwray@duke.edu

Professor of Biology, Duke University

"I grew up loving nature," Greg Wray recalls, "and it's still what gets me up in the morning." Once up, Wray spends his days immersed in large-scale data analysis, studying biological diversity 21st century-style. He has focused on the evolution of gene regulation partly by studying sea urchins, an organism whose gene regulatory networks are well understood, providing an intuitive understanding of how regulation works. But the major focus of the Wray Lab is the primates: understanding how changes in gene expression might have driven many of the phenotypic traits that make us human. Wray joined the faculty at Duke—where he earned his zoology PhD—in 1997.