

NRI Board hosts Governor McCrory for update on growth and progress

During a recent visit to Kannapolis, N.C. Governor Patrick L. McCrory made a special stop at the NRI to learn how scientists are developing the field of individualized nutrition, and in turn, helping people live healthier lives and spurring economic development in the greater Charlotte region.



Senator Fletcher Hartsell, Dr. Steven Zeisel (NRI Director), Governor McCrory, Tom Smith and Dr. Jim Martin (NRI co-chairs) pose for a photo.

The Memorial Day briefing and brunch, held in the NRI's café, spotlighted the five-year-old institute where research focuses on genetics and biotechnology with the goal of enhanced health and prevention of disease.

"I'm thankful for the great work going on at the Nutrition Research Institute, particularly the treatment and prevention of diabetes, obesity and addiction. Not only does this world-class facility help improve the lives of North Carolinians, the growth of this campus is important to generating jobs and continuing to stimulate the economy in this region.

I am excited to watch the Nutrition Research Institute continue to grow and bring some of the best scientific minds to North Carolina," said Governor McCrory.

The NRI's distinguished Board of Advisors hosted the event. Welcoming the Governor to the NRI was Dr. Jim Martin, former governor of North Carolina and co-chair of the board along with Tom Smith, former CEO of Food Lion.

In his opening remarks, Dr. Martin said, "the North Carolina Research Campus is

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ABOUT THE NRI

The University of North Carolina at Chapel Hill Nutrition Research Institute has a bold mission: to develop the field of individualized nutrition.

As we understand why metabolism and nutrient requirements differ from person to person, we are able to discover nutrition-based solutions to overcome health challenges.



**FROM THE DESK OF
STEVEN ZEISEL, M.D., PH.D.**

This academic year has been a year of contrasts. On the positive side, we have had some meaningful successes. Dr. Folami Ideraabdullah joined the NRI, bringing expertise in how nutrition, the environment and genetics interact with one another. Dr. Philip May received another significant National Institute of Health (NIH) grant in excess of \$5 million dollars to study fetal alcohol syndrome disorders. And Dr. Martin Kohlmeier received national recognition from the American Society of Nutrition for his work developing the first comprehensive online nutrition curriculum used to train medical students and practicing physicians. I am proud that our vision of building a world-class center is well on its way to becoming a reality.

To continue this momentum, we have to be nimble and overcome the hurdles that present themselves. Our latest challenge, the Federal Sequestration, means that the competition for new NIH grants is fierce and even funded projects are experiencing significant budget cuts. This is vital because NIH is the single largest funder of basic biomedical science in the United States and historically, has provided most of our funding. In particular, I worry about the effects of this highly competitive and fiscally-austere environment on our young faculty members who are working to establish themselves in their respective fields.

As we move forward, we are proactively attempting to diversify our funding base. We are pursuing industry funding more aggressively and are encouraging our faculty to submit research proposals to new organizations and foundations. We are also asking our individual supporters, friends like you, to thoughtfully consider how you can help. A new section on our website, www.uncnri.org/SupportUs, gives you an opportunity to choose a specific research area or laboratory to support. Even small contributions can make a big difference.

I hope you enjoy this issue of SoundBites and reading about our progress.

**Philip May, Ph.D, recognized
for study of Fetal Alcohol
Spectrum Disorders (FASD)**

Philip May, Ph.D., a faculty member at the UNC NRI and Department of Nutrition, has received international recognition for his work with Fetal Alcohol Spectrum Disorders (FASD). At the NRI, Dr. May is currently studying FASD in South Africa with a \$5.3 million grant awarded in 2013 by the National Institute of Health's National Institute on Alcohol Abuse and Alcoholism.

The Starfish Award -- "for having the courage to make a difference" -- was presented by the Office of Interprofessional Continuing Education of the University of British Columbia, Vancouver, Canada. Dr. May was honored during closing ceremonies at the 5th International Conference on Fetal Alcohol Spectrum Disorders (FASD).

In notes read prior to the award presentation, Dr. May was recognized for many years of research and documentation of the true prevalence of FASD, and for exposing how many individuals are affected by prenatal exposure to alcohol. Two young adults who are living with FASD presented the plaque.

**HOPE FOR CHILDREN
WITH FASD**

A scholarly paper published by Dr. Philip May, Ph.D., concludes that cognitive and behavior skills in children with FASD are influenced by their mother's overall physical health and socioeconomic status, not solely by alcohol use.

"Maternal Factors Predicting Cognitive and Behavioral Characteristics of Children with Fetal Alcohol Spectrum Disorders" appeared in the *Journal of Behavioral and Developmental Pediatrics* in November 2011.

Dr. May's findings indicate that alcohol use by the mother during pregnancy remains the major factor for FASD, but with proper nutrition, education and stimulation, the child can still "grow and develop in a behavioral and social sense quite nicely."

"This study shows that there is hope," says Dr. May.

Dr. Martin Kohlmeier publishes *Nutrigenetics*, first comprehensive textbook in field

"We're not just following the trend; we set the trend."

NRI faculty member Dr. Martin Kohlmeier recently published the first comprehensive textbook on the field of nutrigenetics, covering molecular science to ethics and legal ramifications.

Dr. Kohlmeier is the 2013 recipient of the Roland L. Winsler Award for excellence in Medical/Dental Nutrition Education from the American Society for Nutrition (ASN) and the Delta Omega Faculty Award from the Department of Nutrition, UNC Gillings School of Global Public Health.

Nutrigenetics, Applying the Science of Personal Nutrition, will be taught as the basis for courses for health care professionals learning how nutrients interact with genes and applying that knowledge on an individualized level for health.

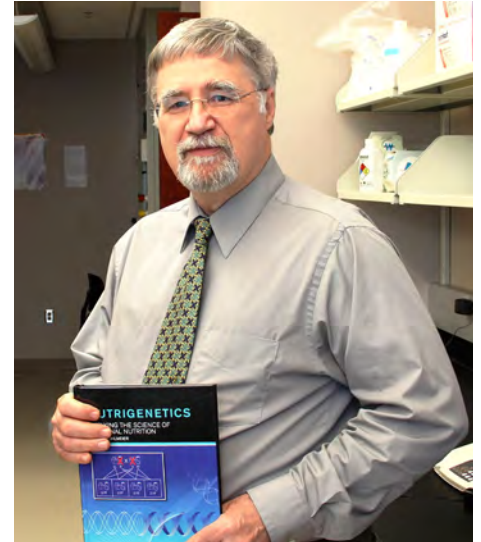
"Nutrigenetics investigates inherited differences in nutrient metabolism and explores how to use individual genetic information for making better nutrition choices," Dr. Kohlmeier said. He noted that extensive nutrigenetic

diversity is part of what defines us as humans. "Most of the millions of variants, which make each of us unique, are not flaws, but have helped our various ancestors to survive in starkly different nutritional environments around the world."

Researchers at the NRI are studying why metabolism and nutrient requirements vary from person to person. The NRI conducts research in nutrigenomics – how nutrition changes gene function and how genes change nutrient requirements – and in metabolomics, the measurement of chemicals in blood or urine that individualize metabolism.

NRI Director Dr. Steven H. Zeisel commented: "Nothing will change how we think about nutrition more than the new knowledge in the field of nutrigenetics.

"Genetics, epigenetics and nutrition are complex scientific areas and people who want to be ready to use nutrigenetics to develop customized nutrition interventions need to master a great deal of new



information. Dr. Kohlmeier's book is an excellent place to begin this learning adventure."

To his knowledge, Dr. Kohlmeier taught the first university level course in nutrigenetics in 1994.

"We're not just following the trend; we set the trend," he said.

[Continued from cover]

one of a strong group of engines that will drive economic growth in North Carolina.

"It is significant that it is happening in Kannapolis, a city that has struggled to recover from the largest layoff in state history that resulted from the closing of the textile mill. Since that time, the State of North Carolina's investment, along with the vision of David Murdock and private partners like Dole Foods, General Mills, and others, is revitalizing this region."

Notable guests for the event included State Senator Fletcher Hartsell, State Senator Andrew Brock and State Representative Linda Johnson. NRI board members Richard Vinroot, former mayor of Charlotte; Brien Lewis, president of Catawba College; Mark Billings, President of Shared Services for Novant Health; and Dr. Linda Combs, former Controller, U.S. Office of Management and Budget, were also on hand.

Dr. Steven Zeisel, director of the NRI, briefed the governor on recent progress

at the institute.

"It is an honor for you to visit us. We are working hard to maximize the state's investment in our center and rapidly becoming a world class hub for scientific research."

Dr. Zeisel said that since the institute's inception in 2008, the NRI has been awarded more than \$26 million in grants and contracts from companies, foundations and the federal government. The direct economic impact is more local jobs in NRI laboratories and more money spent locally on supplies and equipment.

In 2012 and 2013, more than \$14 million was awarded to Dr. Philip May and his research team to study the prevalence and traits of Fetal Alcohol Spectrum Disorders throughout the United States, including sites in North Carolina, and in Africa.

In FY 2012-13, the NRI has generated \$2.7 million in funding from corporate partners such as Nestle Nutrition, Balchem

and Charles River laboratories. In 2012, the institute received a prestigious Bill and Melinda Gates Grand Challenges Exploration grant to study how choline, an essential nutrient, impacts brain development in infants.

The NRI continues to educate students from the local community, building a skilled workforce to attract biotechnology industries. In FY 2012-13, the institute hosted more than 30 student interns from area high schools, colleges and universities.

"We are so pleased to have this facility developing here, in Kannapolis," Smith noted. "This campus is not only going to help many people live better lives by preventing and treating disease, it is also becoming a much needed economic driver for our community.

"We look forward to maximizing the state's investment in this campus and continuing to share our progress as the campus grows."

IN THE COMMUNITY



SoundBites from the 2013 Appetite for Life Academy:

The NRI's Appetite for Life Academy brings the latest scientific research down to earth in educational, interactive community programs. Meet leading experts as they present their research in engaging sessions designed to help people eat better and live healthier lives.



Dr. Folami Ideraabdullah "Heritable Effects of Diet: Becoming What Our Parents Eat"



- The human genome consists of 46 chromosomes and 20,000+ protein coding genes. Whether these genes are "on" or "off" results in patterns of gene expression.
- Epigenetics control how genes are expressed, and disruptions may be associated with disease.
- Research shows relationships between environmental toxicants, drugs, and diet, and epigenetic modification.
- What is the role of nutrients in determining epigenetic states? Can detrimental effects of nutrition be inherited? Do individuals respond differently to nutrition because of genetic differences? Can we use this to predict susceptibility, treatments or things to avoid?

Dr. Brian Bennett "Your Parents and Your Diet: How Genetics and Diet Relate to Cardiovascular Risk"

- Cardiovascular disease is the #1 killer in the United States. Coronary Artery Disease (CAD), known as hardening of the arteries of the heart/aorta, accounts for 50% of cardiovascular disease.
- Costs related to cardiovascular disease are estimated to be \$1 trillion by the year 2030.
- It appears that many factors cause people to develop CAD. There's a complex interaction between diet, the bacteria in your gut and your own genetics.



THE BUZZ

"The BEST one yet!"



"PRACTICAL information that I can use."



"Relates to ME."



"APPLICABLE to my everyday life."



"Very INFORMATIVE!"



"EASY to understand, good examples."

STUDENT FOCUS



Calling all young artists and writers in rising grades Pre-K through 12th!

UNC NRI is celebrating its 5-year anniversary. As we mark this milestone of Carolina in Your Community, we want to celebrate by encouraging healthier lifestyles.

We are challenging students to think about how their community could improve the health and fitness of youth. How do you see yourself, your family and your neighbors living a healthy lifestyle?

Present your ideas in either art or essay format, with one entry per category. Parental permission is required.

Judges will choose a winner from each category for eligible prizes.

GRAND PRIZE (\$100 for best overall art submission; \$100 for best overall essay submission)
Pre-K-3rd Grade (\$50 for art; \$50 for essay)
4th-8th Grade (\$50 for art; \$50 for essay)
9th-12th Grade (\$50 for art and \$50 for essay)

Grand prize will be selected for best representation of the theme from any age category.

2013 NC Science Festival: “An Evening with Alton Brown: The Science of Cooking”



The NRI was proud to sponsor the 2013 North Carolina Science Festival and help bring events like “An Evening with Alton Brown: The Science of Cooking” to our community. We enjoyed seeing those of you who stopped by our table before the show!

Dr. Myles Faith “Family Matters: Lifestyle Strategies for Obesity Prevention that Start at Home”



- Parents and adult caregivers are agents of change for treating obese children, but research shows that positive involvement is best. “Positive parenting” supports behavior change and sets the foundation for success.
- The positive results of family-based behavior modification to help children with weight loss persist up to 10 years.
- Reducing “screen time” – television watching, video game playing, etc. – is the best indicator for weight loss in obese children. Fewer hours spent on these activities equals less eating.

Dr. Deborah Tate “Managing Your Weight, What Really Works?”

- 68% of the population in the United States can be classified as overweight or obese. Weight loss change requires behavior change.
- Diet and exercise (optimally 45 minutes, five days a week) go hand in hand. Short bouts of exercise throughout the day are as effective as one long session.
- For successful weight loss, it’s essential to self-monitor calorie intake by keeping detailed records and weighing every day.
- Strategies to successfully reduce overall calories, while following a weight control diet, include: eating portion-controlled meals, eating more slowly, limiting high-calorie beverages, and drinking a 16-ounce bottle of water before each meal or snack.



VISIT US

To find more information about Appetite for Life Academy or to view seminar footage visit our website!

www.uncnri.org/appetite.asp

Thanks to our sponsors for making Appetite for Life Academy possible



MEET OUR TEAM

Faculty in the News



STEVEN H. ZEISEL, M.D., PH.D., Kenan Distinguished University Professor in Nutrition and Pediatrics and UNC NRI Director, is the 2012 recipient of the Bernard G. Greenberg Alumni Endowment Award from the UNC Gillings School of Public Health. The award includes an annual cash prize of \$12,000 for three years.

Dr. Zeisel was honored for “continuous demonstrated excellence over a number of years in service to the broad public health community.”



MIHAI NICULESCU, M.D., PH.D., faculty member at the UNC NRI and Department of Nutrition, was honored with the Delta Omega Alumnus Award, presented in April by the UNC Gillings School of Global Public Health, Department of Nutrition.

At the NRI, Dr. Niculescu studies epigenetics and nutrition, investigating how diet sets “switches” that control gene expression.

IN THE SPOTLIGHT: JODY ALBRIGHT

Jody Albright, Research Assistant, works in Dr. Brian Bennett's lab studying the role of genetics and diet on cardiovascular disease. A native of Salisbury, Albright is a graduate of the biotechnology program at Rowan Cabarrus Community College.

What initially spurred your interest in biotechnology?

I was born in Salisbury and have lived there the majority of my life. I worked in a variety of fields before entering the RCCC biotech program. I did electrical work for Pike Electrical, worked at Freightliner LLC in assembly and quality control, and then owned a small landscaping/masonry/concrete business for about six years.

When the economy started to fall in 2008, I made a decision to try something completely different. I enrolled in RCCC's biotechnology program in 2009 and graduated in 2011.

What was your path to employment at the NRI?

Later that year, I came across an advertisement for a temporary job in Dr. Brian Bennett's lab. Originally I was hired part

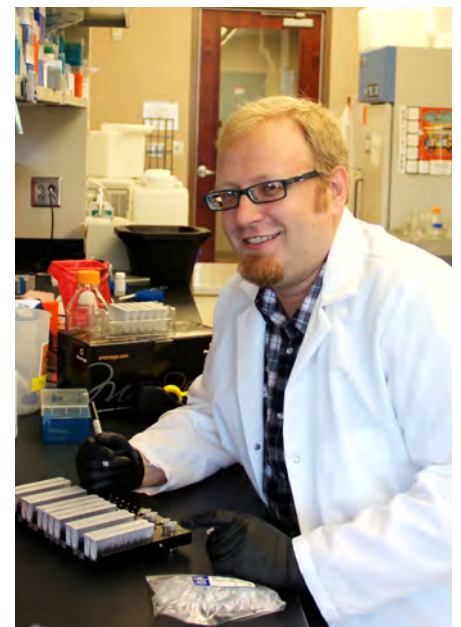
time to set up the lab, but after about six months, I was hired as a research technician here at the NRI.

What is the nature of your work in the Bennett lab?

Our lab is currently studying the role of genetics and diet on atherosclerosis. I enjoy the fact that I don't do the same thing every day, because I like to constantly learn and experience new things.

Working in Brian's lab has allowed me to have a hand in mouse work, cell culture, molecular biology, and sequencing. All these things keep me busy, but that's part of the fun!

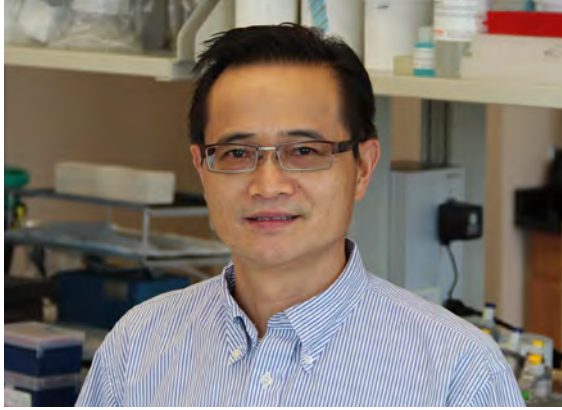
The Bennett lab has an excellent team of employees together with an excellent researcher who also happens to be a great guy to work for. We work hard, but still manage to have a good time.



What are your career plans for the future?

As far as future plans – I'd like to eventually continue my education while working here in the Bennett lab. How and when that will unfold is still unknown. Right now I really enjoy my job, which is something not many people can say.

/NEWFaculty/



WENHONG CAO, M.D., joined NRI in July 2012 as a Research Associate Professor. Dr. Cao:

- Researches new and more effective ways to prevent and treat obesity and diabetes by investigating mechanisms of obesity, insulin resistance, and type 2 diabetes mellitus (T2DM).
- Focuses on the mechanisms of insulin resistance and its various components using molecular, cellular and animal models in studies.
- Serves as editorial board member for the Journal of Biological Biochemistry; the American Journal of Physiology: Endocrinology and Metabolism; and the BBA-Metabolism, Cell Biology of Lipids and Journal of Biological Chemistry.
- Received the 2009 Star Reviewer Award from the American Physiological Society and the American Journal of Physiology.



FOLAMI IDERAABDULLAH, PH.D., joined NRI in January 2012 as an Assistant Professor of Genetics, School of Medicine, University of North Carolina at Chapel Hill (UNC-CH.) Dr. Ideraabdullah:

- Researches the role of gene-environment interactions in phenotypic variation and disease.
- Focuses on the effects of nutrition on epigenetic states during development and how DNA sequence and exposure to environmental toxicants may alter these effects. Studies how nutrients, genetics and environmental toxicants interact to confer susceptibility or resistance to disease.
- In 2008, received a Center of Excellence in Environmental Toxicology Mentored Scientist Transition award.

/NEWPost-doctorates, Lab & Support /



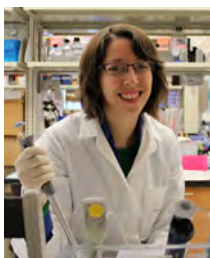
JACKIE BLACK Business Officer



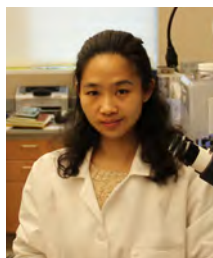
JULIE HASKEN Project Manager, May lab



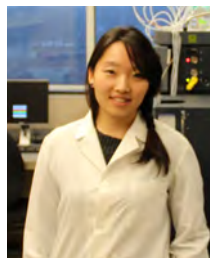
JUDY OAKES, PH.D. Research Associate, Ideraabdullah lab



JENNIFER OWEN Research Technician, Zeisel lab



YANYAN WANG, PH.D. Research Associate, Zeisel lab



HEATHER ZHAO Research Technician, Zeisel lab Ideraabdullah lab

SUPPORT OUR SCIENCE

At the NRI, we are discovering nutrition-based solutions designed to solve our greatest health challenges and, most importantly, to put these solutions into practice.

To be successful, we need your help. Your gifts allow us to pursue creative and innovative ideas, provide stability and continuity to our work, and ensure that we have the brightest minds and technologies available to conduct our cutting-edge research.

Make your gift to the NRI today and join us in our mission of making the world a healthier place!

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Kannapolis, NC 28081

Student-led IMPACT program teaches children about nutrition

NRI faculty member Martin Kohlmeier, M.D. is advising IMPACT (Improving Meals and Physical Activity in Children and Teens). Through this school-based program, UNC student-volunteers enrolled in health profession areas teach children about healthy nutrition and physical activity.

UNC medical students Julia Nugent and Lindsey Rose are IMPACT co-chairs: "We have active members that are medical students, dental students, nursing students, exercise and sports sciences Ph.D. candidates. This has given us the opportunity to teach and understand health from the perspective of numerous health professions and expose the children to the importance of education."

IMPACT volunteers make weekly visits to three fourth grade classrooms in Chapel Hill, NC, teaching students how to choose healthy snacks, understand nutrition labels, and about food/physical activities in other countries.

"We plan to expand the IMPACT program



to reach underserved students in the 2013-14 school year. We anticipate going to two schools in the fall and two schools in the spring, allowing us to reach approximately 250 fourth grade students over the year."

Dr. Kohlmeier said, "IMPACT has proven to be successful. Tests showed significant growth in the knowledge and skills the children in the program had about nutrition and physical activity. Programs like this are key to developing a lifetime of healthy behaviors in young people."