

# NRI

FY22

 **UNC** | NUTRITION RESEARCH  
INSTITUTE

## *Impact Report*

Baba Mass, *research associate* in the  
Voruganti Lab, processing DNA  
samples for SNP genotyping



# ABOUT

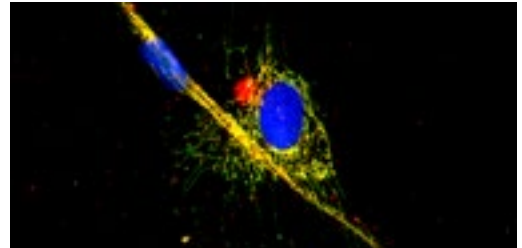


Inside the Mooney Lab  
Matthew Katibah, *research technician*

## VISION

To use scientific discovery to ensure optimal health through individualized nutrition.

*From  
Bench  
to Better  
Health*



## MISSION

To understand how nutrition affects individual health through our leadership in precision nutrition research, establishing how differences in our genes, bacteria, metabolism, and environment shape our individual disease risk.



## GUIDING SCIENTIFIC PREMISE

Each of us is metabolically unique. The UNC Nutrition Research Institute is dedicated to finding out how these differences affect an individual's health so that current one-size-fits-all dietary guidelines can be replaced with customized nutritional recommendations and actions to improve an individual's health and quality of life.

## LEADING THE FIELD OF PRECISION NUTRITION

Our research contributes to the prevention and mitigation of chronic disease across the lifespan from periconception through aging. The science is complex, but the purpose is clear: We do it for you.



Natalia Krupenko, *associate professor of Nutrition* and Kristen Duncan, *student*

Dear Friends,

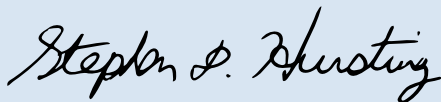
As I reflect on my first year as director of the Nutrition Research Institute, I am proud of our accomplishments while humbled by the confidence you have placed in us demonstrated through your gifts and other forms of support.

It is with your support that we can advance our bold mission to learn how nutrition affects individual health, applying our precision nutrition expertise to address some of the most pressing, chronic health concerns today: cancer, brain health, and cardiometabolic health. Our research is helping your healthcare providers guide you in using your diet to your advantage.

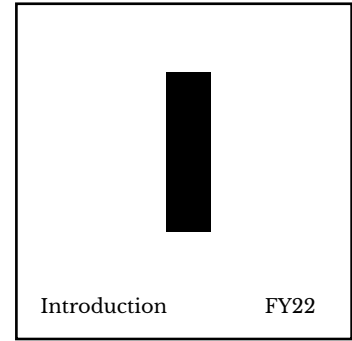
Our team has compiled the following report to let you know how we have applied your financial support, resulting in a year of robust research, invitations to faculty to speak at scientific conferences around the world, and significant awards for future research, particularly from the National Institutes of Health.

Our research is changing how the world looks at nutrition in precision health and healthcare. Thank you for your investment—and here's to a healthy future.

Sincerely,



**Stephen D. Hursting, PhD, MPH**  
Director, Nutrition Research Institute  
AICR/WCRF Distinguished Professor,  
Department of Nutrition  
Member, Lineberger Comprehensive Cancer Center  
The University of North Carolina at Chapel Hill



**Inside the Hursting Lab**

Left to Right: William Pressel III, *graduate student*; Stephen Hursting; Evan Paules, *postdoctoral research associate*

# BOARD OF ADVISORS

We are grateful to the members of our board of advisors for generously supporting the NRI with their expertise and insight. The board of advisors is a select group of individuals with vision and experience in a broad range of areas to help elevate the NRI to world-class stature. The board comprises leaders in their respective fields who can position the institute for continued growth and achievement. They are individuals who are personally committed to the NRI's mission.

Fred T. Brown  
*Charlotte, NC*

Byron Bullard  
**(1927-2021)**  
*Charlotte, NC*

W. Patrick Burgess  
*Charlotte, NC*

Margaret K. Dees  
*Salisbury, NC*

John Fennebresque, Jr.  
*Charlotte, NC*

J. Steven Fisher  
*Salisbury, NC*

Erika G. Gantt  
*Charlotte, NC*

Jason C. Holt  
*Davidson, NC*

Kathleen Kaney  
*Charlotte, NC*

Farzaneh Keshmiri-Sanchez  
*Kannapolis, NC*

Kevin W. Lobdell  
*Charlotte, NC*

Monique May  
*Charlotte, NC*

Jeffry Petry  
*Davidson, NC*

Almer Reddick  
*Zebulon, NC*

Craig Richardville  
*Broomfield, CO*

Rina K. Shah **(Chair)**  
*Durham, NC*

Tom E. Smith  
**(Chair, ret.)**  
*Salisbury, NC*

Samuel L. Taggard  
*West Simsbury, CT*

Richard Vinroot  
*Charlotte, NC*

Jason Walser  
*Salisbury, NC*

Mary Jo Walter  
*Lumberton, NC*

Amanda G. Watlington  
*Durham, NC*

Douglas Weed  
*Wilmington, NC*

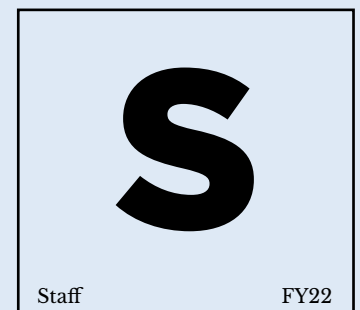
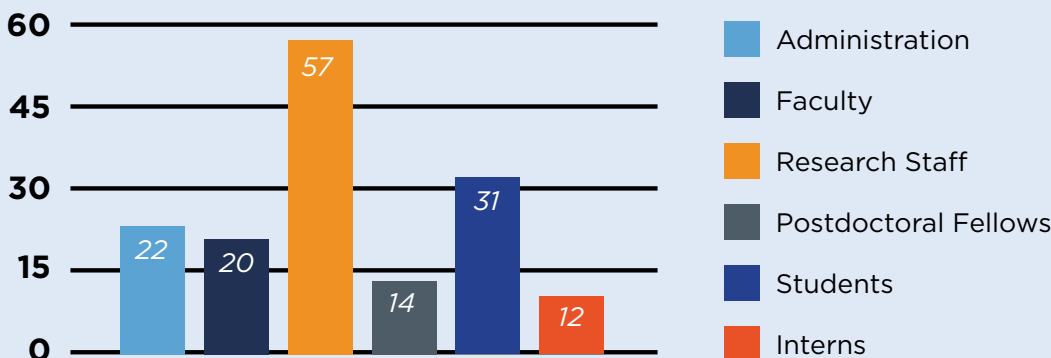
James H. Woodward  
*Charlotte, NC*

The NRI's 22 administrative staff members—from operations and personnel to finance and fundraising—support the institute and its scientific staff. Also supporting our 20 faculty members in FY22 were 57 research staff, 14 postdoctoral fellows, 31 students, and 12 interns.

NRI employees come from all over the country and across the globe to pursue their passion for the study and understanding of precision nutrition. All are employees of the University of North Carolina at Chapel Hill.



**Inside the Summer Lab**  
Madison Schroder, *research technician*



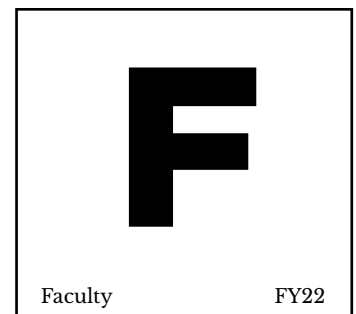


#### Inside the Trujillo Lab

Left to Right: Isis Trujillo-González, *assistant professor of Nutrition*; Evan Paules, *postdoctoral research associate*; Walter Friday, *research associate*

# FACULTY

NRI principal investigators hold faculty appointments in the departments of Nutrition, Epidemiology, Pharmacology, Psychiatry, and Psychology and Neuroscience as well as the School of Social Work at the University of North Carolina at Chapel Hill. They each focus their nutrition research at the NRI among one of three areas: cancer, brain health, and cardiometabolic health.



#### [Ximena Bustamante-Marin, PhD](#)

*Assistant Professor of Nutrition*

#### [Carol L. Cheatham, PhD](#)

*Associate Professor of Psychology and Neuroscience*

#### [John E. French, PhD](#)

*Professor of Nutrition*

#### [Rachel W. Goode, PhD, MPH, LCSW](#)

*Assistant Professor of Social Work and Psychiatry*

#### [Stephen D. Hursting, PhD, MPH](#)

*Director, NRI  
Professor of Nutrition*

#### [Martin Kohlmeier, MD, PhD](#)

*Professor of Nutrition*

#### [Natalia I. Krupenko, PhD](#)

*Associate Professor of Nutrition*

#### [Sergey A. Krupenko, PhD](#)

*Professor of Nutrition*

#### [Yuan Li, PhD](#)

*Assistant Professor of Nutrition*

#### [Philip A. May, PhD](#)

*Professor of Nutrition*

#### [Katie Meyer, ScD](#)

*Assistant Professor of Nutrition*

#### [Sandra Mooney, PhD](#)

*Associate Professor of Nutrition*

#### [Wimal Pathmasiri, PhD](#)

*Assistant Professor of Nutrition*

#### [Blake Rushing, PhD](#)

*Assistant Professor of Nutrition*

#### [Susan M. Smith, PhD](#)

*Deputy Director, NRI  
Professor of Nutrition*

#### [Delisha Stewart, PhD](#)

*Assistant Professor of Nutrition*

#### [Susan Sumner, PhD](#)

*Professor of Nutrition and Pharmacology*

#### [Isis Trujillo-González, PhD](#)

*Assistant Professor of Nutrition*

#### [Saroja Voruganti, PhD](#)

*Associate Professor of Nutrition*

#### [Steven H. Zeisel, MD, PhD](#)

*Professor of Nutrition and Pediatrics,  
Founding Director, NRI*

## VISITING SCHOLAR

Rachel W. Goode



The NRI welcomed Goode as visiting scholar from our main campus in Chapel Hill for FY22. As an assistant professor at the School of Social Work and adjunct assistant professor in the Center for Eating Disorder Excellence, Department of Psychiatry, her research interests include developing, implementing, and evaluating equitable and community-engaged interventions to treat obesity and eating disorders. She officially joins the NRI's permanent faculty in FY23.

# P

Publications &  
Presentations

FY22

## SELECTED PUBLICATIONS

- Carol L. Cheatham** • **Cheatham, CL, Nieman, DC, Neilson, AP and Lila, MA (2022).** “Enhancing the cognitive effects of flavonoids with physical activity: is there a case for the gut microbiome?” *Front Neurosci* 16:833202.
- Rachel W. Goode** • **Goode, RW, Watson, HJ, Masa, R and Bulik, CM (2021).** “Prevalence and contributing factors to recurrent binge eating and obesity among black adults with food insufficiency: findings from a cross-sectional study from a nationally-representative sample.” *J Eat Disord* 9:154.
- Stephen D. Hursting** • **Glenny, EM, Coleman, MF, Giles, ED, Wellberg, EA and Hursting, SD (2021).** “Designing relevant preclinical rodent models for studying links between nutrition, obesity, metabolism, and cancer.” *Annu Rev Nutr* 41:253-282.
- Katie Meyer** • **Choi, Y, Gallaher, DD, Svendsen, K, Meyer, KA, Steffen, LM, Schreiner, PJ, Shikany, JM, Rana, JS, Duprez, DA and Jacobs, DR, Jr. (2022).** “Simple nutrient-based rules vs. a nutritionally rich plant-centered diet in prediction of future coronary heart disease and stroke: Prospective observational study in the US.” *Nutrients* 14:469.
- Yuan Li** • **Li, YY, Rushing, B, Schroder, M, Sumner, S and Kay, CD (2022).** “Exploring the contribution of (poly)phenols to the dietary exposome using high resolution mass spectrometry untargeted metabolomics.” *Mol Nutr Food Res* e2100922.
- Blake Rushing** •
- Susan Sumner** •
- Philip A. May** • **Hasken, JM, Adair, LS, Martin, SL, Thompson, AL, Marais, AS, de Vries, MM, Kalberg, WO, Buckley, D, Eugene Hoyme, H, Seedat, S, Parry, CDH and May, PA (2022).** “The influence of maternal weight and alcohol exposure on infant physical characteristics and neurodevelopmental outcomes.” *Curr Res Toxicol* 3:100076.

## SELECTED PRESENTATIONS

- Ximena Bustamante-Marin** • **Role of the Primary Cilium in the Crosstalk Between Obesity and Cancer.** American Association for Cancer Research, New Orleans, Louisiana. April 2022.
- Stephen D. Hursting** • **Disrupting the Adipose-Tumor Link in Experimental Models of Obesity-Driven Breast and Colon Cancer.** AACR Annual Meeting, New Orleans, Louisiana. April 2022
- Martin Kohlmeier** • **Precision Nutrition in Clinical Practice; Rationale for Nutrigenetic Guideline Development; Taste Testing in Educational and Clinical Practice; Rationale for Nutrigenetic Guideline Development; Mission of the Guideline Development Groups.** International Society of Nutrigenetics/ Nutrigenomics Annual Congress (virtual). Organizer, chair and presenter. September 2021.
- Philip A. May** • **UNM Research Update: Fetal Alcohol Spectrum Disorders 10 years Later.** 66th Annual Research Lecture, University of New Mexico (virtual). October 2021.
- Susan M. Smith** • **The Critical Contribution of Nutrition to the Neurodevelopmental Outcomes of FASD.** Center for Brain and Behavior Research annual research symposium: Effects of Risky Behavior on the Public Health, Sanford School of Medicine, University of South Dakota, Vermillion SD. August 2021.
- Isis Trujillo-González** • **Choline, one-carbon metabolism, and child development.** International Kwashiorkor Colloquium. Virtual. September 21st 2021.
- Saroja Voruganti** • **Precision Nutrition in health and diseases,** Kasturba Health Society Medical Research Center, Mumbai, India. July 2021.

# CLINICAL STUDIES

# Cs

Clinical Studies

FY22

## CHEATHAM LAB

*Infant Cognition and Nutrition Study*

Purpose: To show how nutrition helps babies grow and learn.

## GOODE LAB

*The HONOR Study*

Purpose: To examine the factors that affect eating behaviors of African American adults with Type 2 diabetes.

*The Satisfy Study*

Purpose: To test an intervention that may help decrease emotional eating and improve weight management.

## VORUGANTI LAB

*Children's Health Study*

Purpose: To identify genes and lifestyle factors that affect children's health status and overall well-being.

*Fructose Liver-Fat Study*

Purpose: To identify genetic and dietary factors that affect the risk for non-alcoholic fatty liver disease.

## ADDITIONAL STUDIES

*Colgate Study*

Purpose: To evaluate the impact of regular, professional, non-surgical intensive periodontal therapy to find out whether the effects of oral health are associated with corresponding changes in general health.

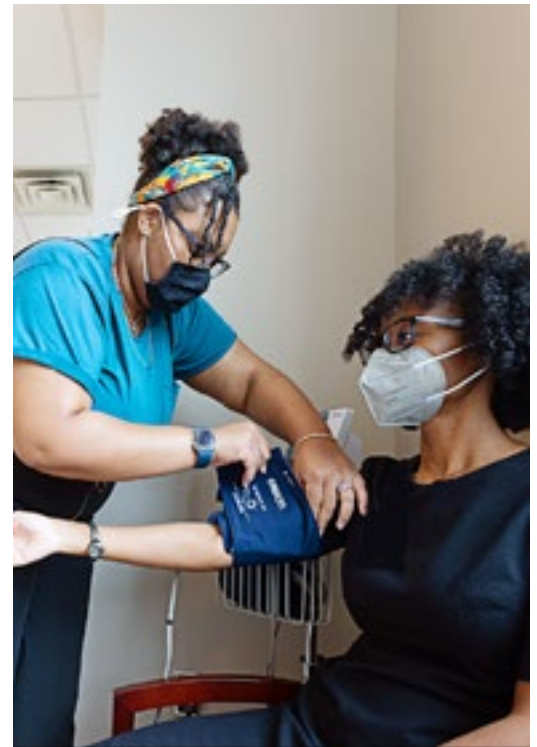
*Fish Oil Study*

Purpose: To evaluate the effect of a fish oil supplement on human health.

## NRI PARTICIPANT POOL

Many of our research studies rely on volunteers to help us learn how nutrition science works in differing people. The participant pool allows us to gather potential volunteers quickly advancing science at greater speed.

The pool is a secure, confidential database for people interested in being notified of future studies with us on the North Carolina Research Campus here in Kannapolis. The pool allows us to share information with interested people about research studies they may be eligible to join, but does not commit anyone to participating.



Inside the Goode Lab  
Tyisha Harper, *project coordinator*, taking a blood pressure measurement

### *Become a Participant*

As a study participant, you may be asked to eat or drink certain nutrients or provide biological samples such as blood or urine. We may record your physical measurements or have you take some cognitive tests. Each study is unique. Being a study participant is voluntary and you can choose to withdraw at any time.

Visit [uncnri.org/participate](https://uncnri.org/participate) for more information.



Inside the NRI Dental Suite  
Neplus Hall, *dental hygienist*, and Samantha Carroll, *Human Research Core lab manager*



Collaboration

FY22



Inside the Voruganti Lab  
Faustina Jeyaraj, doctoral student

# KEY FINDINGS

## Team science connects gene-knockout mice to human metabolic stress

NRI faculty **Sergey Krupenko**, **Susan Sumner**, and **Saroja Voruganti**, were awarded an NIH grant to study how polymorphisms in the *ALDH1L1* gene affect metabolism of the nutrient folate and the amino acids, glycine and serine.

Sharma et al. (2022) compared the metabolic response to dietary folate restriction in wild-type and *Aldh1l1*-knockout mice. This question is relevant because folate deficiency is a known global health concern and mutations in genes that affect folate metabolism are fairly common. Overall, they found that folate deficiency and *Aldh1l1* knockout produced similar but not identical metabolotypes. Notably, *Aldh1l1* knockout caused a decrease in liver and plasma glycine concentrations while folate restriction did not. Notably, these metabolotypes were also sex-dependent.

While gene-knockout mouse models are invaluable for studying disease mechanisms, it is similarly important to demonstrate human relevance. To this end, Krupenko et al. (2022) assessed the impact of SNPs in *ALDH1L1* on plasma serine and glycine levels in a human population. Not only did they find associations of glycine/serine ratios with SNPs in these genes, they also found that SNPs in *ALDH1L1* were associated with markers metabolic stresses including obesity, inflammation, and type 2 diabetes. These findings highlight an intricate relationship between diet and genotype with respect to metabolic outcome and health.

This project exemplifies how the NRI brings together researchers with distinct areas of expertise to answer questions with a much broader scope than would otherwise be possible.

*Sharma, J, Rushing, BR, Hall, MS, Helke, KL, McRitchie, SL, Krupenko, NI, Sumner, SJ, Krupenko, SA (2022). Sex-Specific Metabolic Effects of Dietary Folate Withdrawal in Wild-Type and Aldh1l1 Knockout Mice. Metabolites, 12:454.*  
*Krupenko, SA, Cole, SA, Hou, R, Haack, K, Laston, S, Mehta, NR, Comuzzie, AG, Butte, NF, Voruganti, VS (2022). Genetic variants in ALDH1L1 and GLDC influence serine to glycine ratio in Hispanic children. Am J Clin Nutr, nqac091.*



## Impact of nutritional supplements on severity of fetal alcohol spectrum disorders

Fetal alcohol spectrum disorders (FASD) encompass a range of behavioral, cognitive, and physiological deficits caused by prenatal alcohol exposure (PAE). Through FY22, NRI faculty **Susan M. Smith**, and **Sandra Mooney**, have continued their research into the physiological and neurological impacts of PAE and the efficacy of dietary supplementation with respect to FASD outcomes.

Research at the NRI and elsewhere has shown that dietary choline supplementation during pregnancy has a neuroprotective effect for offspring exposed to alcohol in utero. In a study conducted with mice given alcohol during pregnancy, Smith, Mooney, and their research teams found that dietary choline supplementation also benefited other tissues, in particular the placenta (Kwan et al., 2022). Because the placenta needs nutrients to support its growth and function, it can compete with the growing fetus. PAE causes increased placenta size, which in turn imposes a higher nutrient demand. Choline supplementation normalizes placenta size, limiting its nutrient demand and increasing availability for the fetus. Thus, choline may minimize a metabolic competition between the placenta and fetus. Using a similar mouse model, Saini et al. (2022) analyzed liver metabolites in mouse mothers and their offspring in the context of PAE. The results showed that alcohol altered maternal glucose metabolism and suggested that this altered metabolism could play a major role in how PAE exerts its effects on the developing fetus.

Smith's and Mooney's groups have also measured the impact of PAE on behavior, adiposity, and metabolism in mouse models of FASD. Smith et al., 2022 analyzed the long-term behavioral and metabolic consequences of PAE and found that PAE may increase the risk or severity of metabolic dysfunction (obesity, type 2 diabetes) in late adulthood, and that the risk may be sex dependent. FASD is usually diagnosed in early childhood, but while these deficits persist into adulthood, comparatively few studies have assessed their effects in adulthood. Thus, the true impact of PAE across the lifespan of those affected may be underestimated.



Inside the Smith Lab  
Nipun Saini, *postdoctoral research associate*



Inside the Mooney Lab  
Left to Right: Sandra Mooney, *associate professor of Nutrition*; Katie Walter, *postdoctoral research associate*

*Kwan STC, Ricketts DK, Presswood BH, Smith SM, Mooney SM (2021). Prenatal choline supplementation during mouse pregnancy has differential effects in alcohol-exposed fetal organs. Alcohol Clin Exp Res 45:2471-2484.*

*Saini, N, Virdee, MS, Helfrich, KK, Kwan, STC, Mooney, SM and Smith, SM (2022). Untargeted Metabolome Analysis Reveals Reductions in Maternal Hepatic Glucose and Amino Acid Content That Correlate with Fetal Organ Weights in a Mouse Model of Fetal Alcohol Spectrum Disorders. Nutrients, 14:1096.*

*Smith SM, Pjetri E, Friday WB, Presswood BH, Ricketts DK, Walter KR, Mooney SM (2022). Aging-related behavioral, adiposity, and glucose impairments and their association following prenatal alcohol exposure in the C57BL/6J mouse. Nutrients, 14:1438.*

# IN THE NEWS



Inside the Meyer Lab  
Katie Meyer, assistant professor of Nutrition

*“We are trying to understand how genes affect how nutrients are metabolized and how nutrient metabolism can affect gene expression.”*

- Voruganti, Saroja on [The Bioinformatics CRO Podcast](#), Episode 34 (July 2021)

Voruganti, Saroja in “Clinical research programs aim to improve lives, recruit local participants at NCRC” by Brian Dlugosz for [Salisbury Post](#) (June 23, 2022)

- Meyer, Katie in “Are ‘Good’ Germs in Your Gut Key to a Healthy Brain?” by Denise Mann for [HealthDay.com](#) (February 9, 2022)

*“These health behaviors have been associated with gut microbial features,” Meyer said, “And it is possible that protective effects of diet and activity may, in part, operate through the gut microbiota.”*

*The gut microbiome is made up of trillions of microorganisms and their genetic material. For this new study, researchers analyzed bacteria colonizing the guts of nearly 600 participants (average age: 55).*

# AWARDS & HONORS

## DISTINGUISHED PROFESSORSHIP

Susan M. Smith has been named the inaugural holder of The Dickson Foundation-Harris Teeter Distinguished Professorship in Nutrition. Smith, who joined the UNC-Chapel Hill faculty in 2016, is a professor of Nutrition at the Gillings School of Global Public Health and serves as deputy director for science at the UNC Nutrition Research Institute. Smith researches the molecular mechanisms by which dietary nutrients affect prenatal development. Her work focuses on alcohol and how it alters nutrient use to damage the fetus, causing fetal alcohol syndrome. The newly endowed professorship is named in honor of the Dickson family and their business, Harris Teeter Supermarkets. Alan Dickson, a founding member of the UNC Nutrition Research Institute’s advisory board, made the gift in 2010 to establish an endowment to attract or retain a distinguished teacher and scholar to the institute.

## Rachel W. Goode

*Excellence in Research Faculty Award, UNC School of Social Work*

## Martin Kohlmeier

*Faculty of the Year Award, International Academy of Nutrition Educators*

## Katie Meyer

*Teaching Innovation Award, UNC Department of Nutrition, Gillings School of Global Public Health*

## Yuan Li

*Vice-chair, early career members network, Metabolomics Association of North America (MANA)*

## Wimal Pathmasiri

*Associate editor, Nutrigenomics, specialty section of Frontiers in Genetics and Frontiers in Nutrition*

## Blake Rushing

*Guest editor, Journal of Visualized Experiments*

## Saroja Voruganti

*Secretary-treasurer, International Society for Nutrigenetics and Nutrigenomics (ISNN)*



# AWARDED GRANTS

## S. Krupenko Lab

Sergey Krupenko, extended his work on a key folate metabolizing enzyme involved in susceptibility to metabolic diseases and many cancers. He was awarded a new NIH grant on the role of ALDH1L1 in glycine metabolism (with NRI colleagues Susan Sumner and Saroja Voruganti), and his group used cryo-electron microscopy to solve (for the first time) the structure of ALDH1L1, as published in *Communications Biology* in 2022. Krupenko also reported this year that ALDH1L1 gene variants influence glycine metabolism in a cohort of Hispanic children (in collaboration with Voruganti), as well as the sex- and genotype-dependent dietary effects of folate in mice (in collaboration with NRI colleagues Susan Sumner, Blake Rushing, and Natalia Krupenko).

## Hursting Lab

Director Stephen D. Hursting was awarded four new grants to extend his ongoing mechanistic work on obesity and cancer. These include a new R01 grant from the National Cancer Institute to study the cross-talk between adipose-derived signals and the colon in obesity-driven colon cancer (in collaboration with colleagues at Duke University and the University of Utah), as well as grants from the Breast Cancer Research Foundation and World Cancer Research Fund to identify metabolic and immunologic targets for reversing the breast cancer-enhancing effects of obesity. In addition, his group received an NIH supplement grant (with NRI's Ximena Bustamante-Marin) to assess the role of extracellular vesicles in obesity-driven breast cancer. Including ongoing projects, Hursting was awarded \$1.75 million in research grants and authored 20 publications over the last year.



## North Carolina Research Campus team receives major NIH award for precision nutrition research

The National Institutes of Health (NIH) has awarded a \$19.2 million 5-year grant, pending the availability of funds, to a consortium of North Carolina university researchers who will apply cutting-edge analytical techniques to nutrition research. The team will be led by Susan Sumner at The University of North Carolina at Chapel Hill Nutrition Research Institute (UNC NRI), located on the North Carolina Research Campus (NCRC). The Sumner team award will fund the Metabolomics and Clinical Assays Center for the NIH Common Fund's Nutrition for Precision Health, powered by the All of Us Research Program (NPH), to inform more personalized nutrition recommendations.

Overall, NIH has awarded approximately \$170 million dollars over five years, pending availability of funds, to clinical sites and data generation, technology, and analysis centers across the United States. One of the clinical sites will be led by UNC-Chapel Hill's Elizabeth Mayer-Davis, chair of the Department of Nutrition. This site will engage communities surrounding the Chapel Hill and Kannapolis areas to participate in determining optimal nutrition for precision health.

# E

Engagement

FY22

# PROGRAMMING

*After NRI investigators publish their findings (pages 6, 8-9), we translate and disseminate the information to fellow scientists and the public. As the pandemic continued, we learned how to adopt safety precautions into our programming, allowing us to bring people back into physical settings as well as continuing to engage virtually. We appreciate our friends and colleagues who joined us to learn from and engage with our experts.*



## NGx: Short-Course in Nutrigenetics, Nutrigenomics and Precision Nutrition

The Nutrigenetics, Nutrigenomics, and Precision Nutrition (NGx) Short Course is a 4-day workshop for graduate students, health professionals and nutrition scientists from academia and industry to learn the fundamental concepts of this science. The 6th annual workshop was held May 16-19 in Concord, NC. Applying NGx principles, scientists are developing precision nutrition, the concept that, because people are different from one another, nutrition that works well for one person may not be as effective for someone else due, partly, to each of us having unique variations in our genome. The course was delivered by 16 scientists from UNC-Chapel Hill, UNC Charlotte, US Department of Agriculture, Baylor

University, University of Illinois Urbana-Champaign, and INMEGEN in Mexico City. Topics ranged from genetics in nutrition epidemiology to the role of microRNAs in epigenetics and metabolic programming. The final day focused on concerns around childhood obesity and the application of NGx approaches to preventing it. Two hands-on workshops—practice-based or research-based—ran concurrently throughout the course.

This year’s NGx hosted 45 attendees from 12 states and 3 countries and included graduate students, postdoctoral researchers, faculty, clinical practitioners, and biotechnology company researchers.

*“As someone recently entering the nutrition and nutrigenomics sphere, the conference was an invaluable primer to the world of nutrition and genetics and the vast relevance and reach of the field.”*

Carolyn Lis, MPH-RD candidate



## Wyeth Preceptorship

In partnership with Wyeth Nutrition, four NRI faculty experts in mechanisms of nutrient-brain development delivered a series of informational webinars for healthcare providers on the importance of nutrition in prenatal brain development and health. With this increased knowledge, providers are better equipped to help their patients in this area of care.

## Faculty Seminar Series

Each year, NRI faculty invite colleagues from our own and other research universities to present their discoveries to the scientists on the North Carolina Research Campus. In FY22, the faculty heard from ten speakers including two dissertation presentations from our own doctoral students.

## Appetite for Life

Appetite for Life is a series of free educational and interactive events to translate nutrition-related research into clear and helpful information for the public.

This year, experts presented to in-person and virtual audiences on topics ranging from the Association between Obesity and Arthritis to Fresh Strategies for Weight Maintenance.

In the fall of 2021, Director Steve Hursting led our return to in-person programming by hosting a Night at the Ballpark at neighboring Atrium Ballpark, home of Kannapolis's own Cannon Ballers. Hursting talked about the major league goals of the NRI, his vision for the institute's future, and the impact that our groundbreaking research has on North Carolina and beyond.

Kicking off 2022, audiences enjoyed a New Year's Wellness Workshop with advice, demonstrations, and information to help them succeed at keeping common health resolutions, including eating well with consistency and taking care of mind and body through yoga.

In a new collaboration with Livingstone College in Salisbury, NC, we provided food preparation techniques and nutrition notes based on a refreshing spring menu. Livingstone culinary students demonstrated food preparation while the NRI's nutrition specialist provided tips about ingredient nutrient values and what we're learning about nutrition through research at the NRI. Guests were invited to sample the fare.



### Appetite for Life at Livingstone College

Victoria Fabry, *clinical study coordinator*, poses with student chefs, Alex Boyd, Tinsley Battle, Yasmin Savage, and head chef, Elizabeth Marquez.

*"The students did an excellent job of presenting their recipes and techniques. I'm pleased to see the collaboration with Livingstone College."*

Appetite for Life Participant

## Virtual Internship Program

The NRI Virtual Internship Program (VIP) is offered to rising ninth- through twelfth-grade students. This four-week program provides opportunities to learn from NRI principal investigators, participate in group mentoring sessions, and complete an independent nutrition research paper and presentation. This year, 20 high school students from across the country attended six virtual sessions before presenting their research projects. Their papers have been compiled in a VIP Student Journal, available at our website.

## Undergraduate Scholars



### Inside the Voruganti Lab

Left to right: Delaney Duncan, *intern*, Brea Nance, *research technician*, and Brendon Coats, *intern*

The NRI is helping prepare undergraduate scholars to enter the workforce through career opportunities in the scientific field. Our researchers are highly qualified to train, mentor, and provide hands-on experiences to emerging scientists. This year, the NRI offered 12 student interns unique opportunities to strengthen their education with hands-on research experiences.

## STEMersion

Middle school science teachers with Cabarrus County (NC) Schools attended a half-day professional development program to immerse themselves in the Nutrition Research Institute. The CCS-NRI STEMersion event informed teachers about the NRI's purpose and goals and presented ways to consider teaching about nutrition in their classrooms. Teachers learned about precision nutrition and why it is critical to long-term health and about three types of research conducted at the NRI: bench, clinical, and epidemiology. A panel of NRI professionals shared views on careers in science to help prepare teachers to speak with their students about their futures.

# NEWS

1

## THE LIFESPAN IMPACT OF **Prenatal Alcohol Exposure**

2

## **BREAKING THE OBESITY-CANCER LINK**

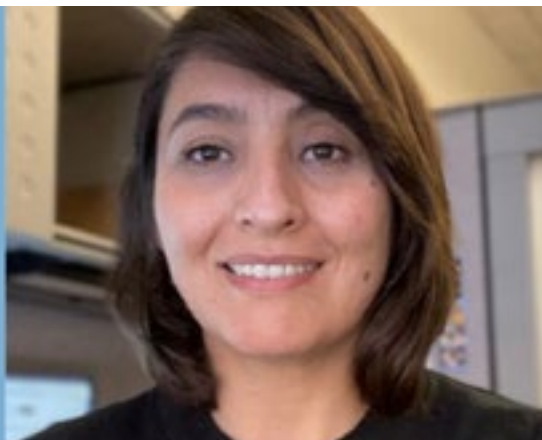
## 3 **PUFA Metabolism Affected by Genetics and Diet**



4

**Dr. Ximena  
Bustamante-Marin**  
Assistant Professor of  
Nutrition

*Welcome to the NRI!*



## NEWS HIGHLIGHTS

Each week we send e-news from the NRI to you. To read the full stories for these highlights, visit [uncnri.org/news](http://uncnri.org/news).

1. *...PAE may increase the risk or severity of metabolic dysfunction ... in late adulthood...*
2. *...As a risk factor for cancer, the importance of obesity has emerged, with at least 15 different cancer types strongly associated with being obese...*
3. *...genetic variation (polymorphisms) can affect PUFA metabolism and cause different outcomes with respect to cardiovascular disease risk...*
4. *...Understanding the effects of obesity on the function of the primary cilium ... could generate opportunities for early detection and clinical interventions during breast cancer development...*

Interested in receiving our emails? Sign up at [uncnri.org/subscribe](http://uncnri.org/subscribe)

# N

News

FY22



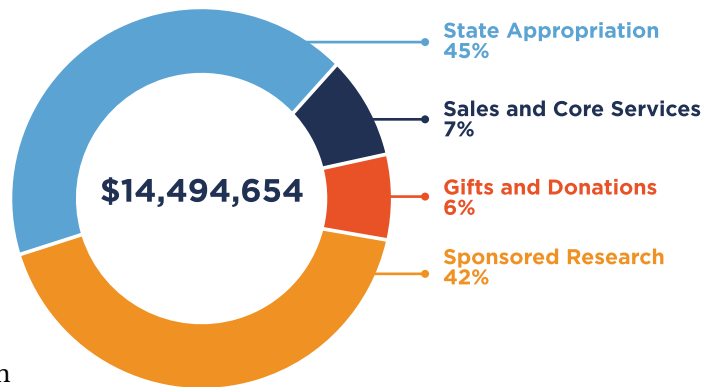
# COMMUNITY

## WITH GRATITUDE

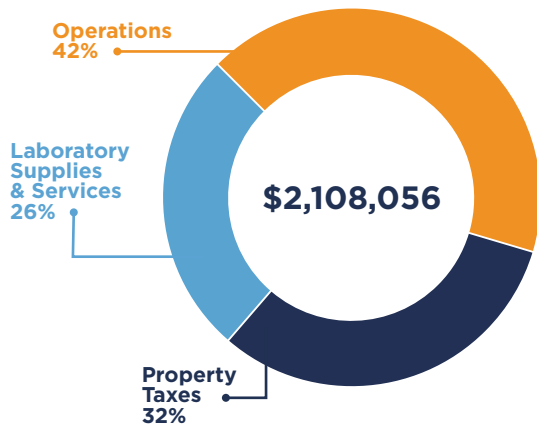
Because you recognize the value of scientific research, we can support our faculty, their staffs, and the administration and operation of our institute. Gifts to the NRI from individuals, foundations, and businesses provide crucial funds that help us recruit the world's best nutrition scientists, forge new paths of inquiry and discovery in precision nutrition, and provide hands-on education and mentoring to students. We are inspired everyday by your commitment to our institute.

*Thank you.*

## FUNDING



## LOCAL EXPENDITURES



## OUR COMMUNITY

As a proud member of the North Carolina Research Campus in Kannapolis, the NRI is pleased that our participation in the local business community contributes to the economic development of our hometown. Along with our fellow institutions and private industry, we have attracted many new residents to Rowan, Cabarrus, and surrounding counties, all of whom shop locally and contribute to the revitalization of our beautiful community.



 **UNC** | NUTRITION RESEARCH  
INSTITUTE

Carolyn Munson, *lab manager* in the Mooney Lab, using a western blot machine to identify specific proteins within a complex sample extracted from a cell

*500 Laureate Way,  
Kannapolis, NC 28081*

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