FY21IMPACT REPORT

UNC INSTITUTE

Directors' conversation Dr. Steve Zeisel and Dr. Steve Hursting

Zeisel: Fiscal Year 2021 was a landmark year in the history of the UNC Nutrition Research Institute: We transitioned directorship while continually adapting to safety requirements to operate our world-class center during a worldwide pandemic.

Hursting: Last year, people everywhere lived and worked in abnormal conditions that gradually became the new normal. I was continually impressed by the perseverance of our outstanding faculty and staff, adapting seamlessly to whatever new policy or procedure we had to enact.

Zeisel: Indeed, the culminating year of my tenure as founding director of the NRI looked nothing like I could have ever imagined, yet outcomes from this exceptional team were even better than in previous years. Those stories of innovation, discovery, and impact are told in the following pages.

Hursting: I'm honored and excited to have assumed the director's role from you and look forward to continuing the legacy of scientific excellence in precision nutrition research that you established here at the NRI.

Zeisel: I anticipate a steady increase in scientific knowledge from the NRI that will point to long-awaited benefits for improved health. An important thing to note – and I know you join me – is the role of our friends and supporters in our success. Their philanthropy and advocacy are essential to this institute's well-being.

Hursting: This report is for them. I hope they will enjoy learning how their contributions advance our work, and that they'll be inspired to continue their support. To the reader of this report, I extend an invitation to contact me anytime. I'd like to get to know you.

Zeisel and Hursting: We hope you are all staying well and safe and we sincerely thank you for your generosity.



Steven H. Zeisel, MD, PhD Founding Institute Director, retired 5/31/2021

> Stephen D. Hursting, PhD, MPH Institute Director, 6/1/2021



Stephen & Shusting

COVID-19 Response at the NRI

COVID-19 continues to be an unprecedented situation requiring continual adjustment to workplace normal practices. Throughout this pandemic year, NRI leadership and NC Research Campus safety officers incorporated guidance and prevention strategies from the Centers for Disease Control, North Carolina governor's executive orders, and the UNC System Office to establish operational protocols and create a safe work environment.

We implemented aggressive measures to protect individual and collective health by instituting the 3Ws of COVID-19 (wear, wait, wash), posting one-way directional arrows, closing our building to visitors, and establishing a protocol to address individual case reports. Non-essential employees set flexible, remote work arrangements to minimize the number of people in the building simultaneously. We adapt our procedures for maintaining safety as new CDC guidelines and executive orders from the governor are issued.

Even while COVID-19 caused major shifts in operations in Kannapolis and on the main campus in Chapel Hill, UNC-CH researchers stayed active conducting science that could help in prevention or cure of the disease. In a paper published in BMJ Nutrition, Prevention & Health on the importance of a healthy immune system when confronting COVID-19, NRI faculty member Martin Kohlmeier, MD, PhD, and colleagues concluded with "lifestyle strategies for avoiding vitamin D deficiency and ensuring a healthy balanced diet at any time, including during the current pandemic." They summarize, in part:

- Vitamin D is essential for good health.
- Many people, particularly those living in northern latitudes ..., have poor vitamin D status, especially in winter or if confined indoors.
- Low vitamin D status may be exacerbated during this COVID-19 crisis ..., and anyone who is self-isolating with limited access to sunlight is advised to take a vitamin D supplement according to their government's recommendations for the general population...
- There is no strong scientific evidence to show that very high intakes (i.e., mega supplements) of vitamin D will be beneficial in preventing or treating COVID-19.
- There are evidenced health risks with excessive vitamin D intakes especially for those with other health issues such as a reduced kidney function.

Lanham-New SA, Webb AR, Cashman KD, et al. Vitamin D and SARS-CoV-2 virus/COVID-19 disease. BMJ Nutrition, Prevention & Health 2020;0. doi:10.1136/bmjnph-2020-000089

FACE MASK REQUIRED



While at the facility, all individuals must wear a University-approved face mask when in the presence of others and in a public setting (e.g. labs and common areas and workspaces) Each person working on campus will be provided one dispersible face mask by the associated historicity for use every the situs ferry to do go d work.

Faculty and Research Staff

NRI principal investigators hold faculty appointments in the departments of Nutrition and Psychology at the University of North Carolina at Chapel Hill. They apply their specialized tools and talents in precision nutrition research to address some of the most urgent nutrition-related health concerns facing our society today, including brain health, cancer, and cardiometabolic diseases.

- Stephen D. Hursting, PhD, MPH, Director Professor of Nutrition
- Susan Smith, PhD, Deputy Director Professor of Nutrition
- Carol L. Cheatham, PhD Associate Professor of Psychology and Neuroscience
- John E. French, PhD 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

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

Delisha Stewart, PhD Assistant Professor of Nutrition

Susan Sumner, PhD Professor of Nutrition

Saroja Voruganti, PhD Associate Professor of Nutrition

Steven H. Zeisel, MD, PhD, Founding Director Professor of Nutrition and Pediatrics

We are pleased to recognize the following who were promoted to the rank of assistant professor in the last fiscal year.



Yuan Li, PhD, Assistant Professor of Nutrition

Dr. Li's research interests focus on using nutritional approaches to prevent and manage metabolic syndromes, including obesity and diabetes and their complications.

Blake Rushing, PhD, Assistant Professor of Nutrition Dr. Rushing's research interests lie in using "-omics" techniques to study how nutrients and other compounds from the diet can be used to enhance the efficacy of drugs or mitigate their adverse effects.





Isis Trujillo-Gonzalez, PhD, Assistant Professor of Nutrition Dr. Trujillo-Gonzalez's research is focused on mechanisms linking choline status and neurodevelopment in health and disease states.



Principle Investigators Postdoctoral Research Associates Laboratory Staff

Administrative Staff and Board of Advisors

The NRI's 18 administrative staff members – from operations and personnel to finance and fundraising – support the institute and its scientific staff throughout the year. Also supporting our 18 faculty members in FY21 were 32 research staff, 11 postdoctoral fellows, 10 students, and 9 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.



UNC NRI Board of Advisors

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 NRI for continued growth and achievement. They are individuals who are personally committed to the NRI mission.

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Tom E. Smith (Chair) Salisbury, NC

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Davidson, NC

Building Staff

Our Innovation Begins with Yours

Because you recognize the value of scientific research, we can support our faculty, their staffs, and the administration and operation of our institute. Monetary and in-kind gifts to the NRI from individuals, foundations, and businesses provide crucial funds that help investigators explore new ideas, make it possible to recruit the world's best nutrition scientists, and support hands-on education and mentoring of students. Your innovation makes all the difference to the success of ours. Thank you.

Individual Gifts*

\$100,000+

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\$20,000 - \$99,999

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+ - deceased

We welcome and thank our new friends in FY21

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* - All years cumulative support

Corporate and Foundation Gifts**

Balchem CRDF Global North Carolina Biotechnology Center Abbott

State and Federal Funding

Funding for research from external sources primarily federal grants – accounts for about half of the NRI's annual revenue. An appropriation from the North Carolina legislature provides operating funds. We offer research services for a fee, accounting for 6% of the annual budget, and individual, foundation, and corporate gifts account for 4%. An additional \$5.26M is provided by the state to cover building lease and obligations.

Standard Process William Carey University Farmers & Merchants Bank **Castle & Cooke**



**- FY21 Support

Findings

Metabolic Effects of Vitamin D Illustrate Precision Nutrition

The fundamental principle of precision nutrition is that different people, by virtue of their genetic backgrounds and life exposures, may have different nutritional needs. A compelling example of this principle was demonstrated by Dr. Susan Sumner and colleagues who looked at whether mice with different genetic backgrounds had different metabolic responses to dietary vitamin D deficiency.

While the metabolic impacts of vitamin D deficiency have been studied extensively, most mouse studies only looked at these impacts in mice that were genetically identical. In contrast, this study looked at the response to vitamin D deficiency in eight genetically distinct strains of mice. This is important because an individual's genetics can affect how s/he responds to a dietary challenge. One of the difficulties in translating mouse studies to human research is that we (twins excepted) are not genetically identical to each other. What works in a particular mouse strain may not work in a different strain; likewise, what works in one person might not work in another.

In this study, scientists fed vitamin D-sufficient or vitamin D-deficient diets to eight genetically different mouse strains and measured their circulating vitamin D levels and liver metabolites after 12 weeks. The scientists found multiple metabolic differences among the strains. While all strains showed an effect of vitamin D deficiency, the specific effects differed among strains; those with lower circulating levels of vitamin D likely being most susceptible to dietary deficiency. This research clearly shows that the same dietary challenge can elicit different effects in individuals with different genetic backgrounds. This study did not attempt to identify the genetic basis of the observed differences. This is a particularly important question to address but, given the complexity of the mouse (and human) genome, one that will require substantial effort to answer.

Xue J, Hutchins EK, Elnagheeb M, Li Y, Valdar W, McRitchie S, Sumner S, 1deraabdullah FY (2020). Maternal Liver Metabolic Response to Chronic Vitamin D Deficiency Is Determined by Mouse Strain Genetic Background. Curr Dev Nutr. 4(8):nzaa106.

Factors to Consider in Treating Obesity

While obesity is often regarded as a single disease state, in fact its causes are highly varied and include sex, race, age of onset, and genetic background. This is a critical concept because it suggests that prevention and treatment strategies also need to be tailored. As part of a UNC-Chapel Hill Creativity Hub developed specifically to address variety of factors in obesity, Drs. John French, Saroja Voruganti, and Delisha Stewart coauthored a review discussing current knowledge gaps and describing potential approaches involving animal and human models that can address these gaps.

A recent publication from Dr. Susan Smith and her collaborators showed that different strains and sexes of obese mice responded differently to the same treatment, in this case the flavonoid quercetin (a naturally occurring polyphenol). While the anti-obesity properties of flavonoids are well established in animal models, results in human clinical studies have been mixed. This study shows that mouse genetic background mediates effectiveness of an anti-obesity therapeutic and suggests that it will be important to account for differences in genetics, sex, and other factors when studying, developing, and translating obesity treatments.

Gordon-Larsen, P, French, JE, Moustaid-Moussa, N, Voruganti, VS, Mayer-Davis, EJ, Bizon, CA, Cheng, Z, Stewart, DA, Easterbrook, JW and Shaikh, SR (2021). *Synergizing Mouse and Human Studies to Understand the Heterogeneity of Obesity*. Adv Nutr, nmab040.

Griffin, LE, Essenmacher, L, Racine, KC, Iglesias-Carres, L, Tessem, JS, Smith, SM and Neilson, AP (2021). Diet-induced obesity in genetically diverse collaborative cross mouse founder strains reveals diverse phenotype response and amelioration by quercetin treatment in 129S1/SvImJ, PWK/EiJ, CAST/PhJ, and WSB/EiJ mice. J Nutr Biochem 87:108521.

Treating FASD with Nutrients

While the best defense against fetal alcohol spectrum disorders (FASD) remains avoiding alcohol consumption during pregnancy, research has shown that choline supplementation can reduce at least some of the cognitive and behavioral problems associated with FASD in human and animal models.

Dr. Sandra Mooney and her colleagues investigated whether a combination of choline and working memory training would improve cognitive flexibility in a rat model of prenatal alcohol exposure (their mothers were given alcohol). Working memory underlies learning and problem-solving and is often compromised in children with FASD. In this study, rats received prenatal alcohol exposure and either choline with training or placebo without training during the rat-equivalence of childhood and adolescence. The same rats, in adulthood, were then tested for learning and memory abilities.

In rats that had been exposed to alcohol prenatally, the choline-and-training treatment during youth improved brain function in adulthood. Tests also showed that prenatal alcohol exposure altered functional connectivity between different regions of the brain. This research suggests that nutritional and cognitive interventions during childhood/adolescence may have long-term benefits for people with FASD.

Waddell J, Hill E, Tang S, Jiang L, Xu S, Mooney SM (2020). Choline Plus Working Memory Training Improves Prenatal Alcohol-Induced Deficits in Cognitive Flexibility and Functional Connectivity in Adulthood in Rats. Nutrients, 12(11):3513. Full article link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7696837/

Folate and the Development of Some Cancers

Triple-negative breast cancer (TNBC) is an aggressive disease with a frequently poor prognosis. It accounts for up to 15 percent of all breast cancers and is most common in women of color who are younger than 40. At present, there are limited treatment options.

NRI director Dr. Stephen Hursting, in conjunction with Drs. Susan Sumner and Sergey Krupenko, have published findings showing that, in a mouse model, restricting folate in the diet also restricts tumor growth. Although there are no targeted therapies for TNBC at present, this study connects folate metabolism pathways to the development of TNBC and suggests that folate deprivation or antifolate therapy may represent a novel precision-medicine strategy for TNBC.

Coleman, MF, O'Flanagan, CH, Pfeil, AJ, Chen, X, Pearce, JB, Sumner, S, Krupenko, SA and Hursting, SD (2021). *Metabolic Response of Triple-Negative Breast Cancer to Folate Restriction*. Nutrients 13:1637.



Selected Publications

Canipe, LG, 3rd, Sioda, M and **Cheatham, CL** (2021). "Diversity of the gut-microbiome related to cognitive behavioral outcomes in healthy older adults." *Arch Gerontol Geriatr* **96**:104464.

May, PA, Marais, AS, De Vries, MM, Buckley, D, Kalberg, WO, Hasken, JM, Stegall, JM, Hedrick, DM, Robinson, LK, Manning, MA, Tabachnick, BG, Seedat, S, Parry, CDH and Hoyme, HE (2021). "The prevalence, child characteristics, and maternal risk factors for the continuum of fetal alcohol spectrum disorders: A sixth population-based study in the same South African community." *Drug Alcohol Depend* **218**:108408.

Gordon-Larsen, P, **French, JE**, Moustaid-Moussa, N, **Voruganti, VS**, Mayer-Davis, EJ, Bizon, CA, Cheng, Z, **Stewart, DA**, Easterbrook, JW and Shaikh, SR (2021). "Synergizing Mouse and Human Studies to Understand the Heterogeneity of Obesity." *Adv Nutr*, nmab040.

Krupenko, NI, Sharma, J, Pediaditakis, P, Helke, KL, Hall, MS, Du, X, **Sumner, S** and **Krupenko, SA** (2020). "Aldh1l2 knockout mouse metabolomics links the loss of the mitochondrial folate enzyme to deregulation of a lipid metabolism observed in rare human disorder." *Hum Genomics* **14**:41.

Coleman, MF, O'Flanagan, CH, Pfeil, AJ, Chen, X, Pearce, JB, **Sumner, S**, **Krupenko, SA** and **Hursting, SD** (2021). "Metabolic Response of Triple-Negative Breast Cancer to Folate Restriction." *Nutrients* **13**:1637.

Harville, EW, Li, YY, Pan, K, McRitchie, S, **Pathmasiri, W** and **Sumner, S** (2021). "Untargeted analysis of first trimester serum to reveal biomarkers of pregnancy complications: a case-control discovery phase study." *Sci Rep* 11:3468.

McAuliffe, S, Ray, S, Fallon, E, Bradfield, J, Eden, T and **Kohlmeier, M** (2020). "Dietary micronutrients in the wake of COVID-19: an appraisal of evidence with a focus on high-risk groups and preventative healthcare." *BMJ Nutr Prev Health* **3**:93-99.

Bustamante-Marin, XM, Merlino, JL, Devericks, E, Carson, MS, **Hursting, SD** and **Stewart, DA** (2021). "Mechanistic Targets and Nutritionally Relevant Intervention Strategies to Break Obesity-Breast Cancer Links." *Front Endocrinol (Lausanne)* **12**:632284.

Dibaba, DT, Johnson, KC, Kucharska-Newton, AM, **Meyer, K**, **Zeisel, SH** and Bidulescu, A (2020). "The Association of Dietary Choline and Betaine with the Risk of Type 2 Diabetes: The Atherosclerosis Risk in Communities (ARIC) Study." *Diabetes Care* **43**:2840-2846.

Virdee, MS, Saini, N, Kay, CD, Neilson, AP, Kwan, STC, Helfrich, KK, **Mooney, SM** and **Smith, SM** (2021). "An enriched biosignature of gut microbiota-dependent metabolites characterizes maternal plasma in a mouse model of fetal alcohol spectrum disorder." *Sci Rep* 11:248.

Rushing, BR, Rohlik, DL, Roy, S, Skaff, DA and Garcia, BL (2020). "Targeting the Initiator Protease of the Classical Pathway of Complement Using Fragment-Based Drug Discovery." *Molecules* **25**:4016.

Clinical Studies

Engaging the Community in Research

NRI nutrition research starts in the laboratory and then, sometimes, moves into clinical studies. These studies rely on people who volunteer to be a part of scientific discovery. When you participate in a clinical study you provide opportunity to researchers and hope to so many people worldwide. At the NRI, research focuses on the intersection of nutrition and genetics; therefore, each clinical study has different requirements.

This year the following studies offered opportunities for community members to be involved in our mission.



Children's Health Study

Dr. Saroja Voruganti is working to identify genes and lifestyle factors that affect children's health status and overall well-being.



IUNC Choline Status Study

Choline Status Study

Dr. Steven Zeisel's study is determining which biomarkers in the blood most accurately reflect a person's choline status.



Fish Oil Supplement Study

Dr. Martin Kohlmeier is testing for the effects of a fish oil supplement in human heath.



Fructose-Liver Fat Study

Dr. Saroja Voruganti is identifying genetic and dietary factors that affect the risk for nonalcoholic fatty liver disease.



QUNC MINISTER Infant Cognition & Nutrition Study

Infant Cognition & Nutrition Study

Dr. Carol L. Cheatham is testing whether eating an egg for five out of seven days each week while breastfeeding will improve infant cognitive development.

Engagement

After NRI investigators publish their findings (see pages 6-8), we translate and disseminate the information to fellow scientists and the public. Through this pandemic year, NRI faculty and staff learned on-the-go how to plan and produce highly successful virtual events. We are grateful to have seen so many of you through our computer cameras and thank you for continuing to support the NRI by giving us the opportunity to share our information with you.

Education

NGx Virtual Short Course

After a postponement in 2020, the NRI presented its fifth (in six years) Nutrigenetics, Nutrigenomics and Precision Nutrition (NGx) Workshop on a virtual platform in two half-day sessions per week across three weeks in May and June to accommodate work and study schedules. We capped attendance at 80 people to provide an optimal experience in the various interactive sessions, and provided registration scholarships to eight graduate students.

Designed for graduate students, post docs, health professionals, and nutrition scientists from academia, agencies, and industry, this course delivered fundamental NGx concepts and addressed barriers that impede translation of research results from laboratories to people by bringing together researchers and practitioners in NGx concepts ranging from cell biology to dietetics. Participants submitted their saliva samples in advance to be genotyped for more than 300,000 SNPs, so they could use their own results during the hands-on workshops.



The workshop was sponsored by the National Institutes of Health/National Institute of Diabetes and Digestive and Kidney Diseases, CRDF Global Fogarty International Center, North Carolina Biotechnology Center, Standard Process, and Castle and Cooke, LLC.

Precision Nutrition and Brain Health Virtual Symposium

At the NRI, we strive to understand how the process of brain development and function can be optimized for an individual based on his or her genetic and nutritional backgrounds. To further explore and expand research focused on this area, the NRI brought together scientists, physicians, students, and funding agency representatives, including from the National Institutes of Health, for a two-day Precision Nutrition and Brain Health virtual symposium in April 2021.



The symposium focused on: 1) understanding how the interaction between genes and nutrition affects brain development and health; 2) incorporating precision nutrition into research on brain development; and 3) advancing the field of brain development and function with precision nutrition. Keynote speakers led sessions in each of these areas as they relate to nutrition: brain development, the aging brain, nutrigenetics, and gut-brain axis. Networking and poster sessions brought experts and trainees together for organic discussions.

To ensure opportunity to attend this symposium, the NRI funded tuition scholarships for four under-represented students. Abbott and the Cheatham Nutrition and Cognition Lab

sponsored the event with the Cheatham Lab funding an additional 12 tuition scholarships.

Faculty Seminar Series

Our principal investigators, the NRI faculty, seek to stay current about developments in science related to their work. Each year they invite faculty from other research universities and hospitals to present their discoveries to the science teams at the NRI and across the NC Research Campus. In FY21, the faculty chose to look inward, examining through their presentations, the work of ten of their own colleagues. Guest seminar presenters were from from Wake Forest University, NC Central University, and Tel Aviv University, Israel.

An unexpected and welcome outcome of this pandemic was the explosion in audience sizes for these seminars. No longer needing to be present to attend, 740 people around the world were able to view one or more of the 13 presentations available via Zoom.

Virtual Internship Program (VIP)

Although we had to cancel all in-person public activities in FY21, we were determined to provide a summer learning opportunity for high school students and, so, created the NRI Virtual Internship Program (VIP).

Designed for rising high school freshman through seniors, the VIP provided six weekly lectures and group mentoring sessions with NRI faculty, postdocs, students, and staff via Zoom to the program's 19 students across the U.S. Over the course of these six weeks, each student completed an independent research paper on the nutrient of their choice. At the end of their internship, students presented their work to their peers, instructors, and mentors and submitted their research papers, which we compiled into a VIP Student Journal.



Undergraduate Interns

The North Carolina Research Campus is attracting life sciences companies to the region, whose future growth and development depends on a local workforce with scientific training. The NRI helps college students develop career skills in biotechnology and related scientific fields and prepares them to enter the workforce. NRI researchers are highly qualified to train, mentor, and provide hands-on experiences to a younger generation of emerging scientists. In FY21, the NRI provided nine students from nearby community and four-year colleges with rare opportunities to strengthen their educations and experiences through hands-on research during semester- and year-long internships.

Community

Appetite for Life

Appetite for Life is a series of free talks and events to keep the public abreast of nutrition-related research as it unfolds. Expert speakers presented to our virtual audiences (640 registrants) on a wide range of topics.

In the fall of 2020, presenters focused on news-related concerns with these talks: Nutrition Risks for COVID-19, Immunity Boosting Recipes, and The Gillings School of Global Public Health's COVID-19 Research Response. By January, with nearly a year of pandemic behind us, we focused on broader nutrition and health topics including a New Year's wellness workshop, a farm-to-fork cooking demonstration, and talks on Folate in Human Health and Diseases, Mycotoxins: Invisible Threats to Food Safety and Public Health, and Eating Healthy: What Do We Really Know About Our Nutrients?

The Importance of Community

It is important to us that our location in Kannapolis means that many people in this town, which experienced the single greatest one-day layoff of workers in state history when the Cannon Mills Company closed, now have the opportunity to find local employment again. Our presence on the research campus also means that, along with our sister 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.

As a proud member of the North Carolina Research Campus in Kannapolis, the NRI is pleased that our participation as a member of the local business community contributes to the economic development of our hometown.

FY21 NRI Local Expenditures



& services

2.0

Faculty Honors

Carol Cheatham, PhD

NRI FY21 Q1 Collaboration Award

Martin Kohlmeier, MD, PhD

Inducted as a Class of 2021 Fellow of the American Society for Nutrition

Natalia Krupenko, PhD

- Organizer, FASEB SRC on Folate and One-Carbon Metabolism; Session chair, "Folate, OCM and Cancer," August 2020
- Member, NRI Director Search Committee (Office of Vice-Chancellor for Research)

Sergey Krupenko, PhD

- Chair, Institutional Animal Care and Use Committee (IACUC), David H. Murdock Research Institute
- Editorial board member, Journal of Biological Chemistry

Yuan Li, PhD

- Vice Chair, Early Career Member Network, Metabolomics Association of North America (MANA)
- Member, NIEHS Human Health Exposure Analysis Resource (HHEAR) Program Quality Assurance Quality Control Working Group

Philip May, PhD

- Reappointed Adjunct Professor of Pediatrics, Sanford School of Medicine, University of South Dakota
- Member, NIAAA Diagnostic Consensus Meeting Group (2020-present)

Sandra Mooney, PhD

- President, Fetal Alcohol Spectrum Disorders Study Group, National Institute on Alcohol Abuse and Alcoholism
- Chair or co-chair, 3 NIH Study Section Special Emphasis Panels

Wimal Pathmasiri, PhD

- Member, Leadership Team, Metabolomics Association of North America Microbiome Interest Group (MANA-MIG)
- Member, Metabolomics Association of North America NMR Interest Group

Blake Rushing, PhD

 Member, NIEHS Human Health Exposure Analysis Resource (HHEAR) Program Quality Assurance Quality Control Working Group

Susan Smith, PhD

- Co-Director, Pilot Project Research Program, UNC Nutrition Obesity Research Center (NORC)
- Permanent Member 2016 2021, National Institute on Alcohol Abuse and Alcoholism External Advisory Board

Delisha Stewart, PhD

- Inductee, Diversity Scholars Program, Nutrition Obesity Research Center at Harvard (NORCH)
- Member, UNC-CH Department of Nutrition Diversity, Equity and Inclusion Committee

Susan Sumner, PhD

- Appointed, Joint Faculty in Department of Pharmacology, UNC School of Medicine
- Chair, 2021 and 2023 Gordon Research Conference on Metabolomics

Saroja Voruganti, PhD

- Member, guest editorial team, Journal of Nutritional Biochemistry special issue on Precision Nutrition
- Member, executive steering committee, countywide Children Wellness Initiative Network (WIN) Cabarrus Co., NC

Steven Zeisel, MD, PhD

• American Society for Nutrition 2021 Award, Senior Investigator: Gilbert A. Leveille Lectureship and Award

Faculty Presentations*

Carol L. Cheatham, PhD

Wild Blueberries and Cognitive Decline: How Precise Were We? UNC NRI Symposium on Precision Nutrition and Brain Health. April 2021.

Nutrigenetics and Cognitive Development: Precision Nutrition for Brain Development and Function Starts with Mom. American Society for Nutrition annual conference. June 2021.

Natalia Krupenko, PhD

Dietary modulation of the pathways driving carcinogenesis in GNMT KO mice. FASEB Virtual Science Research Conference: Folic Acid, Vitamin B12 And One-Carbon Metabolism. August 2020.

Nutrient and Genetic Regulation of Methylation Potential. UNC NRI Nutrigenetics, Nutrigenomics and Precision Nutrition Virtual Short Course. Spring 2021.

Sergey Krupenko, PhD

Metabolic sensors of dietary folate in the regulation of malignant tumors and metastasis. FASEB Virtual Science Research Conference: Folic Acid, Vitamin B12 and One-Carbon Metabolism. August 2020.

Yuan Li, PhD

WomiX Images of Success: Women in Metabolomics Cores, Metabolomics Association of North America. April 2021.

Applications of Untargeted Metabolomics in Developing Stool Reference Material and Analysis of Seminal plasma. NIEHS HHEAR Program Annual Meeting. June 2021.

Philip A. May, PhD

Prevalence and Characteristics of Fetal Alcohol Spectrum Disorders in a Southeastern County. Northwest Area Health Education Center (AHEC), Wake Forest School of Medicine. August 2020.

Breastfeeding, Alcohol, and Fetal Alcohol Spectrum Disorders. Northwest AHEC, Wake Forest School of Medicine. March 2021.

Sandra Mooney, PhD

Choline supplementation alters the transcriptome of E17.5 alcohol-exposed fetal mouse brain to reflect improved neuron generation and maturation. Research Society on Alcoholism. June 2021.

An enriched biosignature of gut microbiota-dependent metabolites characterizes maternal plasma in a mouse model of Fetal Alcohol Spectrum Disorders. Research Society on Alcoholism. June 2021.

Blake Rushing, PhD

Applications of Untargeted Metabolomics in Developing Stool Reference Material and Analysis of Seminal plasma. NIEHS HHEAR Program Annual Meeting. June 2021.

Untargeted Fecal Metabolomics to Investigate the Role of the Microbiome and Nutrients in Osteoarthritis. American Society for Nutrition, Nutrition Live Online 2021. June 2021.

Susan M Smith, PhD

Alcohol as an environmental stressor that increases maternal-fetal nutrient needs: choline & iron in the developing brain. UNC NRI Symposium on Precision Nutrition & Brain Health. April 2021.

Applying precision nutrition to identify choline polymorphisms that affect cognition in children diagnosed with Fetal Alcohol Spectrum Disorders. UNC NRI Nutrigenetics, Nutrigenomics and Precision Nutrition Virtual Short Course. May 2021.

Delisha A. Stewart, PhD

Diversifying the Gillings Research Workforce: NIH Diversity Supplement Workshop. University of North Carolina at Chapel Hill. March 2021.

Identification of genetic and metabolic impairments to improve chemotherapeutic efficacy. American Association for Cancer Research Annual Meeting, Virtual II Conference. May 2021.

Susan Sumner, PhD

Metabolomics Reveals Biomarkers of Opium Use Disorder and Informs Nutritional Intervention Strategies. Global Summit on Regulatory Science 2020 (GSRS20). Sept. 2020.

Why Metabolomics Matters in Nutritional Pharma/Tox. UNC-Chapel Hill Department of Pharmacology Seminar Series. February 2021.

Isis Trujillo-Gomzalez, PhD

Choline and Brain Development. FASEB Virtual Science Research Conference: Folic Acid, Vitamin B12 and One-Carbon Metabolism. August 17-19, 2020.

Fetal Origins of Late Life Disease and Function. NIH, Research Centers Collaborative Network: Lifecourse Perspectives on Aging. November 3-4, 2020.

Saroja Voruganti, PhD

Purine metabolism in complex diseases: Role of gene-nutrient interactions. Nutrition Seminar Series of the University of Nevada, Reno. February 26, 2021.

Nutrient-gene interactions and disease risk in ethnically diverse populations. 9th Annual Catalyst Symposium, NC Research Campus Catalyst Group. March 25-26, 2021.

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