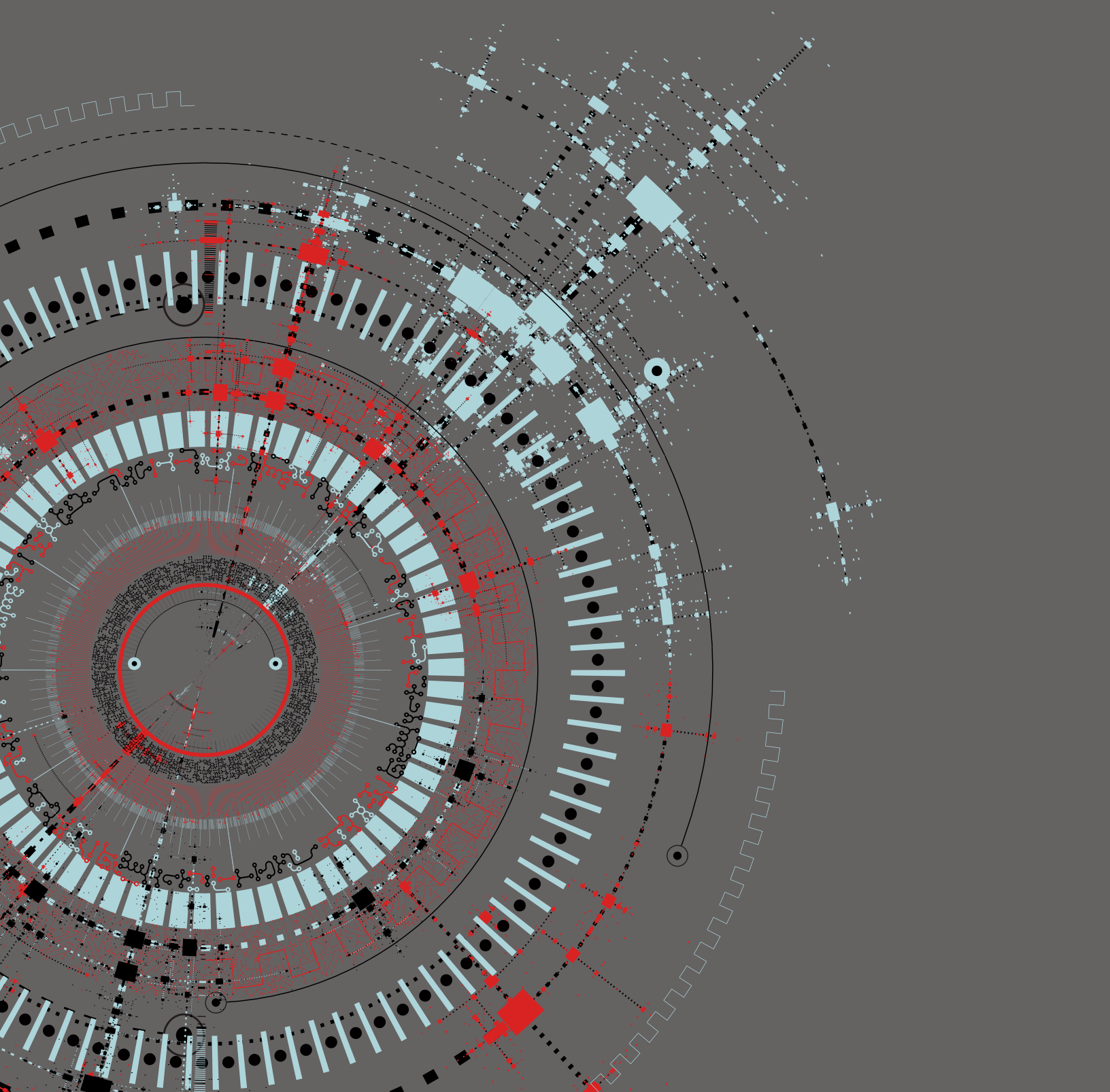


FY20 IMPACT REPORT





Steven H. Zeisel, MD, PhD

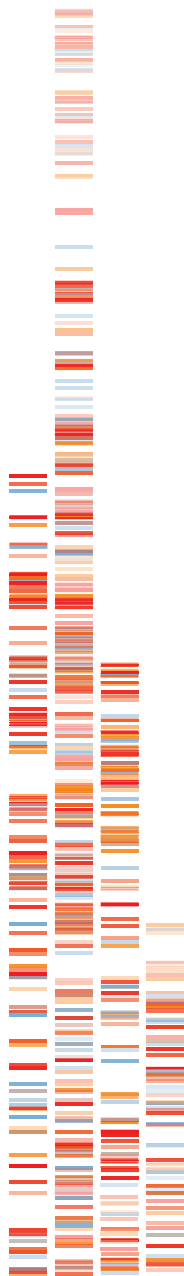
Institute Director
Professor of Nutrition and Pediatrics
Nutrition Research Institute
University of North Carolina at Chapel Hill

I always look forward to this opportunity to share with you our accomplishments of the year, achieved in part through your generosity. This year, as I bring you news of advancements in our laboratories and studies, of exciting faculty findings published in esteemed journals, and of the progress in our local community, which we are proud to support, we are in a world vastly different than any of us ever imagined.

The Covid-19 pandemic has placed each one of us in unfamiliar circumstances, separating us from our friends, families, colleagues, and routines. At the NRI, we have had to make swift and frequent changes to our operations in order to help stop the spread of the disease. While many NRI staff have adjusted to working from home effectively, others have adapted schedules and in-lab procedures to ensure the safety of their coworkers and themselves. And yet, despite the many disruptions, I am pleased to tell you that the NRI had a remarkably strong year, which is shown on the following pages.

As we continue our research during this most extraordinary time, we are actively seeking knowledge about the roles of metabolism, gut microbiota, and environment in determining how well an individual responds to nutrients. This mission is more important than ever as we see how significant it is to resisting or surviving disease that a person have general good health – the kind that comes from being well nourished. We will persevere in this work and it will be, in many ways, thanks to your philanthropy.

I hope you find this report informative and useful. We appreciate your support.



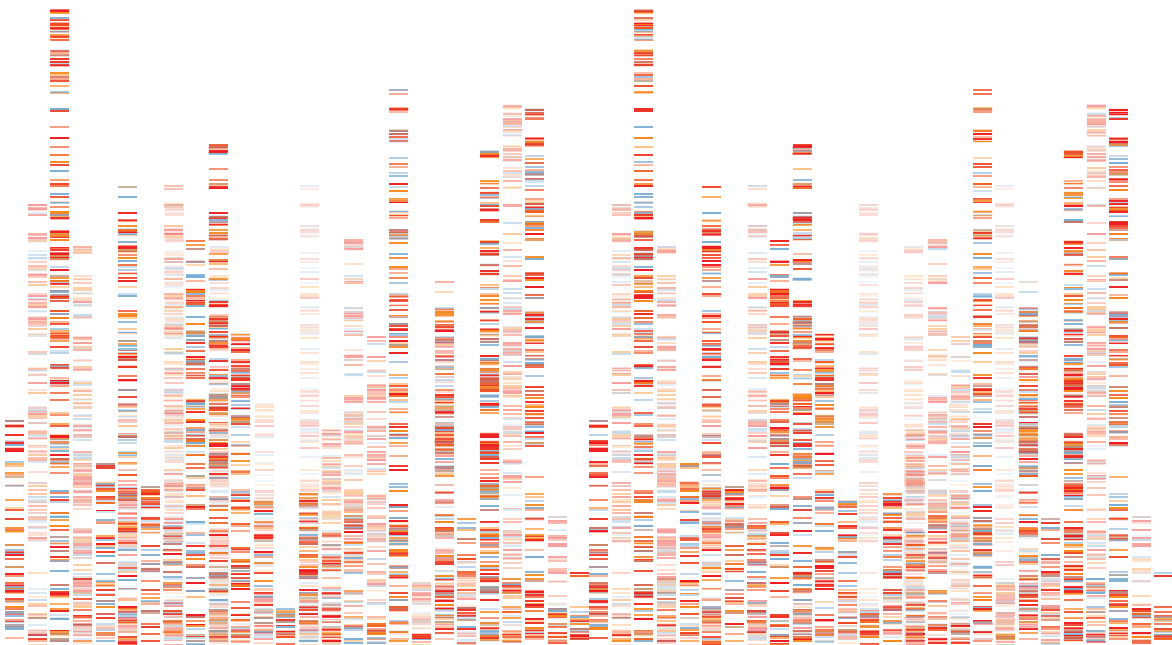
DEFINING PRECISION NUTRITION

The National Institutes of Health (NIH) is the major funding source for biomedical research in the U.S., and its funding priorities reflect what it perceives to be health issues of major concern. In its recently released 2020-2030 Strategic Plan for NIH Nutrition Research, NIH emphasizes Precision Nutrition as “critical for developing more targeted and effective dietary interventions to improve and maintain health in an increasingly diverse U.S. population.” This growing interest on the part of NIH in funding Precision Nutrition further validates the mission of the NRI and suggests that over the coming years, there will be increased availability of research funds for which the NRI is ideally placed to compete.

As a renowned global leader in Precision Nutrition, NRI Director Steven Zeisel, MD, PhD, recently

reviewed the state of the field, including our current understanding of its principles and how this understanding can be applied to improve health (Zeisel, 2020). In this review, Dr. Zeisel discusses reasons why people have differing nutritional needs, including genetic and epigenetic mechanisms, the microbiome, and environmental exposures. He also discusses some of the challenges and opportunities presented by widespread adoption and implementation of Precision Nutrition.

- NIH Nutrition Task Force, 2020-2030 Strategic Plan for NIH Nutrition Research, available at <https://www.niddk.nih.gov/about-niddk/strategic-plans-reports>.
- Zeisel, SH (2020). “Precision (Personalized) Nutrition: Understanding Metabolic Heterogeneity.” *Annu Rev Food Sci Technol* 11: 71-92.



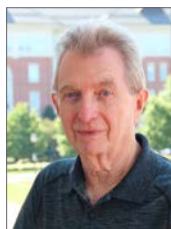
FACULTY

NRI principal investigators hold faculty appointments in the departments of Nutrition and Psychology at UNC-Chapel Hill. Their research includes studies on the role of nutrients in

preventing disease, diet-related health behaviors and risk factors for disease, the effects of the environment and genes on disease outcomes, and the impact of gene-nutrient interactions.



Carol L. Cheatham,
PhD



John E. French, PhD



Stephen Hursting,
PhD, MPH



Martin Kohlmeier,
MD, PhD



Natalia Krupenko,
PhD*



Sergey Krupenko,
PhD



Philip May, PhD



Katie Meyer, ScD



Sandra Mooney, PhD



Wimal Pathmasiri,
PhD



Susan Smith, PhD,
Deputy Director



Delisha Stewart,
PhD



Susan Sumner,
PhD



Saroja Voruganti,
PhD*



Steven Zeisel, MD,
PhD, Director

**This year we are pleased to recognize Drs. Natalia Krupenko and Saroja Voruganti for their promotions to Associate Professor of Nutrition.*

Faculty in the News

Steven H. Zeisel, MD, PhD in “Choline: the forgotten vital nutrient we’re not getting enough of” by Claire Wilson for NewScientist.com (October 23, 2019)

Martin Kohlmeier, MD, PhD in “If food is medicine, why isn’t it taught at medical schools?” by Jessica Fu for TheCounter.org (October 14, 2019)

Steven H. Zeisel, MD, PhD in “Choline must be integrated into the prenatal supplement regimen, says expert review,” by Stephen Daniels for NUTRAingredients-usa.com (September 11, 2019)

Stephen Hursting, PhD, MPH in “One Size Won’t Fit All” by Alyssa LaFaro for Endeavors.UNC.com (August 13, 2019)

HONORS

Stephen Hursting, PhD, MPH

Funding from the Breast Cancer Research Foundation renewed for 16th consecutive year in recognition of and to continue work in understanding the links between obesity and cancer and trying to find a solution for the increased risk obesity can cause.

Martin Kohlmeier, MD, PhD

Excellence in Nutrition Education Award from the American Society for Nutrition and ASN Foundation, supported by the Nestle Nutrition Institute, for scientific achievement in the senior investigator category.

Co-editor of textbook *Principles of Nutrigenetics and Nutrigenomics, Fundamentals of Individualized Nutrition* published by Academic Press, September 1, 2019.

Natalia Krupenko, PhD

Chair of the 54th SouthEastern Regional Lipid Conference (November 6-8, 2019) in Asheville NC.

Philip May, PhD

Researched and published papers on three of four sites in the first large-scale, population-based study in the US on the prevalence of fetal alcohol spectrum disorders, featured in a special edition of *Alcoholism: Clinical and Experimental Research*, the official journal of the Research Society on Alcoholism.

Sandra Mooney, PhD

President of Fetal Alcohol Spectrum Disorders Study Group.

Chair of NIH Special Emphasis Panel (ZRG1 IFCN-C (02) M)

Susan Smith, PhD

Member of the National Advisory Council on Alcohol Abuse and Alcoholism, National Institutes on Alcohol Abuse and Alcoholism.

Delisha Stewart, PhD

Invited panelist for session on “Next steps for animal models to further clinic-based medical treatment” at inaugural Interdisciplinary Sciences Symposium, Department of Nutrition, University of North Carolina at Chapel Hill, July 2019.

Susan Sumner, PhD

Co-Chair, and Chair for the 2021 and 2023 Gordon Conference on Metabolomics.

Saroja Voruganti, PhD

Chair of the Nutrient-Gene Interaction Research Interest Section of the American Society for Nutrition for the period July 2019-June 2020.

Steven Zeisel, MD, PhD

Presidential Initiative Award and grant from the North Carolina Biotechnology Center for the first company to spin out of the UNC Nutrition Research Institute in Kannapolis, NC. The company, SNP Therapeutics, is a research-based genomics company with a focus on issues in metabolism that contribute to diseases and other health-related issues.



RESEARCH HIGHLIGHTS

Understanding Nutrition and FASD

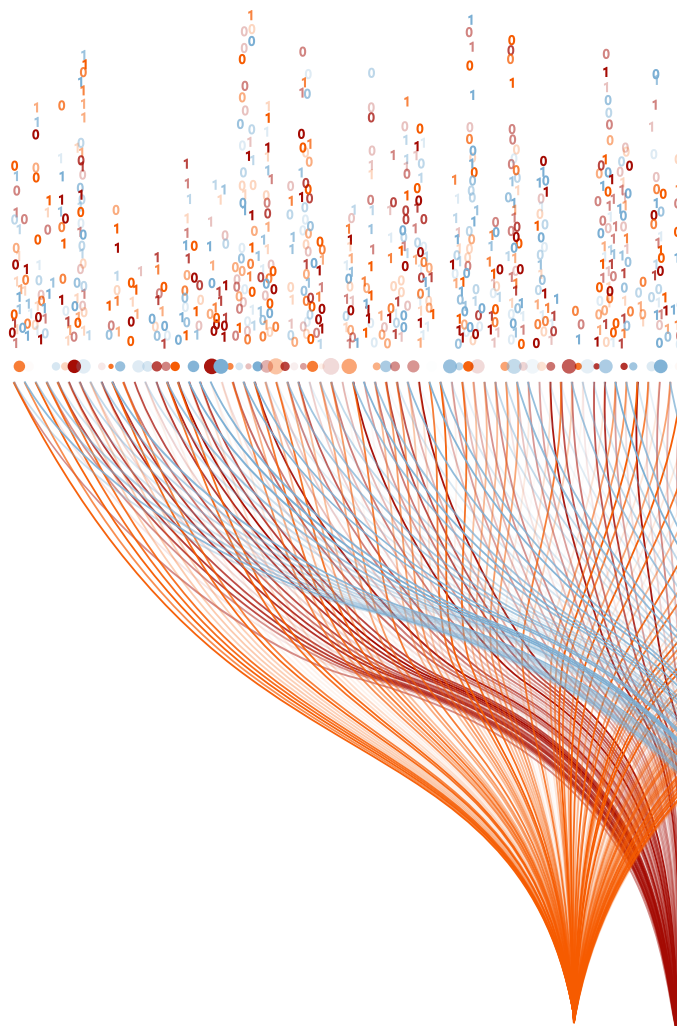
Nutrition is a cornerstone of health, and maternal nutrition is a cornerstone of her child's health as well. NRI researchers have, for many years, emphasized the importance of proper nutrition during pregnancy. Recent work from Susan Smith, PhD, now shows how maternal dietary iron affects the severity of fetal alcohol spectrum disorder (FASD).

Despite widespread recognition that drinking while pregnant carries high risk for the developing child, FASD remains a significant and ongoing problem. Research from the Smith lab has identified a particular pro-inflammatory pathway as playing an important role in the response to alcohol exposure (Saini et al., 2019). A greater understanding of precisely how alcohol consumption causes FASD should enable further research into treatments. And while there is yet no cure for FASD, Smith's research in laboratory animal models has shown that optimal maternal nutritional status can reduce the severity of this alcohol-induced inflammatory response in the placenta (Kwan et al., 2020). Specifically, adequate maternal iron levels are key; iron deficiency worsens the developmental damage caused by alcohol. Research from the NRI is thus not only identifying cellular mechanisms linking alcohol consumption with FASD, but also potential nutrition-based therapeutic approaches.

- Saini, N, Helfrich, KK, Kwan, STC, Huebner, SM, Abazi, J, Flentke, GR, Blohowiak, SE, Kling, PJ and **Smith, SM** (2019). "Alcohol's Dysregulation of Maternal-Fetal IL-6 and p-STAT3 Is a Function of Maternal Iron Status." *Alcohol Clin Exp Res* **43**: 2332-2343.
- Kwan, STC, Kezer, CA, Helfrich, KK, Saini, N, Huebner, SM, Flentke, GR, Kling, PJ and **Smith, SM** (2020). "Maternal iron nutriture modulates placental development in a rat model of fetal alcohol spectrum disorder." *Alcohol* **84**: 57-66.

HHEAR It for Metabolomics

The Sumner laboratory at the NRI is pioneering the use of metabolomics to study how the totality of our environmental exposures, including diet and nutrition, affects our health. Susan Sumner, PhD, and colleagues Timothy Fennell, PhD, of RTI International and Xiuxia Du, PhD, of UNC Charlotte have been awarded a major grant from NIH to create and lead the Human Health Exposure Analysis Resource (HHEAR) Untargeted Analysis Laboratory hub. This hub will provide access to metabolomics and data analyses services to the research community at large. HHEAR is a continuation of the Children's Health Exposure Analysis Resource (CHEAR) network study, for which Fennell and Sumner led the Exposure Assessment component. The CHEAR project, which ran from 2015-2019, established the research infrastructure necessary to conduct large-scale metabolomics studies, such as this recent report



(Deysenroth et al., 2020), which included identifying associations between umbilical cord blood metabolites and birth weight.

Metabolomics plays an important role in precision nutrition by allowing us to identify biomarkers of what we are exposed to (i.e., diet and nutrition) as well as our body's responses to these exposures. By increasing the accessibility of high throughput metabolomics analyses, HHEAR and the Sumner laboratory will enable the global research community to better include environmental exposures in their research.

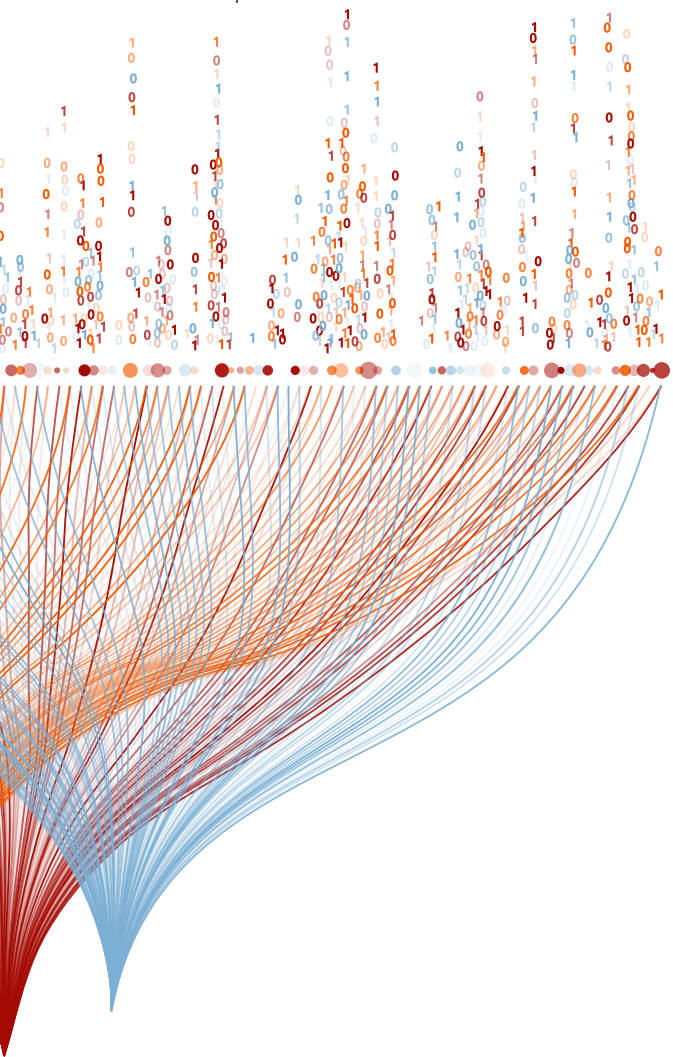
- CHEAR Metabolomics Analysis Team (Deysenroth MA, Colicino E, Curtin P, Niedzwiecki MM), Mazzella M, **Sumner SJ**, Gao S, Su L, Diao N, Mostofa G, Qamruzzaman Q, **Pathmasiri W**, Christiani DC, Fennell T, Gennings C (2020). "Quantitative methods for metabolomic analyses evaluated in the Children's Health Exposure Analysis Resource (CHEAR)." *J Expo Sci Environ Epidemiol* **30**: 16-27.

Roles of Folate Metabolism in Disease

Insufficient maternal folate (vitamin B₉) intake increases risk of neural tube defects in offspring, while excess folate intake has been linked to more aggressive cancers. Several researchers at the NRI are studying how folate is metabolized in order to better understand its various roles in health and disease.

Sergey Krupenko, PhD, in a collaborative effort with fellow NRI faculty Natalia Krupenko, PhD, and Susan Sumner, PhD, has recently made considerable progress toward understanding the role played by a pair of related enzymes, ALDH1L1 and ALDH1L2, in regulating folate metabolism. These proteins are highly similar and differ mainly in where they are located in tissues and cells. ALDH1L1 functions in biosynthesis of the amino acid glycine, which has protective effects in addition to being a building block of proteins (Krupenko, 2019). Surprisingly, ALDH1L2 plays entirely distinct roles in cellular energy production and balance, and mutations to ALDH1L2 are linked to a disease known as Sjögren–Larsson syndrome (Sarret et al., 2019). Thus, metabolism of the same nutrient, folate, has different outcomes depending where in the cell it is metabolized. These findings highlight the complexity of nutrient metabolism.

- **Krupenko, NI**, Sharma, J, Pediaditakis, P, Fekry, B, Helke, KL, Du, X, **Sumner, S** and **Krupenko, SA** (2019). "Cytosolic 10-formyltetrahydrofolate dehydrogenase regulates glycine metabolism in mouse liver." *Sci Rep* **9**: 14937.
- Sarret, C, Ashkavand, Z, Paules, E, Dorboz, I, Pediaditakis, P, **Sumner, S**, Eymard–Pierre, E, Francannet, C, **Krupenko, NI**, Boespflug–Tanguy, O and **Krupenko, SA** (2019). "Deleterious mutations in ALDH1L2 suggest a novel cause for neuro-ichthyotic syndrome." *NPJ Genom Med* **4**: 17.



SELECTED PUBLICATIONS

Avoidance of vitamin D deficiency to slow the COVID-19 pandemic. Kohlmeier M (2020). *BMJ Nutrition, Prevention & Health* bmjnph-2020-000096.

“In the context of the current Covid-19 pandemic renewed attention to the very high prevalence of severe vitamin D deficiency is in order. Advanced age, obesity, darker skin tone and risk-related genotypes, particularly in combination, are alarm signs that should prompt corrective action, typically with a moderate, individually tailored dose of supplemental vitamin D. While the preventive potential of supplemental vitamin D should not be exaggerated and the dose kept within recommended ranges, preventing vitamin D deficiency should be a widely shared goal.”

Nutritional factors in fetal and infant brain development. Cheatham CL (2020). *Ann Nutr Metab* 75 Suppl 1: 3-15.

Effects of folic acid withdrawal on transcriptomic profiles in murine triple-negative breast cancer cell lines. Kok DE, O’Flanagan CH, Coleman MF, Ashkavand Z, Hursting SD and Krupenko SA (2020). *Biochimie* 173:114-122.

Exposure to inorganic arsenic and its methylated metabolites alters metabolomics profiles in INS-1 832/13 insulinoma cells and isolated pancreatic islets. Li YY, Douillet C, Huang M, Beck R, Sumner SJ and Styblo M (2020). *Arch Toxicol* 94: 1955-1972.

Sphingolipids and the link between alcohol and cancer. Barron KA, Jeffries KA and Krupenko NI (2020). *Chem Biol Interact* 322: 109058.

Four-year follow-up of a randomized controlled trial of choline for neurodevelopment in fetal alcohol spectrum disorder. Wozniak JR, Fink BA, Fuglestad AJ, Eckerle JK, Boys CJ, Sandness KE, Radke JP, Miller NC, Lindgren C, Brearley AM, Zeisel SH and Georgieff MK (2020). *J Neurodev Disord* 12: 9.

Alterations in the whole brain network organization after prenatal ethanol exposure. Tang S, Xu S, Zhu W, Gulapalli RP and Mooney SM (2019). *Eur J Neurosci* 51: 2110-2118.

Dietary cholesterol and cardiovascular risk: A science advisory from the American Heart Association. Carson JAS, Lichtenstein AH, Anderson CAM, Appel LJ, Kris-Etherton PM, Meyer KA, Petersen K, Polonsky T and Van Horn L (2020). *Circulation* 141: e39-e53.

Genetic variants affecting bone mineral density and bone mineral content at multiple skeletal sites in Hispanic children. Hou R, Cole SA, Graff M, Haack K, Laston S, Comuzzie AG, Mehta NR, Ryan K, Cousminer DL, Zemel BS, Grant SFA, Mitchell BD, Shypailo RJ, Gourlay ML, North KE, Butte NF and Voruganti VS (2020). *Bone* 132: 115175.

The World Cancer Research Fund/American Institute for Cancer Research third expert report on diet, nutrition, physical activity, and cancer: Impact and future directions. Clinton SK, Giovannucci EL and Hursting SD (2020). *J Nutr* 150: 663-671.

Early-life predictors of fetal alcohol spectrum disorders. Kalberg WO, May PA, Buckley D, Hasken JM, Marais AS, De Vries MM, Bezuidenhout H, Manning MA, Robinson LK, Adam MP, Hoyme DB, Parry CDH, Seedat S, Elliott AJ and Hoyme HE (2019). *Pediatrics* 144: e20182141.

Quantitative methods for metabolomic analyses evaluated in the Children’s Health Exposure Analysis Resource (CHEAR). Mazzella M, Sumner SJ, Gao S, Su L, Diao N, Mostofa G, Qamruzzaman Q, Pathmasiri W, Christiani DC, Fennell T and Gennings C (2020). *J Expo Sci Environ Epidemiol* 30: 16-27.

An integrated Gaussian graphical model to evaluate the impact of exposures on metabolic networks. Lee JW, Moen EL, Punshon T, Hoen AG, Stewart D, Li H, Karagas MR and Gui J (2019). *Comput Biol Med* 114: 103417.

Perspective: Dietary biomarkers of intake and exposure-exploration with omics approaches. Maruvada P, Lampe JW, Wishart DS, Barupal D, Chester DN, Dodd D, Djoumbou-Feunang Y, Dorrestein PC, Dragsted LO, Draper J, Duffy LC, Dwyer JT, Emenaker NJ, Fiehn O, Gerszten RE, F BH, Karp RW, Klurfeld DM, Laughlin MR, Little AR, Lynch CJ, Moore SC, Nicastro HL, O’Brien DM, Ordovas JM, Osganian SK, Playdon M, Prentice R, Raftery D, Reisdorph N, Roche HM, Ross SA, Sang S, Scalbert A, Srinivas PR and Zeisel SH (2020). *Adv Nutr* 11: 200-21.

PRESENTATIONS

Carol L. Cheatham, PhD

The Golden Window and Importance of Right Nutrition for Optimal Cognitive Development. Abbott Symposium, Penang, Malaysia. Fall 2019.

Potential Role for Lutein in Infant Memory. American Society for Nutrition, Nutrition 2019, Baltimore, MD. June 8-11, 2019.

Martin Kohlmeier, MD, PhD

Nutrigenetics and Laboratory Diagnostics. Regional Meeting of the North Carolina Academy of Nutrition and Dietetics, Gastonia, NC. March 6, 2020.

Weaving together omics and food intake patterns. Introduction to the Annual Congress of the International Society of Nutrigenetics/Nutrigenomics, Cambridge, UK. July 12, 2019.

NGx case studies as teachable moments in nutrition education for health professionals. NNEdPro 5th International Summit: Conference on Medical and Public Health Nutrition Education and Research, Cambridge, UK. July 9, 2019.

Phil May, PhD

Linking Maternal Risk Traits to Specific Child Diagnoses in Fetal Alcohol Spectrum Disorders (FASD). American PsychoPathology Association (APPA) annual meeting plenary session, New York, NY. March 2020.

Katie Meyer, PhD

Gut Microbiome and Blood Pressure. American Heart Association Scientific Sessions: Microbiota and Hypertension: What Bugs You? Session, Philadelphia, PA. November 16, 2019.

Gut Microbiome and Blood Pressure: Interplay with Nutrition. Hypertension Scientific Sessions: Recent Advances Plenary, New Orleans, LA. September 6, 2019.

Delisha Stewart, PhD

High Carbohydrate and Fat Diet Hastens Tumor Growth, Increases Pro-inflammatory Signals and Metabolic Shifts in a Mouse Model of Basal-like Breast Cancer. American Association for Cancer Research, Annual Meeting, Virtual II Conference. June, 2020.

Common and Unique Breast and Prostate Cancer Metabolic Profiles in African Americans. American Association for Cancer Research, 12th Conference on The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved, San Francisco, CA. September, 2019.

Environmental Pollutants and Plasma Metabolomics in a Pregnancy Cohort. 31st Annual Conference of the International Society of Environmental Epidemiology, Utrecht, The Netherlands. August 2019.

Susan Sumner, PhD

Precision Nutrition: Metabolomics to Deliver Biomarkers and Mechanistic Insights. Health Talks speaker series, Arizona State University, Tempe, AZ. February 6, 2020.

The Internal Exposome, Opium Use, and Opioid Use Disorder. NIDA Genetics and Epigenetics Cross-Cutting Research Meeting, Rockville, MD. January 13-14, 2020.

The Exposome Meets Precision Nutrition: Applications in Addiction, Maternal and Child Health, and Obesity and Diabetes. Plenary speaker for the Annual Ohio Mass Spectrometry and Metabolomics Symposium, Columbus, OH. October 1-2, 2019.

Saroja Voruganti, PhD

Genes and individual response to nutrients in bone health. Presented as part of the "Appetite for Life" lecture series at the North Carolina Research Campus, Kannapolis, NC. January 2020.

Nutritional Genomics: An overview. SVT Home Science College, SNDT Women's University, Mumbai, India. December 2019.

Genetic variation affecting cardiometabolic response to nutrient intake. Orman Harris Lecture, University of Alabama, Tuscaloosa, AL. November 2019.

Steven Zeisel, MD, PhD

Nutrigenetics can help target precision-nutrition interventions. American Society for Nutrition, Nutrition 2020 Live Online. June 2, 2020.

Impact of Genotypes on Folate and Choline Metabolism: Is There a Need for Personalized Nutrition? Abbott Nutrition Research Conference, Columbus, OH. October 7, 2019.

Workshop to establish genetic-specific guidelines on choline intakes. International Society of Nutrigenetics/Nutrigenomics Conference 2019, Cambridge, UK. July 13, 2019.

55

Invitations
to speak
world-wide

OUR TEAM



Faculty & Staff

The NRI's 22 administrative staff members – from operations and personnel to finance and fundraising – support the institute and its scientific staff throughout the year.

Also supporting our 15 faculty members in FY20 were 43 research staff, 16 postdoctoral fellows, 6 doctoral students, and 6 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.

It is with sorrow that we share that our friend and coworker Rodney Edwards passed away earlier this year. Rodney worked at the NRI in the Lettuce Eat Café and during the early months of the pandemic helped in the Development and Finance departments. His warm friendliness was on display when he greeted everyone by name, always taking time to have a meaningful conversation. He was passionate about photography and eager to lend a helping hand. He was a loving, devoted husband and father. We mourn the loss of our colleague.



Rodney Edwards

Board of Advisors

The board of advisors is a select group of individuals with vision and experience in a range of areas who are personally committed to our mission. Members, leaders in their respective fields, help position the NRI for continued growth and achievement.

Fred T. Brown
Charlotte, NC

John Fennebresque, Jr.
Charlotte, NC

W. Brien D. Lewis
Salisbury, NC

Craig Richardville
Broomfield, CO

Richard Vinroot
Charlotte, NC

Byron Bullard
Charlotte, NC

J. Steven Fisher
Salisbury, NC

James G. Martin
 Mooresville, NC

Rina K. Shah
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Phyllis A. Wingate
Kannapolis, NC

W. Patrick Burgess
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Erika G. Gantt
Charlotte, NC

Jeffrey Petry
Davidson, NC

Tom E. Smith
Salisbury, NC

James H. Woodward
Charlotte, NC

EDUCATION AND ENGAGEMENT

Providing educational and informational experiences to our local community and visitors from afar is a core tenet of the Nutrition Research Institute. This past fiscal year, we, like everyone worldwide, experienced an abrupt end to some programs and swift changes to others. As a result, our reach to our constituents was narrower than in previous years, but we've learned much during the process and are developing and presenting new virtual programs to help us reconnect with old friends and meet and stay in touch with new ones, wherever they are in the world.

APPETITEFORLIFE

Appetite for Life is a series of free talks to keep the public abreast of nutrition-related research as it unfolds, as well as tours of our state-of-the-art facility where the science happens. Public tours in summer 2019 gave way to live presentations in September. AFL programming moved to the virtual world starting in April as we produced encores of earlier presentations via Facebook watch parties with live Q&A.

Almost 400 people connected with the NRI through free Appetite for Life tours and presentations. Talks covered topics such as the role of the gut microbiome in metabolism of dietary components; genes and individual response to nutrients in bone health; and debunking food myths around fats, dairy and eggs. Small-group tours took in key points of interest at the NRI including:

- Research laboratories with scientist meet-and-greet
- Whole-room calorimeter (metabolic chamber)
- Metabolic assessment lab
- Body composition lab

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.

Before stopping because of the pandemic, 82 members of the research campus community attended guest lectures by scientists from Harvard Medical School, Atrium Health/Levine Children's Hospital, University of Minnesota department of psychiatry and Imperial College London department of biochemistry.

School-based Field Trips

A newly revamped field trip program provided substantial, hands-on experiences for local students. Our half-day high school program offered four rotations to help students learn about:

- Overview of nutrition and health sciences
- Performing a DNA expression analysis
- Introductions to human research, epidemiology and biostatistics
- High-level study design

Fifty-four students from high schools in Rowan and Cabarrus counties were able to participate in this new program before COVID-19 forced us to suspend the program.



Camp NRI

During the Covid-19 quarantine, we launched a new virtual program for our young enthusiasts. Camp NRI, designed for elementary and middle school students, is a monthly video program featuring a follow-along science experiment or project. Live presentations were streamed on both Facebook and Instagram one day a month and made available for viewing at any time thereafter. These interactive sessions were designed to bring a bit of nutrition and health science into homes for kids and parents to do together. We kicked off the season with a strawberry DNA extraction experiment.

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.

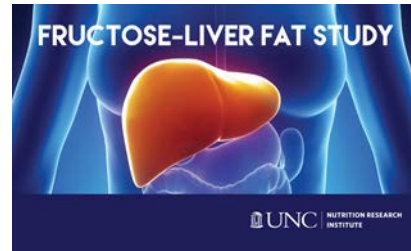
At the NRI, research focuses on the intersection of nutrition and genetics; therefore, each clinical study has different requirements.

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.



Fructose-Liver Fat Study

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



Choline Status Study

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



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.



Fatty Acid Supplement Study

Dr. Martin Kohlmeier is testing for the effects of a fatty acid supplementation in human health.

FASD Epidemiological Study

In addition to studies recruiting participants in our local community, Dr. Phil May's research reaches far beyond and includes cohorts of women and their children in the Western Cape Province of South Africa. These participants are in a longitudinal study on child growth and development and maternal risk factors for fetal alcohol spectrum disorders.

LOCAL IMPACT

Tarheel Bus Tour

Public service is at the core of Carolina’s mission as a university built for the people. On October 16, 2019, 90 UNC–Chapel Hill faculty members and senior administrators boarded 3 buses to embark on a journey throughout the state to connect with the communities the University serves. The Nutrition Research Institute was honored to serve as stop 1 for the West Tour bus. Our 30 guests spent the morning touring labs, hearing the unique stories of our scientists, and learning about the incredible impact the NRI is having on Kannapolis, the state, and beyond.

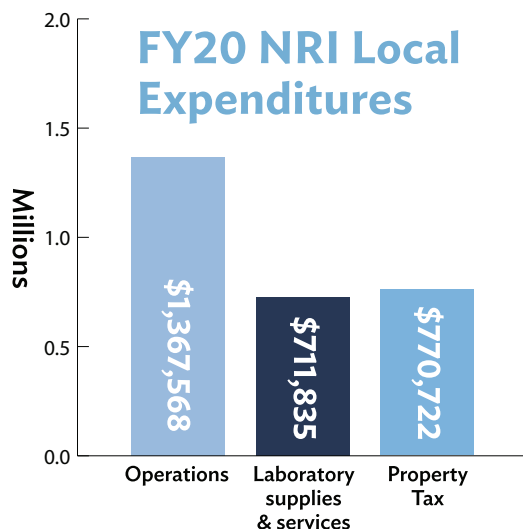


The Nutrition Research Institute does not tolerate racism, bigotry, violence or harassment. We denounce systemic racism and stand in support of efforts to bring about

equity and justice. A core value to which we, the people who compose this institute, have committed ourselves is Inclusion and Respect. We defined this value because we seek to foster an environment where open inquiry and expression are embraced. We realize, however, that stating a core value isn’t sufficient. We are committed to improving dialogue, listening carefully, becoming educated about the realities faced by our Black, Indigenous, People of Color (BIPOC) colleagues, and taking action to ensure that they are equally able to contribute to and reap the benefits of being part of the NRI community.

NRI²

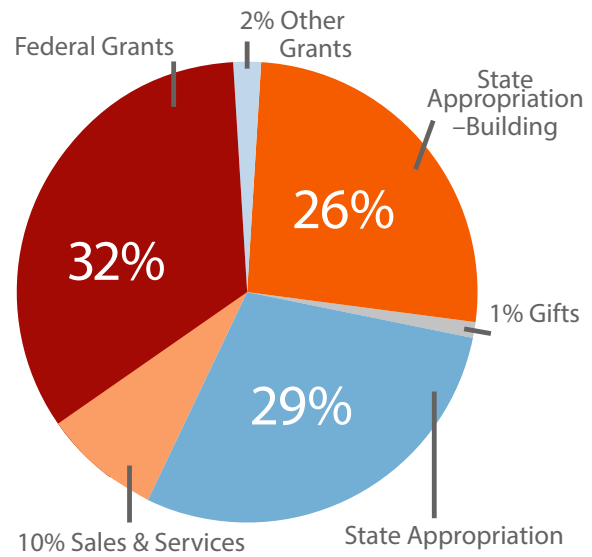
The NRI’s Neighborhood Resource Initiative (NRI²) brings our faculty, students and staff together in community service. Last November, 17 employees volunteered with Cabarrus County Habitat for Humanity to help build and prepare a new home for a local resident. Later that month, 7 NRI members helped 4th- and 5th-graders at Jackson Park Elementary School restore their butterfly garden.



FUNDING FY20

The Impact of Donor GIFTS

Donor gifts from individuals, corporations, and foundations provide crucial funds for exploring new ideas to prove they are worthy of larger federal funding. Donations also make possible our recruitment of the world's best minds in nutrition science, and support hands-on education and mentoring of students. Your gifts make all the difference to our success. Thank you.



\$19,754,802

“Donors believe their support of NRI will lead the world to a better understanding of how to make personal nutrition knowledge foster good health and help people all over the world to enjoy longer, healthier lives. Support of NRI has shown handsome return on investment to the hometown of Kannapolis and the surrounding area by bringing faculty, students, and staff together in community service and assuming a critical role in the redevelopment of Kannapolis.”

- Ken and Patty Argo

Corporate & Foundation Gifts

Balchem
VWR, part of Avantor
MAKO Medical
William Carey University

Food Lion
Abbott Nutrition
Farmers & Merchants Bank
Metabolon

“Balchem considers it a privilege to support scientific research in general, but is particularly honored to support ongoing scientific endeavors by Dr. Steven Zeisel and his team. We are committed to supporting high-quality research, and Dr. Zeisel’s work on choline is world class.”

- Jonathan Bortz, MD
Senior Director Strategic
Innovation, Human Nutrition and
Pharma, Balchem

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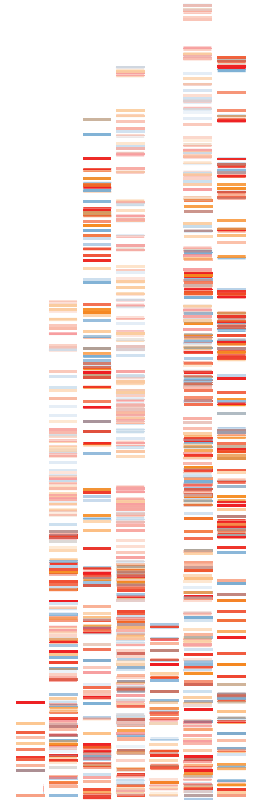
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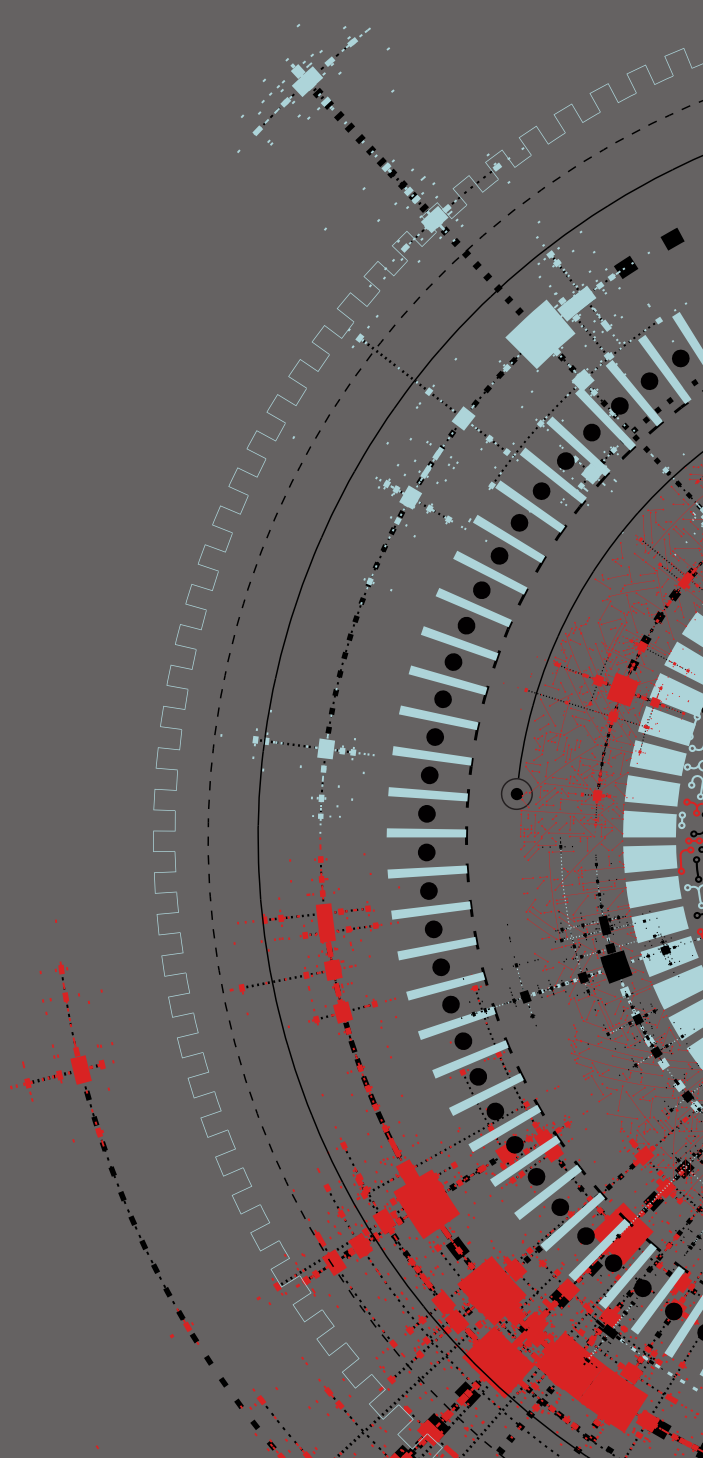
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