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**THE ROLE OF ADVANCED COMPUTATION, PREDICTIVE TECHNOLOGIES, AND BIG DATA ANALYTICS RELATED TO FOOD AND NUTRITION RESEARCH: A WORKSHOP**

**Speaker Bios**

**Sai Krupa Das** is a Senior Scientist on the Energy Metabolism Team at the Jean Mayer USDA Human Nutrition Research Center on Aging and Professor at the Friedman School of Nutrition Science and Policy, both at Tufts University. She has over 20 years of experience in human nutrition research and in the field of energy metabolism. She has examined energy expenditure in adults with varying weight status and is an expert on doubly labeled water and other methodologies for measuring energy intake and expenditure and body composition. During her career, Dr. Das has conducted several clinical trials involving lifestyle interventions for attenuating age-related changes and targeting the obesity epidemic. These studies have included employees at worksites, hard-to-reach segments of the general population, military families, and people from around the world who face weight-related health challenges. She is widely published for her ongoing work on the landmark CALERIE (Comprehensive Assessment of Long-term Effects of Reducing Intake of Energy) trial, the first largest randomized controlled trial of calorie restriction in humans. Her publications include A Standard Calculation Methodology for Human Doubly Labeled Water Studies; Evaluation of PIQNIQ, a Novel Mobile Application for Capturing Dietary Intake; and Opportunities and Challenges of Technology Tools in Dietary and Activity Assessment: Bridging Stakeholder Viewpoints. Dr. Das is currently Executive Director of the International Weight Control Registry, a clinical center PI and co-chair of the Nutrition for Precision Health Consortium, and a member of the Energy and Macronutrient Metabolism Research Interest Group of the American Society of Nutrition. She is also a member of the Obesity Society and the Gerontological Society of America. Dr. Das holds a Ph.D. in Human Nutrition from the Friedman School of Nutrition Science and Policy.

**Cindy D. Davis**, Ph.D., serves as National Program Leader for the program in Human Nutrition conducted by the U.S. Department of Agricultural (USDA) Agricultural Research Service. In this role, she helps direct the scientific program for six Human Nutrition Research Centers. Prior to joining USDA, she was the Director of Grants and Extramural Activities in the Office of Dietary Supplements (ODS) where she actively engaged and encouraged partnerships with other National Institutes of Health (NIH) Institutes and Centers to develop a portfolio that advances both nutritional and botanical dietary supplement research for optimizing public health. Dr. Davis is also actively involved in a number of government working groups focused on the microbiome including being a co-founder and co-chair of the Joint Agency Microbiome (NIH, Food and Drug Administration, National Institute of Standards and Technology, and USDA) working group. Before coming to ODS, she was a Program Director in the Nutritional Sciences Research Group at the National Cancer Institute. She completed her postdoctoral training at the Laboratory of Experimental Carcinogenesis at the National Cancer Institute. She then joined the Grand Forks Human Nutrition Research Center, USDA, as a research nutritionist. In 2000, she received a Presidential Early Career Award for Scientists and Engineers and was named the USDA Early Career Scientist. She has published more than 135 peer-reviewed journal articles and eleven invited book chapters. She is a supplement editor for the Journal of Nutrition, assistant editor for Nutrition Reviews and a member of the editorial board for Advances in Nutrition. Dr. Davis received her B.S. degree in nutritional sciences with honors from Cornell

University in Ithaca, NY, and her Ph.D. degree in nutrition with a minor in human cancer biology from the University of Wisconsin-Madison.

**Elenna Dugundji** is a research scientist at the MIT Center for Transportation and Logistics. She shapes supply chain futures by bringing expertise in demand forecasting, machine learning and AI to research in mainport logistics, involving network analytics, optimization of operational processes, tactical planning and strategic asset management. She received her Ph.D. in environmental sciences from the University of Amsterdam.

**Judy Gichoya**, M.D., is an assistant professor at Emory University in Interventional Radiology and Informatics. Her career focus is on validating machine learning models for health in real clinical settings, exploring explainability, fairness, and a specific focus on how algorithms fail. She is heavily invested in training the next generation of data scientists through multiple high school programs, serving as the program director for radiology: AI trainee editorial board and the medical students machine learning elective.

**Chris Hartshorn** is the chief of the Digital & Mobile Technologies Section and Acting Chief of the Clinical and Translational Science Awards (CTSA) Program Branch within NCATS' Division of Clinical Innovation, where he manages and coordinates programmatic and research activities. Prior to joining NCATS, he served as a program director in the Division of Cancer Treatment and Diagnosis at the National Cancer Institute (NCI). During his tenure at the NIH, he has guided and managed multiple programs including the NIH Academic–Industrial Partnerships, the NIH Common Fund's Nutrition for Precision Health, powered by the *All of Us* Research Program, and the Bridge to Artificial Intelligence program. Through these programs, he established the AI for Multimodal Data Modeling and Bioinformatics Center FOA and several corollary efforts for the NCI Strategic Plan for AI/ML in Cancer. A principal focus for Hartshorn has been establishing initiatives to bring more care, to more patients remotely by way of sophisticated multimodal analytical methods, artificial intelligence (AI), and novel biomedical technologies. Prior to joining NIH, Hartshorn was a research staff member at the National Institute of Standards and Technology for projects focused on biomedical and national security applications, as well as subsequent collaborations with the U.S. Department of Defense, U.S. Department of Justice, NIH, Merck and Pfizer.

**Janie Simms Hipp** is the inaugural president and CEO of Native Agriculture Financial Services, the first-ever Other Financing Institution within the Farm Credit System that will fund Native farmers and ranchers. She previously served as General Counsel for the U.S. Department of Agriculture, the first Native American to serve in that role. She is the founder of the Indigenous Food and Agriculture Initiative at the University of Arkansas, founder of the U.S. Department of Agriculture's Office of Tribal Relations in the Office of the Secretary and founding Executive Director of the Native American Agriculture Fund. She has also served on two delegations to the United Nations regarding women's and Indigenous issues. As an agriculture and food lawyer and policy expert, her work focuses on the intersection of Indian law and agriculture and food law. She earned her Juris Doctor from Oklahoma City University School of Law and earned a Master of Law in Agricultural Law from the University of Arkansas School of Law.

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**Rob Knight** is the founding Director of the Center for Microbiome Innovation and Professor of Pediatrics, Bioengineering, and Computer Science & Engineering at the University of California San Diego. His research has linked microbes to a range of health conditions, enhanced our understanding of microbes in many environments, and made high-throughput sequencing accessible to thousands of researchers around the world. His lab has produced many of the software tools and laboratory techniques that enabled high-throughput microbiome science, including QIIME and UniFrac. He is co-founder of the Earth Microbiome Project, the American Gut Project, and the company Biota, Inc., which uses DNA from microbes in the subsurface to guide oilfield decisions. He set up and runs the wastewater COVID-19 detection program and co-founded the COVID-19 testing lab at U.C. San Diego, which performs thousands of clinical tests per day and also sequences viral genomes out of wastewater and clinical samples. He is a Fellow of the American Association for the Advancement of Science and the American Academy of Microbiology and received the 2019 NIH Director's Pioneer Award and 2017 Massry Prize. Dr. Knight earned his B.S. in Biochemistry from the University of Otago and his Ph.D. in Evolutionary Biology from Princeton University.

**Benoît Lamarche** is Full Professor at the School of Nutrition at Université Laval and Scientific Director and founder of the FRQS-funded Research Center on Nutrition, santé et société (NUTRISS). He has published more than 420 peer-reviewed papers on physiological, clinical, epidemiological and public health issues related to food and health. He currently leads NutriQuébec, the largest population-based study on nutrition and health funded by the Gouvernement du Québec. He has contributed to the training of more than 70 MSc, PhD students and postdocs. He has received numerous awards, including awards from the Société Québécoise de lipidologie, nutrition et métabolisme (Prix des Fondateurs, 2013) and the Canadian Nutrition Society (Centrum New Investigator Award, 2011 and the Khursheed Jeejeebhoy Award, 2020). He has co-written two books with the acclaimed Chef Jean Soulard on the topics of nutrition, sport and health. Benoît Lamarche is an Olympian (1984, 1988) in long track speed skating.

**Faisal Mahmood** is an Associate Professor of Pathology at Harvard Medical School and the Division of Computational Pathology at the Brigham and Women's Hospital. He received his Ph.D. in Biomedical Imaging from the Okinawa Institute of Science and Technology, Japan and was a postdoctoral fellow at the department of biomedical engineering at Johns Hopkins University. His research interests include pathology image analysis, morphological feature, and biomarker discovery using data fusion and multimodal analysis. Dr. Mahmood is a full member of the Dana-Farber Cancer Institute / Harvard Cancer Center; an Associate Member of the Broad Institute of Harvard and MIT, and a member of the Harvard Bioinformatics and Integrative Genomics (BIG) faculty.

**Susan McRitchie, MA, MS** is the lead biostatistician and program manager in the Metabolomics and Exposome Laboratory at the UNC Chapel Hill Nutrition Research Institute. She has over 10 years of experience analyzing metabolomics and exposome data that support research in precision nutrition, precision health, and precision environmental health. Ms. McRitchie has experience analyzing data using a variety of methods including quadratic growth curves, ordinal logistic regression, logistic regression, multiple linear regression, principal component analysis, orthogonal projection to latent structures discriminant analysis, structural equation modeling, and random forest. She is also the program coordinator for the Metabolomics and Clinical Assays Center in the NIH Common Fund Nutrition for

Precision Health (NPH) Consortium. Ms. McRitchie earned her M.A in Mathematics from UCLA and her M.S. in Biostatistics from UNC-CH.

**Saurabh Mehta, M.B.B.S., Sc.D.,** is a physician with training and expertise in nutrition, infectious disease, epidemiology, and diagnostics. He is a faculty member in the Division of Nutritional Sciences, Cornell University and serves on its executive leadership team. Additionally, he also serves as the Director of the Program in International Nutrition and the co-Founding Director of the new Center for Precision Nutrition and Health. He also co-leads the NIH Nutrition for Precision Health Research Coordinating Center. The central theme of Dr. Mehta's research is the interplay between nutrition and disease, including facilitating field-friendly assessment for both, and elucidating how nutrition can be used as a modifiable risk factor for improving health and associated outcomes, often in the context of pregnancy and early childhood. This is achieved through a combination of active surveillance programs, invention of point-of-care diagnostics and randomized controlled trials primarily in resource-limited settings in India, Sub-Saharan Africa, and South America. His research program is supported by funding from the NIH, NSF, USDA, USAID, World Health Organization, and the Department of Defense, among others. Relevant to this workshop, Dr. Mehta is also the program director of a new training program on Artificial Intelligence and Precision Nutrition supported by the NIH.

**Christopher Mejía Argueta** is a research scientist at the MIT Center for Transportation and Logistics. He is a supply chain specialist whose research focuses on improving the efficiency, and flexibility of operations in multiple stakeholders, addressing changing purchasing patterns and coupling these dynamic consumer profiles with the retail landscape. He founded and directed the MIT Food and Retail Operations Lab, a global, interdisciplinary research group that combats food malnutrition, reduces food waste, ensures food safety, empowers smallholder farming, and builds local, short food supply chains using data- and model-driven approaches. Dr. Mejia leads research networks and educational programs for Latin America and the Caribbean with top-ranked universities and research groups. He has over 14 years of experience and has developed dozens of applied research projects for companies, NGOs, multilateral funding sources, and governments in over 12 countries on three continents.

**Holly Nicastro, PhD, MPH**, is a Program Director in the NIH Office of Nutrition Research (ONR), where she serves as Coordinator for Nutrition for Precision Health, powered by the *All of Us* Research Program. In this role, she is responsible for overall management of the Nutrition for Precision Health consortium, progress toward the program's goals, and monitoring of interactions between the consortium and the external community. Dr. Nicastro holds a Bachelor of Science degree in Nutritional Sciences from the Pennsylvania State University, a Ph.D. in Molecular and Biochemical Nutrition from the University of California, Berkeley, and a Master of Public Health (MPH) degree from Johns Hopkins Bloomberg School of Public Health. She completed a postdoctoral fellowship with NCI's Cancer Prevention Fellowship Program, where she worked in the Nutritional Science Research Group.

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**Angela Odoms-Young, PhD** (she/her/hers) is The Nancy Schlegel Meinig Associate Professor of Maternal and Child Nutrition, Director of the Food and Nutrition Education in Communities Program (FNEC) and New York State Expanded Food and Nutrition Education Program (EFNEP) at Cornell University. Her research explores social and structural determinants of dietary behaviors and diet-related diseases in low-income and Black/Latinx populations and centers on identifying culturally appropriate programs and policies that promote health equity, food justice, and community resilience. Dr. Odoms-Young has over 20 years' of experience partnering with communities to improve nutrition and health and 200+ academic publications, book chapters, and presentations. She has served on numerous advisory committees and boards, including the National Academy of Sciences Food and Nutrition Board, the Institute of Medicine committees to develop the nutrition standards for the National School Lunch Program/School Breakfast Program and revise the food packages provided in the Supplemental Program for Women, Infants, and Children (WIC), and Council on Black Health. Dr. Odoms-Young has also been a member of the Board of the Greater Chicago Food Depository (previous), American Heart Association Chicago Metro Board (current), Grow Greater Englewood (current), and Blacks in Green (current). She also currently is the inaugural Equity Visiting Scholar at Feeding America. Dr. Odoms-Young received her B.S. in Foods and Nutrition from the University of Illinois at Urbana-Champaign and M.S./PhD in Community Nutrition from Cornell University. Additionally, she completed a Family Research Consortium Postdoctoral Fellowship examining family processes in diverse populations at the Pennsylvania State University and the University of Illinois at Urbana-Champaign and a Community Health Scholars Fellowship in community-based participatory research at the University of Michigan School of Public Health. Prior to joining Cornell Dr. Odoms-Young served on the faculty at University of Illinois at Chicago in the Department of Kinesiology and Nutrition.

**Edward Sazonov (IEEE M'02, SM'11)** received the Diploma of Systems Engineer from Khabarovsk State University of Technology, Russia, in 1993 and the Ph.D. degree in Computer Engineering from West Virginia University, Morgantown, WV, in 2002. Currently he is a James R. Cudworth endowed Professor in the Department of Electrical and Computer Engineering at the University of Alabama, Tuscaloosa, AL and the head of the Computer Laboratory of Ambient and Wearable Systems (http://claws.eng.ua.edu). His research interests span wearable devices, sensor-based behavioral informatics and methods of biomedical signal processing, machine learning and artificial intelligence. Devices developed in his laboratory include a wearable sensor for objective detection and characterization of food intake (AIM – Automatic Ingestion Monitor); a highly accurate physical activity and gait monitor integrated into a shoe insole (SmartStep, winner of Bluetooth Innovation WorldCup 2009); a wearable sensor system for monitoring of cigarette smoking (PACT); and others. The research in his lab was recognized by several awards, including best paper awards, President's research award at the University of Alabama and others. In 2020 Dr. Sazonov served as a Fulbright Distinguished Chair at the University of Newcastle, Australia. His research has been supported by the National Institutes of Health, National Science Foundation, National Academies of Science, as well as by state agencies, private industry and foundations. Dr. Sazonov serves as an Specialty Chief Editor for Wearable Electronics, Frontiers In Electronics and Associate Editor for several IEEE journals.

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**Aaron Smith** is the DeLoach Professor of Agricultural and Resource Economics at the University of California, Davis, where he has been since 2001. Originally from New Zealand, he earned his PhD in Economics from the University of California, San Diego. His research addresses economic and policy challenges related to agriculture, energy, and the environment. He has over 50 publications in refereed journals, including outlets such as the Review of Economics and Statistics, the Journal of Econometrics, the American Journal of Agricultural Economics, and Proceedings of the National Academy of Sciences. His research has won the Quality of Communication, Quality of Research Discovery, and Outstanding American Journal of Agricultural Economics Article Awards from the Agricultural and Applied Economics Association and the Quality of Research Discovery Award from the European Association of Agricultural Economists. He is the cluster lead for socioeconomics and ethics in the AI Institute for the Food System (AIFS).

**Patrick J. Stover, Ph.D.,** is the director of the Institute for Advancing Health through Agriculture (IHA) at Texas A&M University. The IHA is the world's first research institute to bring together precision nutrition, responsive agriculture, and behavioral research to reduce diet-related chronic disease in a way that considers environmental and economic effects. With support from the United States Department of Agriculture and the State of Texas, the IHA includes an embedded USDA program. As an international leader in biochemistry, agriculture and nutrition, Stover's research focuses on the biological mechanisms that underlie the relationships between food and human pathologies such as birth defects, neuropathies and cancer. He is an elected member of the National Academy of Sciences and a fellow of the American Association for the Advancement of Science. He is also former president of the American Society for Nutrition and has served two terms on the National Academies of Sciences, Engineering, and Medicine's Food and Nutrition Board. He received the Presidential Early Career Award for Scientists and Engineers from President Clinton, the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers.

**Jennifer Tiller** serves as the Deputy Staff Director for the House Committee on Agriculture under the leadership of Chairman Glenn Thompson (R-PA). Previously, Tiller served as both Deputy Staff Director and Senior Professional Staff for Chairman K. Michael Conaway (R-TX). Tiller has worked on a variety of legislative efforts affecting U.S. agriculture and domestic nutrition programs including the 2018 Farm Bill, pandemic-related aid packages, and bills impacting federal spending and revenues. A Syracuse, New York native, Tiller holds a Master of Public Administration from Marist College and a Master of Business Administration from Syracuse University.