

Science Breakthroughs 2030: A Strategy for Food and Agricultural Research

Committee

David B. Allison

Member

Dr. David B. Allison (NAM) is the Dean and Provost Professor of the School of Public Health-Bloomington and the Director of Nutrition Obesity Research Center at Indiana University, Bloomington. Previously, he was Distinguished Professor and Quetelet Endowed Professor in the Department of Nutrition Sciences School of Health Professions at the University of Alabama at Birmingham (UAB). He is also served as Associate Dean for Research and Science, Director of the Office of Energetics, and Director of the Nutrition Obesity Research Center at UAB. Dr. Allison's research interests include obesity and nutrition, quantitative genetics, clinical trials, statistical and research methodology, and research rigor and integrity. Previously, he completed a post-doctoral fellowship at the Johns Hopkins University School of Medicine and a second post-doctoral fellowship at the New York Obesity Research Center at St. Luke's/Roosevelt Hospital Center. Dr. Allison was also a research scientist at the NY Obesity Research Center and Associate Professor of Medical Psychology at Columbia University College of Physicians and Surgeons until 2001. He was elected as a Fellow of the American Statistical Association (ASA) in 2007, the American Psychological Association (APA) in 2008, the American Association for the Advancement of Science (AAAS) in 2009, the NY Academy of Medicine in 2014, the Gerontological Society of America in 2014, the Academy of Behavioral Medicine Research in 2017, and inducted into the Johns Hopkins Society of Scholars in 2013. Dr. Allison was elected to the National Academy of Medicine of the National Academies of Sciences, Engineering, and Medicine in 2012. He received his B.A. in Psychology at Vassar College, M.A. in Clinical and School Psychology, and Ph.D. in Clinical and School Psychology from Hofstra University.

Corrie Brown

Member

Dr. Corrie C. Brown is a Professor of Anatomic Pathology in the College of Veterinary Medicine at the University of Georgia. Dr. Brown received her Ph.D. in veterinary pathology with a specialization in infectious diseases from the University of California at Davis, and her D.V.M. from the University of Guelph. She is a Diplomate of the American College of Veterinary Pathologists. Her research interests focus on pathogenesis of infectious disease in food-producing animals, especially the transboundary animal diseases. She is active in the fields of emerging diseases and international veterinary medicine. She has published or presented more than 300 scientific papers. Dr. Brown has served on many industrial and federal panels, and has been a technical consultant to several federal agencies and intergovernmental organizations on issues involving infectious diseases and animal health infrastructure. Dr. Brown has received numerous awards for her teaching and service, at the college, university and national levels.

Lisa Goddard

Member

Dr. Lisa Goddard is the Director of the International Research Institute for Climate and Society and an adjunct associate professor within the Department of Earth and Environmental Sciences at Columbia University. She has been involved in El Nino and climate forecasting research and operations since the mid-1990s. She has extensive experience in forecasting methodology and has published papers on El Nino, seasonal climate forecasting and verification, and probabilistic climate change projections. Currently leading the IRI's effort on near-term climate change, Goddard oversees research and product development aimed at providing climate information at the 10-20 year horizon and how that low frequency variability and change interacts with the probabilistic risks and benefits of seasonal-to-interannual variability. Most of Goddard's research focuses on diagnosing and extracting meaningful information from climate models and available observations. She also developed and oversees a new national post-doctoral program, the Post-docs Applying Climate Expertise Program (PACE), which explicitly links recent climate doctorate graduates with decision making institutions. Goddard holds a Ph.D. in atmospheric and oceanic sciences from Princeton University and a B.A. in physics from the University of California at Berkeley.

Mary Lou Guerinot

Member

Dr. Mary Lou Guerinot is the Ronald and Deborah Harris Professor in the Sciences in the Department of Biological Sciences at Dartmouth College. In 2016, she was elected to the National Academy of Sciences. Dr. Guerinot pioneered research on metal metabolism in plants through key discoveries of genes involved in major transport processes for minerals such as iron and zinc. Her research is critically important for both agriculture and human nutrition since iron and zinc deficiencies affect billions of humans that rely upon crop-based diets. Dr. Guerinot is also a member of various societies including the American Association for the Advancement of Science, American Society for Microbiology, American Society of Plant Biologists, and the Genetics Society of America. She received her B.S. in Biology from Cornell University, Ph.D. in Biology from Dalhousie University, and completed two Postdoctoral Fellowships at the University of Maryland, College Park and the DOE-Plant Research Laboratory, Michigan State University.

Janet Jansson

Member

Dr. Janet Jansson is Chief Scientist for Biology in the Earth and Biological Sciences Directorate and a Laboratory Fellow at the Pacific Northwest National Laboratory. Dr. Jansson's research interests are in the application of molecular "omics" tools to gain an understanding of the function of microbial communities in complex environments, ranging from soil to the human gut. She is currently coordinating two large research initiatives at PNNL; one is focused on microbiomes in transition "MinT" and the other is a DOE-funded project on the soil microbiome. From 2007-2014, she was a Senior Staff Scientist and at the Lawrence Berkeley National Laboratory (LBNL) and an Adjunct Professor at the University of California, Berkeley. Prior to that, she spent 20 years in Sweden with her last position as Professor (Chair) of Environmental Microbiology at the Swedish University of Agricultural Sciences (SLU) and Vice Dean of the Natural Science Faculty. Dr. Jansson recently completed a term as the President of the International Society for Microbiology (ISME). She is a fellow of the American Academy of Microbiology and of the Washington State Academy of Science. Dr. Jansson received her Ph.D. (1988) in Microbial Ecology from Michigan State University.

Lee-Ann Jaykus

Member

Dr. Lee-Ann Jaykus is a William Neal Reynolds Distinguished Professor in the Department of Food, Bioprocessing, and Nutrition Sciences at North Carolina State University. Dr. Jaykus works in the area of microbiological food safety, with specific expertise in food virology and microbial risk assessment. She is currently serving as the scientific director of the USDA-NIFA Food Virology Collaborative. Also called NoroCORE, the Collaborative is a large consortium of scientists and stakeholders working collectively to reduce the burden of foodborne illness associated with viruses. Her professional activities have included membership on the National Advisory Committee on Microbiological Criteria for Foods; participation in several National Academies food safety activities; and on the executive board of the International Association for Food Protection (IAFP), for which she served as president in 2010-2011. She has taught food microbiology/safety on the undergraduate and graduate levels, has mentored over 40 graduate students and 15 post-doctoral research associates, and authored or co-authored over 170 publications. Dr. Jaykus received a B.S. degree in Food Science and M.S. in Animal Science (Food Microbiology) from Purdue University. Her Ph.D. is from the University of North Carolina-Chapel Hill School of Public Health.

Helen H. Jensen

Member

Dr. Helen H. Jensen is a professor of economics and leads a research group focused on food and nutrition programs in the Center for Agricultural and Rural Development at Iowa State University, an internationally recognized research center that addresses issues of the food, agricultural, and natural resource sectors. Her research interests include the design of food and nutrition programs and policies, assessment of nutritional enhancement of foods, food demand and markets, linkages between agricultural policies and nutrition, and food-safety regulations. She has led projects that analyze food demand, involve dietary, nutritional, and health assessment as well as design and implement food consumption surveys in the United States as well as in several developing countries. Dr. Jensen was elected Fellow of the Agricultural and Applied Economics Association (AAEA) in 2012 and has served on the Executive Board of AAEA and the Council on Food, Agriculture, and Resource Economics (C-FARE). She has served on several committees of the National Academies of Sciences, Engineering, and Medicine including the recent Committee to Review Women, Infants, and Children Food Packages. She also chaired the Planning Committee for a Workshop on Exploring the True Cost of Food, and is an active member of the Food Forum. Dr. Jensen holds a Ph.D. in agricultural economics from the University of Wisconsin.

Rajiv Khosla

Member

Dr. Rajiv Khosla is Monfort Professor of Precision Agriculture at Colorado State University. His main research focus has been on management of in-field soil and crop variability using geo-spatial technologies for precision management of crop-inputs. In 2012, he was named the Jefferson Science Fellow by the National Academy of Sciences. Previously, he served two 2-yr terms on NASA's US "Presidential Advisory Board on Positioning, Navigation and Timing". He is a Fellow of the American Society of Agronomy; Soil Science Society of America; Soil and Water Conservation Society; and Honorary Life Fellow of International Society of Precision Agriculture. He is the Founder and Founding-President of the International Society of Precision Agriculture. Dr. Khosla received his B.S. in Agricultural Sciences at the University of Allahabad, India, M.S. in Soil Physics from Virginia Tech, and Ph.D. in Soil Fertility and Crop Management from Virginia Tech.

Robin Lougee

Member

Dr. Robin Lougee is the IBM Research Lead for Consumer Products & Agriculture. Robin chairs the 2017 Syngenta Crop Challenge Award in Analytics Prize Committee and serves on the Advisory Committee for the World Agri-Tech Innovation Summit. She is an industrial research scientist with a strong track record of delivering innovation to IBM and its customers. Robin pioneered the creation of COIN-OR, an open-source foundry for computational operations research, and led its growth to an independent non-profit that has served the scientific and business community for over 15 years. She was elected to the Board of INFORMS, the largest society in the world for professionals in the field of operations research, management science and analytics, Chair of the INFORMS Computing Society, and President of the Fora of Women in ORMS. She is a past Associate Editor of Surveys in Operations Research. Robin earned a Ph.D. in Mathematical Sciences from Clemson University in 1993.

Gregory V. Lowry

Member

Dr. Gregory V. Lowry is the Walter J. Blenko, Sr. Professor of Civil and Environmental Engineering at Carnegie Mellon University. He is the Deputy Director of the NSF/EPA Center for Environmental Implications of Nanotechnology (CEINT), and an Associate Editor of *Environmental Science: Nano* and *Nature: Scientific Data*. His research aims to safely harness the unique properties of engineered nanomaterials for making water treatment and crop agriculture more sustainable. Recent work aims at understanding how a nanomaterial's properties and environmental conditions influence their fate in soils, nanomaterial-plant interactions, nutrient uptake efficiency, and disease management. He has authored more than 130 peer-reviewed journal articles. He has served as PI or Co-PI on grants from the National Science Foundation, U.S. Department of Defense, U.S. Department of Energy, and U.S. Environmental Protection Agency, and from industry. He currently serves on the US EPA Science Advisory Board (Environmental Engineering committee) and on the board of directors of the Association of Environmental Engineering and Science Professors. He served on the National Research Council Committee to Develop a Research Strategy for Environmental Health and Safety Aspects of Engineered Nanomaterials. Dr. Lowry holds a B.S. in Chemical Engineering from the University of California at Davis, an M.S. from the University of Wisconsin at Madison, and a Ph.D. in Civil & Environmental Engineering from Stanford University.

Alison L. Van Eenennaam

Member

Dr. Alison L. Van Eenennaam is a Cooperative Extension Specialist in the field of Animal Genomics and Biotechnology in the Department of Animal Science at University of California, Davis where she has been on faculty for 15 years. Her publicly-funded research and outreach program focuses on the use of animal genomics and biotechnology in livestock breeding and production systems. Her current research projects include the development of genomic approaches to select for cattle that are less susceptible to disease, the development of genome editing approaches for livestock, and applied uses of DNA-based information on commercial beef cattle operations. She has given over 450 invited presentations to audiences globally, and uses a variety of media to inform general public audiences about science and technology. Dr. Van Eenennaam was the recipient of the 2014 Council for Agricultural Science and Technology (CAST) Borlaug Communication Award. She received a Bachelor of Agricultural Science from the University of Melbourne in Australia, and both an M.S. in Animal Science, and a Ph.D. in Genetics from UC Davis.

John D. Floros

Co-Chair

Dr. John D. Floros is Professor of Food Science & Engineering, Dean of the College of Agriculture, and Director of K-State Research and Extension at Kansas State University since 2012. For the previous 12 years, he was Head of the Food Science Department at the Pennsylvania State University, and prior to that he served as Professor of Food Process Engineering and Packaging at Purdue University. He also worked in the food industry, served on several boards, including FDA's Science Board, and he is a Fellow and Past-President of the Institute of Food Technologists (IFT), and a Fellow of the Food Systems Leadership Institute. He has expertise in food processing, engineering and packaging systems, and a broad understanding of food safety, microbiology, biochemistry and material science. As dean, he gained a broader perspective of our complex food system, including knowledge of animal and plant agriculture, water and natural resources, energy and environmental issues, as well as social and behavioral concerns. Similarly, he understands the continuum of agriculture-food-nutrition-health, and he has been extensively involved in international agriculture efforts and improving the sustainability of the global food system. He has published more than 220 refereed articles, research abstracts, book chapters and other publications, presented more than 400 scientific lectures, more than 300 being invited lectures, and received numerous awards and professional honors throughout his career. Dr. Floros received his B.S./M.S. in Food Science and Technology from Agricultural University of Athens, Greece and his Ph.D. in Food and Science Technology from University of Georgia, Athens.

Susan R. Wessler

Co-Chair

Dr. Susan R. Wessler is currently the Neil and Rochelle Campbell Presidential Chair for Innovation in Science Education and Distinguished Professor of Genetics at the University of California, Riverside. She is a member of the National Academy of Sciences and in 2011 she was elected its Home Secretary, the first woman to hold this position in its 150 year history. She is also a fellow of the American Association of the Advancement of Science, the American Academy of Arts and Sciences, the American Philosophical Society, and a Foreign Member of the Royal Society. Dr. Wessler is a plant molecular geneticist who studies the role of transposable elements in generating genetic diversity. Her laboratory has shown that transposable elements are an important mutagenic force fueling plant gene and genome evolution. She discovered a new type of transposon, called MITES, and unraveled revealed key features of gene regulation through her comparative studies of rice and maize. Wessler has contributed extensively to educational initiatives. As a Howard Hughes Medical Institute Professor, she adapted her research program for the classroom by developing the Dynamic Genome Courses where incoming freshman can experience the excitement of scientific discovery. Dr. Wessler is the recipient of several awards including the inaugural Distinguished Scientist Award from the Southeastern Universities Research Association (SURA), the Stephen Hales Prize from the American Society of Plant Biologists, the Excellence in Science Award from FASEB, and the McClintock Prize for Plant Genetics and Genome Studies from the Maize Genetics Community . She earned her B.A. in Biology from the State University of New York at Stony Brook in 1974, and her Ph.D. in Biochemistry from Cornell University in 1980.