NATIONAL ACADEMIES Sciences Engineering Medicine

National Science, Technology, and Security Roundtable
Meeting 13

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SPEAKER BIOGRAPHIES

Mahendra Bhandari's research lies at the intersection of agronomy/crop physiology and the use of technologies to investigate the physiological and biophysical processes involved in genetics, environment, and management interactions, with the overall goal of utilizing emerging technologies and associated data analytics to develop data driven tools for genotype selection, cropping system design, and crop management decisions. Specific research areas include remote sensing (Unmanned Aerial Systems, satellite imagery, and ground sensors), big data analytics, high throughput phenotyping for improved response to biotic and abiotic stresses, and precision agriculture for predictive and prescriptive management of irrigation, fertilizer, growth regulators, and harvest-aid chemicals. Dr. Bhandari received his B.S. in Agriculture at Tribhuvan University in 2011, his M.S. in Plant, Soil, and Environmental Science at West Texas A&M University in 2016, and Ph.D. in Agronomy at Texas A&M University in 2020.

Majed Dweik has a mission to motivate and inspire innovators from different disciplines and at varying ages, to develop and implement novel ideas. His students come not only from engineering and physics but also from art, music, business, education, and other areas. This unique mixture of collaborators work together in teams and discover novel ideas such as hybrid alternative energy harvesting. Dr. Dweik is leading to educate and implement nanotechnology in medical devices, energy harvesting, environmental products, and 3D printing. Dr. Dweik received a US patent in 2021 for his biotechnology system for detection of biological and chemical targets. Dr. Dweik has a B.S. and M.S. in Electrical and Computer Engineering, and a Ph.D. in Biological and Biomedical Engineering from University of Missouri-Columbia.

Kit Hardman is Senior Advisor in the Research Collaboration Advice Team (RCAT) in the UK government. Through this role he advises universities on how to manage national security risks linked to international research. His team supports academics and university leaders to understand the risks, and to put in place appropriate and proportionate safeguards to support their collaborative activity. This is done by promoting greater understanding within the academic research community about the UK's security policies and regulations, and by offering tailored risk-management guidance. We are here to help researchers create and sustain successful, thriving international research partnerships. Prior to this role, Kit was an active researcher and lecturer in Earth and Natural Sciences, working

internationally to find explanations for confounding natural phenomena through field work, isotopic analyses, remote sensing, and mathematical modelling. Kit received his B.S. in Geology/Earth Science at the University of Birmingham, M.S. in Petroleum Geoscience at Imperial College in London, and his Ph.D. in Geology/Earth Science at Durham University.

Chris Holly is a patent lawyer with experience in IP portfolio creation and counseling, early-, mid-, and late-stage fundraising diligence, targeted acquisitions, and post-grant adversarial proceedings at the USPTO. Chris counsels clients across the market spectrum, from small startup companies to billion-dollar private and publicly traded corporations. Chris' practice focuses on helping clients in the synthetic biology, agriculture, microbiology, and biotechnology industries create and leverage robust IP portfolios. He has vast experience in helping disruptive startup companies in these sectors carve out valuable IP space, monetize such, and position themselves for acquisition, IPO, or successful commercial launch. Chris is a member of the Fellows of the American Bar Foundation, a global honorary society of attorneys, judges, law faculty and legal scholars. In 2021, The National Law Journal honored Chris as a "Rising Star," noted for his accomplishments in intellectual property law. Chris obtained a Ph.D. in Biological Sciences from Mississippi State University with research funded by the US Department of Agriculture and focused upon microbial and plant community dynamics in agricultural systems. Chris obtained his B.S. in Biology at Millsaps College and his J.D. at University of Mississippi School of Law.

Jung-Kyu Jung

Rebecca Spyke Keiser is Chief of Research Security Strategy and Policy (CRSSP) at the National Science Foundation (NSF). She has served as head of Office of International Science and Engineering since coming to NSF in 2015. The office promotes an integrated, international strategy and manages internally focused programs that are innovative, catalytic and responsive to a broad range of NSF and national interests. Keiser is the first CRSSP, a position established in March 2020 to ensure the security of federally funded research while maintaining open international collaboration. In this role, Keiser provides the NSF director with policy advice on all aspects of research security strategy. She also leads for NSF in developing and implementing efforts to improve research security and the agency's coordination with other federal agencies and the White House.

Harriet Kung is the Deputy Director for Science Programs in the Office of Science at the U.S. Department of Energy (DOE). As Deputy Director for Science Programs, Kung is the senior career official providing scientific and management direction and oversight for Office of Science research programs, including Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics, as well as other supporting functions and offices. Kung served in various leadership roles in Basic Energy Sciences, the largest program in Office of Science, from 2002 - 2020. Before joining DOE in 2002, Dr. Kung was a technical staff member and a project leader at Los Alamos National Laboratory. Her research focused primarily on nanoscale materials and high temperature superconductivity. With over 20 years of service in the Department of Energy, Kung led and cultivated one of the Nation's premier physical sciences programs. During her tenure, she developed a new basic research paradigm in team-science approach to advance DOE's science and energy missions by spearheading a decade-long strategic planning initiative to assure timely, science-based solutions. She also positioned the Office of

Science as a National Quantum Initiative leader by establishing strategies to capitalize on strong synergy between disciplines such as physics, biology, materials, and engineering, as well as the world-leading scientific user facilities. She has chaired and co-chaired high-level interagency working groups to develop and implement national science priorities. Kung received her M.S. and Ph.D. degrees from Cornell University. She is the recipient of numerous awards including the Presidential Meritorious Executive Rank Award in 2009 and the Distinguished Executive Rank Award in 2022.

Michael McCaul is currently serving his tenth term representing Texas' 10th District in the United States Congress. At the beginning of the 118th Congress, Congressman McCaul became the chairman of the House Foreign Affairs Committee. This committee considers legislation that impacts the diplomatic community, which includes the Department of State, the Agency for International Development, the Peace Corps, the United Nations, and the enforcement of the Arms Export Control Act. In his capacity as the committee's chairman, McCaul is committed to ensuring we promote America's leadership on the global stage. In his view, it is essential the United States bolsters international engagement with our allies, counters the aggressive policies of our adversaries, and advances the common interests of nations in defense of stability and democracy around the globe. He will continue to use his national security expertise to work to counter threats facing the United States, especially the increasing threat we face from nation state actors such as China, Iran, Russia, North Korea, among others. Congressman McCaul served as the Chairman of the House Committee on the Homeland Security Committee during the 113th, 115th, and 116th Congresses. Prior to Congress, Michael McCaul served as Chief of Counter Terrorism and National Security in the U.S. Attorney's office, Western District of Texas, and led the Joint Terrorism Task Force charged with detecting, deterring, and preventing terrorist activity. McCaul also served as Texas Deputy Attorney General under current U.S. Senator John Cornyn and as a federal prosecutor in the Department of Justice's Public Integrity Section in Washington, DC. A fourth generation Texan, Congressman McCaul earned a B.A. in Business and History from Trinity University and holds a J.D. from St. Mary's University School of Law.

Shawn McGuirk is Deputy Director (previously, Senior Policy Advisor and Canadian Science Policy Fellow) at the Natural Sciences and Engineering Research Council of Canada (NSERC), an alumnus of the Government of Canada Recruitment of Policy Leaders program, and a Ph.D. and Vanier Scholar at the Goodman Cancer Research Centre at McGill University. His research centers on the role of cellular metabolism in cancer progression. During this degree he completed numerous international collaborations and high-impact peer-reviewed publications, and he launched a biomedical startup (ProVivoX) which won top prizes in competitions at the US Center for Advancing Innovation Breast Cancer Startup Challenge and at Fondation Montréal. Dr. McGuirk received his B.S., M.S., and Ph.D. from McGill University in Biochemistry.

Mirko van Muijen

Bindu Nair is Director of Basic Research at the U.S. Department of Defense, within the Office of the Secretary of Defense (OSD). In this role, she is responsible for oversight and coordination of the Department's $2.2 billion investment in basic science. This investment supports high risk and high pay-off basic research projects in fields including physical science, life science, environmental science, applied mathematics, and others that probe the limits of today's technologies and discover new

phenomena and know-how that may ultimately lead to future technologies for the Department. Prior to her assignment to OSD, Dr. Nair worked for the Department of the Army with oversight responsibilities over the science and technology program in power and energy. She has worked in the DoD laboratory system at Natick Soldier Research, Development and Engineering Center as well as in private industry at Foster Miller (Waltham, MA). Her research expertise is in the field of Material Science and Engineering including nanomaterials, polymers, and organic electronic materials, and she has taught graduate level courses in Polymer Synthesis. She has published primarily in membrane and materials development fields and holds patents in fuel cell technologies. Dr. Nair holds a B.Sc. from the University of Florida and a Ph.D. from the Massachusetts Institute of Technology in Materials Science and Engineering.

Giovanni Piedimonte MD, FAAP, FCCP, is responsible for enhancing Tulane's research mission across all fields including the humanities, neuroscience, environmental science, infectious diseases and more. In addition to his role as Vice President for Research, he is professor of medicine in the School of Medicine Department of Pediatrics. Dr. Piedimonte has also received training in healthcare management and managed care and capitation from the University of Miami School of Business, training in health policy and management from Harvard School of Public Health, training in healthcare finance and accounting from Baldwin Wallace University, and training in population health from Thomas Jefferson University. Dr. Piedimonte's research has been funded by the National Institutes of Health (NIH) for more than 30 years. He has been principal investigator or co-investigator for more than 40 research projects funded by the NIH, the National Cystic Fibrosis Foundation, the American Lung Association, the Asthma and Allergy Foundation of America and the pharmaceutical industry. He holds 18 U.S. and international patents. He has authored or co-authored more than 400 peer-reviewed journal articles, book chapters, monographs, editorials, and abstracts. His articles have been published in the country's leading scientific journals, and he has authored several op-eds on healthcare policy and leadership topics in national newspapers and online media. He is an internationally renowned physician, researcher, and healthcare executive.

Gregory Pompelli is the Director of the Center of Excellence for Cross-Border Threat Screening and Supply Chain Defense (CBTS), a Department of Homeland Security Science and Technology Center of Excellence. The Center is responsible for protecting people, plants, animals, and infrastructure in the U.S. from evolving biological threats outside its borders. As lead institution, Texas A&M University spearheads the cooperative efforts by academic, industry, government, and laboratory partners throughout the U.S. to provide research and educational resources that improve the nation's biological security. Prior to joining CBTS in January 2020, Pompelli served as the Associate Administrator of the USDA Economic Research Service (ERS) where he directed operations of an $86 million research agency. He also served as the Associate Director in the ERS Market and Trade Economics Division where he directed the work of 100 economists on commodity outlook and international markets reports published for industry, Congress, policy makers, farmers, and consumers. Before his federal experience, he was an Associate and Assistant Professor in the Department of Agricultural Economics and Rural Sociology at the University of Tennessee. He started his career as a Loan Officer for the Sacramento Bank for Cooperatives, then moved to Sunkist Growers as an Economic Analyst. Dr. Pompelli received his B.S. in Agricultural Economics and Rural Sociology from Pennsylvania State University and received his M.S. and Ph.D. in Agricultural Economics from University of California Davis.

Magesh Rajan has a unique blend of research and academic leadership experience, coupled with industrial, commercialization, and entrepreneurial experiences over a span of 18 years. Currently, he is the Vice President for the Division of Research & Innovation at Prairie View A&M University, a member of the Texas A&M University System. He oversees PVAMU's Office of Research Advancement, Office of Sponsored Programs, Office of Research Compliance/Export Controls, Office of Undergraduate Research, Office of Title-III Programs, Office of Innovation-Commercialization-Entrepreneurship-Economic Development, and Office of Research Communications. He serves as the Institutional Official (IO) for AWP, Empowered Official (EC) for PVAMU. Dr. Rajan has been with the Texas A&M University System for over 9 years, and is also a Full Professor of Electrical Engineering. He has over ten years of entrepreneurial experience in founding and leading three successful technology-based start-up companies and led R&D, commercialization, and economic development efforts. He has published two textbooks, five book chapters, and over 100 original research publications. He received his Ph.D. (U. of Wisconsin-Madison), and M.S. (U. of Tennessee-Knoxville) degrees in Electrical Engineering, M.B.A. (Texas A&M-Corpus Christi) in Strategic Management, M.L.E. (Harvard University) in Management and Leadership in Higher Education.

Sonny Ramaswamy is president of Northwest Commission on Colleges and Universities. Sonny served for six years as President Barack Obama's appointee as the Director of the National Institute of Food and Agriculture (NIFA) in Washington, DC. NIFA catalyzes transformative discoveries, education, and engagement to solve societal and agricultural challenges. Previously, Sonny served as dean of Oregon State University's College of Agricultural Sciences, director of Purdue's Agricultural Research Programs, university distinguished professor and head of the entomology department at Kansas State University, and professor of entomology at Mississippi State University. He has published over 150 journal articles, book chapters, and a book, and has a patent. Sonny is the recipient of several awards and honors, including Fellow of the American Association for the Advancement of Science, Fellow of the Entomological Society of America, Food Systems Leadership Award for Extraordinary Impacts on Food Systems, the Ellen Swallow Richards Public Service Award for Visionary Leadership and Exceptional Contributions to Advance the Human Sciences, and Hutchinson Medal from the Chicago Botanic Garden. Sonny's B.Sc. (Ag) in agriculture and M.Sc. (Ag) in entomology are from the University of Agricultural Sciences, Bangalore, India. Following his doctorate in entomology from Rutgers University, Sonny undertook postdoctoral research at Michigan State University. He is also a graduate of the Management Development Program from Harvard University.

Patricia Valdez is a Health Science Policy Analyst at the National Institutes of Health (NIH) and serves as the Extramural Research Integrity Officer in the NIH Office of Extramural Research (OER). In this position, she serves as a liaison between the NIH and the HHS Office of Research Integrity and handles allegations of research misconduct in NIH-funded extramural activities. For the past two- and one-half years, she has been involved in the implementation of updates to NIH grant applications and review language aimed at enhancing the reproducibility of biomedical science through rigor and transparency. Dr. Valdez received her Ph.D. in Molecular and Cell Biology from the University of California, Berkeley and carried out her postdoctoral training in Immunology Discovery at Genentech. She then joined the NIH as an Intramural Staff Scientist in the NIAID Laboratory of Clinical Infectious Disease (LCID). Prior to joining OER, Dr. Valdez served as the Manager of Publication Ethics for the American Society for Biochemistry and Molecular Biology (ASBMB).