NATIONAL ACADEMIES Sciences Engineering Medicine

GUIRR Meeting: Supporting K-12 STEM Education to Create the Foundations for Innovation

Government-University-Industry Research Roundtable

February 6-7, 2024

Speaker Biographies

Keynote:

Mary Wooley is the president and CEO of Research!America, an alliance that advocates for science, discovery, and innovation to achieve better health for all. Woolley is an elected member of the National Academy of Medicine and served two terms on its Governing Council. She is a Fellow of the American Association for the Advancement of Science and has served on the National Academy of Sciences Board on Higher Education and the Workforce, and the Board on Life Sciences. She is a Founding Member of the Board of Associates of the Whitehead Institute for Biomedical Research and served as a member of the University of Chicago Medical Center's Division of the Biological Sciences and the Pritzker School of Medicine Council. She is co-chair of the Science and Technology Action Committee. Woolley holds honorary doctoral degrees from Wayne State University and the Northeast Ohio Medical University. Woolley has also served as president of the Association of Independent Research Institutes, as a reviewer for the National Institutes of Health and National Science Foundation, and as a consultant to several research organizations. She has a 35-year publication history on science advocacy and research related topics, and is a sought-after speaker, often interviewed by science, news, and policy journalists.

Panel 1: The Evolving State of K-12 STEM Education in the US

Moderated by: Dr. Darryll J. Pines, President, University of Maryland
(9:15-10:45 am ET)

Lucie Howell is the Chief Learning Officer and Director of Learning & Engagement, at The Henry Ford. An engineer by head and an educator by heart, Lucie is focused on driving the Henry Ford learning philosophy of 'learning by doing' through innovation education. After 20 years working as a K-12 teacher, educational outreach and career development professional in STEM (Science, Technology, Engineering and Math) and STEAM (add the Arts), Lucie believes in authentic, trans-disciplinary learning opportunities. She believes that these experiences empower learners by allowing them to demonstrate their strengths while growing and developing new skills and expertise. It is this approach that is at the core of the Innovation Learning products and programs that make up The Henry Ford's inHub virtual venue. Learning that is powered by perspective, applied in the real world, and shared equitably by all.

Nancy Hopkins-Evans is the Senior Science Educator and Associate Director for Profram Impact, Acting Director of Equitable Impact BSCS Science Learning. Nancy Hopkins-Evans is the Associate Director for Program Impact and Senior Science Educator at BSCS Science Learning. She leads BSCS's strategy for broad and equitable impact by identifying next steps for existing and new lines of work focused on the magnitude of learning and changes in practice of students, teachers and leaders and the number and demographics of the communities and individuals reached. As a former chemistry professor, she has dedicated her career to K-12 science education, leading work at school districts, charter school organizations, and non-profit educational service providers. She also participates in national science education initiatives such as the National Academies of Science, Engineering and Medicine, 2021 Call to Action for Science Education: Building Opportunity for the Future and the 2028 NAEP Science Assessment Framework Development and Steering panels.

She holds degrees in chemistry from Chestnut Hill College and Villanova University and a Ph.D. in biological chemistry from the University of Michigan.

Alexandra Fuentes is the Program Manager overseeing Science, Technology, Engineering, Arts, Mathematics (STEAM) and Computer Science (CS) Programs in Fairfax County Public Schools (FCPS). In this role, she is leading the expansion of STEAM and CS from the earliest ages in pre-K through grade 12 to prepare students for careers of the future. Prior to this role, she served as an Albert Einstein Distinguished Educator Fellow in the U.S. Senate. She began her career teaching high school biology in DC and VA where she collaborated with scientists to increase underrepresented students' access to STEAM. She earned degrees from the University of Pittsburgh, the Harvard Graduate School of Education, and the University of Virginia.

Louie Lopez is the Director of the Department of Defense Science, Technology, Engineering and Mathematics (STEM) in the Office of the Undersecretary of Defense in Research and Engineering's, Basic Research Office. Mr. Lopez is responsible for the management and execution of the K through Graduate STEM efforts under the National Defense Education Program (NDEP). His responsibilities include the Science Mathematics and Research Transformation (SMART) scholarship, Manufacturing Engineering Education Program, and STEM education and outreach initiatives under the Defense STEM Education Consortium (DSEC) in collaboration with partners from academia, industry, and other community organizations with a shared mission in STEM. He serves on a variety of Federal interagency working groups as part of the Federal Coordination on STEM Education. He is also responsible for developing policy, strategic direction, and coordination of STEM education activities across the Department to ensure alignment with DoD and Federal STEM Education Strategic plans.

Panel 2: Early Entrepreneurship Education and the Future STEM Workforce

Moderated by Ahmad Ezzeddine
(11:00-12:15pm)

Ahmad Ezzeddine, Ph.D. is the Vice President for Academic Student Affairs and Global Engagement at Wayne State University. As WSU's Senior International Officer, Dr. Ezzeddine leads the university's global engagement and has developed partnerships with institutions in the Middle East, Latin America, Korea, India, and China which have led to innovative initiatives and new educational and research opportunities for students and faculty. He is a member of the National Academy for International Education and the Board of NAFSA: Association of International Educators, where he serves as NAFSA's Vice President for Scholarship and Institutional Strategy. A firm proponent of the crucial role that universities play in driving economic and community development, he is responsible for supporting community engagement and workforce development initiatives in Detroit and the region. He currently serves on the Executive Committee of the Association of Public and Land Grant Universities' (APLU) Commission on Economic and Community Engagement. Dr. Ezzeddine's degrees include a Ph.D. in Industrial and Systems Engineering, MBA in International Business, and a BA in Information Systems, all from Wayne State University.

David Coronado is a Senior Program Officer with the Lemelson Foundation. His work focuses on helping transform higher education and K-12 learning by developing new innovative teaching and learning approaches that help empower students with cutting-edge skills and confidence to design their own futures and to create solutions for our society's pressing problems. Coronado achieves this through the development and stewardship of a strong network of local and national cross-sector partnerships, advocacy, testing new models, and generating research. Coronado founded InventEd, a national community of practice focused on invention education. Before joining the Foundation, Coronado helped transform education and developed various efforts to provide young people with equal and inclusive access to invention education and STEM coursework through his involvement with Harvey Mudd College, Portland State University, and MESA (Math, Engineering, Science Achievement). Coronado is the chair emeritus of the national STEM Funder's Network.

MC Desrosiers is Chief Education Solution & Learning Technology Officer. She is an award-winning forward-thinking education executive and is known for innovation and scaling proven learning products lines. She oversees design, development, training, and evaluation of JA USA's education solutions and technologies to meet the lived lives of every student. She leads JA USA education strategic planning, key partnerships, and new channels for distribution.

Prior to joining JA, MC was Chief Program Development Officer for the Association for Supervision and Curriculum Development (ASCD), where she oversaw the business operations that included research, design, development, evaluation and delivery of an array of association programs, products, and services designed for member and nonmember practitioners, researchers, policymakers, and other constituents. MC has served as the Chief Strategy and Operations officer at Integrated Educational Strategies Inc. (IES) in the creation of new products and services dedicated to assisting schools with the implementation of a "blended model" of instruction. She also served as the Sr. Vice President of School and Academics for Kaplan Virtual Learning, managing the online/blended school delivery of educational programs. MC also served as SVP of Product Development, Systems and Operations of K12, Inc. (Stride). MC served with Origin Technology in Business, a national e-business technology practice. She served as director for Philips Electronics NV, where she established Fountain works, an internal best-of-breed digital/Internet technology organization, and helped develop and implement global e-business strategies. MC also established and managed Studio Interactive which produced edutainments products and games. MC holds a BS in Business and Finance from Mount Saint Mary's University and an MBA from Marymount University. MC's first experience with Junior Achievement was in high school as a participant in JA Company Program in the Washington, DC area. She has returned to JA with a passion for empowering our youth to own their economic success.

Jorge Valdes is Education Advisor at the United States Patent and Trademark Office where he is focused on increasing Intellectual Property knowledge through education, outreach and collaborations with a broad range of stakeholders including development of professional development programs for educators nationally. Prior to his role in government, Dr. Valdes held leadership positions at AT&T Bell Labs and received the E.O. Lawrence Laureate award from the U.S. Department of Energy on behalf of the President of the United States for pioneering work in reagent generation technology. Dr. Valdes received his Ph.D. from Columbia University and has an MBA from Northwestern Kellogg School of Business. He holds 33 U.S. patents and has published over 100 research papers in science and technology. Dr. Valdes was co-founder of the Young Science Achievers Program - a national program dedicated to empowering more young women and students under-represented in STEM fields and careers.

Panel 3: Encouraging Science Based Economic Development Through Regional Education Programs
Moderated by: Nichole Pitruzzello
(1:30-2:45pm)

Nichole Pitruzzello, M.Ed., is a seasoned educator and passionate advocate for innovative learning experiences. With over a decade of expertise in the field of education, Nichole brings a wealth of knowledge and practical insights to the table. Her journey in education has taken her across borders, having taught abroad in South Africa, where she gained invaluable perspectives on global educational practices. Upon returning to the United States, Nichole dedicated herself to refining educational strategies at the local level, spearheading curriculum development initiatives across three school districts in Connecticut. Her commitment to enhancing K-12 educational experiences led her to running the award-winning civics education program, Connecticut's Kid Governor, which empowers 5th graders to change the world. Nichole currently serves as the Director of Programs for the Connecticut Invention Convention – a K-12 education nonprofit that specializes in innovation and entrepreneurship programs. She continues to shape the future of education by designing, implementing, and expanding STEM education initiatives that foster critical thinking, ingenuity, and problem-solving skills among students.

Stephen Pruitt started his education career as a high school chemistry teacher in Fayetteville and Tyrone, Georgia. During his career, Dr. Pruitt has amassed an extensive policy, assessment and instructional background in education at the local, state and national levels. In May 2018, the Southern Regional Education Board unanimously voted to hire Dr. Pruitt as President. Prior to this appointment, Dr. Pruitt served as Kentucky's sixth commissioner of education, senior vice president for Achieve, Inc., and president of the Council of State Science Supervisors. A native of Georgia, Dr. Pruitt holds a bachelor's degree in chemistry from North Georgia College and State University, a master's degree in science education from the University of West Georgia and a Doctor of Philosophy in chemistry education from Auburn University. Dr. Pruitt and his wife are proud parents of two children.

Michelle Reaves serves as the Executive Director of the Detroit Area Pre-College Engineering Program (DAPCEP) and is the chief architect of several DAPCEP initiatives including the popular Pre-K to 3rd grade Explorers Program, the annual STEM Day held at the Michigan Science Center, GEAR-UP student programming, the bi-annual DAPCEP Student Showcase, and the STEM In-State and Out-of-State College tours. Michelle has over 20 years of experience in providing enrichment opportunities for students in STEM fields. Prior to DAPCEP, she was the Assistant Director of the Pre-College and Outreach programs in the College of Engineering at Wayne State University (WSU). Michelle graduated from Western Michigan University with a Bachelors' degree in Business Administration and earned an MBA from Wayne State University. She is also a member of the Great Lakes (MI) Chapter of the Links, Incorporated and serves as a volunteer for the Detroit Alumna Chapter of the Delta GEMS.

Eric Smith is the Tech Hubs Director at the U.S. Economic Development Administration (EDA) under the U.S. Department of Commerce. Eric leads government investments in innovation and technology economies through EDA's Tech Hubs program, which aims to strengthen our economic and national security by enabling the industries of the future to start, grow, and remain in the U.S.Eric was in-house counsel in fintech before joining government at the Patent and Trademark Office, focusing on wireless technologies. Earlier at EDA, he helped start its first innovation-centric program and improved EDA's digital infrastructure. At NASA, Eric led digital services as Chief Customer Officer for SBIR/STTR, building software to manage $200+ million in annual small business R&D. Eric was (mostly) raised and educated in Indiana, is a member of the New York bar, and has lived and worked in Washington, DC, for more than a decade. He holds a J.D. from the Indiana University Maurer School of Law and a B.S. in computer science and mathematics from the Rose-Hulman Institute of Technology.

Panel 4: Mapping the Future of Early STEM Education to Prepare an Innovation-Based Workforce
Moderated by: Col. Janelle Jackson
(3:00 – 4:15 pm ET)

Col Janelle T.H. Jackson is the Acting Director and Detachment 14 Commander of the Air Force Office of Scientific Research (AFOSR), Air Force Research Laboratory (AFRL), Arlington, VA. In this role she leads the management of the United States Air Force's global basic research investment. AFOSR has a staff of 200+ scientists, engineers and business professionals in Arlington, Virginia and international offices located in the United Kingdom, Japan, Brazil, Chile, and Australia. In this role, Col Jackson ensures the success of a $540 million per year basic research investment portfolio and the transition of resulting discoveries to Air Force Research Laboratory Directorates, to defense industries and to other federal agencies. The office's annual investment in basic research is distributed among roughly 200 leading academic institutions worldwide, 100 industry- based contracts, and more than 250 internal AFRL research efforts.

Col Jackson received her commission through the Air Force Reserve Officer Training Corps at Virginia Tech. Throughout her career, she gained extensive aircraft, launch range operations, engineering, and acquisitions experience. Her assignments include multiple program offices, the intelligence community, and a myriad of legislative affairs functions. She was selected for Intermediate Developmental Education (IDE) and served as Air Officer Commanding at the United States Air Force Academy where she developed officers of character and advised on fitness for commissioned service. Col Jackson also served as the Commander, 317th Recruiting Squadron, inspiring, engaging and recruiting future Airmen across Washington D.C., Virginia, Maryland, West Virginia, and North Carolina. Prior to her current assignment, Col Jackson served as the Chief, Networks Engineering Division and Military Assistant for a special access program critical to the Department of Defense and several mission partners.

James Moore As a member of the executive leadership team at the National Science Foundation (NSF), Dr. James L. Moore III is the Assistant Director for the Directorate for STEM Education (EDU). With an annual budget of over $1 Billion and personnel oversight for nearly 200 employees, he serves as the senior leader for EDU, which supports science, technology, engineering, and mathematics (STEM) projects focusing on K-12 education, undergraduate and graduate education, workforce and human resource development, and learning in formal and informal settings. Prior to his NSF appointment, Dr. Moore served, for over five years, as the university's vice provost for diversity and inclusion, chief diversity officer, and leader of the Office of Diversity and Inclusion (one of the nation's oldest, largest, and most comprehensive office of its kind) at The Ohio State University. From 2015 to 2017, he served as a program director for Broadening Participation in Engineering in the Directorate for Engineering at NSF, and, during that time, he was one of the program directors who helped launch the highly acclaimed, cross-directorate, NSF INCLUDES, a $100 million plus national broadening participation in STEM initiative. From 2011 to 2015, he was an associate provost for diversity and inclusion at The Ohio State University, where he managed numerous nationally-acclaimed programs and units.

Dr. Moore is nationally-recognized for his work on African American males, and he has served on The Ohio State University's faculty, since 2002. He is the first executive director for the Todd Anthony Bell National Resource Center on the African American Male and is the inaugural EHE Distinguished Professor of Urban Education at The Ohio State University. His research agenda focuses on school counseling, gifted education, urban education, higher education, multicultural education/counseling, and STEM education, and Dr. Moore is often quoted, featured, and mentioned in popular publications, such as the New York Magazine, New York Times, St. Louis Post-Dispatch, Columbus Dispatch, Spartanburg Herald, Cincinnati Enquirer, Journal of Blacks in Higher Education, Chronicle of Higher Education, and Diverse: Issues in Higher Education. Since 2018, he has been cited annually by Education Week as one of the 200 most influential scholars and researchers in the United States.

Erwin Gianchandani Erwin Gianchandani is the U.S. National Science Foundation's assistant director for Technology, Innovation and Partnerships (TIP), leading the newly established TIP Directorate. Prior to becoming the assistant director for TIP, he served as the senior advisor for Translation, Innovation and Partnerships, where he helped develop plans for the new TIP directorate in collaboration with colleagues at NSF, other government agencies, industry, and academia. During the previous six years, Gianchandani was the NSF deputy assistant director for Computer and Information Science and Engineering (CISE), twice serving as acting assistant director. Before joining NSF in 2012, Gianchandani was the inaugural director of the Computing Community Consortium, providing leadership to the computing research community in identifying and pursuing bold, high-impact research directions such as health information technology and sustainable computing. Gianchandani holds a Ph.D. in biomedical engineering from the University of Virginia. In 2021, Gianchandani received the Distinguished Presidential Rank Award, awarded to members of the Federal Government's Senior Executive Service for sustained extraordinary accomplishment.

William B. Bonvillian is a Lecturer at MIT, and Senior Director for Special Projects at MIT's Office of Digital Learning, leading research projects on technology issues and workforce education. From 2006 until 2017, he was Director of MIT's Washington Office, supporting MIT's long-standing and historic role in science policy. He teaches courses on science and technology policy and innovation systems at MIT and is coauthor of five books on innovation policy, *Workforce Education, A New Roadmap* (MIT Press 2021 – with Sanjay Sarma), *The DARPA Model for Transformative Technologies* (Open Book 2020), *Advanced Manufacturing: The New America Innovation Policies* (MIT Press 2018), *Technological Innovation in Legacy Sectors* (Oxford University Press 2015), and *Structuring an Energy Technology Revolution* (MIT Press 2009), as well as numerous articles and book chapters. Previously he worked for over 15 years on innovation issues as a senior advisor in the U.S. Senate, and earlier was a Deputy Assistant U.S. Secretary of Transportation. He serves on the National Academies of Sciences' Board on Materials and Manufacturing and its standing committee for its Innovation Policy Forum and has served on nine other NAS committees, is a member of the Babbage Forum on innovation policy at Cambridge University, is on the Polaris Advisory Council for the GAO's science and technology policy program, and chaired for four years the standing Committee on Science and Engineering Policy at the American Association for the Advancement of Science (AAAS). He was elected a Fellow of the AAAS in 2011 and received the IEEE's public service award in 2007. He has degrees from Columbia, Yale and Columbia Law.