National Science Foundation
Directorate for Engineering (ENG) Advisory Committee
Spring 2021

Member Biographies

TILAK AGERWALA is retired vice president, Systems, at IBM Research. He was responsible for developing the next-generation technologies for IBM's systems, from microprocessor architecture and design to commercial systems and supercomputers, as well as novel Supercomputing algorithms, systems software and applications. He currently leads TKMA Consulting. Agerwala joined IBM in 1979 at the T.J. Watson Research Center and has held executive positions at IBM in research, advanced development, development, marketing and business development. His research interests are in high performance computer architectures and systems.

Agerwala is a founding member of the IBM Academy of Technology, and a Fellow of the Institute of Electrical and Electronics Engineers. He has given over 100 invited technical presentations and Keynote talks at conferences, universities, and National Laboratories worldwide. He received his B.Tech. in electrical engineering from the Indian Institute of Technology, Kanpur, India, and his Ph.D. in electrical engineering from Johns Hopkins University, Baltimore, Maryland.

GILDA A. BARABINO is the president of Olin College of Engineering and professor of biomedical and chemical engineering. Previously she served as dean of The Grove School of Engineering at the City College of New York (CCNY). She also served as Daniel and Frances Berg Professor, with appointments in the Departments of Biomedical Engineering and Chemical Engineering, as well as the City University of New York School of Medicine.

A biomedical engineer trained in chemical engineering, with broad interest in global health, systems, and interdisciplinary engineering education, Barabino is a noted investigator in the areas of sickle cell disease, cellular and tissue engineering. She is an internationally recognized thought leader and highly sought speaker and consultant on race/ethnicity and gender in science and engineering, with particular focus on creating cultures and climates that support a sense of belonging. She has led several initiatives in these areas including serving as the founder and Executive Director of the National Institute for Faculty Equity.

Before joining CCNY, she served as associate chair for graduate studies and professor in the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University. She also served as Georgia Tech's inaugural Vice Provost for Academic Diversity. Prior to that, she spent 18 years at Northeastern University, rising to the rank of full professor of chemical engineering and serving as Vice Provost for Undergraduate Education.

Barabino is an active member of the National Academy of Engineering and serves on numerous committees of the National Academies of Science, Engineering and Medicine, including the Committee on Women in Science Engineering and Medicine; the Roundtable on Black Men and Black Women in Science, Engineering and Medicine; the Underrepresentation of Women of Color in Tech Project; the Ad-Hoc Committee for the Gulf Scholars Program; the Committee on Addressing Sickle Cell Disease; and the

National Institutes of Health National Institute of Biomedical Imaging and Bioengineering Strategic Planning Working Group. Barabino also serves as a member of the National Science Foundation's Advisory Committee for Engineering; the congressionally mandated Committee on Equal Opportunities in Science and Engineering; and the American Association for the Advancement of Science Committee on Science, Engineering and Public Policy.

Her many honors include the American Institute of Chemical Engineers Award for Service to Society (2019); the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (2018); the Pierre Galetti Award (2017), the American Institute for Medical and Biological Engineering's highest honor; and an honorary degree from Xavier University of Louisiana (2016). She is currently the Chair of the American Society of Engineering Education Engineering Deans Council. She sits on the board of trustees for VentureWell, Associated Universities, Inc., and Xavier University of Louisiana. Barabino earned her B.S. degree in chemistry from Xavier University of Louisiana and her Ph.D. in chemical engineering from Rice University.

ROBIN N. COGER is an experienced leader with a demonstrated record of success in higher education. She is the Dean of the College of Engineering, and a Professor of Mechanical Engineering, at North Carolina Agricultural and Technical State University (N.C. A&T) in Greensboro, NC. Prior to joining N.C. A&T, Coger served as a Professor and Center Director at the University of North Carolina at Charlotte. Her career at UNC-Charlotte spanned more than 15 years, where she served as a dedicated educator, researcher, and administrator.

Coger's technical research expertise is in solving design and performance problems related to tissue engineered organs, with special emphasis on liver replacement devices and their safe storage for off-the-shelf availability. Her work has been supported by grants from the National Institutes of Health, the NSF, and the Whitaker Foundation; and has resulted in numerous journal and conference publications in the areas of liver tissue engineering and cryopreservation, one patent, and two patent applications. Coger has been awarded for her excellence in research, teaching, and mentoring over her career, and is actively engaged in collaborations that advance faculty, innovative ventures, and student competitiveness.

Coger is a fellow of the American Society of Mechanical Engineers and of the American Institute for Medical and Biological Engineering. She is also a board member of the Greensboro Chamber of Commerce; the Advancing Minorities Interest in Engineering organization; and *FIRST* – an organization founded to inspire the interest and participation of young people in engineering, science and technology. She also chairs the Council of HBCU Engineering Deans. Aligned with her understanding of the importance of sharing best practices and concepts among engineering educators, Coger is also a member of the editorial board of the American Society of Engineering Education publication, PRISM.

Coger earned a B.S. from Cornell University and her M.S. and Ph.D. from the University of California, Berkeley, all in mechanical engineering. Coger also completed her post-doctoral research as a fellow at Harvard Medical School and the Department of Surgery at Massachusetts General Hospital in Boston.

KARINA MONTILLA EDMONDS is a globally recognized visionary leader in the field of innovation, technology transfer, and commercialization. She currently serves as the Vice President and Global Lead for Academies and University Alliances at SAP. In this role, she is leading university partnerships that inspire, expose and educate students through engaging SAP curriculum. She also oversees the Sales and Engineering Academies which develop early talent and emerging leaders to build the best sales and engineering talent in the world.

Prior to joining SAP, Edmonds was the Global Lead for Cloud AI at Google in Sunnyvale, California. At Google, her primary role was to facilitate research collaborations in AI between Google Cloud and top academic researchers. Edmonds joined Google Cloud from the California Institute of Technology (Caltech) where she served as the Executive Director for Corporate Partnerships. At Caltech, she was responsible for implementing and managing an integrated strategy with the private sector and major federal funding agencies across numerous research areas.

Edmonds was appointed by the U.S. Secretary of Energy as the first full-time Technology Transfer Coordinator for the U.S. Department of Energy (DOE) in April 2010. In that role, Edmonds was responsible for working with the DOE's national laboratories to accelerate the advancement of discoveries from the laboratory to the marketplace. She has also held positions at the Jet Propulsion Laboratory and TRW, Inc. (now Northrop Grumman). Edmonds has co-authored two patent applications in the area of noise reduction for the automotive environment. As a Principal Research Scientist, her research at Northrop Grumman was in support of speech recognition for mobile applications.

Edmonds has been a long-standing advocate for the promotion of science, technology, engineering, and math (STEM) careers, especially for underrepresented students and women. She is a product of a STEM program herself and continues to serve as a role model and mentor to students across the country. She has been a keynote speaker, panelist, and awardee at innovation, clean energy, and STEM events across the country and has received numerous national recognition and awards. She has served as a member of the White House Speaker Bureau that promotes STEM careers to women and girls. Her advocacy for STEM spans several decades, including her role as a founding member and volunteer for Science is Fun Inc. (SIFI) while still an undergraduate at the University of Rhode Island (URI).

She frequently speaks at industry engagements and currently serves on the boards for the Institute for Pure and Applied Mathematics at the University of California, Los Angeles and was confirmed by the Rhode Island State Senate to the inaugural Board of Trustees for the University of RI in March 2020. Edmonds previously served on the boards of the URI Foundation, Caltech Alumni Foundation and ConnectEd California. She received a BS in Mechanical Engineering from URI, where she was inducted into its Engineering Hall of Fame in 2011 and was named a Distinguished Alumna in 2013. She holds an M.S. and Ph.D. in aeronautics with a minor in materials science from Caltech in Pasadena.

BRUCE HORN is Distinguished Engineer at Datawire.io. Previously, he was Intel Fellow and Chief Technical Officer for the Intel Saffron Technology group, where he was responsible for driving new

applications and uses for Intel Saffron's memory-based reasoning system, a fundamentally new approach in the development of intelligent devices and systems. In prior work at Intel, Horn built a team to develop advanced conversational interfaces; that team provided the spoken language technology and mobile application for the Oakley Radar Pace running and cycling coach. Prior to joining Intel, Horn was a principal research software development engineer at Microsoft, where he worked on the creation and deployment of natural language systems for Bing; worked at Powerset, where he was responsible for the computational infrastructure of the Powerset Natural Language Search System; worked at Apple, where he created and developed the Macintosh Finder, the first widely used desktop graphical user interface, among other components of MacOS; and served as a member of the learning research group at the Xerox Palo Alto Research Center, where he contributed to several implementations of the Smalltalk virtual machine. Horn holds a B.S. in mathematical sciences from Stanford University and an M.S. and Ph.D. in computer science from Carnegie Mellon University.

LEAH JAMIESON is Ransburg Distinguished Professor of Electrical and Computer Engineering at Purdue University, John A. Edwardson Dean Emerita of Engineering, and holds a courtesy appointment in Purdue's School of Engineering Education. She is co-founder and past director of the EPICS – Engineering Projects in Community Service program. She served as the 2007 President and CEO of the IEEE and 2012-17 President of the IEEE Foundation. She has been recognized with the National Academy of Engineering's Gordon Prize for Innovation in Engineering and Technology Education, the NSF Director's Award for Distinguished Teaching Scholars, the Anita Borg Institute's Women of Vision Award for Social Impact, the National Association of Multicultural Engineering Program Advocates (NAMEPA) Dean of Engineering Champion Award, was named 2002 Indiana Professor of the Year by the Carnegie Foundation, and presented the Simon Bolivar medal from the National Ministry of Education of Colombia.

Jamieson is a member of the U.S. National Academy of Engineering, the American Academy of Arts and Sciences, a Fellow of the IEEE and ASEE, an Eminent Member of IEEE-Eta Kappa Nu, and an Honorary Member of Tau Beta Pi. She has been an advocate and activist promoting the success of women in engineering and computer science both at Purdue and through national and global professional societies. Jamieson received her S.B. in mathematics from MIT and her Ph.D. in electrical engineering and Computer Science from Princeton University, and has been awarded an honorary doctorate from Drexel University. She joined the faculty of Purdue in 1976.

MARY C. JUHAS is associate vice president in the Office of Research at the Ohio State University. In this role, she impacts the recruitment, retention and advancement of women faculty in the STEM disciplines with a goal to develop research leaders. She holds the appointment of clinical professor in the Department of Materials Science and Engineering. As the leader of Ohio State ADVANCE, Juhas directs "REACH for Commercialization™", a workshop series for women faculty inventors. She is an angel investor. She served a two-year IPA (intergovernmental personnel act) leave as program director in the Directorate for Engineering at the National Science Foundation. She was the 2015-2016 national president of the Women in Engineering ProActive Network (WEPAN) and the past chair of the Women in Materials Science and Engineering Committee of the Minerals, Metals, and Materials Society (TMS); Juhas is a Fellow of ASM International, and former ABET board member. Her scholarly research is focused on understanding microstructure/property relationships in structural metallic systems. Juhas earned a B.S. in chemistry from Seton Hill University, a Master's degree in materials science and Engineering from Carnegie Mellon University, and a Ph.D. in materials science and engineering from The Ohio State University. She was a Châteaubriand postdoctoral fellow at the University of Paris, France. Juhas has held engineering research and leadership positions at Lawrence Livermore National Laboratory and Edison Welding Institute.

JAMES R. MARTIN II is the U.S. Steel Dean of Engineering at the University of Pittsburgh Swanson School of Engineering, and the tenth to serve as Pitt's dean of engineering since 1882. Prior to joining Pitt, Martin served as the Bob Benmosche Professor and Chair of the Glenn Department of Civil Engineering at Clemson University.

Prior to Clemson, Martin spent more than 20 years on the civil engineering faculty at Virginia Tech and served five years as director of the Disaster Risk Management Institute. His professional career focused on earthquake engineering and risk assessment of natural hazards. He taught undergraduate and graduate courses in geotechnical and earthquake engineering, foundation engineering and disaster risk management, among others.

Internationally recognized for his research on earthquakes, Martin has served as an earthquake engineering consultant on more than 100 major infrastructure projects for global corporations, engineering firms and government agencies, and has contributed to improved earthquake building code standards in the central and eastern United States. He is regularly called upon to serve on field teams after earthquakes strike and was the team leader for the NSF-sponsored study of the 2011 earthquake in Virginia and Washington, D.C., and has led similar studies in Turkey and Japan.

Martin earned a B.S. in civil engineering from The Citadel, and an M.S. and Ph.D. in civil engineering from Virginia Tech. He has received numerous national, state and university awards for research, teaching and professional service, including the American Society of Civil Engineer's Norman Medal, the highest honor for published work in his field. He was inducted into the civil engineering department's Academy of Distinguished Alumni at Virginia Tech in 2015.

ROBIN MURPHY is the Raytheon Professor of Computer Science and Engineering at Texas A&M University, director of the Humanitarian Robotics and Artificial Intelligence Laboratory and is a founding director of the Center for Robot-Assisted Search and Rescue. She helped found the fields of disaster robotics and human-robot interaction, concentrating on developing human-centered AI for ground, air, and marine robots. Her work is captured in over 150 scientific publications including the award-winning book *Disaster Robotics* and a TED talk. Murphy has deployed robots to over 27 disasters in five countries including the 9/11 World Trade Center, Hurricane Katrina, Fukushima, the Syrian boat refugee crisis, Hurricane Harvey, and the Kilauea volcanic eruption. Murphy's contributions to disaster robotics have been recognized with the ACM Eugene L. Lawler Award for Humanitarian Contributions, the AUVSI Foundation's Al Aube Award, and the Motohiro Kisoi Award for Rescue Engineering Education.

LANCE C. PÉREZ was named dean of the University of Nebraska-Lincoln College of Engineering in May 2018, following two years as interim dean. An experienced academic and campus leader, Pérez previously was associate vice chancellor for academic affairs and dean of graduate studies at the university. He has been a faculty member in the Department of Electrical and Computer Engineering since 1995, where he holds the Omar H. Heins Professorship in Electrical and Computer Engineering.

In his previous administrative positions, Pérez was responsible for faculty and leadership development, promotion and tenure, instruction technology and classroom facilities' improvements, and graduate education. He led the implementation of $30 million in improvements to academic facilities and played a pivotal role in the university's entrance into the Big Ten Committee on Institutional Cooperation.

As a faculty member, he has won numerous teaching awards and has been principal investigator or co-principal investigator on more than $15 million in federally funded research. His research interests include signal and information processing, engineering education and faculty leadership development. From 2008-10, Pérez was a program director in the Division of Undergraduate Education at the National Science Foundation.

He has a B.S. in electrical engineering from the University of Virginia, and an M.S. and Ph.D. in electrical engineering from the University of Notre Dame.

DARRYLL J. PINES serves as president of the University of Maryland as well as the Glenn L. Martin Professor of Aerospace Engineering. Formerly the Nariman Farvardin Professor of Engineering and dean of UMD's A. James Clark School of Engineering, where he has been on the faculty since 1995, Pines amassed a record of academic leadership and research accomplishments. In 2019, he was elected to the National Academy of Engineering for his "inspirational leadership and contributions to engineering education."

As dean for 11 years, Pines instituted sweeping changes to improve the student experience, including revamping teaching in fundamental undergraduate courses; encouraging participation in national and international student competitions; emphasizing sustainability engineering and service learning; and expanding innovation and entrepreneurship activities. has served as Dean and Nariman Farvardin Professor of Aerospace Engineering at the Clark School since January 2009. He arrived at the Clark School in 1995 as an assistant professor and then served as chair of the department of aerospace engineering from 2006 to 2009.

During a leave of absence from the University (2003-2006), Pines served as program manager for the Tactical Technology Office and Defense Sciences Office of DARPA (Defense Advanced Research Projects Agency). While at DARPA, Pines initiated five new programs primarily related to the development of aerospace technologies, for which he received a Distinguished Service Medal. He also held positions at the Lawrence Livermore National Laboratory (LLNL), Chevron Corporation, and Space Tethers Inc. At LLNL, Pines worked on the Clementine Spacecraft program, which discovered water near the south pole of the moon. A replica of the spacecraft now sits in the National Air and Space Museum.

Pines' current research focuses on structural dynamics, including structural health monitoring and prognosis, smart sensors, and adaptive, morphing and biologically-inspired structures, as well as the guidance, navigation, and control of uninhabited aerospace vehicles. He is a fellow of the Institute of Physics, the American Society of Mechanical Engineers and the American Institute of Aeronautics and Astronautics, and he has received an NSF CAREER Award. Pines received a B.S. in mechanical engineering from the University of California, Berkeley. He earned M.S. and Ph.D. degrees in mechanical engineering from the Massachusetts Institute of Technology.

SARAH RAJALA is Dean Emerita of the College of Engineering at Iowa State University. She is a former president of the American Society for Engineering Education and chaired the Global Engineering Deans Council. She was named 2016 national engineer of the year by the American Association of Engineering Societies and received the 2015 national Harriett B. Rigas Award from the Institute of Electrical and Electronics Engineers Education Society honoring outstanding female faculty.

Rajala’s previous leadership positions were at North Carolina State University as associate dean for research and graduate programs and associate dean for academic affairs in the college of engineering; and Mississippi State University as a department chair and dean of the Bagley College of Engineering. She had a distinguished career as a professor and center director prior to moving into administrative positions.

Rajala earned her bachelor’s degree in electrical engineering from Michigan Technological University and master’s degree and Ph.D. from Rice University. She is a fellow of the American Association for the Advancement of Science, the American Society for Engineering Education and the Institute of Electrical and Electronic Engineers.

SUSAN SMYTH recently retired as the chief scientist for global manufacturing at General Motors and the director of GM R&D Manufacturing Systems Research Labs. In this capacity, she directed the creation of GM's global manufacturing R&D strategies and oversaw innovation and implementation of its advanced manufacturing technology portfolio. In this position at General Motors, Smyth was responsible for manufacturing technology research and development enabling the production of world class vehicle and propulsion systems and driving innovations to enhance quality, efficiency and flexibility of GM's manufacturing systems. During her career at GM she held a variety of leadership positions in manufacturing, engineering, "big data" analytics, and research and development.

Smyth is recognized as one of the strategic technology leaders inside and outside General Motors. She served as chair of the U.S. Manufacturing Council, which advises the Secretary of Commerce on government policies and programs that affect United States manufacturing. She was the GM Executive Representative and Chair of the Manufacturing Technology Leadership Council at the United States Council for Automotive Research. She has also served as executive technology advisor to a number of prestigious research institutes (University of Michigan, MIT, Georgia Tech, Northwestern, and Shanghai Jiao-Tong University, and others).

Smyth has been recognized for her technical and business achievements with numerous national and international awards. She was made a Fellow of the Society of Manufacturing Engineers in 2015 and was elected to the National Academy of Engineering in 2018. She has a Bachelor of Science degree in Physics, a Master of Science degree in Optoelectronics and Information Technology, and a Doctorate in Physics from the Queen's University of Belfast, Northern Ireland.

JAMES H. THOMPSON serves as executive vice president, engineering for Qualcomm Technologies, Inc. and chief technology officer. In this role he is responsible for global research and development activities associated with all wireless chipsets in QCT, Qualcomm's semiconductor business, as well as overseeing the companywide technical and product roadmaps across all business areas. Additionally, Thompson directs Qualcomm Research and Corporate Engineering.

Thompson has overseen hardware and systems engineering activities in QCT since 2001 and all QCT engineering since 2004. Prior to joining QCT, Thompson led Qualcomm's Globalstar engineering team and was also part of the team that developed the CDMA cellular standard. He has been a member of Qualcomm's executive committee since 2012.

Thompson received his bachelor's and master's degrees, as well as his doctorate in electrical and computer engineering from the University of Wisconsin-Madison. Thompson serves on the Wisconsin Alumni Research Foundation (WARF) Board of Trustees, a nearly 100-year-old foundation that supports research and technology transfer at the University of Wisconsin-Madison. He is also a member of the Council of Advisors for the Jacobs School of Engineering at the University of California, San Diego.

JEANNE M. VANBRIESEN is the Duquesne Light Company Professor of Civil & Environmental Engineering and Engineering & Public Policy at Carnegie Mellon University, where she also serves as the Vice Provost for Faculty. She is a fellow of the American Society of Civil Engineering (ASCE) and of its Environmental and Water Resources Institute (EWRI), as well as a fellow of the Association of Environmental Engineering and Science Professors (AEESP).

VanBriesen holds a B.S. in Education and a M.S. and Ph.D. in Civil Engineering from Northwestern University. She is a licensed professional engineer. Her research is in environmental systems, including detection of biological agents in water systems, bromine-containing disinfection by-products in drinking water, and impacts of energy extraction on water systems. VanBriesen has served on the board of the Association for Environmental Engineering and Science Professors and the U.S. EPA Science Advisory Board. She is currently the Chair of the Board of the Consortium for the Advancement of Hydrologic Sciences (CUAHSI).

VanBriesen has been an Aldo Leopold Leadership Fellow and she has received numerous awards, including the 2015 American Society of Civil Engineers Margaret S. Petersen Award and the 2009 American Society of Civil Engineers Pittsburgh Chapter Professor of the Year. VanBriesen was a selected presenter at the National Academy of Engineering Indo-U.S. Frontiers of Engineering Symposium on Infrastructure in 2008, and an invited speaker at the National Academy of Engineering Education Symposium in 2010. She was selected as a National Academy of Engineering Gilbreth Lecturer in 2011.

JELENA VUČKOVIĆ is the Jensen Huang Professor in Global Leadership in the School of Engineering, a professor of electrical engineering and (by courtesy) a professor of applied physics at Stanford University, where she leads the Nanoscale and Quantum Photonics Lab. She is also a director of Q-FARM, Stanford-SLAC Quantum Science and Engineering Initiative, and is affiliated with Ginzton Lab, PULSE Institute, SIMES Institute, Stanford Photonics Research Center (SPRC), SystemX Alliance, and Bio-X at Stanford.

Upon receiving her Ph.D. from the California Institute of Technology (Caltech) in 2002, Vučković worked as a postdoctoral scholar at Stanford. In 2003, she joined the Stanford Electrical Engineering Faculty, first as an assistant professor (until 2008), then an associate professor (2008-2013), and finally as a professor of electrical engineering (since 2013). She has also held visiting positions at the Max Planck Institute for Quantum Optics (MPQ) in Munich, Germany (2019), at the Institute for Advanced Studies of the Technical University in Munich, Germany (2013-2018), and at the Institute for Physics of the Humboldt University in Berlin, Germany (2010-2013).

Vučković has received many awards including Distinguished Scholar of the Max Planck Institute for Quantum Optics - MPQ (2019), Hans Fischer Senior Fellowship from the Institute for Advanced Studies in Munich (2013), Humboldt Prize (2010), Marko V. Jaric award for outstanding achievements in physics (2012), DARPA Young Faculty Award (2008), Chambers Faculty Scholarship at Stanford (2008), Presidential Early Career Award for Scientists and Engineers (PECASE in 2007), Office of Naval Research

Young Investigator Award (2006), Okawa Foundation Research Grant (2006), and Frederic E. Terman Fellowship at Stanford (2003). She is a Fellow of the American Physical Society (APS), of the Optical Society of America (OSA), and of the Institute of Electronics and Electrical Engineers (IEEE).

Vučković is a member of the scientific advisory board of the Max Planck Institute for Quantum Optics - MPQ (in Munich, Germany), of the Ferdinand Braun Institute (in Berlin, Germany), and a board member of SystemX at Stanford. Currently, she is also an Associate Editor of ACS Photonics, and a member of the editorial advisory board of Nature Quantum Information and APL Photonics.