NATIONAL ACADEMIES Sciences Engineering Medicine

ROUNDTABLE ON BLACK MEN & BLACK WOMEN IN SCIENCE, ENGINEERING & MEDICINE

Inventorship, Entrepreneurship, and Systems for Nurturing Black People in Applied and Translation Fields A Workshop

May 20-21 Workshop Speaker Bios

Co-Chairs of Workshop Committee

Engineer **Marian Croak, PhD** has worked on advancing Voice over Internet Protocol (VoIP) technologies, converting voice data into digital signals that can be easily transmitted over the internet rather than using traditional phone lines. Her work has furthered the capabilities of audio and video conferencing, making it a practical reality in today's world.

In 1982, Croak began her career at Bell Labs (later AT&T) with a position in the Human Factors research division, looking at how technology could be used to positively impact people's lives. She subsequently went on to work on network engineering, where she contemplated the potential of digital telecommunications. Rather than use a traditional phone line for voice communication along with a digital method for internet data, she and her team thought both could be done digitally with the internet. Consequently, they focused on enabling voice traffic that could be both reliable and of high quality. Today, the widespread use of VoIP technology is vital for remote work and conferencing, as well as personal communications.

During her career, Croak and her team created a text-to-donate system for charitable organizations that first saw widespread use after Hurricane Katrina hit New Orleans in 2005, which raised $130,000. After the 2010 earthquake in Haiti, the technology raised $43 million in donations. Croak joined Google in 2014, where she now is vice president of engineering and leads the Research Center for Responsible AI and Human Centered Technology. She also has led a team bringing broadband to developing countries in Asia and Africa.

Croak attended Princeton University for her undergraduate studies and the University of Southern California for her doctorate, focusing on statistical analysis and social psychology. With more than 200 patents to her name, Croak also works on racial justice efforts at Google and continues her goal of encouraging women and young girls in engineering. She was inducted into the National Inventors Hall of Fame and the National Academy of Engineering in 2022.

Ian Henry, PhD is a section head in R&D at Procter & Gamble. A native of Marion, IN, Ian earned his B.A. in chemistry from Earlham College in 2001 and a Ph.D. in Analytical Chemistry from Purdue University in 2008, where he studied under Dr. M. Daniel Raftery. Currently, Ian leads the Analytical group for P&G's global Feminine Care business.

Prior to Feminine Care, Ian led the Qualitative Mass Spectrometry group in the Trace Analysis Capability and the Analytical Digital Platforms group in corporate R&D. An analytical chemist with a background in bioanalytical NMR Spectroscopy, Ian started his P&G journey in the Beauty business, supporting innovation programs for brands such as Olay, Safeguard, Pantene and Head & Shoulders. During his tenure in Beauty, he was an original member of the Centric Team, a grassroots-led group of black Ph.D. scientists who led fundamental hair studies and value proposition creation that resulted in the startup of focused product initiatives for Consumers of African-Ancestry, most notably Pantene Gold Series, H&S Royal Oils and, more recently, the My Black Is Beautiful brand. The team's work earned both CTO Pathfinder and P&G Diversity and Inclusion Award honors. In 2016, Ian was selected as a Great Leader Under 40 by LEAD Cincinnati.

Beyond work, Ian is the Vice President of the Cincinnati Chapter of NOBCChE and active in the local Cincinnati Section of the ACS, where he is involved in STEM outreach throughout the greater Cincinnati region. Ian has served as a member of the Board of Trustees at Earlham College, where he led the Diversity Committee. He has also served a mentor in the Big Brothers Big Sisters program, serving since 2010.

Workshop Committee

James Howard is a lecturer, design historian, and industrial designer/inventor of some 300 products with 20 patents. He owns and operates entrepreneurial U, a specialty private career school of Design Thinking. Howard's course, "Bridge" Exploring New Career Pathways, takes students through the problem-solving processes: problem/necessity, solution, and execution and leads them to new career pathways and job opportunities. James Howard serves as Executive Director of The Black Inventors Hall of Fame, (www.BIHOF.org) a virtual museum devoted to immortalizing African Americans whose noteworthy inventions have improved lives yet gone unnoticed. James also serves on the Board of Directors for the United States Intellectual Property Alliance, and recently assisted the National Inventors Hall of Fame to curate their very first Black Inventors exhibit Breaking Barriers.

James serves on the advisory board for the American Institutes for Research, addressing the question - Does Race and Gender of the Patent Examiner Matter for Innovation? He is also the recent recipient of the TAGGIE award for his documentary film, The Gathering, and the co-producer of the groundbreaking film, The Great Equalizer, examining fairness in the patent system. James has served as a subject matter expert on design thinking for the Keller Innovation

Center at Princeton University. He is also a visiting lecturer for the University of Texas Center for Integrated Design.

James earned a Master's and Bachelor of Fine Arts -Industrial Design at the University of Illinois, Urbana, IL. James was recently awarded honorary member of the National Academy of Inventors, and he serves on the panel for Diversity, Equity, and Inclusion in the innovation ecosystem. He is also a recent recipient of the Inspire Top 100 award. For the past two years, James has served as a keynote speaker for various USPTO Black history month symposiums. For the past three years James has served as a judge for the esteemed Conrad Challenge program and he has also served as a judge for the Fairleigh Dickinson FDU Pitch competition.

Gualberto Ruaño, MD PhD has been an innovator in the biotechnology industry for 30 years, and is a pioneering expert in the science and clinical deployment of personalized medicine. His continued record of scholarship and innovation in translational genomics and clinical decision support counts over 130 publications and 12 patents. At the University of Connecticut, he is Assistant Professor of Psychiatry and Assistant Director for Special Projects at the Cato T. Laurencin Institute for Regenerative Engineering. Dr. Ruaño is also an Investigator at the Institute of Living of Hartford Hospital. He has led research and development grants totaling $11 M from AHRQ, NIH, NSF and DOE. Dr. Ruaño invented the Coupled Amplification and Sequencing System (U.S. Patent 5,427,911) in 1992 for the rapid determination of sequence variation which enabled the first FDA-approved pharmacogenomic decision support system for antiviral drug therapy.

Dr. Ruaño was a founding Director of the Personalized Medicine Coalition in Washington, D.C. and senior editor of the journal *Personalized Medicine* (London). He has served on steering committees working with the FDA on pharmacogenomic guidelines and as a member at the Manhattan Institute's 21st Century FDA Task Force. He is a Fellow of the National Academy of Clinical Biochemistry and of the American Institute for Medical and Biological Engineering. He serves as a member of the Clinical Pharmacogenetics Implementation Consortium and the Pharmacogene Variation Consortium. Dr. Ruaño was elected to the Connecticut Academy of Science and Engineering in 2004. He was awarded the 2005 Medical Technology Award by the Biomedical Engineering Alliance of Connecticut for his contributions to personalized medicine and molecular diagnostics.

He obtained his B.A. degree from Johns Hopkins University, where he was elected to Phi Betta Kappa. He obtained M.D. and Ph.D. degrees from Yale University, where he was a Fellow of the NIH Medical Scientist Training Program and the Ford Foundation. He is one of the 28 alumni in the University's history honored in the *Yale Innovation Timeline*.

Shameika Wilmington, PhD received her B.S. in Biochemistry from the University of Iowa, where she published her first scientific article. Enjoying having an independent research project, she thrived in the academic lab environment and decided to attend graduate school. Dr. Wilmington received a Ph.D. in Biochemistry and Cell Biology from Northwestern University

where she engineered inducible proteasome degradation systems to control cellular protein concentration. During her graduate program she also received a certificate from Kellogg School of Business for completing the competitive Business Management for PhDs program. Towards the end of her studies, Dr. Wilmington spent time at The University of Texas at Austin continuing her research as a Bill & Melinda Gates Research Foundation recipient. Dr. Wilmington later accepted a position in Boston with Procter & Gamble/Gillette in Research & Development as a Regulatory Affairs Scientist.

Today Dr. Wilmington is the Research & Development Director for Regulatory Affairs. She is responsible for the governance and compliance of the Global Grooming/Shave Care Business in North America, Europe, and Latin America. Externally, Dr. Wilmington represents Procter & Gamble on the Greater Boston Chamber of Commerce Young Professional Advisory Board and leads the partnership between Gillette and Dearborn STEM Academy, a Boston public high school.

Workshop speakers (in alphabetical order by last name)

John L. Anderson, PhD is the president of the National Academy of Engineering since July 1, 2019. He was born in Wilmington, DE, and received his undergraduate degree from the University of Delaware in 1967 and a PhD degree from the University of Illinois at Urbana-Champaign in 1971, both in chemical engineering. He served as president of the Illinois Institute of Technology (IIT) and Distinguished Professor of Chemical Engineering from 2007 – 2015. Before that he was provost and executive vice president at Case Western Reserve University (2004–2007), following 28 years at Carnegie Mellon University including 8 years as dean of the College of Engineering and 11 years as head of the chemical engineering department. He began his professional career as assistant professor of chemical engineering at Cornell University (1971-1976).

Dr. Anderson was elected to the NAE in 1992 for contributions to the understanding of colloidal hydrodynamics and membrane transport phenomena. He was elected an NAE Councillor in 2015 and served on the Executive Compensation Committee and Temporary Nominating Committee on Member Diversity. He has also served on the Membership Policy Committee, Nominating Committee (chair), Chemical Engineering Section (chair, vice chair, section liaison, member), Chemical Engineering Peer Committee (chair), and Committee on Membership (immediate past chair, chair, vice chair, peer committee chair). His service also includes numerous National Academies activities, such as the Committee on Determining Basic Research Needs to Interrupt the Improvised Explosive Device Delivery Chain (chair); Committee on Review of Existing and Potential Standoff Explosives Detection Techniques (chair); Organizing Committee for the National Security and Homeland Defense Workshop (co-chair); Board on Chemical Sciences and Technology (co-chair); and Ford Foundation Minority Postdoctoral Review Panel on Physical Sciences, Mathematics, and Engineering.

In addition to his NAE membership, Dr. Anderson is a fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science. He was appointed to the National Science Board in 2014 for a six-year term. He received the Acrivos Professional Progress Award from the American Institute of Chemical Engineers (AIChE) and an award from the Pittsburgh Section of AIChE for "Outstanding Professional Accomplishments in the Field of Academics," and he is listed on the Alumni Wall of Fame at the University of Delaware. In 2012 he received the National Engineering Award from the American Association of Engineering Societies. He has held visiting professorships at the Massachusetts Institute of Technology (fellow of the John Simon Guggenheim Foundation), University of Melbourne (Australia), and Landbouwuniversiteit Wageningen (the Netherlands). He has presented guest lectures at universities throughout the United States and is the author of numerous journal articles and book chapters. He has received honorary doctorates from Case Western Reserve University, Illinois Institute of Technology, Rensselaer Polytechnic Institute, and the University of Delaware.

Charles Bridges MD, MS, ScD is Chief Scientific Officer and Executive Vice President of CorVista Health. CorVista Health (formerly known as Analytics 4 Life) is a medical device manufacturing company that specializes in the fields of machine learning, cloud computing, and artificial intelligence to develop a completely new form of medical imaging. Dr. Bridges brings over 35 years of healthcare experience as both a leading cardiac surgeon and investigator and also as a serial healthcare company leader in both global and earlier stage companies.

Previously, Dr. Bridges was Chief Technology Officer and Head of Cross Enterprise Innovation for the Cardiovascular and Pulmonary Therapeutic Areas at Janssen Pharmaceuticals, of Johnson and Johnson, Inc (JNJ). At JNJ, Charles served as the scientific lead on nearly $1 billion of cardiovascular and neurovascular device equity investments and acquisitions including the development of the first ever FDA-approved neurovascular device to treat heart failure. In 2021, at JNJ he received the Juan A. Simpson Outstanding Employee Service Award for "excellence both personally and professionally". He is also the co-founder of an early-stage biotech company in the muscular dystrophy gene therapy space.

Prior to JNJ, , Dr. Bridges was the first African American Full Professor of Surgery at the University of Pennsylvania, Chief of Cardiac Surgery at Pennsylvania Hospital, and Professor and Chairman of the Department of Cardiothoracic and Vascular Surgery at Carolina's HealthCare System. During his academic career, Charles received $10 million in continuous National Institutes of Health (NIH) RO1 funding, had 175 peer-reviewed publications and 15 patents issued. Dr. Bridges received his bachelor's degree in applied physics from Harvard College *magna cum laude*, entered Harvard Medical School at age 18 and graduated with honors. Charles also earned a Master of Science in Electrical Engineering and Computer Science and a Doctor of Science in Chemical Engineering from the Massachusetts Institute of Technology. In 2022, he was elected to the U.S. National Academy of Engineering.

Lance R. Collins, PhD in 2020 was named the inaugural vice president and executive director of the Virginia Tech Innovation Campus that is opening in Alexandria, Virginia in 2025. The

Innovation Campus is a startup graduate campus offering advanced degrees in computer science and computer engineering. It was created as part of the deal to attract Amazon's second headquarters to northern Virginia. Collins oversees the hiring of faculty and staff, development of research areas, implementation of a novel project-based curriculum, and growth of the enrollment. Additionally, he has set the goal to make the Innovation Campus the most diverse graduate technology program in the country. Today, the campus has 18 faculty and over 300 students on their way to 50 faculty and 750 students at full build.

Prior to joining Virginia Tech, Collins served as the Joseph Silbert Dean of Engineering at Cornell University from 2010-2020 and the S. C. Thomas Sze Director of the Sibley School of Mechanical & Aerospace Engineering from 2005-2010. In 2011, he was part of the team that successfully bid to partner with New York City to build Cornell Tech, which opened its Roosevelt Island campus in 2017. In his role as dean, Collins accelerated the college's efforts in diversity, overseeing the increase in the proportion of underrepresented minority students from 8 to 19 percent, and the percentage of undergraduate women from 33 to 50 percent, more than twice the national average. For those efforts, he received the inaugural Mosaic Medal of Distinction from Cornell Mosaic and the Edward Bouchet Legacy Award from the Bouchet Graduate Honor Society.

Collins is a professor of mechanical engineering. His research is focused on the application of direct numerical simulation to a broad range of turbulent processes. He is a fellow of the American Physical Society, the American Association for the Advancement of Science, and the American Institute of Chemical Engineers. In 2014, he received the William Grimes Award from the AIChE and in 2021 he was elected to the National Academy of Engineering. Collins graduated from Princeton in 1981 with honors and holds a M.S. and Ph.D. from the University of Pennsylvania, all in chemical engineering.

Michael Curry PhD is a professor in the Department of Nanoengineering at the Joint School of Nanoscience and Nanoengineering at North Carolina A&T State University. Curry completed his B.S. in chemistry at the University of West Alabama (1999) and his Ph.D. in analytical chemistry at the University of Alabama (2004). Curry has spent the last 15 years as an HBCU professor and researcher and mentored countless HBCU undergraduate and graduate students. His research career has focused on developing biodegradable materials to replace synthetic polymers reducing their negative impact on climate change, as *documented* in 40 peer-reviewed publications, two U.S. patents, three pending patent applications, and over 100 technical presentations. He has served as a primary and co-primary investigator on numerous multidisciplinary, multi-institutional research grants, bringing over 20 million in grant funding to support research and educational capacity-building activities at HBCUs.

Curry has made a far-reaching impact in STEM education by establishing infrastructure, partnerships, and educational platforms to recruit diverse students and prepare them for STEM careers. His passion for STEM education has resulted in programs that include the (1) development of K-12 curricula to improve science education at school districts of the Alabama

Black Belt region and beyond, (2) an evidence-based bridge program that provides mentoring and academic support to promote persistence in STEM, (3) summer internship and student exchange programs for undergraduate and graduate students, and (4) a graduate education model to provide joint mentorship and promote a community of underrepresented students pursuing faculty positions, and much more. Curry's efforts in STEM have earned him numerous accolades, including being named the 2021 NOBCChE HBCU Pioneer Awardee, nomination for the 2025 National American Chemical Society Henry and Camile Award for mentoring and encouraging URMs in STEM, The Top 100 Magazine's 2022 list of Top 100 Innovators & Entrepreneurs, and featured on the cover of Exeleon's Black History Month magazine for his work in promoting URM as the founder and CEO of Eco-friendly Plastic Materials, LLC.

Curry has partnered with global societies and organizations to increase the meaningful engagement of HBCUs within the chemical enterprise. Among his efforts, he has organized a very high-impact ACS Accounts of Chemical Research (ACR) Special Issue Highlighting *Research at HBCUs* and authored the ACR Editorial *"Advancing Research at the Nation's 101 HBCUs and Their Role in Maintaining the Nation's Competitiveness in Science and Technology*" which has gained notable recognition as the start of the playbook guide for engaging HBCUs.

Ben Esner is the Director of the Center for K12 STEM Education at the NYU Tandon School of Engineering. The Center designs and runs high quality initiatives in engineering, science and technology education and research for middle and high school students from New York City, the US and around the globe. Nearly 550 students attend a variety of in-depth, on-campus programs every year.

The Center's mission is to promote participation and inclusion in STEM by providing access and opportunity to explore, learn, and excel in these fields. In service of this mission, it seeks to lower barriers for students and families through comprehensive outreach, engaging curriculum, and supportive classroom environments. The Center seeks students that can benefit most from its opportunities and who will be active collaborators in its community of burgeoning STEM scholars.

Prior to joining NYU Tandon, Ben held the post of Senior Vice President for Programs at Brooklyn Community Foundation. At the foundation he created competitive grant programs disbursing $5 million annually to address a broad range of educational and social issues affecting families and young people. Ben was also the Deputy Director of Independence Community Foundation, joining shortly after its founding; in that role, Ben helped develop and nurture its initial grant programs and organizational infrastructure. He was instrumental in its later transition to Brooklyn Community Foundation.

Ben was Vice Chair and Secretary of the Board of Trustees of Bedford Stuyvesant Restoration Corporation, the country's first community development organization, where he served as a member of the board for 18 years. He was a founding Trustee of four public charter schools serving the communities of Bedford Stuyvesant, Brownsville, Ocean Hill and Canarsie. Earlier

in his career, Ben was Chief of Staff to the Commissioner of the New York City Department of Environmental Protection and Assistant to the Brooklyn Borough President for Environmental Affairs. In addition, he has had stints in the private sector as a government relations specialist and in a public relations firm. Ben is a New Yorker and, most importantly, a lifelong Brooklynite.

Denise Fall, MBA is Head of D.E.I., U.S. at Johnson & Johnson. She is a seasoned leader with over 20 years of experience in creating positive organizational change and delivering exceptional business outcomes through exceptional teamwork. As the Head of Diversity, Equity, and Inclusion (DEI) for the US at Johnson & Johnson, she oversees the DEI strategy and initiatives for the US market, aligning their organization with their global vision and values.

Her core competencies include sales leadership, talent development, and marketing, which she has honed through her previous roles and achievements at J&J. She has coached, motivated, and developed diverse and high-performing teams, earning multiple awards and recognitions, such as the Janssen BRAVO Award, the Sensei Award, and the Standard of Excellence. She has also pioneered and executed a DEI program that was adopted nationally, demonstrating her ability to innovate and collaborate across functions and levels. She is passionate about empowering others, fostering collaboration, and driving excellence everywhere.

Whitney Gaskins, PhD is the Associate Dean of Inclusive Excellence, Community Engagement and Faculty Development in the University of Cincinnati College of Engineering and Applied Science, one of two African-American women currently teaching in the faculty of the College of Engineering. Whitney earned her Bachelor of Science in Biomedical Engineering, her Master of Business Administration in Quantitative Analysis and her Doctor of Philosophy in Biomedical Engineering/Engineering Education. In her role as Associate Dean, Dr. Gaskins has revamped the summer bridge program to increase student support and retention as well as developed and strengthened partnerships with local area school districts to aid in the high school to college pathway. She serves as the Principal Investigator for both the Choose Ohio First Program (COF) and Ohio LSAMP grants. Through these grant programs the students receive competitive scholarship funding and professional development workshops which help prepare them to enter the STEMM workforce.

In 2009, she founded The Gaskins Foundation, a non-profit organization, who launched the STEMulates year-round K-12 program, which is a free of charge program that introduces more students to math and science, that currently offers programming in five cities. She was named the 2017 K12 Champion by the National Association of Multicultural Engineering Program Advocates (NAMEPA). In 2015, Dr. Gaskins was awarded the Janice A Lumpkin Educator of the Year Golden Torch Award. In 2019, she was recognized by the Greater Cincinnati Chamber as a Black History Maker. She was a recipient of the Dr. Terry Kershaw Faculty Excellence Award and the Excellence in Teaching Award from the University of Cincinnati for her innovative honors course Sticky Innovation (stickyinnovation.com). She was inducted in the 40 under 40 class of 2019, recognized as a 2021 YWCA Career Woman of Achievement, a 2022 Girl Scouts Woman of Distinction, a 2023 Educational Leadership (College Level Promotion of Education)

awardee by the Women of Color in STEM conference and a two-time 2024 NSBE Golden Torch Award winner for both her work at UC and The Gaskins Foundation.

Garth Graham, MD is Director and Global Head of Healthcare and Public Health at Google/YouTube. He is a cardiologist, researcher and public health expert. He previously served in two US administrations as US Deputy Assistant Secretary for Health, and was Assistant Dean for Health Policy and Chief of Health Services Research in the department of medicine at the University of Florida School of Medicine, President of the Aetna Foundation as well as Vice President & Chief Community Health Officer at CVS Health. He has served on several boards, including the National Heart Lung, and Blood Institute Advisory Council; the Institute of Medicine Board on Population Health and the board of the National Quality Forum.

An elected member of the U.S. National Academy of Medicine, Garth obtained his MD at Yale University School of Medicine, MPH at Yale School of Public Health, Internal Medicine at Massachusetts General Hospital and Cardiology fellowship at Johns Hopkins. He holds three board certifications including internal medicine, cardiology and interventional cardiology. He also holds an honorary Doctor of Laws from Regis College. In 2021, the Satcher Health Leadership Institute at Morehouse School of Medicine inaugurated the Garth N. Graham Distinguished Lectureship Award, which spotlights trail blazers who are leading the creation and advancement of health equity.

Eboney Hearn holds the position of Executive Director of the MIT Introduction to Technology, Engineering, and Science (MITES). She earned a bachelor's of science in chemical engineering from MIT and her Ed.M. from Harvard University.

She joined MITES in 2016 and has been dedicated to promoting access to science, technology, engineering and mathematics fields for underrepresented students for two decades. In her current role, she focuses on implementing strategic outreach initiatives within MIT's School of Engineering, engaging over 400 middle and high school students, annually, who are aspiring scientists and engineers.

Prior to her tenure at MITES, Eboney served as the Assistant Dean for Graduate Education and Diversity Initiatives at the Office of Graduate Education at MIT and as Program Director, Diversity Initiatives at the Broad Institute at MIT. In that role, she implemented a multi-million dollar NHGRI Diversity Action Plan (R25) grant. Earlier in her career, Eboney worked as a manufacturing engineer at IBM, where she spearheaded various manufacturing processes in circuit board printing and co-patented a groundbreaking photolithography process. She then pivoted her career to contribute her experiences and expertise to reaching students as a middle and high school mathematics teacher in the Boston public school system for five years.

Eboney co-chairs the subcommittee on mentoring for the newly established Postdoctoral Fellowship for Engineering Excellence within the MIT School of Engineering. Additionally, she actively contributes to several committees and networks, including the MIT Diversity Think

Tank, the Steering Committee of the UMass Amherst Researchers, Educators, and Business Leaders Network funded by NSF, and the Committee on Extraordinary Engineering Impacts on Society with the National Academies of Sciences, Engineering, and Medicine.

In recognition of her consistent dedication, Eboney was honored with the 2022 Outstanding Contributor MIT Excellence Award. Eboney has provided strategic leadership and coordinated efforts to enhance student diversity and academic achievement across all educational levels. She has championed diversity in STEM and mentored and guided over 3,000 young scientists and engineers.

Dr. Lonnie Johnson holds a B.S. in Mechanical Engineering, a M.S. in Nuclear Engineering from Tuskegee University and is a 2022 inductee of the National Inventor's Hall of Fame. His professional service includes leadership roles on the Stealth (B2) Bomber and NASA's Voyager, Galileo, and Cassini missions. He is the Founder of Johnson Research & Dev., an invention incubator, Founder of JTEC Energy, Inc. for his high efficiency solid-state engine, and Founder of Johnson Energy Storage, Inc. for his revolutionary rechargeable battery using proprietary solid glass electrolyte. Mr. Johnson's STEM Activity Center (JSAC) is a 501(c)3 non-profit that mentors grade school students in partnerships with Georgia "FIRST Robotics", the Forever Young Foundation and Meta (Facebook) for a "Creator's Zone". He is a former Air Force Officer, has over 140 patents and is the inventor of the *Super Soaker*® water gun.

Lindiwe Matlali is an influential leader in technology and entrepreneurship, renowned for her substantial contributions to digital transformation and social innovation. Her academic journey began with a Bachelor of Commerce in Economics and Statistics from the University of Cape Town, laying a robust foundation for her future endeavors. Aspiring to enhance her business acumen, Lindiwe then completed several executive programs at the Gordon Institute of Business Science at the University of Pretoria, where she mastered General Management, Board Leadership, Private Equity, and Strategic Execution.

Her passion for technology and social change propelled her to further her education at prestigious institutions such as Stanford University, where she earned Graduate Certificates in Innovation and Entrepreneurship and Social Entrepreneurship. Currently, she is expanding her expertise by pursuing a Master's in Technology Management at Columbia University and a Master's in Innovation Studies at Wits Business School.

Professionally, Lindiwe has made significant strides as the Founder and CEO of Africa Teen Geeks, a non-profit organization committed to introducing African youth to computer science. Her roles extend into public service where she actively contributes as a Commissioner on the Presidential 4IR Commission and as a board member of the National Financial Aid Scheme.

Lindiwe's excellence and leadership have not gone unnoticed. Her accolades include the Telkom Women in Tech Award, the Charlotte Maxeke Excellence in STEM Award, and the Schwab Foundation Social Entrepreneur of the Year. Additionally, she made history as the first African

recipient of the German Digital Female Leader Award and was honored by Queen Elizabeth II as a Commonwealth Point of Light Awardee.

In addition to her leadership at Africa Teen Geeks, Lindiwe oversees strategic business development as the CEO of Apodytes Pty Ltd. Her dynamic career, marked by prestigious awards and high-impact roles, highlights her unwavering commitment to enhancing technology access and education across Africa. Through her visionary leadership, Lindiwe Matlali continues to inspire and pave the way for future generations in the global tech landscape.

Thema Monroe-White, PhD is an evaluator, instructor and race scholar. Dr. White is an Assistant Professor in the Department of Technology, Entrepreneurship, and Data Analytics at Berry College and Academic Director of the Campbell Center for Data Analytics. As an interdisciplinary scholar, she examines the entrepreneurial, workforce and educational pathways of racially minoritized groups in science, engineering and information technology fields. Her research is concerned with understanding the innovative pathways for achieving social and economic justice for minoritized groups via data literacy, STEM education, and entrepreneurship.

Dr. White has received multiple federal grants to study racial equity in entrepreneurship and STEM fields and has been named a special government employee data scientist for the US Bureau of Labor Statistics. She holds a Ph.D. in science, technology, and innovation policy from the Georgia Institute of Technology as well as master's and bachelor's degrees from Howard University.

Carolyn W. Oglesby, PhD is the oldest of three children of Mr. Ira and Dr. Gladys West. She is married to Barry Oglesby. She has a son/daughter in law, a stepdaughter/son in law, and four grandchildren. Carolyn has a BA in Economics from Mary Washington College, an MBA from Averett University, and a PhD in Organization and Management, specializing in Human Resource Management, from Capella University.

Carolyn has worked at the Marine Corps Systems Command for nineteen years. After eleven years as a Financial Manager, she is now the Supervisory Competency Manager for the Financial Managers. Her job entails hiring, mentoring, career counseling, placement, and training. Carolyn is an active member of Shiloh Baptist Church (New Site) in Fredericksburg, VA, where she serves as a Deacon and is the vice chairperson of the Christian Education Ministry.

She is actively involved in Xi Upsilon Omega Chapter of Alpha Kappa Alpha Sorority, Inc., where her passion is working with the high school students in motivating, engaging, and assisting the students in reaching their maximum potential.

In her leisure time, she enjoys spending time with family and friends, traveling with her husband, playing the piano, reading, working out, and trying new recipes.

NATIONAL ACADEMIES *Sciences Engineering Medicine*

Gladys West, PhD, mother of Dr. Oglesby, was born in Sutherland, VA in 1930. She holds a BS and a master's degree in mathematics from Virginia State University. She also holds a Master of Public Administration from the University of Oklahoma and a PhD in Public Administration from Virginia Tech.

Dr. West began her career in 1956 at the Naval Proving Ground, Dahlgren. She was the second African American woman hired there and one of only four African American employees in total. During her 42 years of service, Dr. West played an integral role in the development of the Global Positioning System (GPS), through her work on satellite geodesy and other satellite measurements that contributed to the accuracy of GPS. West published numerous papers and made presentations on her work at national and international conferences before retiring in 1998.

West has received numerous awards: named as one of the top 100 Women by the British Broadcasting Corporation, named a Dominion Energy Strong Men & Women recipient and received a Virginia Senate Resolution. Dr. West is the only black woman to be inducted into the Air Force Missile and Space Pioneers Hall of Fame and was also inducted into the National Black College Alumni Hall of Fame. She was also awarded the Prince Philip Medal by The Royal Academy of Engineering and is the first woman to win this award. She was recently inducted into the Surface Navy Hall of Fame.

She released her memoir on 19 June 2020, "It Began with A Dream."

Jamie Renee serves as the Executive Director for the National Academy of Inventors (NAI). Before assuming the role as Executive Director, she served for two years as the Senior Advisor to the Academy's Founder and President, Dr. Paul Sanberg, overseeing strategic partnerships, Board engagement, and team development. As Executive Director, she is committed to growing the impact of NAI through strategic partnerships and intentional member engagement and making strides in reaching and involving underrepresented populations in the innovation and invention ecosystem.

Jamie has a heart for humanity and a mind for business. Korn Ferry ranked her business acumen in the top 2.5% of executive leaders worldwide. She has more than 25 years of corporate and nonprofit experience, having served in leadership roles within Home Depot, OAI, The Children's Home, United Way, and Habitat for Humanity. An alumna of the University of North Florida, Jamie is certified in Strength-based Professional Coaching from Gallup, Social Responsibility Planning from Yale, and Culture Creation from Havard.

Before her appointment at the Academy, Jamie founded Good Day Solutions, a consulting firm specializing in strategic planning and culture alignment. Her firm worked with organizations and leaders committed to leveraging best practices that put people first and build a culture of inclusivity, trust, and cohesion. Jamie is passionate about bringing out the best in individuals and teams. She is committed to measuring and celebrating what matters and helps leaders identify and prioritize the key activities aligned with achieving success.

She has extensive experience developing and implementing strategic plans, leadership and team coaching, and project implementation. Having overseen multiple mergers and acquisitions, her passion for building cohesive teams and inspiring positive change helps take teams and operations to new levels.

Jamie is an avid life-long learner and loves to teach what she learns. As part of her commitment to "be the good in the world," she founded Engage364, a nonprofit focused on mobilizing business leaders to engage with at-risk youth to help them discover and plan for their purpose.

Paul R. Sanberg, PhD, DSc is President and founder of the National Academy of Inventors and Distinguished University Professor and Executive Director, Center of Excellence for Aging & Brain Repair at the University of South Florida. work has been instrumental in understanding and developing new pharmaceutical and cellular therapeutics for stroke, Alzheimer's, ALS, Huntington's, Parkinson's disease and Tourette syndrome. His research has involved discovering innovative ways to repair the damaged brain and has helped lead the team that demonstrated the use of umbilical cord blood-derived cells for neurological disease. He holds 163 U.S. and foreign patents.

Sanberg trained at York University, University of British Columbia, Australian National University and Johns Hopkins University School of Medicine, and held faculty appointments at the University of Cincinnati and Brown University, among others, prior to joining the University of South Florida as a professor in 1992. He was a long-time member of the Board of Scientific Counselors for the National Institute on Drug Abuse at the National Institutes of Health and has served on numerous scientific advisory boards for health-related foundations and companies. He has industry experience as a founder or director of a number of companies involved in cell therapy for degenerative disorders. He is the author of more than 680 articles and 14 books, with over 33,000 citations to his published work, has served on editorial boards for more than 30 scientific journals, and is editor-in-chief of *Technology and Innovation: Journal of the National Academy of Inventors*.

Sanberg is president and a Charter Fellow of the National Academy of Inventors. He is the 2015 Medalist of the Florida Academy of Sciences; a Fulbright Specialist; fellow of the American Association for the Advancement of Science (AAAS), American Institute for Medical and Biological Engineering, and Royal Societies of Chemistry, Public Health and Medicine; and AAAS-Lemelson Invention Ambassador. He serves on the nomination evaluation committee of the U.S. National Medal of Technology and Innovation with the U.S. Department of Commerce, Smithsonian Innovation Festival selection committee, and advisory board of the APLU Commission on Innovation, Competitiveness, and Economic Prosperity.

Jacqueline Smith, PhD is an Associate Professor of Chemistry in the Department of Natural Sciences at Bowie State University. Smith completed her undergraduate studies at the University of Maryland Baltimore County (UMBC) where she was a part of the Meyerhoff Scholarship

Program. She earned her Ph.D. in Chemistry from the University of Maryland College Park with Herman Sintim and conducted postdoctoral research at Georgetown University in the Drug Discovery Lab of Milton Brown. Dr. Smith is co-author on several peer-reviewed publication and has 2 US Patents.

At Bowie, Jacqueline is developing a research program focused on small molecule therapeutics to target resistant breast cancer. She is also using organic synthesis to develop bioanalytical tools that will ultimately be used for drug delivery. Through this work Dr. Smith has been awarded the NSF CAREER Award and Excellence in Research Award; in addition, previously winning an NSF HBCU-UP RIA.

Since arriving at Bowie in 2016, Dr. Smith has mentored over 30 undergraduate students in her lab. Dr. Smith has a passion for outreach and works with local schools to enhance K-12 exposure to STEM. She is currently the Chair of the Northeast region of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers.

Dr. Patricia Carter Sluby is a free-lance writer, registered patent agent, certified in genealogy, lecturer on local history and on inventors, former U. S. Primary Patent Examiner, and past president of the National Intellectual Property Law Association. Her published works include numerous national journals and newspaper articles on inventors and her own ancestors. Dr. Sluby also has appeared on the internet, radio and TV programs.

In 1987, she published *Creativity and Inventions: The Genius of Afro-Americans and Women in the United States and their Patents*. In 2004, Praeger published her next title *The Genius of African Americans: Patented Ingenuity*; and then in 2011, the publishers released her third book *The Entrepreneurial Spirit of African American inventors*. Another work in progress includes a full biography of Dr. Sluby's maternal great grandfather, Colonel Giles Beecher Jackson, former slave, businessman, publisher, confidant of U. S. Presidents, and first African American in 1887, allowed to practice law before the Supreme Court of the State of Virginia.

Valerie Thomas, EdD is an American scientist and inventor who, while working at the National Aeronautics and Space Administration (NASA), invented a way to transmit three-dimensional images, or holograms, that appear to be real. In addition, she helped to develop processing software to convert scientific data captured by satellites into information that scientists could use.

She was born in February of 1943 in Maryland. She was fascinated with technology as a very young child. Around the age of eight, her curiosity about how things worked inspired her to borrow a book called, "The Boy's First Book On Electronics," which she took home hoping that her father would help her take on some of the projects in it. After all, he liked to tinker with radios and television sets. But he did not help her.

Thomas attended an all-girls high school. At the time, while the students were encouraged to do their best, scientific subjects were not necessarily considered a focus for women, and the school

had just been integrated. So, no one encouraged Thomas to take the advanced math classes that were offered at her school, and she continued to view her technological aptitude as more of a quest than anything else.

This changed in college, when Thomas enrolled at Morgan State University as one of only two women in her class to major in physics. She was an excellent student, and soon she had acquired the knowledge of mathematics that led her to a position as a mathematical/data analyst for NASA.

Eventually Thomas moved up within NASA and served in a position of managing the development of NASA's image-processing systems for "Landsat," the first satellite to send multi-spectral images to study the Earth's resources from outer space. In 1976, she saw something at a scientific exhibit that would lead her down a path of invention. She saw an illusion of a glowing light bulb that had been unscrewed and removed from a lamp. It had been created using a second bulb pointing downward in a socket beneath the top socket, employing a concave mirror to produce the illusion of the lit bulb. Unlike flat mirrors, which produce images that appear to be inside, or behind the mirror, concave mirrors create images that appear to be real, or in front of the mirror itself.

Thomas was intrigued, and wondered how such an image could be transmitted like other images were at the time. She began experimenting in 1976, setting up equipment to observe the relationship between an object and its real image relative to the positions from concave mirrors. She thought that if it were possible to present and transmit these types of realistic, three-dimensional images, great improvements could be made in video, and even television, in the future.

In 1980, she received a patent for her illusion transmitter, which uses a concave mirror on the transmitting end as well as on the receiving end to produce optical illusion images. NASA uses the technology today, and scientists are currently working on ways to incorporate it into tools for surgeons to look inside the human body, and possibly for television sets and video screens one day.

Thomas continued to work for NASA until her retirement in 1995, serving in such positions as Space Physics Analysis Network (SPAN) project manager and most recently associate chief of the Space Science Data Operations Office.

Over the course of her career Thomas contributed to the development of SPAN (Space Physics Analysis Network for research related to Halley's comet, ozone hole studies, and a supernova. She has received a number of NASA awards including the GSFC (Goddard Space Flight Center) Award of Merit, and the NASA Equal Opportunity Medal. She continues to mentor young students through the National Technical Association (NTA), Science Mathematics Aerospace Research and Technology (S.M.A.R.T.), Inc., and the SHADES OF BLUE DMV (District of Columbia, Maryland, and Virginia) Chapter.

NATIONAL ACADEMIES Sciences Engineering Medicine

Joyce Ward is Director of the Office of Education and Outreach at the United States Patent and Trademark Office (USPTO). She is tasked with expanding the reach of the USPTO's outreach offerings to provide educators and students with unique USPTO learning experiences and resources designed to integrate knowledge of invention, innovation, entrepreneurship, and science, technology, engineering, and mathematics (STEM). Her office encourages both the creation as well as the protection of intellectual property. Under Joyce's leadership the USPTO has launched several projects for educators and students such as the Science of Innovation series, a collaboration between the USPTO, the National Science Foundation, and NBC Learn; a national summer institute for teachers with a focus on intellectual property and the resources of the USPTO; intellectual property and STEM/STEAM professional development workshops for K-12 educators, an Intellectual Property patch with the Girl Scouts organization, and the first USPTO Inventor Trading/Collectible Card series.

Prior to her current position Joyce served as the Director of Program Support and Intellectual Property for the National Inventors Hall of Fame. From 1994 to 2002, she worked for the USPTO as a Trademark Examining Attorney and later as an Education Specialist in the Office of Public Affairs. She received her undergraduate degree from the University of North Carolina at Chapel Hill and her law degree from the Georgetown University Law Center in Washington, DC.

Rochelle L. Williams, PhD is an engineer, educator, and advocate for equitable environments in science, technology, engineering, and mathematics (STEM) professions. As the newly appointed Executive Director of Graduate Fellowships for STEM Diversity (GFSD), Dr. Williams has over 14 years of experience as a non-profit leader and champion for equity, inclusion, and justice in STEM education. In addition to her leadership abilities, Dr. Rochelle currently serves as Co-Principal Investigator on several National Science Foundation grants (totaling over $6.4M since 2020) with partners including, WEPAN, SWE, SHPE, AISES, Kennesaw State, and the Algebra Project. She also serves as the President-elect of the Women in Engineering Proactive Network (WEPAN) Board of Directors.

Dr. Williams previously served as the Chief Programs and Membership Officer at the National Society of Black Engineers (NSBE), where she was responsible for achieving the strategic outcomes of the society and for supporting the planning and implementation of programs, membership initiatives, and research. Prior to joining NSBE, Dr. Rochelle served as Project Director and Co-Principal Investigator for the ADVANCE Resource Coordination (ARC) Network with the Association for Women in Science (AWIS) and Research Scientist in the Office for Academic Affairs at Prairie View A&M University. In 2016, Rochelle was selected as a Christine Mirzayan Science and Technology Policy Fellow with the National Academies of Science, Engineering, and Medicine in Washington, DC. As a fellow, she supported the Committee on Women in Science, Engineering, and Medicine on the initial phases of the study that led to the *Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine* report.

Having received her Bachelor of Science in physics from Spelman College and both her Master of Engineering in Mechanical Engineering and Ph.D. in Science and Mathematics Education from Southern University and A&M College, Dr. Williams intentionally works to promote the excellence and innovation at Historically Black Colleges and Universities.