

# 2019 | NIH ADVANCING DIVERSITY PROGRAMS CONFERENCE

June 24

National Institutes of Health | Bethesda, MD

## WELCOME AND INTRODUCTIONS SUMMARY AND CLOSING REMARKS



### **Hannah Valantine, MD, MRCP**

Dr. Valantine is the first NIH Chief Officer for Scientific Workforce Diversity and a Senior Investigator in the Intramural Research Program at NIH's National Heart, Lung, and Blood Institute. Before arriving at NIH in April 2014, Dr. Valantine was a Professor of Cardiovascular Medicine and the Senior Associate Dean for Diversity and Leadership at Stanford University, a leadership position she had held since November 2004. She is nationally recognized for her transformative approaches to diversity and is a recipient of the NIH Director's Pathfinder Award to Promote Diversity in the Scientific Workforce. She is currently leading NIH efforts to promote diversity through innovation across the NIH-funded biomedical workforce through a range of evidence-based approaches. Dr. Valantine maintains an active clinical research program that continues to have a high impact on patient care. Current research extends her previous finding that an organ transplant is essentially a genome transplant and that monitoring the level of donor DNA in a recipient's blood as a marker of organ damage will detect early stages of rejection. Dr. Valantine is currently overseeing a multisite consortium of mid-Atlantic transplant centers to validate these findings clinically toward the development of a noninvasive tool for detecting early signs of organ rejection.

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## WELCOME AND INTRODUCTIONS



### **Francis Collins, MD, PhD**

Dr. Collins was appointed the 16th Director of the National Institutes of Health by President Barack Obama and confirmed by the Senate. He was sworn in on August 17, 2009. On June 6, 2017, President Donald Trump announced his selection of Dr. Collins to continue to serve as the NIH Director. In this role, Dr. Collins oversees the work of the largest supporter of biomedical research in the world, spanning the spectrum from basic to clinical research. Dr. Collins is a physician-geneticist noted for his landmark discoveries of disease genes and his leadership of the international Human Genome Project, which culminated in April 2003 with the completion of a finished sequence of the human DNA instruction book. He served as director of the National Human Genome Research Institute at NIH from 1993 to 2008. Before coming to NIH, Dr. Collins was a Howard Hughes Medical Institute investigator at the University of Michigan. He is an elected member of the National Academy of Medicine and the National Academy of Sciences, was awarded the Presidential Medal of Freedom in November 2007, and received the National Medal of Science in 2009.

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## OPENING REMARKS: FRAMING ORGANIZATIONAL APPROACHES

### **M. Roy Wilson, MD, MS**

M. Roy Wilson became president of Wayne State University in August 2013. Previous leadership positions include deputy director for strategic scientific planning and program coordination at the National Institute on Minority Health and Health Disparities of the National Institutes of Health, dean of the School of Medicine at Creighton University, president of Texas Tech University Health Sciences Center, and chancellor of University of Colorado Denver/Anschutz Medical Centers. As an ophthalmologist and epidemiologist, his research focused on glaucoma and blindness in populations from the Caribbean to West Africa. In 2003, President Wilson was elected to the National Academy of Medicine (Institute of Medicine), one of the highest honors in the field of medicine. He received his undergraduate degree from Allegheny College, an M.S. in epidemiology from UCLA, and an M.D. from Harvard Medical School.

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## OPENING REMARKS: FRAMING ORGANIZATIONAL APPROACHES

### Freeman Hrabowski, PhD

Dr. Freeman Hrabowski, President of UMBC (University of Maryland, Baltimore County) since 1992, is a consultant on science and math education to national agencies, universities, and school systems. With Robert Meyerhoff, he founded the Meyerhoff Scholars Program, a national model for supporting and preparing African American undergraduates who go on to earn PhDs in the natural sciences and engineering and MD-PhDs. His 2013 TED talk highlights the “[Four Pillars of College Success in Science](#)” that are also central to the success of the Meyerhoff program. Dr. Hrabowski was named by President Barack Obama to chair the President’s Advisory Commission on Educational Excellence for African Americans. He also chaired the National Academies’ committee that produced the report, *Expanding Underrepresented Minority Participation: America’s Science and Technology Talent at the Crossroads* (2011). He is the author of *Holding Fast to Dreams: Empowering Youth from the Civil Rights Crusade to STEM Achievement* (Beacon Press). His new book, *The Empowered University: Shared Leadership, Culture Change, and Academic Success*, co-authored with Phil J. Rous and Peter H. Henderson, will be published this fall (Johns Hopkins University Press). Dr. Hrabowski is the recipient of numerous honorary degrees and awards, including the 2018 American Council on Education (ACE) Lifetime Achievement Award.

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## OPENING REMARKS: FRAMING ORGANIZATIONAL APPROACHES

### **Ambika Mathur, PhD**

Ambika Mathur, Ph.D., is deeply committed to the advancement of all aspects of training for high school, undergraduate, medical, master's, doctoral and postdoctoral trainees. She is nationally recognized for establishing programs to enhance professional and career development opportunities for doctoral students, and reporting on career outcomes of doctoral alumni. She was Wayne State University's PI for one of only ten Broadening Experience in Scientific Training grant from the NIH. She was the first permanent director of the combined M.D./Ph.D. combined degree program, and the founding director of the Office of Postdoctoral Affairs at WSU. Ambika is a tireless advocate of holistic admission on campus and contributed to the national discussion to promote diversity and inclusion across the spectrum of training. For undergraduate programs, she served as a PI of the \$21 million NIH-funded ReBUILDetroit to build a pipeline for students from diverse backgrounds for careers in research. She was also founding director of the Wayne Med-Direct program which emphasizes mentoring and research training to select undergraduate students interested in health disparities, leading to M.D. or combined M.D./Ph.D. degree programs. At the graduate level, she led programs funded by the NSF and the state of Michigan. Recognizing the need for extending the diversity spectrum to faculty, she worked with President M. Roy Wilson and led WSU's Postdoc to Faculty program. Ambika recently briefed Congress on the importance graduate education in reducing health disparities. A cancer immunologist by training, Ambika has been funded by the National Institutes of Health and several other agencies for research in cancer immunology, the immunological basis for complementary and alternative medicine interventions in pediatric populations, and has over 120 research publications. Altogether she has been awarded over \$30 million in grant funding for cancer research and for research training. Ambika is also a published author of a medical mystery suspense thriller and a series of books for children.

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### DiOnetta Crayton, MA

DiOnetta Jones Crayton is an Associate Dean in the Office of the Vice Chancellor (OVC) and Director of the Office of Minority Education at the Massachusetts Institute of Technology. She has held this role since August 2009. Dean Crayton plays a critical role in ensuring that the Institute develops and supports the overall success of all students, particularly those from underrepresented minority groups. Prior to this appointment, she was the Director of Diversity Programs for the College of Engineering at Cornell University. She previously served as Director of Education, Training, and Outreach at The National GEM Consortium (The National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc.). Before joining GEM, she held the position of Statewide Associate Director for California's Mathematics Engineering and Science Achievement Schools Program at the University of California, Berkeley Office of the President. She also served as Director of the MESA Schools Program and the MESA Engineering Program at the University of the Pacific in Stockton, CA. Dean Crayton is affiliated with many educational and technical organizations, and she has held several national positions including Director for Diversity Advancement for the Women in Engineering ProActive Network, Inc. (WEPAN); National Treasurer for the Institute for Broadening Participation; Member of the Massachusetts' Governor's Diversity Subcommittee on STEM; and National Secretary for the National Association of Multicultural Engineering Program Advocates, Inc. (NAMEPA). She is also an active member of Alpha Kappa Alpha Sorority, Inc. Dean Crayton is an experienced practitioner in the areas of Diversity and Inclusion, Mentoring, Funding Higher Education, Leadership, etc. This June (2019), under Dean Crayton's leadership, the Office of Minority Education was awarded the *Infinite Mile Award for Diversity and Inclusion* by the MIT Office of the Vice Chancellor. Dean Crayton was personally recognized in 2017 by the Women in Engineering Pro-Active Network (WEPAN) with their *Inclusive Culture and Equity Award*. That same year, she was awarded the inaugural *Ayida Mthembu Woman of Color Award* by the MIT Black Women's Alliance, and in 2016 she won the *MIT Black Students' Union Faculty Award*.

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## PANEL I: WHAT ARE INSTITUTIONAL PERSPECTIVES AND PROGRAMS THAT HELP PREPARE STUDENTS FOR THE TRANSITION BETWEEN UNDERGRADUATE AND GRADUATE SCHOOL?

### **Edwin Barea-Rodriguez, PhD**

Edwin J. Barea-Rodriguez is a Professor and Associate Dean for Student Success and Instructional Innovation at The University of Texas at San Antonio. He obtained his Ph.D. in Biopsychology from Southern Illinois University Carbondale. After several years of investigating the biology of learning and memory, he began focusing his efforts on student success and improving pedagogy in STEM disciplines. He serves as the program director of MARC-U\*STAR and RISE, all of which aim to increase underrepresented minority participation in STEM fields. He received the SIUC's Richard S. Howe Excellence in Service to Undergraduate Students Award in 2006 and 2017. In 2014, he was named Sloan Mentor of the Year by the Southern Regional Education Board. In 2012, he was one of 40 educators nationwide selected as a Vision and Change Leadership Fellow for the Partnership for Undergraduate Life Sciences Education (PULSE). In 2015, he was named a member of the steering committee for My Brother's Keeper San Antonio (MBKSA) collaborative. MBKSA collaborative is working to remove systemic barriers, to safety, education, and career success for young boys and men of color. He also co-chairs the Post-Secondary Success group in MBKSA.

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## PANEL I: WHAT ARE INSTITUTIONAL PERSPECTIVES AND PROGRAMS THAT HELP PREPARE STUDENTS FOR THE TRANSITION BETWEEN UNDERGRADUATE AND GRADUATE SCHOOL?

### **William LaCourse, PhD**

William R. LaCourse is a professor of chemistry who has served as Dean of the College of Natural and Mathematical Sciences (CNMS) at UMBC since 2012. With 74 refereed articles, nine reviews, 26 chapters, a sole-authored book, two patents and over 300 national and international talks, Dr. LaCourse has melded a prodigious career in analytical chemistry with his interests in innovative teaching and learning strategies aimed at student success. In 2005, he founded UMBC's Chemistry Discovery Center, which dramatically improved student performance in introductory chemistry courses. He oversees the College Active Science Teaching & Learning Environment (CASTLE), which is designed to study active-learning pedagogies across the STEM disciplines, and the Science Learning Collaboratory, a wet-lab for innovative bench instruction. Dr. LaCourse served key roles in the iCubed@UMBC project (NSF), the collaborative STEM Transfer Student Success Initiative (Bill and Melinda Gates Foundation), and UMBC's quantitative biology project (HHMI NEXUS). Dr. LaCourse expanded his work in STEM pedagogical research through leadership roles in the STEM BUILD at UMBC Initiative (NIH), the Collaborative Research: Institutional and Community Transformation for Teaching and Learning Quantitative Reasoning in the Biological Sciences project (NSF-IUSE), and the AGEP Alliance State System Model to Transform the Hiring Practices and Career Success of Tenure Track Historically Underrepresented Minority Faculty in Biomedical Sciences (NSF). Dr. LaCourse, in collaboration with other UMBC professionals, works to fulfill an ambitious strategy for the advancement of the CNMS educational and research mission. He is a dedicated teacher who has mentored numerous graduate and undergraduate students throughout his career and his former students hold positions in industry, government, and academia. In addition to his research interests in hydrodynamic electroanalytical systems, Dr. LaCourse is a former Kauffman Fellow of Entrepreneurship who helped to establish an entrepreneurship minor at UMBC and cofounded Aurora Analytics, LLC.

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### **Sheila Thomas, PhD**

Sheila Thomas is currently a faculty member in the Division of Medical Sciences and the Department of Medicine at Harvard Medical School (HMS) and serves as Dean of Academic Programs and Diversity for the Graduate School of Arts and Sciences (GSAS) at Harvard University. She received her BA in Biochemistry and Molecular and Cellular Biology from Northwestern University, her PhD in Molecular Genetics from University of Pennsylvania, and did her post-doctoral training at the Fred Hutchinson Cancer Research Center. As a HMS faculty, she directed a federally funded independent research program for 14 yrs with her lab focusing on defining networks that controlled basic cellular processes and how deregulation of these networks contributes to cancer. She has also been actively involved in the teaching and mentoring of both undergraduates and graduate students and has served in various leadership roles for some of the graduate programs at Harvard University. In her role as a Dean, she oversees two areas and is the PI/ Co-PI on four Federal grants and one Foundation grant. As Dean of Diversity, she is responsible for overseeing the diversity and inclusion efforts for Harvard University's 57 PhD and 4 Master's programs and is committed to creating, identifying and implementing initiatives to diversify the Academy at all levels and creating an environment where all students can thrive. As Dean of Academic Programs, she works closely with the Academic Dean of the Graduate School and faculty in the programs/departments to support the academic and professional development of PhD and Master's students.

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### **Lourdes Echegoyen, PhD**

Lourdes Echegoyan was the founding director of the Campus Office of Undergraduate Research Initiatives (COURI) at the University of Texas at El Paso (UTEP). Dr. Echegoyen received B.S. and Ph.D. degrees in Chemistry from the University of Miami. She started her career in 1993 as a high school teacher in Miami before returning to the University of Miami in 1998 as a post-doctoral fellow and lecturer. In 2002, she joined the faculty in the Chemistry Department at Clemson University and took over the direction of their Summer Research Experiences for Undergraduates (REU) program, which she successfully ran for two cycles of continuous funding from the National Science Foundation. In January 2008, at the request of the American Chemical Society (ACS), she took a leave of absence from Clemson to develop and manage the ACS International REU Program (also with NSF funding), which she ran until joining UTEP in fall of 2010. Since her arrival at UTEP, Dr. Echegoyen has received several awards as PI or Co-PI from the National Science Foundation (2), the National Institutes of Health (2), the Howard Hughes Medical Institute (1), and the Department of Energy (1), all of which are focused on undergraduate research training in the sciences and engineering. In the past 5 years, a multi-million dollar project, funded by the National Institutes of Health in 2015 as part of their Diversity Program Consortium, has allowed Dr. Echegoyen and her team of Co-PIs to develop the BUILDing SCHOLARS Center at UTEP. The initiatives and activities of this center are aimed at developing, implementing, evaluating, and sustaining institutional, faculty and student programs and activities that will positively transform the training of the next generation of biomedical researchers from the US Southwest region. The vision of the center is to increase the diversity of the biomedical research workforce so that it mirrors the demographics of the U.S. Dr. Echegoyen is an avid hiker, has traveled around the world, and is passionate about many things, including her family, her work, science, nature, democracy, education, international cooperation through research, and dancing.

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### **John Matsui, PhD**

Dr. John Matsui is a product of the California public school system. His training is in Evolutionary Biology and Science Education. He co-founded and directs the Biology Scholars Program (BSP) in UC Berkeley's Department of Integrative Biology. Since 1992, of the 3600 Berkeley undergraduates that have participated in BSP, 80% are from low-income/first-generation backgrounds, 70% are women, and 60% are URM. In spite of entering Cal with lower SATs and high school GPAs, his students graduate in the same percentages with biology degrees and with nearly equivalent exit GPAs as their peers. For his work, in 2015 he received from President Obama the NSF Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM). He serves on the HHMI Meyerhoff Adaptation Project Advisory Group, the NSF Biology REU Leadership Council, the NIH NRMN Executive Committee, the HHMI Inclusive Excellence Commission, and is an Associate Editor for the Understanding Interventions e-journal.

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## RECAP

### **Charlene Le Fauve, PhD**

Dr. Le Fauve became the first Senior Advisor to the NIH Chief Officer for Scientific Workforce Diversity (COSWD) in December 2016. In this role, Dr. Le Fauve supports Dr. Hannah Valentine, who serves as the NIH COSWD as she leads NIH's effort to diversify the biomedical research workforce by developing a vision and comprehensive strategy to expand recruitment and retention and to promote inclusiveness and equity throughout the biomedical research enterprise. Dr. Le Fauve came to COSWD from the National Institute of Mental Health, where she served as Deputy Director of the Office for Research on Disparities and Global Mental Health. Before joining NIMH, she was a Senior Policy Coordinator at the Department of Health and Human Services, where she led coordination and clearance activities of regulations, policy, and other reports for the Centers for Medicare & Medicaid Services and for implementation of the Patient Protection and Affordable Care Act. Her federal career spans 20 years and includes leadership and health scientist roles at NIDA, NIAAA, the White House Office of National Drug Control Policy, and the Substance Abuse and Mental Health Services Administration. Dr. Le Fauve studied clinical psychology and behavioral medicine at the University of Georgia after completing her undergraduate education at Howard University. She completed her postgraduate work at the Medical College of Virginia/Virginia Commonwealth University (MCV/VCU) in the field of addiction medicine, with an emphasis on perinatal addicted women and the treatment of co-occurring mental illness, addiction, and chronic pain. She then joined the faculty as an Assistant Professor of Human Genetics and Psychiatry at MCV/VCU, where as an NIH Principal Investigator on a Research Career Award, she conducted behavior genetic research on African American adolescent twins and drug use, as well as training genetics counseling students, psychiatry residents, and psychology interns in cultural diversity and clinical practice.

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## PANEL II: WHAT ARE EVIDENCE-BASED PRACTICES FOR FACILITATING THE TRANSITION FROM UNDERGRADUATE TO GRADUATE SCHOOL?

### **Iris Romero, MD**

Iris Romero is an Obstetrician & Gynecologist and the Dean for Diversity and Inclusion for the Biological Sciences Division of the University of Chicago. In her role as Dean for Diversity and Inclusion, Dr. Romero and her team support the institution's commitment to creating an inclusive environment that enables investigators from all backgrounds to thrive and make important contributions to science and medicine. Dr. Romero brings to the role of Dean for Diversity and Inclusion a clear understanding of the challenges and rewards of academic medicine informed by her experiences as a first generation college student, a Chicana and a Lesbian. Dr. Romero is an active clinician with a focus on hereditary breast and ovarian cancer and translational researcher. Her clinical practice includes individuals with a family history of gynecologic or breast cancer and patients with germline genetic mutations that predispose to cancer. Her NIH funded research focuses on drug repurposing or exploiting anti-tumor and cancer preventative mechanisms of drugs that are FDA-approved for other clinical indications. Her research group integrates studies of the tumor microenvironment, mouse models of ovarian cancer and prospective clinical trials to advance new cancer therapeutic and preventive strategies.

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### **George Langford, PhD**

George Langford is Distinguished Professor of Neuroscience and Professor of Biology at Syracuse University and served as dean of SU's College of Arts and Sciences from 2008-2014. Prior to SU, he served as dean of the College of Natural Sciences and Mathematics at the University of Massachusetts-Amherst and Distinguished Professor of Biology. Before his appointment at UMass, he served as the inaugural Ernest Everett Just Professor of Natural Sciences at Dartmouth College and professor of Biological Sciences until 2005. Professor Langford also served on the faculty of the School of Medicine at the University of North Carolina Chapel Hill. He was appointed in 1998 by President Clinton to a six-year term on the National Science Board, the governing board of the National Science foundation. He was awarded an honorary Doctor of Humane Letter by Beloit College in 2001 and in 2013, he was elected a Fellow of the American Association for the Advancement of Science (AAAS). A longstanding advocate for supporting under represented minority students in the sciences, Professor Langford was named inaugural chair of the Minority Affairs Committee of the American Society for Cell Biology (ASCB), and the first recipient of the ASCB EE Just Award for his seminal work on the actin cytoskeleton and molecular motors. He recently served on the Science Education Advisory Board of the Howard Hughes Medical Institute and was former chair of the Board of Directors of the Burroughs Wellcome Fund. He is Program Director of the Syracuse University CHANcE Project funded by the HHMI Inclusive Excellence Initiative.

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## PANEL II: WHAT ARE EVIDENCE-BASED PRACTICES FOR FACILITATING THE TRANSITION FROM UNDERGRADUATE TO GRADUATE SCHOOL?

### **Shawn Abernathy, PhD**

Dr. Shawn Abernathy is an associate professor of chemistry at Howard University (HU). He received his B.S., M.S. (Inorganic), and Ph.D. (Physical) degrees in chemistry from the University of Michigan at Ann Arbor, MI. His doctoral research was in experimental Nuclear Magnetic Resonance (NMR) in the area of NMR-Paramagnetic Relaxation Enhancement (NMR-PRE). Dr. Abernathy completed a postdoctoral fellowship at the HU Cancer Center. He has vast experience in NMR spectroscopy that includes using traditional instrumentation, NMR microprobes, and magnetic resonance imaging (MRI) in clinical setting. Dr. Abernathy served as the director of the HU Department of Chemistry NMR User Facility. He was a key contributor to a proposal awarded funding from NSF to the University of Maryland to purchase an 800 MHz NMR spectrometer. Dr. Abernathy's current research focus is measuring vapor pressure (VP) of volatile organic compounds and mixtures using the data to compute thermodynamic quantities. This research is interdisciplinary in many respects. He was a visiting professor during the summers of 2007 and 2008 to Brookhaven National Laboratory (BNL) as part of the Faculty Student Team (FAST) Program. His research team synthesized a series of ionic liquids and characterized the compounds. He developed gradient NMR protocol on BNL department of chemistry 400 MHz NMR spectrometer. Dr. Abernathy was the PI/PD of the HU-MARC Program (2013 – 2019) and was the director from 2009 – 10 of HU Amgen Scholars Program (HUASP). In 2009, he was the recipient of the National Organization for the Professional Development of Black Chemist and Chemical Engineers (NOBCChE) Henry C. McBay Outstanding Teacher Award and served as the vice president and president (2010 and 2011) of HU chapter of Sigma Xi the Honors' Research Society. He is currently a board member on the NSF funded HU-LSAMP (Louis Stokes Alliance for Minority Participation) Program. On the scholastic level, Dr. Abernathy is on the Department of Chemistry's executive committee and in charge of undergraduate education and research. He was also the director of the Department of Chemistry Supplemental Instruction (SI) Program from 2001 – 2003 in chemistry.

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## PANEL II: WHAT ARE EVIDENCE-BASED PRACTICES FOR FACILITATING THE TRANSITION FROM UNDERGRADUATE TO GRADUATE SCHOOL?

### **Connie Champagne, PhD**

Connie Champagne is the Director of Educational Enrichment and Outreach Programs (EEOP) in the College of Biological Sciences at the University of California, Davis. Her purpose is to increase the diversity of undergraduate students who pursue careers in biomedical research. Dr. Champagne has a strong record of accomplishment in conceptualizing, implementing, and administering innovative programs that serve the diverse UC Davis undergraduate community. Over the last decade, she has mentored over 500 program participants, teaching them in a formal classroom setting, in seminar-style courses, as well as in a laboratory setting and has overseen their placement into laboratories for faculty-mentored research experiences. Dr. Champagne served as Chair of the UC Davis Academic Federation (AF) Affirmative Action & Diversity Committee (AA&DC) for two years and was the AF representative on the Academic Senate AA&DC for three years. She received a UC Davis “Soaring to New Heights Diversity and Principles of Community Award” for her accomplishments as an effective advocate for the success of a diverse group of undergraduate students pursuing studies in the life sciences. Dr. Champagne earned her PhD from the University of Regina in Canada and has broad training in genetics and molecular and cellular biology, with a focus on plant development and evolution. She is particularly interested in the evolution of genes that allowed plants to colonize land and the identification of genes that regulate the development and evolution of leaf shape in angiosperms. As a first-generation student from a disadvantaged background, Dr. Champagne identifies with the students she serves, and is determined to support them as they pursue careers in science.

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## RECAP



### **Tara Schwetz, PhD**

Tara A. Schwetz, Ph.D. is the Associate Deputy Director, Office of the Director (OD), National Institutes of Health (NIH). Prior to assuming this role, Dr. Schwetz was the Chief of the Strategic Planning and Evaluation Branch in the Office of the Director at the National Institute of Allergy and Infectious Diseases (NIAID). During her tenure at NIAID, she led several efforts, including conducting an evaluation of the Centers of Excellence for Influenza Research and Surveillance to facilitate evidence-based decision-making and developing the NIAID Strategic Plan for Tuberculosis Research. Previously, Dr. Schwetz served as the Senior Advisor to the Principal Deputy Director of NIH, where she coordinated efforts such as Reimagine HHS, the NIH rigor and reproducibility activities, and the NIH-Wide Strategic Plan. Dr. Schwetz also served in the dual role of the NIH Environmental influences on Child Health Outcomes Interim Associate Program Director and the Special Assistant to the DEPD. Prior to these roles, she was a Health Science Policy Analyst at the National Institute of Neurological Disorders and Stroke, where she helped develop the National Pain Strategy. Dr. Schwetz started her career at NIH as an AAAS Science and Technology Policy Fellow at the National Institute of Nursing Research. She received a BS in biochemistry with honors from Florida State University and a PhD in Biophysics from the University of South Florida, followed by a postdoctoral fellowship at Vanderbilt University. Dr. Schwetz has received numerous awards, including fellowships from the American Cancer Society, the American Heart Association, and NIH.

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## FRAMING REMARKS: INSIGHTS FROM NIH DATA REGARDING TRANSITIONS ACROSS THE CAREER PATH

### **P. Kay Lund, PhD**

P. Kay Lund is Director of the Division of Biomedical Research Workforce and the NIH Extramural Research Training Officer in the Office of Extramural Research, Office of the Director, at the National Institutes of Health (NIH). She provides leadership for development, implementation, policy and evaluation of extramural programs related to research training, career development and diversity of the biomedical research workforce, including institutional training grants, individual pre- and postdoctoral fellowships and Career Development K awards. An area of recent emphasis has been on innovative strategies to recruit, retain and accelerate independence for early stage physician/clinician scientists, including new Institutional Research in Residency programs with opportunities for Transitional Scholar K awards during fellowship (Clinician Investigator Training and Need to Pilot New Approaches to Recruiting and Retaining this Workforce. *Academic Medicine*. 2017, 92:1382). In addition, Dr. Lund is working with COSWD and the ACD working group on workforce diversity to discuss and assist in implementation of approaches to enhance workforce diversity. Dr. Lund joined NIH from a career in academia including appointments at the Massachusetts General Hospital and Harvard, and a long career at University of North Carolina at Chapel Hill where she held a Sarah Graham Kenan Distinguished Professorship. Throughout her entire research career, she partnered with clinician investigators. Her long-standing research and publications focused on the glucagon-like peptides (GLPs), insulin-like growth factors (IGFs) and insulin family including basic molecular biology, gene structure and regulation and roles in intestinal epithelial renewal, regeneration, inflammatory bowel diseases and early stage cancer. Most recently she has studied roles specifically in intestinal stem cells and early precancerous lesions. Dr. Lund mentored many undergraduates, graduate students, postdocs and early stage faculty, both Ph.D. and clinician scientists a majority of whom are succeeding as independent researchers. She is the recipient of many awards including an Award for the Advancement of Women, the Davenport award from American Physiological Society and the 2016 Distinguished Mentor Award from the American Gastroenterology Association. Dr. Lund served as Associate Editor for Gastroenterology and Editor in Chief for American Journal of Physiology, GI and Liver. Dr. Lund has published about women in science (see Opportunities and Challenges for women PhD investigators in gastrointestinal research, *Gastroenterology* 2013, 145, 266, and Women's Careers in Biomedical Sciences: Implications for the Economy, Scientific Discovery, and Women's Health, *J. Women's Health* 2017, 26:525).

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## PANEL III : WHAT ARE THE KEY COMPONENTS OF SUCCESSFUL POSTDOC AND FACULTY-ORIENTED PROGRAMS?

### **Sherilynn Black, PhD**

Sherilynn Black, PhD is the Associate Vice Provost for Faculty Advancement at Duke University. She creates strategic initiatives and implements practices that support faculty development and advancement in many areas, including mentoring, support for pre-tenure and mid-career faculty, and career pathways and professional development for non-tenure system faculty. She also leads initiatives to increase diversity among the faculty ranks and further develop an inclusive climate within academic units. Dr. Black is an Assistant Professor of the Practice of Medical Education. Her research focuses on understanding effective ways to optimize interactions between faculty and trainees in mentoring relationships, and also on developing institutional models to increase effectiveness of interventions designed to promote diversity in academia. Dr. Black previously served as the founding Director of the Office of Biomedical Graduate Diversity for the Duke University School of Medicine and provided intellectual and strategic leadership for all diversity initiatives for trainees and faculty in the basic science departments and programs. She was also a Principal Investigator of the Duke Initiative for Maximizing Student Development (IMSD) Program referred to as the Duke Biosciences Collaborative for Research Engagement (BioCoRE), which provided extensive mentoring and scientific engagement opportunities for diverse undergraduate/graduate students and faculty in the biomedical sciences. Dr. Black holds several national appointments relating to faculty development and advancement, including serving on advisory boards, developing strategic initiatives, and holding committee appointments with the National Institutes of Health, Howard Hughes Medical Institute, The Burroughs Wellcome Fund, the American Association of Medical Colleges, the National Academies of Sciences, Engineering and Medicine, the National Labs, and the Society for Neuroscience. She has won a number of distinctions for her work, including the Samuel Debois Cook Society award and the Deans Award for Inclusive Excellence in Graduate Education. Dr. Black earned her Bachelor of Science in Psychology and Biology with highest honors at the University of North Carolina at Chapel Hill and was a Morehead-Cain Scholar. She earned her PhD in Neurobiology at Duke University. She also completed additional studies in the School of Education at the University of North Carolina at Chapel Hill.

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## PANEL III : WHAT ARE THE KEY COMPONENTS OF SUCCESSFUL POSTDOC AND FACULTY-ORIENTED PROGRAMS?

### **Lisa Schwiebert, PhD**

Dr. Lisa Schwiebert, Professor of Cell, Developmental, and Integrative Biology and Senior Associate Dean for Graduate and Postdoctoral Affairs, maintains a strong research and training record. Collectively, she has published over 100 manuscripts, abstracts, reviews, and book chapters in the areas of asthma, cystic fibrosis, and immunology. Dr. Schwiebert's laboratory was the first to demonstrate the effects of aerobic exercise on cellular and molecular responses in a mouse model of allergic asthma. These seminal findings led to the initiation of clinical trials that examine the effectiveness of aerobic exercise as an adjunct therapy for the treatment of asthma in adult and pediatric subjects. With regard to training efforts, Dr. Schwiebert has served as the primary mentor for a total of nine trainees, including three graduate students, four postdoctoral fellows, and two clinical fellows; the majority of these former trainees currently hold tenure-track faculty appointments at top-tier institutions, including Duke University, the University of Alabama at Birmingham, and the University of Texas. Dr. Schwiebert has also served or is serving on more than 20 graduate student dissertation and postdoctoral career development committees and is preceptor on five UAB NIH-funded training grants. In her role as Senior Associate Dean, Dr. Schwiebert and her staff work with graduate students, postdoctoral fellows, faculty members, and administrators campus-wide to facilitate and enhance trainee recruitment, oversight, and career development. She has developed and also directs a year-round curriculum, including courses in research ethics, lab management, grant writing, translational science and job skills, and oversees award programs that emphasize career preparation for basic science and clinical postdoctoral fellows as well as graduate students. In addition, she serves as the Program Director of the NIH-funded IRACDA-Mentored Experiences in Research, Instruction, and Teaching (MERIT) Program at UAB. She also serves currently as a member of the NIH/NIGMS TWD-D review committee and is past-chair of the AAMC GREAT Postdoc Group. From 2010, while under her leadership, *The Scientist* ranked UAB in the top ten of academic institutions for postdoctoral training; in 2013, the final year of the survey, UAB ranked first among all academic institutions nationwide.

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### **Alfred Mays, MS**

Alfred Mays is the Program Officer for Science Education and Diversity at Burroughs Wellcome Fund and oversees the competitive grant programming for K-12 math and science teachers, informal STEM enrichment programming as well as increasing diversity and underrepresented support in Science within graduate and postdoctoral programming. Prior to Alfred assuming this role, he served as an independent consultant with a service delivery that included strategic planning, project incubation, design and implementation of a number initiatives within education agencies and organizations. He has served as the Assistant Director of the Collaborative Project, a 21<sup>st</sup> Century Program supported by the NC General Assembly. In this role, Alfred was primarily responsible for the development and management of information resources. Alfred also served as staff advisor (Project Manager) to North Carolina's eLearning Commission and provided consultation to a number of special committees and focus groups. Other efforts include implementation of youth leadership and empowerment activities and the build out of STEM career awareness. Prior to joining the Collaborative Project, Alfred served public education as the Director of Information Resources Affairs and Director of Special Projects at the University of North Carolina – in the Office of the President. During this tenure, Alfred was responsible for the coordination of a number of special initiatives and collaborative efforts within the Division of Information Resources and served as a central liaison for the 16 campus system and various state agencies. Alfred's other work experience includes service as a regional director for the North Carolina Model Teacher Education Consortium (UNC-General Administration) and State Program Director within the North Carolina State Department of Public Instruction. He has been recognized for his contributions with many organizational successes to include Government Wide Best Practices for Information Resources.

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### **Roger Chalkley, DPhil**

Roger Chalkley has had an extensive career engaged in both teaching and research. The research was directed towards the issues of gene regulation in different tissues. Over time my interests have expanded to include graduate education as well as contributing to introducing diversity into the biomedical field at Vanderbilt. He was responsible for designing the Vanderbilt Graduate IGP, which has served as a model for graduate education for many other institutions. In my role as Director of the IGP (1992-2001). Subsequently as Senior Associate Dean, I created the Vanderbilt graduate diversity program, which has now led to the awarding of its 126th PhD in biomedical research to students contributing to diversity at this institution. In line with a major commitment to introducing URM students into Basic Biomedical Research I have been a senior advisor to the Vanderbilt Bridges program and have served as an advisor to MARC related programs at Arizona State University, Tougaloo College and Savannah State College. For over a decade he has served on the steering committee to the Leadership Alliance program, which is dedicated to strengthening the relationships between leading R1 institutions and HBCUs and other MSIs. During this same time period he was either PI or Co-PI of the Vanderbilt IMSD program which last year was acknowledged as the Nation's leading producer of African American Biomedical PhDs. Over the years he has continued his interest in innovative approaches to graduate education both at Vanderbilt and nationally. He was chair of the NRC Workforce Committee on Biomedical Training in 2010; and was president of the AAMC GREAT Group in 2012. In recent years he has been giving a great deal of attention to direct support of inclusion and equity by encouraging mentoring among faculty. We spent a great deal of effort to research and then publish work on the inability of the GRE to predict outcomes in grad school, and we have worked hard to help remove this obstacle at literally now over 100 schools. The GRE has long been a hurdle to underrepresented students entering graduate school. Along with his colleague, Linda Sealy, they have introduced Culturally Aware Mentoring to almost 50% of their faculty to date. This has been developed by a very productive collaboration with Chris Pfund and Angela Byars-Winston at UW-Madison. Now, with the changes in mentoring expectations driven by NIGMS we have instituted training in this area so that we expect that within 18 months no faculty member will be able to have a student/postdoc join their lab unless they have completed training, along with the writing of a detailed mentor statement of goals and support for inclusion at all levels. Currently they are devoting much of their effort to support for underrepresented postdocs who wish to develop a career in teaching and research in academia. This will assuredly involve a major effort to make their colleagues aware of the need for inclusivity and an awareness of implicit biases. Hopefully this will improve the climate in the various departments and make them more welcoming to diversity in all its forms.

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## PANEL IV : WHAT ARE THE PERSPECTIVES OF EARLY-STAGE FACULTY?

### **Kenneth Gibbs, PhD**

Kenneth (Kenny) Gibbs, Jr., Ph.D., is Director of the Postdoctoral Research Associate Training (PRAT) Program at the National Institute of General Medical Sciences (NIGMS). At NIGMS, he also is a Program Director in the Divisions of Training, Workforce Development and Diversity, and Genetics & Molecular, Cellular, and Developmental Biology where leads and administers federal programs that train the next generation of scientists, broaden participation in the research workforce, and promote basic research in the area of stem cell biology. Prior to joining NIGMS, Dr. Gibbs was a Cancer Prevention Fellow at the National Cancer Institute, and an AAAS Science & Technology Policy Fellow at the National Science Foundation (NSF) in the Directorate for Education and Human Resources (EHR). Dr. Gibbs completed his Ph.D. in the Immunology program at Stanford University, and received his B.S. in biochemistry & molecular biology (summa cum laude) from the University of Maryland, Baltimore County where he was a Meyerhoff, MARC, and HHMI scholar. Dr. Gibbs has previously served on the committee for the National Academies of Sciences, Engineering and Medicine's consensus report "Graduate STEM Education for the 21st Century," on the Board of Directors for the National Postdoctoral Association and he has written about scientific training and diversity issues for Science Careers, and Scientific American.

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## PANEL IV : WHAT ARE THE PERSPECTIVES OF EARLY-STAGE FACULTY?

### **Stanley Andrisse, MBA, PhD**

Dr. Stanley Andrisse is an endocrinologist scientist and assistant professor at Johns Hopkins Medicine and Howard University College of Medicine researching Type 2 diabetes and insulin resistance. Dr. Andrisse completed his Ph.D. at Saint Louis University and his M.B.A. and Bachelors degree at Lindenwood University, where he played three years of Division II collegiate football. Dr. Andrisse's service commitments include: Executive Director and Founder of From Prison Cells to PhD, past President of the Johns Hopkins Postdoctoral Association, Founder of the Diversity Postdoctoral Alliance, member on several local and national committees aimed at community outreach, youth mentor, motivational speaker, and community activist.

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## PANEL IV : WHAT ARE THE PERSPECTIVES OF EARLY-STAGE FACULTY?

### **Ismail Abdus-Saboor, PhD**

Ishmail Abdus-Saboor was born and raised in Philadelphia, with roots in Philly dating back four generations. As part of an honor's biology course at Central High School, at age 14 Ishmail set up a lab at home investigating regeneration in crayfish. He won a citywide science fair competition and this experience set his science career in motion. He received his bachelor's degree in Animal Science from North Carolina A&T University in 2006, having completed internships in research labs in academia and industry, as well as a veterinary clinic and a farm. It was an internship at the University of Pennsylvania in the summer of 2005 for URM undergrads (SUIP) working in a developmental biology lab where he became overjoyed with the fast pace of biomedical research and working at the wet lab bench. He earned his PhD in Cell and Molecular Biology in 2012 with Meera Sundaram at the University of Pennsylvania studying signal transduction pathways during development of the roundworm *C.elegans*. His PhD thesis work was supported by an NIH/NIGMS Genetics Training Grant and recognized with the Tom Kadesch Prize in Genetic Research. He completed postdoctoral training with Benjamin Shykind at Weill Cornell Medical College studying monoallelic gene expression of olfactory receptors and Wenqin Luo at the University of Pennsylvania studying neural circuit mechanisms for somatosensation. As a postdoctoral fellow his research was supported by an NIH/NIGMS K12 IRACDA fellowship, NIH/NIDCR K99, Burroughs Wellcome Fund Postdoctoral Enrichment Fellowship (PDEP), and recognized with the Mitchell Max Award in Pain Research from the NIH.

Ishmail opened his lab in July of 2018 as the Mitchell J. Blutt and Margo Krody Blutt Presidential Assistant Professor of Biology at the University of Pennsylvania. Ishmail is proud and humbled to be the first African-American faculty member in this department at Penn. In addition to generous startup funds from the university, the Abdus-Saboor lab is supported by an R00 Pathway to Independence grant from the NIH.

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## PANEL IV : WHAT ARE THE PERSPECTIVES OF EARLY-STAGE FACULTY?

### **Zelieann Craig, PhD**

Dr. Zeilieann Craig is an Assistant Professor in the School of Animal and Comparative Biomedical Sciences and the Physiological Sciences Graduate Interdisciplinary Program at the University of Arizona. Dr. Craig began her biomedical research journey as an undergraduate student participating in the MARC U-STAR program (T34GM008419) at The University of Puerto Rico Mayaguez, from where she graduated in 2004 with a Bachelor's degree in Industrial Microbiology. Later that year, she joined The University of Arizona's Physiological Sciences Graduate Interdisciplinary Program as a predoctoral student and became an Initiatives to Maximize Student Diversity (R25GM062584) fellow. She completed a postdoctoral fellowship in Reproductive Toxicology in the Department of Comparative Biosciences at the University of Illinois Urbana-Champaign from 2009-2013. When describing her development as a scientist, Dr. Craig credits programs aimed at recruiting and supporting minority students such as MARC for supporting her discovery of research as her dream careers. In the lab, Dr. Craig's research focuses on understanding how environmental exposures influence human fertility. Over the past five years, she has developed a research program aimed at answering two main questions: (1) which environmental exposures negatively influence female reproductive function and (2) what are the signaling pathways involved in their mechanisms of toxicity. Thus far, her studies have provided empirical information on low dose effects, compared the outcomes of low and high dose exposures, and reported on the sensitivity of novel signaling pathways and related phenotypes following exposures to endocrine-disrupting chemicals. She has trained 15 students in her laboratory from diverse backgrounds.

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## PANEL IV : WHAT ARE THE PERSPECTIVES OF EARLY-STAGE FACULTY?

### **Katherine Clements, PhD**

Katherine (Katie) Clements completed her Ph.D. at Rice University in Chemistry in 2017 after a BA in Chemistry from Purdue University in 2012. She studied the effect of mutations associated with the disease *osteogenesis imperfecta* on the structure of collagen mimetic peptides and the rational design of collagen mimetic peptide materials with Jeffrey Hartgerink. During her graduate school experience, she completed the Certificate in Teaching and Learning at the Rice University Center for Teaching Excellence, where she discovered a passion for education. This passion led to teaching numerous classes while a graduate student and then completing a year of postdoctoral research in chemical education, also at Rice University with John Hutchinson. She currently employed as a Lecturer of Chemistry at Vanderbilt University where she also serves as the Program Coordinator for the Academic Pathways Postdoctoral Fellowship. This position combines her passion for teaching with the ability to support diversity and inclusion efforts. She teaches a realistic research lab course for senior chemistry majors as well as a course on macromolecular chemistry. Additional service to the university includes participating in the VUceptor program, where she mentors a group of first-year students throughout their first semester at Vanderbilt, and being the Co-Faculty Mentor of the American Chemical Society Student Affiliate Club on campus.

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## PANEL V : WHAT IS REQUIRED OF A PROGRAM FOR IT TO BE SCALABLE AND SUSTAINABLE?

### **Clyde Yancy, MD**

Clyde Yancy, MD, MSc is Chief of Cardiology at Northwestern University, Feinberg School of Medicine, and Associate Director of the Bluhm Cardiovascular Institute at Northwestern Memorial Hospital. He holds the Magerstadt Endowed Professor of Medicine Chair and also serves as Professor of Medical Social Sciences. He concurrently serves as Vice Dean of Diversity & Inclusion, Northwestern University, Feinberg School of Medicine. His research interests are in heart failure, clinical guideline generation, outcomes sciences, personalized medicine and health care disparities. He is extensively published with well over 500 peer reviewed publications and has been named annually as one of the most highly cited scientific authors worldwide. He is Deputy Editor, *JAMA Cardiology*; Senior Section Editor (Heart Failure), *Journal of the American College of Cardiology*; and serves on the editorial boards for *Circulation*, *Circulation Heart Failure*, *the American Heart Journal* and *JACC Heart Failure*. He is a Master of the American College of Cardiology, a Fellow of the American Heart Association, a Master of the American College of Physicians and a Fellow of the Heart Failure Society of America. He is the chair of the ACC/AHA Heart Failure Guideline Writing Committee, Chair of the ACC Heart Failure Clinical Pathway Writing Committee and Co-chair of the ACC Diversity & Inclusion Taskforce. He is a former President of the American Heart Association (2009-2010). He has completed extensive government service for the NIH, FDA and the Patient Centered Outcomes Research Institute. In 2016, he was elected to the National Academy of Medicine. In 2018 he was appointed to the Minority Health Affairs Subcommittee, Department of Health and Human Services. Also in 2018, he received two lifetime achievement awards for clinical research from Women Heart® and the Cardiovascular Research Foundation®. In 2019 he received the Outstanding Alumnus Award from Tulane University School of Medicine, New Orleans, LA.

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### **Alison Gammie, PhD**

Alison Gammie, Ph.D., is the Director of the National Institute of General Medical Sciences (NIGMS) Division of Training, Workforce Development, and Diversity (TWD). TWD is the focal point for NIGMS programs aimed at developing a strong and diverse biomedical research workforce. Dr. Gammie received a B.A. from Reed College in Biology and a Ph.D. from the Oregon Health & Sciences University. She was initially a Jane Coffin Childs Postdoctoral Fellow and eventually a Senior Lecturer at Princeton University. While at Princeton, in addition to teaching, mentoring and running a research laboratory, she served as an academic advisor, an Associate Member at the Cancer Institute of New Jersey, and the Director of Diversity Programs & Graduate Recruiting. Honors include Princeton's President's Award for Distinguished Teaching, the Graduate Mentoring Award and the American Society for Microbiology Hinton Award for advancing the research careers of under-represented minorities.

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## PANEL V : WHAT IS REQUIRED OF A PROGRAM FOR IT TO BE SCALABLE AND SUSTAINABLE?

### **Bishr Omary, MD, PhD**

M. Bishr Omary, MD, PhD, is Professor and former chair of Molecular & Integrative Physiology, and Special Advisor on Research to the Dean, at the University of Michigan Medical School. He will be moving to Rutgers University starting September 2019 to serve as Senior Vice Chancellor for Academic Affairs and Research for Rutgers Biomedical and Health Sciences. His laboratory studies the rare diseases caused by mutations of keratin and lamin cytoskeletal proteins that lead to a broad range of diseases, and mutations of heme biosynthesis enzymes that lead to porphyrias. He has received several mentoring and teaching awards, and his passion for mentoring, training and career development are reflected in small part by commentaries he (co)authored that include: (i) Omary (2008). Mentoring the mentor: Another tool to enhance mentorship. *Gastroenterology*; (ii) Merchant & Omary (2010). Underrepresentation of underrepresented minorities in academic medicine: The need to enhance the pipeline and the pipe. *Gastroenterology*; (iii) Omary (2016). Mentoring: A necessary but not sufficient ingredient for enhancing success. *Gastroenterology*; (iv) Conte & Omary (2018). NIH career development awards: Conversion to research grants and regional distribution. *J Clin Invest*; (v) Omary, Shah, Schnell, Subramanian, Swanson, O’Riordan (2019). Enhancing career development of postdoctoral trainees: Act locally and beyond. *J Physiol*.

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## PANEL V : WHAT IS REQUIRED OF A PROGRAM FOR IT TO BE SCALABLE AND SUSTAINABLE?

### **Barbara Graves, PhD**

Barbara Graves has held the position of Senior Scientific Officer at the Howard Hughes Medical Institute in Chevy Chase, Maryland since 2011. At HHMI she participates in the management of the flagship Investigator program with four other scientific officers. She was also instrumental in the early design of the Hanna H. Gray Fellows Program. Her previous administrative experience includes ten years as Chair of the Department of Oncological Sciences at the University of Utah School of Medicine and four years as Senior Director of Basic Science at the Huntsman Cancer Institute at the University of Utah. Her research program, which was NIH funded for 32 years during her faculty position at the University of Utah, had national and international recognition for leadership in the investigation of the ETS transcription factors. A graduate of Rice University in Houston, Texas, Graves earned her PhD from the University of Washington in Seattle, Washington, and completed postdoctoral training at the Fred Hutchinson Cancer Research Center in Seattle and the Carnegie Institute of Washington, Department of Embryology in Baltimore, Maryland. She was associate editor of the Journal of Molecular and Cellular Biology for five years and served on NIH Review Panels for CSR and the NCI. She was elected as a Fellow of the American Association for the Advancement of Science in 2007.

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## PANEL V : WHAT IS REQUIRED OF A PROGRAM FOR IT TO BE SCALABLE AND SUSTAINABLE?

### Carlos Gutiérrez, PhD

Carlos G. Gutiérrez is a distinguished Professor of Chemistry, Emeritus, at California State University, Los Angeles. He was raised in Los Angeles and educated in its public schools. He pursued interests in graphic arts, literature, and film animation before completing the BS in chemistry at UCLA (1971). He studied under R. Bryan Miller at UC Davis for the PhD in natural products synthesis (1975). He was appointed to the Cal State LA faculty in 1976, and promoted to professor in 1984. He has administered research training programs over four decades, including the Cal State LA MARC Program from 1978-2018, and the MBRS/RISE Program from 1992-2017. In 2000, he became the founding director of the Cal State LA Minority Opportunities in Research (MORE) Programs, an umbrella organization of efforts that share the goal of preparing minority undergraduates and masters students for success in science PhD programs. Since inception of MORE, 165 alumni have earned the PhD, and 167 are in strong PhD programs nationwide. In its most recent ranking, the National Science Foundation lists Cal State LA as the top baccalaureate institution of origin of Hispanic science PhD recipients among all 2500 BS/MS colleges and universities in the continental US. The Office of the President of the University of California lists Cal State LA as the number one baccalaureate origin of underrepresented students that earned science PhDs at the 10 campuses of the University of California among alumni of the 23 campuses of the California State University. Gutiérrez is a synthetic organic chemist. He and his students have developed methodologies for: selective reduction of unsymmetrical organic sulfides; the synthesis of highly substituted crown ethers; and for efficient syntheses of the *E. coli* siderophore enterobactin and its derivatives to study the details of bacterial iron acquisition, transport, and utilization. Other work has focused on selective acylation of polyamines having several similar or identical amine functionalities, as a strategy for the synthesis of molecules to seek out anatomical targets for delivery of probes for diagnosis, or of drugs for therapy. He was the founding chair of the American Chemical Society (ACS) Committee on Minority Affairs (CMA), and oversaw the establishment of the ACS Scholars Program. Since 1995, ACS has supported the academic and career development of over 3,000 talented minority undergrads pursuing degrees in the chemical sciences by awarding some \$900,000 in scholarships yearly. Student outcomes detail the success of the program: 92% complete the BS in the molecular sciences. Over half pursued post-baccalaureate education: 200 have earned the PhD; and many more are on track to do so. Gutiérrez received a 1996 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring from former President William J. Clinton; the 2004 American Association for the Advancement of Science (AAAS) Lifetime Mentor Award; and the 2011 SACNAS Distinguished Undergraduate Mentor Award. He was named a 2005 U.S. Professor of the Year by the Carnegie Foundation for the Advancement of Teaching. He is a Senior Fellow of the California Council on Science and Technology, a 2002 Fellow of the AAAS, and a 2013 Fellow of the American Chemical Society. He received a special Academy Award in 1973 for "Antimatter", a science educational film he and roommate Lewis Hall made as UCLA undergraduates.