

# MISSIONSTEM SUMMIT

August 8-9, 2016

## OPENING SESSION

### *Speakers:*

- Charles F. Bolden, Jr., NASA Administrator
- Dr. Dava Newman, NASA Deputy Administrator
- Brenda R. Manuel, Associate Administrator, NASA Office of Diversity and Equal Opportunity (ODEO)
- Dr. Jo Handelsman, Associate Director for Science, White House Office of Science and Technology Policy (OSTP)
- Christina M. “Tina” Tchen, Assistant to the President and Chief of Staff to the First Lady

*Summary:* NASA officials welcomed participants and discussed the importance of diversity and inclusion in science, technology, engineering, and mathematics (STEM). The NASA Associate Administrator for Diversity and Equal Opportunity stated that the MissionSTEM Web site is a catalyst for change, a vehicle for highlighting best practices, and a clearinghouse for information about equal opportunity and STEM, and that the MissionSTEM Summit was the next logical step for NASA’s work in diversity. The purpose of the Summit was to foster idea generation and collaboration. The NASA Administrator (via pre-taped video) noted that disparities in STEM are of great concern and noted diversity is critical to the Nation’s scientific and economic future. NASA’s Deputy Administrator added that it is important to nurture all of the talent available to us and inspire a new generation. Sexual harassment, unconscious bias, discrimination, and lack of inclusion have serious, negative impacts on the choice to pursue STEM careers.

In pre-taped videos, members of Congress emphasized that diversity in STEM is a moral and economic issue; U.S. competitiveness depends on it and diversity strengthens innovation. The United States needs to find ways to open STEM to everyone; the environment must be hospitable and Federal funding agencies must stand up to predators and harassers.

Dr. Jo Handelsman noted that only 60 percent of college students intending to major in STEM graduate in STEM; retention among some minority groups is below 20 percent. To address this, the President and OTSP developed [STEM for ALL](#). This initiative focuses on expanding access to rigorous STEM courses, improving STEM teaching, supporting active learning, overcoming stereotypes, and expanding opportunities for all students in STEM. Dr. Handelsman noted that the future workforce should resemble the U.S. demographic profile and should include both workers with STEM training and non-STEM workers who understand the nature of science. She also stated that change must be supported by strong leadership from the highest levels of organizations and that initiatives that seek to improve outcomes in diversity, inclusion, and compliance must be sustained over the long-term to enable culture change and build a sense of community.

## TOWN HALL 1 PANEL: LEVERAGING THE POWER OF DIVERSITY AND INCLUSION IN STEM: CHALLENGES

### *Speakers:*

- Dr. Dava Newman, NASA Deputy Administrator
- Dr. France Cordova, Director, National Science Foundation (NSF)
- Dr. Ellen Stofan, NASA Chief Scientist
- Alice Bowman, New Horizons Mission Operations Manager, Johns Hopkins University Applied Physics Laboratory
- Dr. Michele V. Manuel, Professor, University of Florida
- Constance V.A. Thompson, Director, External & Government Affairs, National Society of Black Engineers (NSBE)

*Summary:* Challenges in STEM include increasing the diversity of students and faculty and retention of minority faculty and students. The panelists emphasized the importance of mentoring and collaboration, noting that those involved in STEM educational programs and workplaces need role models and to feel that they are part of a community. Diversity must be normalized so that people see that STEM fields are inclusive of all people.

Dr. France Cordova, Director of the National Science Foundation (NSF), discussed the [NSF INCLUDES](#) program (Inclusion across the Nation of Communities of Learners and Underrepresented Discoverers in Engineering and Science), a comprehensive initiative to enhance U.S. leadership in scientific discovery and innovation by developing STEM talent from all sectors and groups in society. The initiative aims to improve preparation for and increase participation in STEM education and careers, and ensure the inclusion of individuals from traditionally underrepresented and underserved groups in STEM, including women, members of racial and ethnic groups, persons with disabilities, and persons with low socio-economic status. Significant advancement of these groups will result in a new generation of promising STEM talent and leadership to secure our Nation's future in science and technology.

## **TOWN HALL 2 PANEL: LEVERAGING THE POWER OF DIVERSITY AND INCLUSION IN STEM: PROMISING PRACTICES**

### *Speakers:*

- Dr. Dava Newman, NASA Deputy Administrator
- Dr. Alma Clayton-Pedersen, Senior Associate, Curtis Lewis & Associates (CLA)
- Dr. Ann Weaver Hart, President, University of Arizona
- Janet Bandows Koster, Executive Director and CEO, Association for Women in Science (AWIS)
- Dr. Michele V. Manuel, Professor, University of Florida
- Dr. Stephen M. Ruffin, Professor, Georgia Institute of Technology and Director, NASA Georgia Space Grant Consortium

*Summary:* The panel members discussed the need for culture change in STEM environments. They emphasized mentoring, creating a sense of community, modeling appropriate behaviors, and providing undergraduate research experiences. Such efforts require sustainability, transparency, and leadership from the top. Examples of promising practices highlighted by the panelists included the University of Arizona's [Think Tank](#), which provides a positive environment where students can master the skills needed to become successful lifelong learners, and Georgia Institute of Technology's [FOCUS Program](#), which provides undergraduate students the opportunity to learn more about graduate education.

## **PANEL: ACCESSING NASA GRANTS/CONTRACTS**

### *Speakers:*

- Dennis Andrucyk, Deputy Associate Administrator, NASA Space Technology Mission Directorate
- Glenn Delgado, Associate Administrator, NASA Office of Small Business Programs
- Dr. Ahsan Choudhuri, Director, NASA Minority University and Education Project (MUREP) Institutional Research Opportunity (MIRO) Center for Space Exploration & Technology Research, University of Texas at El Paso
- Dr. Okenwa O.I. Okoli, Chair of Industrial and Manufacturing Engineering, Florida A&M University - Florida State University
- Jenifer Scoffield, Small Business Liaison Officer, Orbital ATK
- Barbara Orlando, Senior Grant Policy Analyst, NASA Office of Procurement
- Tania Davis, Acting Manager, NASA MUREP
- Consuelo Grier, Director of Constituency Engagement, Excelencia in Education
- Carolyn Knowles, Director, NASA Internships, Fellowships, and Scholarships
- Andres Quintanilla, Program Manager, Excelencia in Education

*Summary:* This panel discussed the importance of capacity building and partnerships as well as the impact of real research experiences for students. Several programs were highlighted, including: NASA's [Pathways Programs](#), providing employment opportunities for students and recent graduates, and NASA's [Mentor-Protégé Program](#), which encourages NASA prime contractors to work with eligible protégés (such as small businesses and minority-serving institutions), thereby enhancing the protégés' capabilities to perform on NASA contracts and subcontracts, establishing long-term business relationships between these entities and NASA prime contractors, and increasing the number of these entities that receive NASA contract and subcontract awards.

## PANEL: INCREASING WORKFORCE DIVERSITY IN STEM: THE STEM PIPELINE

### *Speakers:*

- Robert Lightfoot, NASA Associate Administrator
- Donald James, Associate Administrator, NASA Office of Education
- Susan Fonseca Lanham, CEO and Founder of Women@TheFrontier
- Jill L. Prince, Manager, NASA Engineering and Safety Center Integration Office
- Dr. Wanda Ward, Assistant Director, Broadening Participation, White House OSTP
- Dennis Woodfork, Assistant Division Chief for Technology, NASA Goddard Space Flight Center
- Keith Lowe, Pathways Program Manager, NASA Office of Human Capital Management

*Summary:* This session focused on increasing diversity in the STEM workforce and preparing for the future STEM workplace. The skills needed for the future include teamwork, communications, and flexibility, as well as training in the arts and design. The environment needs to be open and accommodating, as well as provide a sense of community, empowerment, and engagement. Workplace flexibilities will help attract and sustain a diverse workforce. It is important to normalize diversity in the STEM workplace, such as by providing role models and encouraging active participation. It is also important to cultivate the STEM workforce at early ages. One Federal program focusing on the STEM pipeline is OSTP's [Educate to Innovate](#) campaign, which seeks to broaden participation in STEM, inspire a more diverse STEM talent pool, and recruit and prepare effective STEM teachers.

## PANEL: MAKING STEM ACADEMIC ENVIRONMENTS MORE INCLUSIVE

### *Speakers:*

- Lesa Roe, NASA Deputy Associate Administrator
- Dr. Ellen Stofan, NASA Chief Scientist
- Dr. Jedidah Isler, Astronomy & Astrophysics Postdoctoral Fellow, Vanderbilt University - NSF
- Dr. Neill Reid, Space Science Operations Lead for the Hubble Space Telescope, The Space Telescope Science Institute
- Dr. Beverly Daniel Tatum, President Emerita, Spelman College
- Dr. Claudia "Meg" Urry, Professor of Physics and Astronomy, Yale University/Past President, American Astronomical Society

*Summary:* This panel focused on ways to increase diversity and inclusion in STEM academic environments and the greater STEM community. Diversity is integral to STEM and we must normalize diversity in STEM environments. This requires buy-in at all levels. We must work together to create inclusive spaces that take into account individuals and how they see themselves. The panelists offered a variety of concrete solutions for combatting stereotype threat, unconscious bias, micro-aggressions, and potentially exclusionary processes. Schools can rethink their admissions criteria to ensure they are neutral, create diverse review panels when hiring, provide constructive feedback and encouragement to students, and promote a sense of belonging and provide mechanisms of support. Academic (and other) institutions must also create a safe place to address important issues. Climate surveys can provide a mechanism for identifying issues on campus. Be transparent so that faculty, staff, and students can see that issues, such as sexual harassment, are being addressed promptly and adequately. Provide training that helps all parties adapt to changing demographics and culture. Create an environment of no fear.

## PANEL: ADVANCING DIVERSITY THROUGH CIVIL RIGHTS COMPLIANCE

### *Speakers:*

- Brenda R. Manuel, Associate Administrator, NASA ODEO
- David Chambers, Acting Director, Program Planning and Evaluation Division, NASA ODEO
- Dr. Joni Baker, Director of Equal Opportunity and Diversity, Texas A&M System
- Dr. Lorelle Espinosa, Assistant Vice President, Center for Policy Research and Strategy, American Council on Education
- Rachel Gettler, Attorney, Office for Civil Rights, U.S. Department of Education

- Dr. Christine Reich, Director of Exhibit Development and Conservation, Museum of Science, Boston

*Summary:* Inclusion and compliance are very closely related. Civil rights compliance includes activities aimed at coming up with strategies or solutions to ensure that everyone is afforded equal opportunities to participate, regardless of race, color, national origin, gender, or disability. Ultimately, compliance is about inclusion, accessibility, and action. The speakers on this panel discussed a variety of ways to change programs to make them accessible to everyone: think about factors other than race and focus on other characteristics, such as geographic residence and socioeconomic status, when considering recruiting and admitting students; rethink admissions criteria; pay attention to campus climate and create a sense of community and of belonging; provide role models; and conduct self-evaluations. For example, STEM departments may want to get involved in the institution’s broader outreach, to make sure representatives at those events are diverse. Other suggestions included designing introductory STEM courses to appeal to a diverse group of students; offering early research opportunities (to all students); and creating pipeline, retention, and mentoring programs to assist students all the way through their educational careers.

With regard to access to science museums receiving Federal funding, the Director of Exhibit Development and Conservation for the Museum of Science in Boston provided an overview of [Universal Design](#). Universal Design goes beyond accessibility to inclusion, incorporating multisensory and multimodal experiences in which everyone can participate, regardless of age, ability, interest levels, and cultural identity. A key element of Universal Design is to include everyone in the design of programs to ensure that their needs and ideas are incorporated.

The MissionSTEM Web site highlights the Museum of Science Universal Design efforts as a “[Featured Promising Practice](#).” In addition, promising practices of other [museums](#) and [colleges and universities](#) are posted on the Web site. The MissionSTEM Web site also provides information about civil rights compliance requirements pertaining to [disability](#) and [language access](#) (under Title VI) in the museum context.

## CLOSING SESSION

### *Speakers:*

- Brenda R. Manuel, Associate Administrator, NASA ODEO
- Dr. Ellen Stofan, NASA Chief Scientist
- Dr. Alma Clayton-Pedersen, Senior Associate, Curtis Lewis Associates
- Dr. Dava Newman, NASA Deputy Administrator

*Summary:* NASA’s Deputy Administrator, Chief Scientist, and Associate Administrator for Diversity and Equal Opportunity, along with a senior associate of Curtis Lewis Associates, summarized what was learned and discussed over the two-day Summit. The Summit affirmed that the culture in STEM organizations, institutions, and workplaces must change to include everyone, regardless of race, sex, disability, or other characteristics. Issues in STEM environments, such as sexual harassment, stereotype threat, implicit biases, micro-aggressions, lack of accessibility, and imposter syndrome, all have a real impact on diversity, inclusion, and retention. STEM institutions and organizations need to: normalize diversity and inclusion, provide a sense of belonging, recognize the spectrum of abilities, and embrace that we are a changing population. Institutional policies regarding diversity and inclusion must be supported by leadership at all levels.

The speakers noted that it is crucial to address the difficult topics. Change comes from both the top and the bottom. We must not filter out anyone, but filter them in and make sure they succeed. We must change the conversation. People always come first: we must love, act, discover, and innovate.

The Associate Administrator for Diversity and Equal Opportunity emphasized that one intended outcome of the MissionSTEM Summit was to share “promising practices” that address the challenges discussed throughout the Summit. All participants were asked to submit promising practices to NASA by emailing them to [civilrightsinfo@nasa.gov](mailto:civilrightsinfo@nasa.gov). The NASA Office of Diversity and Equal Opportunity will collect the submissions and compile them into a document that will be posted on the MissionSTEM Web site.