THROUGH THE LOOKING GLASS: ADDRESSING THE 2023 PLANETARY SCIENCE AND ASTROBIOLOGY DECADAL STATE OF THE PROFESSION RECOMMENDATIONS THROUGH THE LENS OF PUBLIC ENGAGEMENT. K. L. Lynch[1], A. J. Shaner[1], E. G. Rivera-Valentín[2], J. Joyce[3], S. Shebby[3], A. Matiella Novak[2], [1]Lunar and Planetary Institute/USRA, klynch@lpi.usra.edu, [2]Johns Hopkins University Applied Physics Laboratory, [3]McREL International.

Introduction: The Planetary Resources and Content Heroes (ReaCH) project, funded through SMD's Science Activation program, is taking deliberate steps to enhance the planetary science and astrobiology community's ability to engage with diverse audiences, specifically Black and Latinx youth (Fig. 1) and their families. Over the next three

Fig. 1 *Dr. Hannah O'Brien engages a Latinx youth with a hands-on astrobiology activity during a public event following a pilot ReaCH workshop.*

years, ReaCH will conduct 15 workshops across the country for planetary science and astrobiology professionals and informal educators to explore diversity, equity, inclusion, and accessibility (DEIA) infused, effective practices for engaging diverse communities in planetary science and astrobiology. In addition, data obtained during the workshops inform the development of a model for similar workshops for other disciplines (e.g. astrophysics, heliophysics, etc.)

The focus of the ReaCH project is to assist planetary science and astrobiology professionals in engaging diverse audiences in out-of-school settings. More equitable and inclusive interactions between scientists and diverse communities can inspire future STEM professionals [2]. Consequently, the ReaCH project is in a position to address themes discussed in the state of the profession (SoP) chapter from the recent Planetary Science and Astrobiology Decadal Survey.

The Origins, Worlds, and Life (OWL) report is the first planetary decadal survey to include a chapter on issues concerning the profession, including DEIA [1]. The report lays out actionable items that can be taken by funding agencies and highlights community actions that can help to increase the diversity of professionals within the field of planetary science and their inclusion.

Decadal SoP Themes: Implementation and continuous improvement of the Planetary ReaCH project aligns with five points highlighted by the SoP chapter: (1) The continued and severe underrepresentation of Black and Latinx scientists, (2) The need to learn about implicit bias and other factors that act as barriers to the inclusion of underrepresented communities, (3) The need to normalize practices that lead to the fair and equitable treatment of all individuals, (4) The importance of co-creating opportunities by intentionally including underrepresented voices, and (5) The importance of community engagement and outreach.

Continued underrepresentation of Black and Latinx scientists. The SoP reviewed the available demographic data for planetary science [3,4], as well as national data on STEM professionals, and physical scientists. Currently, Latinx/Hispanics make up some 5% of planetary scientists, compared to 17% in the US workforce and 8% in STEM, as well as physical sciences. Importantly, Black scientists make up 1% of the field, compared to 11% of the U.S. workforce, 9% of all STEM jobs, and 6% of physical science jobs. In response, Planetary ReaCH has an intentional focus on Black and Latinx communities (Fig. 2).

Fig. 2 *Pilot workshop participants discuss the importance of forming authentic partnerships as one step in engaging diverse audiences.*

Implicit bias and other factors creating barriers to engagement. During ReaCH workshops participants share and discuss evidence-based and

lived-experience-based practices for engaging with Black and Latinx communities. Additionally, participants review together the impact of implicit biases on personal engagement. These discussions are a starting point for implementing more equitable and inclusive engagement. ReaCH workshop participants also discuss and practice evidence-based strategies for promoting equity and inclusivity in public engagement settings. These include reframing approaches to engaging youth in planetary-themed hands-on activities.

Fig. 3 *Dr. Edgard Rivera-Valentín and Dr. Kennda Lynch celebrate after successfully modeling equitable engagement strategies during a ReaCH pilot workshop.*

The need to normalize equitable and inclusive engagement practices. In addition to workshop discussions, facilitators model and encourage the use of equitable and inclusive engagement practices (Fig. 3). The ReaCH team also utilizes such practices in planning workshops and accompanying events, such as including scientists and informal educators living in the workshop location to assist in the planning and implementation of the workshop and public event.

The importance of co-creation. In 2022, the ReaCH project conducted three pilot workshops to develop the content and implementation practices of future workshops. These pilots were created with input from ReaCH team members, scientists, informal educators, DEIA researchers, and professional, external evaluators. The project also intentionally included Black and Latinx voices in the co-creation of the workshops.

Data collected by the external evaluators during these pilots, and data to be collected in the coming years, will improve workshops and inform the model under development by the ReaCH project. One variable for this model identified early in the process was the need to articulate what general definitions of DEIA look like within the context of ReaCH's work [5]. Lessons learned have been and will be presented during conferences and meetings and, once completed, the model will be disseminated broadly.

The importance of community engagement and outreach. Another point highlighted in the SoP chapter was that scientists have felt disconnected with community engagement after the reorganization of NASA SMD's public engagement programs. Through ReaCH, scientists not only are exposed to ways to reframe community engagement activities, but also practice the activities with local communities by going to them. In doing so, ReaCH tries to bridge the gap between scientists and engagement events.

Our project also intentionally works to pair scientists with informal educators during workshops to facilitate networking (Fig. 4) and partnership-building that may later lead to engagement opportunities. These scientist-educator workshop pairings also put participants on an equal-footing from the start by recognizing the expertise and experiences both groups bring to the workshops.

Fig. 4 *A scientist-educator pair get to know each other during a ReaCH pilot workshop.*

Additionally, the SoP noted that many scientists are not funded to do engagement work. ReaCH supports participation at workshops and public events through stipends to help mitigate funding barriers.

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Additional Information: If you have any questions or would like additional information regarding the Planetary ReaCH project, please visit www.lpi.usra.edu/planetary-reach or contact Andy Shaner at shaner@lpi.usra.edu.