

TRACKING COMMUNITY BUILDING IN OPEN SCIENCE

Christina M. Johnson¹, Paola Castaño², Kristen Peach³, Xavier-Lewis Palmer¹, Ryan T. Scott¹, Daniela Bezdán⁸⁻⁹, Rachel Gilbert¹, Danielle K. Lopez¹, Stephen Lantin⁴, Lauren M. Sanders⁵⁻⁶, Afshin Beheshti⁵⁻⁶, Richard Barker⁵, Sigrid Reinsch⁶, Nitin K. Singh⁷, Melanie J. Correll⁴, Nathaniel Szewczyk¹⁰, Sarah Wyatt¹⁰, Gbolaga O. Olanrewaju¹⁰, Rafael Loureiro¹¹⁻⁵, Chad Vanden Bosch¹¹, Gilbert Cauthorn¹², Lovorka Degoricija¹, Sylvain V. Costes⁶

Goal: Expand the understanding of the effects of spaceflight on cells, tissues, and organisms.

Open and FAIR* Data

User Communities

OSDR Analysis Working Groups

AWG	Members
Animal	135
Multomics	355
Plants	127
Microbes	137
ALSDA	287
AI/ML	149

OSDR Team

Curation
Data Democratization
Archiving



Validation of analytical processes
Sharing of expertise
Harmonization of results across space biology experiments
Re-analysis
Publication

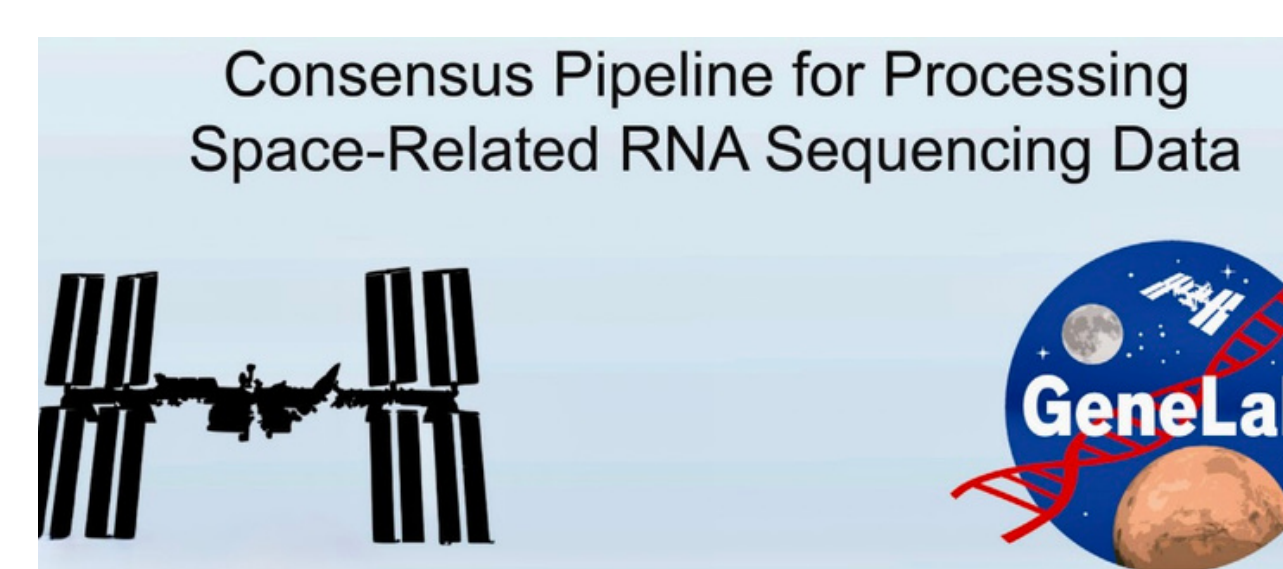
Evidential value of OSDR data

*FAIR: Findable, Accessible, Interoperable, Reusable

Open Science Data Repository's Analysis Working Groups (AWGs)

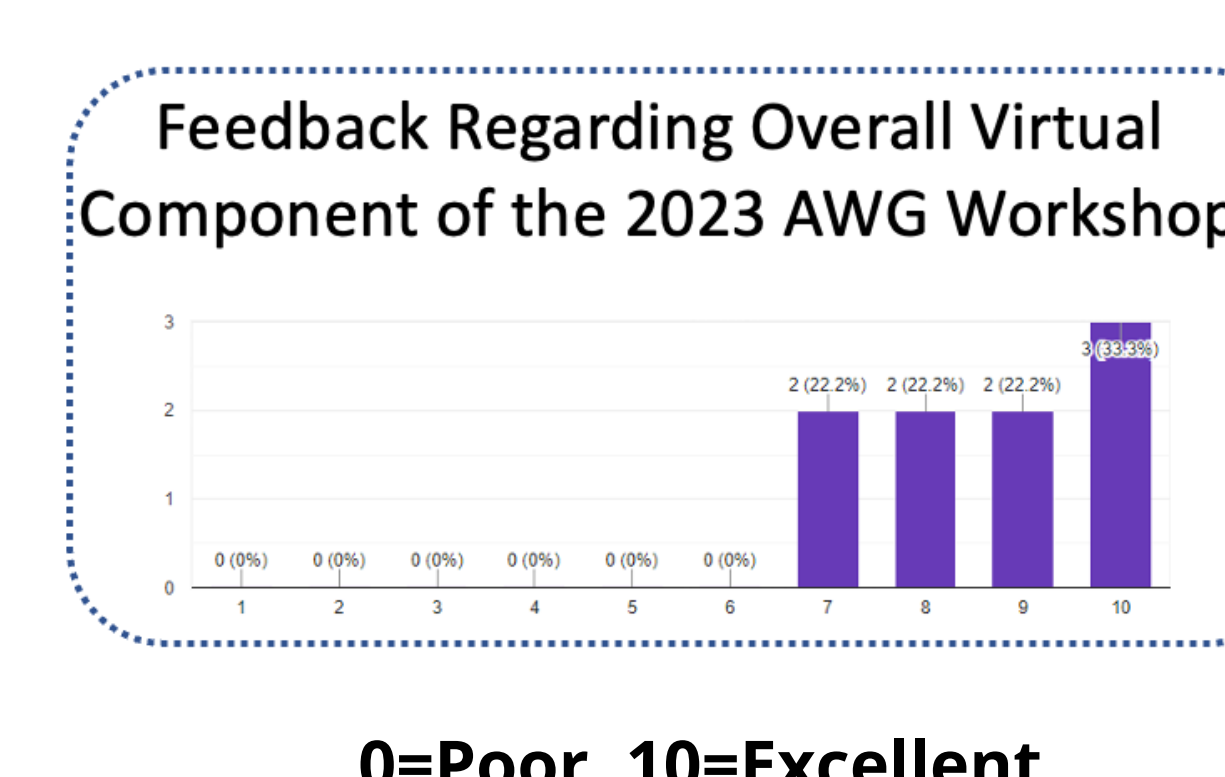
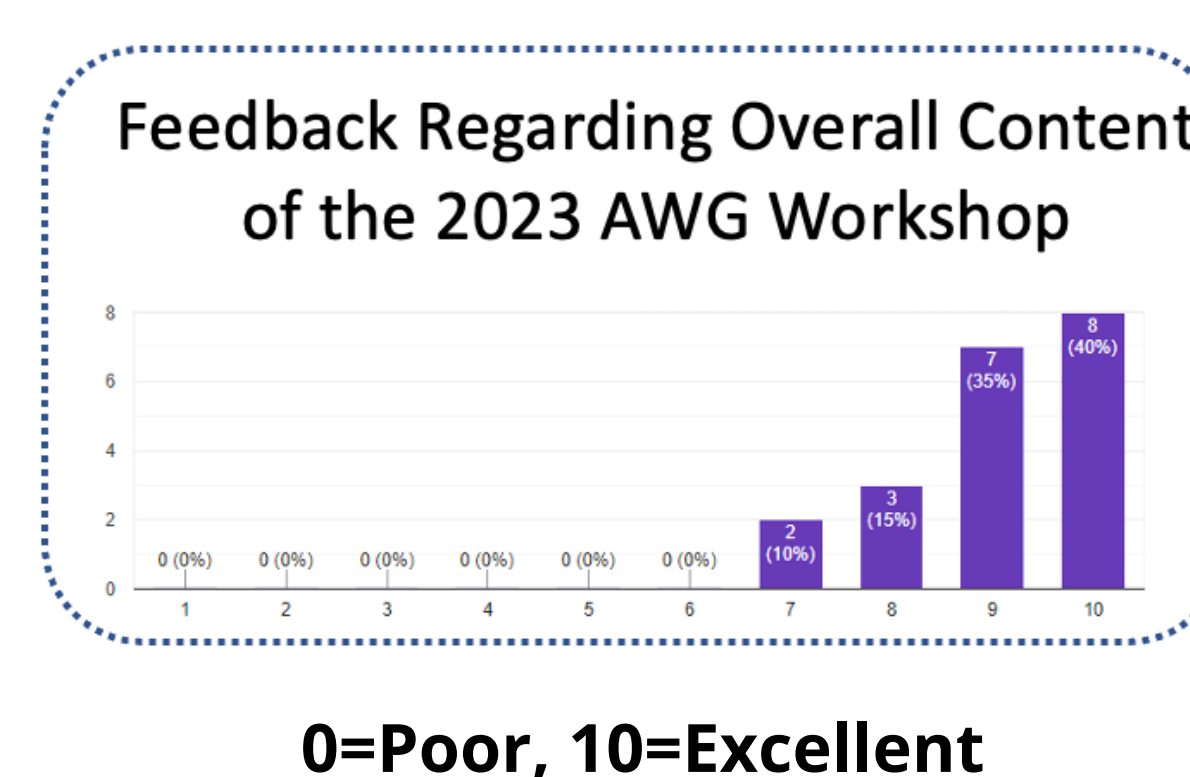


Optimize processing of raw data from OSDR

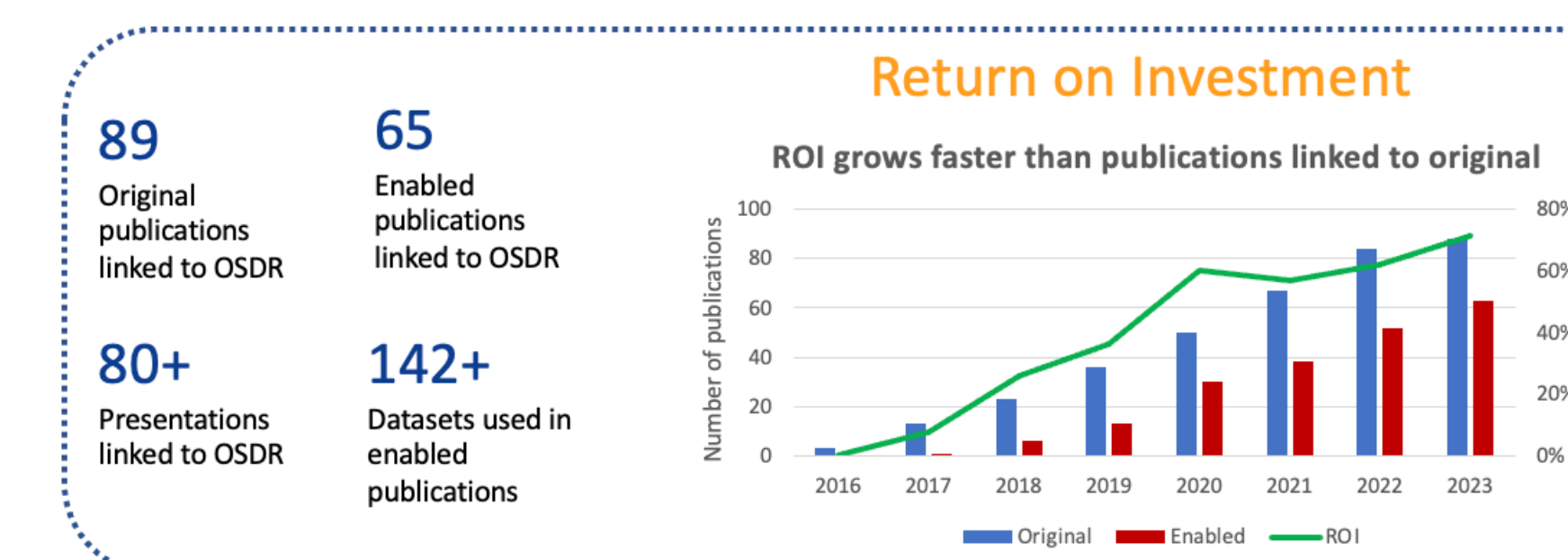


Overbey et al., *iScience* 24, 102361 April 23, 2021

Feedback on OSDR user experience, data collection, metadata standards, and analysis readiness of OSDR data.

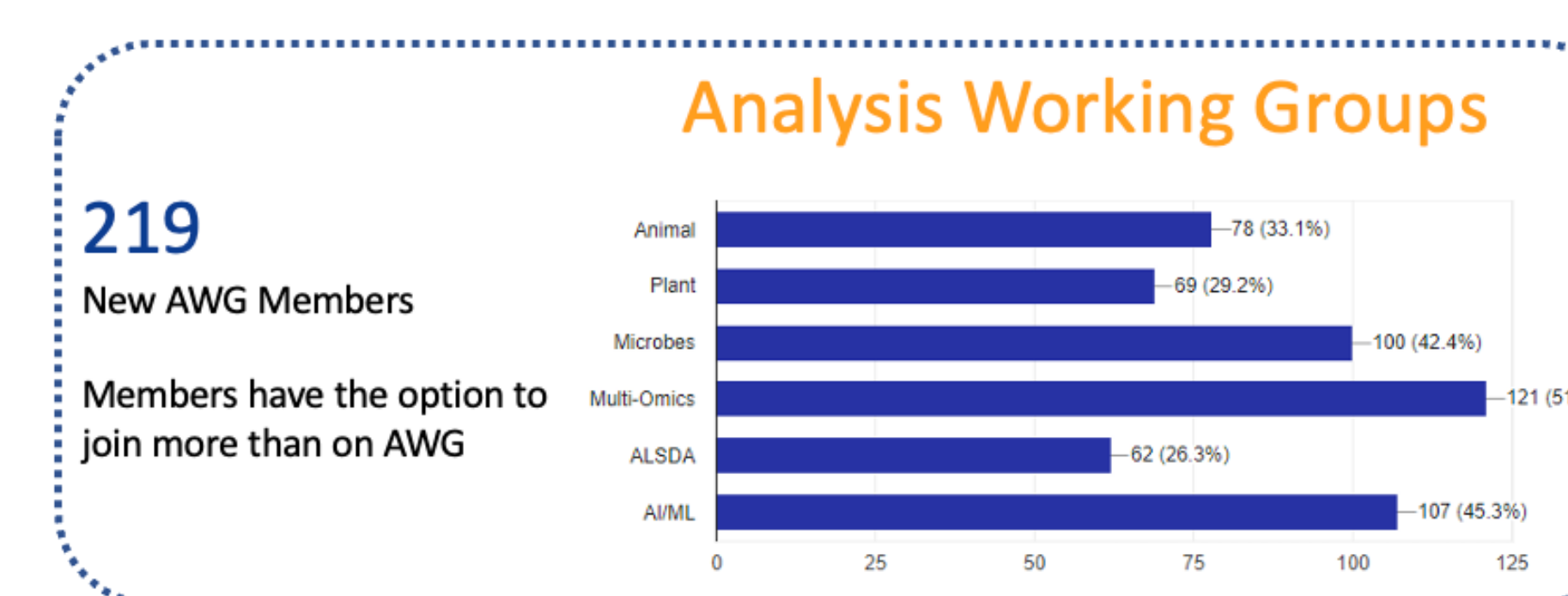


Maximize data re-use for new knowledge discoveries.



5 nasa grants awarded to AWG members
2 publication campaigns

Foster a scientific community



- Expanding access to NASA research for people with diverse backgrounds.
- Participation by students from the GeneLab for High Schools Program.
- Community-building events: In-person and virtual workshops, AWG Symposium, Meet the Experts, TOPS Open Science 101.
- Supporting PhD students in the completion of their degrees.
- International collaboration initiatives: ESA Space Omics Topical Team, International Standards for Space Omics Processing and JAXA Flahship project.

How can Open Science (OS) Promote Good Research Practice?

- OS leads to good research practices through open and FAIR data and communities of users who engage with the data.
- The evidential value of OSDR's data depends on the combined work and expertise of the curation teams and the AWGs.
- The consolidation and expansion of AWG communities is key to continue bringing new expertise and insights to space biology and biomedical research.

Open Science Training



Author Affiliations

1 KBR; 2 University of Exeter; 3 Bionetics; 4 University of Florida; 5 Blue Marble Space Institute of Science; 6 Space Biosciences Division, NASA Ames Research Center; 7 California Institute of Technology, Jet Propulsion Laboratory, Biotechnology and Planetary Protection Group; 8 Institute of Medical Genetics and Applied Genomics, University of Tübingen; 9 NGS Competence Center Tübingen (NCCT), University of Tübingen; 10 Ohio University; 11 Winston-Salem State University; 12 University of North Dakota.



Join an AWG

<https://osdr.nasa.gov/bio/awg/join.html>