

# Science and Planetary Protection in Advance of Human Missions Seminar

## Workshop Context & Goals

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July 31 – August 1, 2024



# Community Outreach Context

- Mars Sample Return
  - Discoveries about our universe and informing future science
- Humans to Mars
  - Space-X Starship & Mars Goals
  - International Initiatives (Artemis Accords)
  - NASA's Moon to Mars Campaign
- Science Planning for Humans on Mars
  - National Academies Study: A Science Strategy for the Human Exploration of Mars
  - Planetary Protection Policy: addressing knowledge gaps for crewed missions to Mars
- Mars Exploration Program Future Plan
  - Operational missions and balanced portfolio of future missions to achieve decadal level science



# Workshop Motivation

- Identify science priorities for robotic missions in advance of humans arriving on Mars
  - Recon needs for humans to perform science missions
  - Activities to ensure integrity of future science data (site characterization, control state)
- Develop Planetary Protection guidelines for crewed missions to Mars
  - Inform science activities to help Planetary Protection develop a balanced solution
  - Understand level of contamination not harmful to future science
  - Identify how impacts of contamination can be mitigated through practices and measurements



# Workshop Goals

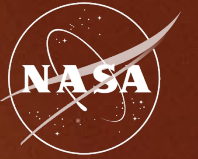
- Identify science observations/measurements desired to achieve in advance of humans on Mars surface
  - Identify synergies across disciplines
- Identify science research topics to address planetary protection knowledge gaps and inform science mission priorities



# Future Mars Surface Science Workshops

- Lunar Surface Science Workshops
  - Series of virtual workshops to collect community input on Lunar surface activities
  - Presentation at last MEPAG face-to-face garnered support for Mars
- Mars Surface Science Workshops (MSSW)
  - This workshop/seminar is a pathfinder for future engagements
  - Planning to hold a series of MSSW engagements in the future
    - Community input solicited for future topics

National Aeronautics and  
Space Administration



# EXPLORING MARS TOGETHER

Mars Exploration Program  
Plan for a Sustainable Future for Science at Mars  
2024-2044