NATIONAL ACADEMIES Sciences Engineering Medicine

Center for Advancing Science and Technology (CAST)
Aeronautics, Space, and Astronomy Program (ASA)
Center for Health, People and Places (CHPP)
Life Sciences and Biotechnology Program Area (LSB)
Space Studies Board/Aeronautics and Space Engineering Board/Board on Life Science

Committee on Planetary Protection Virtual Meeting: Limits of Terrestrial Life and the Probability of Growth on Mars

June 1-2, 2026

Virtual Meeting

Zoom Webinar

ALL TIMES IN US EASTERN STANDARD TIME

MONDAY, JUNE 1, 2026

OPEN SESSION

Zoom Webinar: https://nasem.zoom.us/j/94044714895?pwd=YD3PlrPPb4q0t39b8r4G6C9fpy2R4k.1
Passcode: 526834

9:50 AM **Welcoming Remarks**
(10-minute remarks)
Lisa Pratt: Welcome, introduce CoPP, and go over meeting agenda
Kelsie Krafton: Zoom webinar and Slido logistics information for attendees

10:00 AM **Session 1: Setting the Stage** — **Nick Benardini, Erin Lalime, NASA**
(30-minute presentations and 20-minute discussion)
Moderator: Lisa Pratt, CoPP Co-Chair

10:50 AM **Session 2: Updates on Martian Environmental Factors Relevant to Planetary Protection Considerations**
(3 20-minute presentations and 30-minute discussion)
Moderator: Jill Mikucki, CoPP Member

1. **Briony Horgan (Purdue University) - Martian Geology, Hydrothermal Features, Permafrost and Ground Ice, Brines, and Niche Habitats**
2. **Michael Mischna (JPL) - Martian Atmosphere, Temperature, Dust, and Seasonal Variations**
3. **Andrew Schuerger (University of Florida)- Growth of Hypopiezotolerant Bacteria under Simulated Martian Conditions**

12:20 PM *Break (30 minutes)*

12:50 PM **Session 3: The Microbiome of Crewed Missions Reaching Mars**
(3 20-minute presentations and 30-minute discussion)
Moderator: Gerald Mcdonnell, CoPP Member

1. **Kasthuri "Venkat" Venkateswaran (ret JPL)- Lessons learned from Microbial Sampling of Spacecraft Assembly Facilities**
2. **Fathi Karouia (Blue Marble)- Microbiome of the ISS Built Environment**
3. **Michelle Rucker (ret NASA)- System Engineering Considerations: Crewed Mars Microbiome**

2:20 PM *Break (30 minutes)*

2:50 PM **Session 4: Predicting Dormancy and Persistence of Terrestrial Organisms on Mars**
(5 12-minute presentations and 30-minute discussion)
Moderator: Gerald Mcdonnell, CoPP Member

1. **Jay Lennon (Indiana University)- Ecology and Evolution of Microbial Dormancy**

2. **Madhan Tirumalai (University of Houston)[1]- Dormancy in Spacecraft-Associated Actinobacteria: Implications for Mars Planetary Protection**
3. **Matthew Schrenk (Michigan State University)- Adaptations and Affordances of the Biofilm Lifestyle: Protective Properties of Biofilms and Resulting Tolerance**
4. **Phil Stewart (Montana State)- Microbial Survival in Biofilms**
5. **Maria-Paz Zorzano (Centro de Astrobiología (CAB), INTA-CSIC)- Growth in Martian Analogue Regolith with Ultra-Low Water Activity**

4:20 PM **Closing Remarks** **Lisa Pratt**
(5 minutes: Thank the speakers and attendees, reminder of agenda for tomorrow, and thank NASA)

4:25 PM *Adjourn*

[1] Joined by *Sahar Ali (University of Houston)*, *William R. Widger (University of Houston), Jason Hafner (Rice University), George E. Fox (University of Houston)*

*Remote participant

TUESDAY, JUNE 2, 2026

OPEN SESSION

Zoom Webinar: https://nasem.zoom.us/j/94044714895?pwd=YD3PlrPPb4q0t39b8r4G6C9fpy2R4k.1
Passcode: 526834

9:50 AM **Welcoming Remarks**
(2 5-minute remarks)
Lisa Pratt: Welcome and go over meeting agenda
Kelsie Krafton: Zoom webinar and Slido logistics information for attendees

10:00 AM **Session 5: Survival and Growth in Extraordinary Environments on Earth**
(3 20-minute presentations and 30-minute discussion)
Moderator: Jill Mikucki, CoPP Member

1. **Chris Greening (Monash University)- Microbial Scavenging of Atmospheric Trace Gases**
2. **Jeff Marlow (Boston University)- Low Water Chaotropic Environments**
3. **Jackie Goordial (University of Guelph)- Replication Limits in Dry Permafrost**

11:30 AM *Break (30 minutes)*

12:00 PM **Session 6: Provocative Topics for Planetary Protection Consideration**
(4 15-minute presentations with 7-minute discussions each)
Moderator: Lisa Pratt, CoPP Co-Chair

1. **Emily Paris (Stanford University)- Maintenance Metabolism v Growth Metabolism**
2. **Alexander Pavlov (Goddard Space Flight Center)- Radiolytic Degradation of Organic Molecules**
3. **Emil Ruff (The Marine Biological Laboratory)- Subsurface Life and the Role of 'Dark Oxygen'**
4. **Tejinder Singh (Ames Research Center)- Photosynthesis Under Extreme UV Conditions**

1:30 PM *Break (15 minutes)*

1:45 PM **Session 7: Roundtable—Drawing Conclusions**
Moderator: Gerald Mcdonnell and Jill Mikucki, CoPP Members
(60-minute structured discussion moving through list of parameters discussed so far and debating priority)

2:45 PM *Break (30 minutes)*

3:15 PM **Session 8: Roundtable Session—Next Steps for Closing Knowledge Gaps**
Moderator: Lisa Pratt, CoPP Co-Chair
(60-minute structured discussion on how the last 2 days feed into the bigger picture)

4:15 PM **Closing Remarks** **Lisa Pratt**
(10 minutes)

4:25 PM *Adjourn*

*Remote participant

IMPORTANT NOTES

Presenters:

- Please do not include unpublished data, ITAR-controlled or sensitive information in your presentation.
- A National Academies Board staff member will ask you to sign a form before the meeting allowing us permission to use your likeness and presentation for our livestream video, which will be posted on our Board website after the meeting. Please get in touch with us before the meeting if you have any concerns about this usage.

Members and Presenters:

- Remote access will be provided through Zoom. This will allow you to participate in the meeting even if you can't be physically present.
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- By participating in this activity, you agree to let your voice, likeness, and any materials you provide be recorded for use and dissemination. This includes any language, format, or media now known or later devised.
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Members of the General Public:

- Remote access will be provided through a live stream on Vimeo. This will also be publicly available and posted on the Board website. You do not need to register.

Thank you all for your cooperation, and we look forward to a successful meeting.

REMOTE CONNECTION DETAILS

Zoom Web Conference & Telecon Instructions

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1. Click on the URL (below). A popup will appear that says “Open URL:Zoom Launcher;” Click the “Open” button and let Zoom load (may take a minute).
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1. Download the Zoom app from your phone’s app store (if you don’t have it installed already).
2. Click on the URL (below), or open the Zoom app and enter the Meeting ID: (below), and press join. Enter your name if requested.
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*Remote participant

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Statement of Task

The National Academies of Sciences, Engineering, and Medicine (NASEM) will appoint the Committee on Planetary Protection (CoPP) to operate as a long-term ad hoc committee. The disciplinary scope of CoPP includes the study of those aspects of planetary environments, the life sciences, spacecraft engineering and technology, and science policy relevant to the control of biological cross-contamination arising from the robotic spacecraft missions and the human exploration and utilization of solar system bodies.
CoPP will have two primary tasks:

1. To monitor progress in implementing the planetary protection guidelines associated with priority missions and programs identified in the most recent planetary science decadal survey, and other relevant reports issued by NASEM; and

2. To serve as a source of information and advice on those measures undertaken by robotic spacecraft and human exploration missions to protect the biological and environmental integrity of extraterrestrial bodies for future scientific studies and the means to preserve the integrity of Earth's biosphere when spacecraft return potentially hazardous extraterrestrial materials to Earth.

When requested by NASA and as approved by NASEM in accordance with its procedures the committee may write reports detailing progress in areas relating to NASA's planetary protection guidelines or new scientific and technical developments. The reports will be based on evidence gathered by the committee. The reports may address key activities undertaken by NASA as well as the status of its actions that relate to the state of implementation of priority missions and programs.
Through its regular meetings, the CoPP will also serve the secondary functions of:

1. Providing an independent, authoritative forum for the scientific community, the federal government, international space agencies, relevant private-sector entities and organizations, and the interested public to identify and discuss emerging issues in the scientific, technical, and engineering aspects of planetary protection policies and guidelines;

2. Identifying and prioritizing necessary research and development activities required to advance the development of planetary protection guidelines designed to ensure that the exploration and utilization of extraterrestrial environments is conducted responsibly; and,

3. Providing a forum for interactions with the International Science Council's Committee on Space Research and other national and international organizations through the addition of international participants when appropriate and in coordination with the SSB.

*Remote participant