

# SPACE SCIENCE WEEK

The National  
Academies of

SCIENCES  
ENGINEERING  
MEDICINE



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## SPRING 2020 MEETING OF THE COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS)

March 31-April 2, 2020

**Draft** Virtual Committee Meeting Agenda

Tuesday, March 31, 2020

OPEN SESSION

Symposium<sup>1</sup>

**PREPARING FOR THE FUTURE OF SPACE EXPLORATION: LIFE AND PHYSICAL SCIENCES IN SPACE**

Zoom Remote Access Information – CBPSS Symposium

Phone: +1-877-853-5257

Link: <https://nasem.zoom.us/j/117736864>

Meeting ID: 117-736-864

(All times are Eastern Time)

**9:00 AM**      **Welcome and Introductions**      **Robert Ferl and Dava Newman, Co-Chairs**

**9:20 AM**      **20 Years of Humans on ISS**      **Julie Robinson, NASA**

### Panel A

**Systems Biology for Health Maintenance in Space Exploration**

#### Part 1: Systems Biology and Precision Health

**9:30 AM**      **Introduction**      **Jim Pawelczyk, Moderator**

**9:35 AM**      *A Systems Approach for Constructing Clinically Actionable Individualized Health Course Trajectories of Disease and Wellness*      **Eric Schadt, Icahn School of Medicine**

**10:05 AM**      **Discussion**

**10:10 AM**      *Bringing Phenotype to the Genotype: Semantics for Maximizing Disease Discovery*      **Melissa Haendel, Oregon Health & Science Center**

**10:40 AM**      **Discussion**

**10:45 AM**      *Break*

#### Part 2: Application of Systems Biology in Space Exploration

**11:00 AM**      *Longitudinal Multi-Omics Approaches for Managing Health, Disease, and Space Travel*      **Tejaswini Mishra, Stanford University**

**11:30 AM**      **Discussion**

**11:35 AM**      *Systems Biology and Astronaut Health*      **Steve Platts, NASA/JSC**  
**12:05 PM**      **Discussion**

**12:10 PM**      **Panel A Group Discussion**      **All**

**12:30 PM**      *Lunch Break for All (Zoom line will remain open but muted during the break.)*

<sup>1</sup> Zoom remote connection instructions available at the end of the agenda.

Panel B Physical Sciences for Space Exploration and Benefit to Life on Earth		
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Part 1: Big Data and Grand Challenges		
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1:30 PM	Introduction	Jana Stoudemire, Moderator
1:35 PM	<i>Big Data and Artificial Intelligence: Global Scale Geo-Spatial Analytics</i>	Levente Klein,
2:05 PM	Discussion	IBM Watson Research Center
2:10 PM	<i>NASA Centennial Challenge Program: Models for Advancing NASA Exploration Goals</i>	Monsi Roman,
2:40 PM	Discussion	NASA Marshall Space Flight Center
2:45 PM	Break	

Part 2: AI Applications for Earth Benefit and Space Exploration		
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3:00 PM	<i>Are Self-Driving Labs for Chemistry Next?</i>	Alex Godfrey, NIH NCATS
3:30 PM	Discussion	
3:35 PM	<i>NASA's High-End Computing Capability Project: Analysis and Visualization of Scientific Data</i>	
4:05 PM	Discussion	Piyush Mehrotra, NASA Advanced Supercomputing
4:10 PM	Panel B Group Discussion	All

ISS 20 <sup>th</sup> Anniversary: What We've Learned and Where We Are Going		
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Moderator: Julie Robinson

4:30 PM	<i>The Human Body in Space: How ISS has Changed Our Perspectives and Solutions for Human Exploration</i>	Jennifer Fogarty, NASA Human Research Program
4:45 PM	<i>Life and Physical Sciences Research on ISS, the Decadal Survey, and the Future in Low Earth Orbit</i>	Rob Ferl, University of Florida
5:00 PM	<i>Advancing Technologies for Human Exploration, Successes and Future Plans for Using ISS as an Engineering Testbed</i>	Robyn Gatens, NASA ISS Division
5:15 PM	<i>What ISS has Meant for International Science in Space</i>	Dominique Langevin, ESSC
5:30 PM	Group Discussion	All
6:00 PM	Symposium Adjourns	

**Wednesday, April 1, 2020**

**OPEN SESSION**

Zoom Remote Access Information - Day 2 Open

Phone: +1-877-853-5257

Link: <https://nasem.zoom.us/j/151101647>

Meeting ID: 341-867-878

**(All times are Eastern Time)**

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|-----------------|--|-----------------------------------|
| <b>9:00 AM</b>  | <b>Update on SLPSRA Program Activities</b><br><i>(Presentation 45 min, Q&amp;A 15 min)</i><br>Update on SLPSRA Roles and Responsibilities<br>Program Status<br>Research Plans Overview<br>ISS Issues, Legislation, and Status of Transition Planning<br>Issues for Decadal Survey<br>Challenges and Needs outside the Decadal Survey | <b>Craig Kundrot, NASA SLPSRA</b> |
| <b>10:00 AM</b> | <b>ISS National Laboratory Review and Plans</b><br><i>(Presentation 20 min, Q&amp;A 10 min)</i>  | <b>Robyn Gatens, NASA</b>         |
| <b>10:30 AM</b> | <i>Open Session Adjourns</i>   |                                   |

**CLOSED SESSION**

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|-------------------------------|---------------------------------|
| <b>11:00 AM -<br/>2:30 PM</b> | <b>Committee and Staff Only</b> |
| <b>2:30 PM</b>                | <i>Meeting Adjourns</i>         |

**GENERAL NOTES**

**Space Science Week Website:** To find agendas for all of the virtual meetings go to [www.nationalacademies.org/ssw](http://www.nationalacademies.org/ssw)

**The following information is provided for any members of the general public who may be in attendance:**

This meeting is being held to gather information to help the committee in its charge. This committee will examine the information and material obtained during this, and other public meetings, in an effort to inform its work. Although opinions may be stated and lively discussion may ensue, no conclusions are being drawn nor will recommendations be made. Observers who draw conclusions about the committee's work based on this meeting's discussions will be doing so prematurely.

Furthermore, individual committee members often engage in discussion and questioning for the specific purpose of probing an issue and sharpening an argument. The comments of any given committee member may not necessarily reflect the position he or she may actually hold on the subject under discussion, to say nothing of that person's future position as it may evolve in the course of the project. Any inference about an individual's position are therefore also premature.

**NOTES FOR PRESENTERS**

If your presentation contains unpublished data, ITAR controlled and/or other sensitive information, please be aware that the open sessions at the meeting may be recorded and/or webcast. Presentation materials given to the committee may be posted on a publicly accessible website. Please edit your presentations accordingly.

Mac users should assume that their presentation will be displayed via one of the NASEM's PCs. If your presentation is graphics heavy and best displayed via your own laptop, you should also bring a plain-vanilla pdf version of your presentation with you. The audience in the meeting room will see your presentation via your laptop and we will webcast the pdf file.

At some point a staff member will be asking you to sign a consent form allowing us to use your presentation, specifically to post it on our website.

**REMOTE CONNECTION DETAILS**

## Zoom Web Conference & Telecon Instructions

Join from a computer:

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).
2. Once loaded, Zoom will automatically display another pop-up for the audio connection. Please click the “call me” tab and enter the phone number you would like to be called at (i.e. home, office, mobile). Click “Call me” and follow the prompts.

Join from a mobile device:

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.
3. The Zoom app will automatically display a pop-up window for the audio connection. Select the “Call my Phone” option from the menu, enter your phone number, press call, and follow any prompts.

Join by phone only:

1. Connection quality is much better via Zoom’s “Call me” feature from the webconference, so we strongly recommend that you connect this way.
2. If you are not able to do so, you can dial 1-877-853-5257 (Toll Free) and enter the Meeting ID: (below). International numbers are available at: [https://nasem.zoom.us/join?m=dm0fun9LyXrhECcUWQt2Wwdh\\_9TUrhXG](https://nasem.zoom.us/join?m=dm0fun9LyXrhECcUWQt2Wwdh_9TUrhXG)

*NOTICE: The Zoom service allows audio and any materials exchanged or viewed during the session to be recorded and shared. Please be aware that by participating in this activity, you consent to your voice, likeness, and any materials you provide, being recorded for use and dissemination, without payment of any compensation for such use, in any language, format, or media now known or later devised, and you release the National Academies of Sciences, Engineering, and Medicine from any and all claims, liability, or damages arising from any such use. The Academies will proceed in reliance upon such consent and release. If you do not consent to the foregoing, please do not join the session.*

Topic	Time	Meeting ID	Join URL
<b>TUESDAY, March 31</b>			
CBPSS SSW Day 1 Symposium	9:00 AM	117-736-864	<a href="https://nasem.zoom.us/j/117736864">https://nasem.zoom.us/j/117736864</a>
<b>WEDNESDAY, April 1</b>			
CBPSS SSW Day 2 Open AM	9:00 AM	341-867-878	<a href="https://nasem.zoom.us/j/341867878">https://nasem.zoom.us/j/341867878</a>