

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

DIVISION ON ENGINEERING AND PHYSICAL SCIENCES
SPACE STUDIES BOARD

**ASTROBIOLOGY SCIENCE STRATEGY FOR THE SEARCH FOR LIFE IN THE
UNIVERSE**

Meeting #1: January 16–18, 2018

Tuesday, January 16, 2018

Beckman Center
100 Academy Way

Board Room
Irvine, CA 92617

OPEN SESSION

Remote Access Information

Link: <https://nasem.zoom.us/j/891990927>

Dial: +1 (669) 900-6833, +1 (646) 558-8656

Toll-free dial: +1 (877) 853-5257, +1 (855) 880-1246

Meeting ID: 891 990 927

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11:30 p.m. *Lunch available in the dining room*

12:20 p.m. Meeting convenes with opening remarks Barbara Sherwood Lollar, Chair
University of Toronto

12:30 p.m. NASA Briefing: Planetary Science & Astrobiology Mary Voytek
NASA HQ

1:30 p.m. NASA Briefing: NASA Astrobiology Strategy 2015 Michael New, *via* Zoom
NASA HQ

2:15 p.m. NASA and the Search for Life beyond the Solar System Douglas Hudgins
NASA HQ

3:00 p.m. Discussion with NASA Committee Members
& Guests
(Snacks available, discussion will continue)

4:00 p.m. Center for Life Detection Tori Hoehler, *via* Zoom
Ames Research Center

4:30 p.m. NASA NExSS Natalie Batalha, *via* Zoom
Ames Research Center

5:00 p.m. Habitability & Issues with the Term Elizabeth Tasker, *via* Zoom
Japan Aerospace Exploration Agency

6:00 p.m. *Discussion moves to the dining room for a working dinner*

8:00 p.m. Meeting adjourns

Wednesday, January 17, 2018

Beckman Center
100 Academy Way

Board Room
Irvine, CA 92617

OPEN SESSION

Remote Access Information

Link: <https://nasem.zoom.us/j/319361433>

Dial: +1 (669) 900-6833, +1 (646) 558-8656

Toll-free dial: +1 (877) 853-5257, +1 (855) 880-1246

Meeting ID: 319 361 433

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9:45 a.m. *Break*

10:00 a.m. Mars Astrobiology: Recent Findings and Future Approaches Bethany Ehlmann
California Institute of Technology

11:00 a.m. Ocean Worlds Roadmap Jonathan Lunine
Cornell University

12:00 p.m. *Lunch available in the dining room*

1:00 p.m. Europa Exploration: Europa Lander Mission Concept Kevin Hand
NASA JPL

2:00 p.m. Water, Habitability, and Detectability Steven Desch, *via Zoom*
Arizona State University

3:00 p.m. *Break*

3:15 p.m. Recent Advances and Near-Future Opportunities David Charbonneau
in the Study of Planets Orbiting Other Stars Harvard University

COMMITTEE WILL GO INTO CLOSED SESSION AFTER THE FINAL TALK

Thursday, January 18, 2018

Beckman Center
100 Academy Way

Board Room
Irvine, CA 92617

OPEN SESSION

Remote Access Information

Link: <https://nasem.zoom.us/j/960192563>

Dial: +1 (669) 900-6833, +1 (646) 558-8656

Toll-free dial: +1 (877) 853-5257, +1 (855) 880-1246

Meeting ID: 960 192 563

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7:15 a.m. *Carpools to Beckman Center meet in hotel lobby*

7:30 a.m. *Breakfast available in the dining room*

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|------------|---|--|
| 8:30 a.m. | <i>Searching for Life Across Space and Time: A Discussion</i> | Committee Members & Guests |
| 9:15 a.m. | False Positives | Andrew Steele, <i>via</i> Zoom Carnegie Institution for Science |
| 10:00 a.m. | <i>Break</i> | |
| 10:15 a.m. | Agnostic Approaches to Life Detection | Sarah Johnson, <i>via</i> Zoom Georgetown University |
| 11:00 a.m. | Technosignatures & SETI | Jill Tarter SETI |
| 11:45 a.m. | General Discussion | Committee Members & Guests |
| 12:15 p.m. | <i>Lunch available in the dining room</i> | |
| 1:30 p.m. | The Co-evolution of Life and Biosignatures: A Geochemical Perspective on an Ecological Problem | Hilairy Hartnett, <i>via</i> Zoom Arizona State University |
| 2:15 p.m. | <i>Break</i> | |

CLOSED SESSION

Statement of Task

In preparation for and as an input to the upcoming decadal surveys in astronomy and astrophysics and planetary science, the National Academies of Sciences, Engineering, and Medicine will appoint an ad hoc committee to carry out a study of the state of the science of astrobiology as it relates to the search for life in the solar system and extrasolar planetary systems. The study will have the following objectives:

- Take account of and build on NASA's current Astrobiology Strategy 2015;
- Outline key scientific questions and technology challenges in astrobiology, particularly as they pertain to the search for life in the solar system and extrasolar planetary systems;
- Identify the most promising key research goals in the field of the search for signs of life in which progress is likely in the next 20 years;
- Discuss which of the key goals could be addressed by U.S. and international space missions and ground telescopes in operation or in development;

- Discuss how to expand partnerships (interagency, international and public/private) in furthering the study of life's origin, evolution, distribution, and future in the universe;
- Make recommendations for advancing the research, obtaining the measurements, and realizing NASA's goal to search for signs of life in the universe

In the course of conducting this study, the committee will consider and regularly consult with the concurrent study “Exoplanet Science Strategy,” in the area of assessing habitability, searching for signs of life, and other relevant areas of scientific overlap. Also the committee will not revisit or redefine the scientific priorities or mission recommendations from previous decadal surveys.

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 conduct its study. 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 at this time and no recommendations will be made. In fact, the committee will deliberate thoroughly before writing its draft report. Moreover, once the draft report is written, it must go through a rigorous review by experts who are anonymous to the committee, and the committee then must respond to this review with appropriate revisions that adequately satisfy the Academy’s Report Review committee and the chair of the NRC before it is considered an NRC report. Therefore, observers who draw conclusions about the committee’s work based on today’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 regarding findings or recommendations in the final report are therefore also premature.

NOTES

Beckman Center: Is located at 100 Academy Way, Irvine, CA 92617. Directions are available at the following website: <http://www.thebeckmancenter.org/about/mapanddirections/index.htm>.

Parking: Parking is free and space is usually plentiful. Participants are requested to park in the designated areas only and not on the lawn, driveways or in delivery entrances. Please observe all ONE WAY and NO PARKING signs.

Wi-Fi Connection: To connect to the Wi-Fi chose “Visitor” then open up a browser and click “Accept terms and conditions.” You will then be connected to the internet.