

# Committee on Biological and Physical Sciences in Space (CBPSS)

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# Statement of Task:

The overarching purpose of the committee is to support scientific progress in space research in the biological, medical, and physical sciences and assist the federal government in integrating and planning programs in these fields. The scope for CBPSS spans plant and microbial biology, animal and human physiology, and basic and applied physical sciences, in the context of understanding the role of gravity in living and physical systems in order to develop capabilities required for space exploration, and using the space environment as a tool of science to advance knowledge. The CBPSS provides an independent, authoritative forum for identifying and discussing issues in space life and physical sciences between the research community, the federal government, and the interested public. The CBPSS will also monitor the progress in implementation of the recommendations of the *Recapturing a Future for Space Exploration: Life and Physical Sciences Research for a New Era* (RFSE) decadal survey--building on the survey that was tasked with establishing priorities for an integrated portfolio of biological and physical sciences research in the decade of 2010-2020. In fulfilling these responsibilities, the committee may formulate and oversee ad-hoc studies related to the implementation of the RFSE survey and on issues in biological and physical sciences more broadly, including:

- The scientific quality and the potential for discovery in the field;
- The impact of scientific advances on the implementation of the decadal survey recommended activities and the translation of scientific knowledge to human exploration missions;
- The impact of changing budget priorities, especially those that challenge the fundamental assumptions of RFSE, on the implementation of decadal survey priorities and on the balance between exploration-focused and basic scientific research more broadly; and
- The potential impact on a recommended course of action at a decision point described in the decadal survey.

- CBPSS is a new committee, 1<sup>st</sup> meeting Oct. 7-8, 2014
- Received comprehensive, extremely thorough program briefings from NASA SLPSRA (Space Life and Physical Sciences Research and Applications Division)
- NASA has made tremendous progress in rebuilding research program and community since HQ division (SLPSRA) was formed in 2011
- Decadal study is being utilized extensively in SLPSRA planning for space biology and physical sciences research, and in interactions with the community (for example, research proposals must describe how they address decadal priorities)
- NASA resources for ISS research continue to be highly constrained, and SLPSRA is eager to work with the committee in understanding how to best utilize those resources
- SLPSRA is working to develop Open Science approaches to collecting comprehensive data sets that will be widely accessible to the community. Intended to:
  - Leverage limited research funds
  - Improve research utilization of remaining ISS lifetime
  - Create extensive databases that can be analyzed for new insights after ISS is gone

- Role of CASIS from Gregory Johnson and Mike Roberts, CASIS
- **Minisymposium**
- 9:00 AM Mini-Symposium on GeneLab and Open Science Approaches
  - Robert Ferl, Co-Chair
- 9:10 AM Open Science Concept
  - Marshall Porterfield, NASA HQ
- 9:30 AM GeneLab Plans and Challenges
  - Dan Berrios, NASA Ames
- 10:10 AM Physical Sciences Informatics Database
  - Francis Chiaramonte, NASA HQ
- 11:10 AM Space Telescope Science Institute Database
  - Rick White, STSCI

- **Minisymposium**
- **12:30 PM Genomics Database Panel 1** (Panel presentations and discussion)
- Panelists: **Todd Harris** (WormBase), Ontario Institute for Cancer Research; **Benjamin Hitz** (*Saccharomyces* Genome Database), Stanford University; **Jennifer Lee** (ClinVar), National Center for Biotechnology Information, National Institute of Health; **Anup Mahurkar** (Human Microbiome Project Data Analysis and Coordination Center), University of Maryland, Baltimore; and **Ronald Przygodzki** (Million Veterans Program), Veterans Health Administration.
- **3:00 PM Genomics Database Panel 2** (Panel presentations and discussion)
- Panelists: **Aaron Black** (Inova Translational Medicine Institute), Inova; **Paramvir Dehal** (KBase), Lawrence Berkeley National Laboratory; **Ravi Madduri** (Globus), Argonne National Laboratory; **Aleksandar Milosavljevic** (ClinGen), Baylor College of Medicine; and **Todd Smith** (GeneSifter), Consultant for Digital World Biology

- **Directions and issues**
  - Prioritization of SLPS programs within NASA, especially relative to ISS
  - Crew time as a major limitation to ISS research in SLPS
  - Decadal review in prioritizations; 5 years in
  - Non- ISS research. Ground based and current and future platforms
  - Relations between NASA research and CASIS research
  - Expanding the committee

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