Program and Abstract Titles

Lunar Surface Science: Space Biology

January 20–21, 2021

Virtual

Times listed are Central Standard Time (CST).

7:00 a.m. PST
8:00 a.m. MST
9:00 a.m. CST
10:00 a.m. EST
4:00 p.m. CEST
12:00 a.m. (the following day) JST

Wednesday, January 20, 2021	
9:00 a.m.–12:10 p.m. CST	LSSW Space Biology: Plenary Talks
12:30–3:10 p.m. CST	LSSW Space Biology: Abstract Talks Day 1
Thursday, January 21, 2021	
9:00–11:45 a.m. CST	LSSW Space Biology: Abstract Talks Day 2
11:55 a.m.—4:30 p.m. CST	LSSW Space Biology: Break Out Sessions Day 2
5-minute pre-recorded presentations	LSSW Space Biology: Posters

Wednesday, January 20, 2021
LSSW SPACE BIOLOGY: PLENARY TALKS
9:00 a.m.
Chairs: Kevin Sato and Sharmila Bhattacharya

Times (CST)	Presenters	Presentations
9:00 a.m.	Craig Kundrot *	*Introduction and Welcome*
9:10 a.m.	Kevin Sato *	*Agenda, Goals, and Expectations for LSSW*
9:20 a.m.	Sharmila Bhattacharya *	*Space Biology Research Beyond LEO*
9:40 a.m.	Steven Platts *	*Human Lunar Science Research*
10:00 a.m.	Lisa Pratt	*Planetary Protection Research*
10:20 a.m.		BREAK
10:30 a.m.	Lindsay Hays	*Astrobiology*
10:50 a.m.	Julie Robinson *	*Overview of HEO Lunar Science Utilization and Capabilities*
11:10 a.m.	Debra Needham*	*CLPS Lander Utilization*
11:30 a.m.	Noah Petro *	*Artemis III SDT Report*
11:50 a.m.	Harlan Spence*	*Lunar Surface Environment*
12:10 p.m.		BREAK

Wednesday, January 20, 2021
LSSW SPACE BIOLOGY: ABSTRACT TALKS DAY 1
12:30 p.m.
Chairs: Kevin Sato and Sharmila Bhattacharya

Times (CST)	Presenters	Abstracts Titles
12:30 p.m.	Kiss J. Z. *	*The Effects of Lunar Gravity on Plant Growth and Development* **[#2003]** Plant and Plant Enabling Technology
12:40 p.m.	Monje O. *	*Lunar Lettuce — Food for Lunar Crewed Missions* **[#2005]** Plant and Plant Enabling Technology
12:50 p.m.	Clark P. E. *	*LARGE: Lunar Amended Regolith Gardening Experiment* **[#2009]** Plant and Plant Enabling Technology
1:00 p.m.	Schultz E. R. *	*Multigenerational Phenomics of Cowpea (Vigna unguiculata) in Lunar Environment for Dietary Supplementation in Future Colonization* **[#2022]** Plant and Plant Enabling Technology
1:10 p.m.	Link B. M. *.	*Understanding the Impact of the Deep Space and Lunar Environment on Crop Production and the Associated Microbiome* **[#2023]** Plant and Plant Enabling Technology
1:20 p.m.	Dixit A. R. *.	*Physcomitrella Patens, a Model System to Understand Deep Space and Lunar Surface Radiation Risks* **[#2040]** Plant and Plant Enabling Technology
1:30 p.m.	Larkin E. M. *	*The Impact of Lunar Radiation and Gravity on Plant Growth and Rhizobiome Communities* **[#2047]** Plant and Plant Enabling Technology
1:40 p.m.		BREAK
1:50 p.m.	Foing B. *	*Space Biology Experiments During ILEWG EuroMoonMars Campaigns Preparing for Artemis* **[#2045]** Plant and Plant Enabling Technology
2:00 p.m.	Monje O. *	*Calibrating Plant Watering System Models with Long-Term Lunar Capillary Data* **[#2006]** Plant and Plant Enabling Technology
2:10 p.m.	McKay C. P. *	*Novel Hardware for a Lunar Plant Experiment* **[#2008]** Plant and Plant Enabling Technology
2:20 p.m.	Singh N. K. *	*Sustainable Technologies for Plant Growth in Lunar Systems* **[#2043]** Plant and Plant Enabling Technology
2:30 p.m.	Bywaters K. F. *	*Monitoring Microbial Growth on the Lunar Surface in Fluids Containing Lunar Regolith* **[#2010]** Microbiology
2:40 p.m.	Granata T. C. *	*Effects of Low Gravity and Cosmic Radiation on Microalgae Growth and Polymer Production* **[#2014]** Microbiology
2:50 p.m.	Lee J. A. *	*SOTERIA: Searching for Organisms Through Equipment Recovery at Impact Areas* **[#2021]** Microbiology
3:00 p.m.	Khodadad C. L. *	*Exposure to the Lunar Space Environment Influences Microbial and Fungal Microbe Gene Expression and Survival* **[#2044]** Microbiology
3:10 p.m.		*Adjourn*

Thursday, January 21, 2021
LSSW SPACE BIOLOGY: ABSTRACT TALKS DAY 2
9:00 a.m.
Chairs: Kevin Sato and Sharmila Bhattacharya

Times (CST)	Presenters	Abstract Titles
9:00 a.m.	Sato K. *	*Welcome*
9:05 a.m.	Narayanan S. A. *	*Lunar Spaceflight Effects on Gastrointestinal Cardiovascular and Immune Status* **[#2037]** Vertebrate
9:15 a.m.	Mao X. W. *	*Lunar Spaceflight-Induced Effects on Ocular Response and Blood-Retina Barrier Function* **[#2024]** Vertebrate
9:25 a.m.	Delp M. D. *	*Lunar Spaceflight Effects on Cardiovascular Health* **[#2029]** Vertebrate
9:35 a.m.	Caldwell J. T. *	*Lunar Spaceflight Effects on Internal Jugular Vein Physiology* **[#2035]** Vertebrate
9:45 a.m.	Cromer W. E. *.	*Role of Lymph Node Integrity in Regional GI Function During Spaceflight* **[#2030]** Vertebrate
9:55 a.m.	Szewczyk N. J. *	*Worms on the Moon* **[#2011]** Invertebrate

10:05 a.m.	O'Rourke A. E. *	*A Lunar Ground Truth of Microbes that are Integral to Sustaining Bioregenerative Life Support Systems* **[#2020]** Microbiology
10:15 a.m.		BREAK
10:25 a.m.	Santa Maria S. R. *	*Lunar BioSensor: An Autonomous Instrument to Study the Effects of the Lunar Environment on Biological Organisms* **[#2001]** Enabling Technology
10:35 a.m.	Wagner E. B. *	*Using New Shepard as a Lunar-G Testbed* **[#2002]** Enabling Technology
10:45 a.m.	Howard R. L. Jr. *	*A Notional Configuration and Discussion of a Lunar Surface Space Biology Laboratory* **[#2012]** Enabling Technology
10:55 a.m.	Sun S. C. *	*Lunar Life Sciences Payload Assessment* **[#2032]** Enabling Technology
11:05 a.m.	Riedo A. *	*Laser Ablation/Desorption Ionization Mass Spectrometry for In-Situ Characterization of Biomarkers Experiments* **[#2034]** Enabling Technology
11:15 a.m.	Nikolic D. *	*Lunar CubeSat Mass Spectrometer with Linear Energy Transfer Spectrometer for Lunar Exosphere Investigations* **[#2004]** Enabling Technology
11:25 a.m.	Rask J. *	*Chemical Reactivity of In-Situ Lunar Dust for Biotoxicity Assessment* **[#2027]** Lunar Environment
11:35 a.m.	Looper M. D. *	*Observations of Cosmic-Ray Radiation Effects Near the Moon Over a Complete Solar Cycle by LRO/CRaTER* **[#2038]** Lunar Environment
11:45 a.m.		BREAK

Thursday, January 21, 2021
LSSW SPACE BIOLOGY: BREAK OUT SESSIONS DAY 2
11:55 a.m.

Times (CST)	Session Chairs	Break Out Rooms
11:55 a.m.	Kevin Sato *	*Goals and Questions for Break Out Sessions*
12:05 p.m.		BREAK
12:10 p.m.	Robin Elgart Gioia Massa Jamie Foster	*Break Out Rooms:* *Group A — Vertebrate* *Group B — Plant* *Group E — Invertebrate*
1:10 p.m.	Marianne Sowa Howard Levine Lucie Poulet	*Breakout Rooms:* *Group C — Vertebrate* *Group D — Plant* *Group F — Invertebrate*
2:10 p.m.		BREAK
2:20 p.m.	Tara Ruttley Jennifer Buchli	*Break Out Rooms:* *Group G — Microbiology* *Group I — Cell Biology Systems*
3:20 p.m.	Louis Stodieck Lisa Carnell	*Break Out Rooms:* *Group H — Microbiology* *Group J — Cell Biology Systems*
4:20 p.m.	Sharmila Bhattacharya	*Workshop Wrap-Up*
4:30 p.m.		*Adjourn*

LSSW SPACE BIOLOGY: POSTERS

Authors	Abstract Titles
Kolodziejczyk A. M.	*Development of Kombucha 3D Printing for a Deep-Space Mission* **[#2015]** Enabling Technology
Lagiewka K. Kolodziejczyk A. M. Harasymczuk M. M. Komenda K.	*Testing New Procedures Increasing Biocontamination Control by Analysis of Microbial Ecology in the Analog Space Habitat* **[#2017]** Enabling Technology
Komenda K. Kolodziejczyk A. M. Harasymczuk M. M.	*Analysis of CO_2 Reduction by Algae Multiconsortia Bioreactors in the Lunar Analog Space Habitat* **[#2018]** Enabling Technology

Ortega-Hernandez J. M. Pla-Garcia J. Martinez-Frias J. Sanchez-Rodriguez E. Hernandez-Narvaez J.	*Green Moon Project: Encapsulated and Pressurized Habitat for Plants on the Moon (Habitability and Space Agriculture)* **[#2025]** Enabling Technology
Tompkins D. T.	*Combined Dosimetry and Materiel Testing to Support Activity and Health* **[#2028]** Enabling Technology
Gifford S. E. G.	*Continuous Physical Rehabilitation in Variable Gravity Fields: The Lunar Surface as a Test Bed* **[#2042]** Enabling Technology
Tompkins D. V.	*Lunar Plastics — Full-Spectrum Material Assay and Radiation Dosimetry* **[#2046]** Enabling Technology
Biswal M M. K. Das N. B. Annavarapu R. N.	*Biological Risks and Its Implications for Crewed Interplanetary Missions* **[#2013]** Space Biology
Kolodziejczyk A. M. Harasymczuk M. M. Gorecki I. Zrebiec B.	*Comparative Analysis of Mass Loss, Digestion, and Aggression in Cockroaches Exposed to Sunlight Simulator Lighting System in Analog Habitat Environment* **[#2016]** Space Biology
Garus M. Nasiek A. Nowak M. Kołodziejczyk A. M. Harasymczuk M. M.	*Automatic Recognition of Emotions Using Monitoring System During Lunar Analog Simulation* **[#2019]** Space Biology
Hill E. C. Rivera P. M. Proppe C. E. Keller J. L. Beltran E.	*Applying Heart Rate Variability During EVA-Simulated Activities* **[#2026]** Space Biology
Elkatmis B. Sharma S. Parisi R. Agrawal K. Mohanty A.	*Modeling the Effect of Curcumin on Cancer and Healthy Breast Cells Under Lunar Surface Radiation* **[#2031]** Space Biology
Narayanan S. A. Caldwell J. T. Delp M. D.	*Lunar Spaceflight Effects on Lymphatic Function* **[#2036]** Space Biology
Spilkin A. Foing B. Kołodziejczyk A.	*Assessing Short-Term Memory and Reaction Time in EMMPOL Analog Astronaut Mission* **[#2041]** Space Biology