

INTERNATIONAL SPACE MEDICINE SUMMIT 2022

November 3–4, 7 • Rice University's Baker Institute for Public Policy • Houston, Texas

Agenda

Thursday, November 3

Greeting and Opening of the Summit

- 0830 **The Honorable David M. Satterfield**
Director, Rice University's Baker Institute for Public Policy
- George W.S. Abbey**
Senior Fellow in Space Policy, Baker Institute
- Bonnie J. Dunbar, Ph.D.**
Nonresident Fellow, Baker Institute; John and Bea Slattery Chair,
Department of Aerospace Engineering, Texas A&M University
- Jeffrey Sutton, M.D., Ph.D.**
Director, Center for Space Medicine, Baylor College of Medicine (BCM)

Welcome and Opening Remarks

- 0855 **Neal F. Lane, Ph.D.**
Senior Fellow in Science and Technology Policy, Baker Institute;
Professor of Physics and Astronomy Emeritus, Rice University

Panel I — NASA's Plan to Return to the Moon

Introduction: **George W.S. Abbey**, Baker Institute

- 0915 Moderator: **Robert D. Cabana**, Associate Administrator, National
Aeronautics and Space Administration (NASA)

Panelists

Steve Creech, NASA
Lara Kearney, NASA
Kurt "Spuds" Vogel, NASA
Lisa Watson-Morgan, Ph.D., NASA

Topics

- Projected schedule
- Private companies and their role in supporting NASA's lunar program
- Major tests planned and proofs of concept
- International participation and cooperation
- Program concerns

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Panel II — Contributions of the International Space Station Over 20+ Years

Introduction: **Jeffrey Sutton, M.D., Ph.D.**, BCM

1030 Moderator: **Courtenay McMillan**, NASA

Panelists

Michael Barratt, M.D., Astronaut
Leroy Chiao, Ph.D., Astronaut
Elena Fomina, Russian Institute of Biomedical Problems (IBMP)
Oleg Kotov, Cosmonaut
Michael López-Alegría, Astronaut
William McArthur, Astronaut
William Shepherd, Astronaut

Topics

- Significant research and accomplishments
- Significant contributions of the partnerships
- Benefits of Mission Control Center relationships
- Overall effectiveness and benefits of the partnerships

Panel III — Lifetime Surveillance of Astronaut Health

Introduction: **Bonnie J. Dunbar, Ph.D.**, Baker Institute; Texas A&M University

1145 Moderator: **Ronak Shah, M.D.**, UTMB

Panelists

Jennifer Fogarty, Ph.D., BCM
Jessica Keune, Ph.D., NASA
J. Timothy LaVan, M.D., NASA
David Reyes, M.D., NASA
Jörn Rittweger, European Space Agency (ESA)
Mary Van Baalen, Ph.D., NASA
Emmanuel Urquieta Ordonez, M.D., BCM

Topics

- Potential consequences of spaceflight- and astronaut-training-related environmental exposures and the current medical surveillance program for detecting predicted and unexpected medical decrements
- Program findings to date, and differences that may have been seen between short- and long-duration crew members and those directly exposed to lunar dust
- Current status of NASA's TREAT Act and how it can optimally interface with the Lifetime Surveillance of Astronaut Health program

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Friday, November 4

Panel IV — New Frontiers in Space Medicine: Session I

Introduction: **Jeffrey Sutton, M.D., Ph.D.**, BCM

0830 Moderator: **Serena Auñón-Chancellor, M.D.**, NASA, UTMB

Panelists

Hayley Arceneaux, PA
Rob Brougham, Braided Communications
Douglas Ebert, Ph.D., NASA
Oleg Kotov, M.D., Cosmonaut
Lauren Landon, Ph.D., NASA
Vincent Michaud, M.D., NASA
Ed Powers, M.D., Axiom Space
Josef Schmid, M.D., NASA
James Vanderploeg, M.D., UTMB, Virgin Galactic

Topics

- Medical assessment, risk identification, risk mitigation, medical certification and mission support strategies for spaceflight participants with medical decrements and physical limitations
- The value of optimizing access to space for talented individuals with special needs and the role of these missions in developing and improving medical care capabilities for medical conditions and injuries that may occur during exploration missions
- The need for increasing autonomy for crew and medical care providers on long duration exploration missions
- Procedures and plans for optimum medical care in missions where there is major delay in communication capability with Earth
- The role for new technology such as artificial intelligence and smart medical systems

Panel V — New Frontiers in Space Medicine: Session II

Introduction: **Richard Jennings, M.D.**, The University of Texas Medical Branch at Galveston (UTMB)

0945 Moderator: **Michael Barratt, M.D.**, Astronaut

Panelists

Serena Auñón-Chancellor, M.D., NASA, UTMB
Michael Bungo, M.D., University of Texas Health Science Center
Oleg Kotov, M.D., Cosmonaut
Tom Marshburn, M.D., Astronaut
Vincent Michaud, M.D., NASA
Jan Stepanek, M.D., UTMB
Amy Waer, M.D., Texas A&M

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Topics

- The current status and funding of space medicine training and current needs and support for the immediate future
- Evolving training paradigms for space medicine providers working for commercial spaceflight companies that experience a wide diversity of potential crewmembers who often can be older, younger, and have both physical limitations and coexisting medical decrements
- The optimum space medicine provider training needed for physicians that will serve in Earth-based support of long-duration exploration missions and for physicians that serve on the crews for exploration missions with long phases of microgravity and long surface intervals
- Secondary skills (such as engineering, computers, AI, spacecraft systems, etc.) that may be beneficial for physicians flying on exploration missions

Panel VI — Apollo, the Space Race and Missions to the Moon

Introduction: **Richard Jennings, M.D.**, UTMB

1045 Moderator: **William Shepherd**, Astronaut

Panelists

Bonnie Dunbar, Ph.D., Baker Institute, Texas A&M
Gerry Griffin, NASA
Fred Haise, Astronaut
Jonny Kim, M.D., NASA
Sergei Krikalev, Cosmonaut
Thomas Stafford, Astronaut

Topics

- George Low's report – "What Made Apollo A Success"
- Aerospace Safety Advisory Panel (ASAP) Report 1/1/2022
- Lunar surface mobility considerations
- Lessons learned from Apollo 1

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Monday, November 7

Panel VII — Education and STEM Advances

Introduction: **Richard Jennings, M.D.**, UTMB

830 Moderators: **Bonnie J. Dunbar, Ph.D.**, Baker Institute; Texas A&M, and **Karl Doetsch, Ph.D.**

Panelists

Chris Barber, International Space School Educational Training (ISSET)
Dan Barstow
Alex Blackwood
Ludmila Buravkova, IBMP
Francesco Fusco, Boeing
Linda Godwin, Ph.D., University of Missouri
Michael Lembeck, Ph.D., University of Illinois
Stephen Robinson, Ph.D., University of California, Davis
Andrew Turnage, Association of Space Explorers

Topics

- Stimulating interest in science and engineering education
- Benefits of an international educational program
- Benefits and opportunities for student exchange programs
- SPHERES

Panel VIII — Human Spaceflight and Automation

Introduction: **Richard Jennings, M.D.**, UTMB

1030 Moderator: **Stephen Robinson, Ph.D.**, University of California, Davis

Panelists

Allison Anderson, Ph.D., University of Colorado Boulder
Katya Arquilla, Ph.D., Massachusetts Institute of Technology (MIT)
Tammer Barkouki, University of California, Davis
William Shepard, Astronaut
Aleksandra Stankovic, Ph.D., Harvard University
James Wetherbee, Astronaut

Topics

- Automated control criteria
- Requirements for human control
- Back-up control options
- Testing, verification and training