

Center of Excellence for Commercial Space Transportation

7th Annual Technical Meeting

Baylor
College of
Medicine®

CENTER FOR
SPACE MEDICINE

October 10, 2017

Jeffrey P. Sutton, MD, PhD

Baylor College of Medicine (BCM)

- **BCM is an independent health sciences university**
 - 7 hospital affiliations
 - 19 clinical and 7 basic top-tier science departments
 - 8 academic centers
 - 24 advanced technology core laboratories
 - >\$200M/annum NIH support
 - Located in the heart of the Texas Medical Center close to NASA JSC
- **Center for Space Medicine (CSM) established in 2008**
- **First time space medicine codified at the level of an academic center or department in a university or medical school**

BCM Center in Space Medicine

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Mission

To be a world academic leader in space biomedical research, education and aerospace medicine with a focus on translating space advances to benefit health on Earth



National Space Biomedical Research Institute

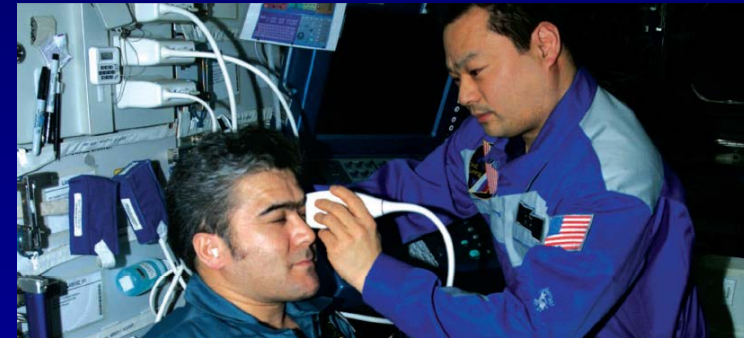
- CSM is a legacy spin-off of the National Space Biomedical Research Institute (NSBRI)
- NSBRI was a 20-year NASA cooperative agreement that operated from 1997 to 2017





NSBRI Rationale and Value

- Unparalleled intellectual and institutional resources leveraging the nation's investment in biomedical research and development
- High caliber and productivity of investigators from ~60 institutions at any given time are brought to bear on solving problems for NASA
- Focus on deliverables and collaboration
- Multidisciplinary distributed teams
- User Panel: astronauts, flight surgeons
- Industry Forum
- Outstanding award-winning education programs
- Lean management led by BCM
- Success impacted NASA's decision to have a follow-on institute - TRI



CSM Overview

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- **Currently >80 members, including 18 BCM faculty members in space medicine, former astronauts and flight surgeons**
 - Dr. James Vanderploeg
 - Dr. Tarah Castleberry
- **Academic home to all physician astronauts worldwide**
- **Cutting-edge research by faculty, affiliates, fellows, residents, students and staff**
- **First and only four-year Space Medicine Track for medical students, with graduates in every year since 2012**
- **> 600 students have enrolled in space medicine electives, with approximately half of the first-year class taking the introductory elective from 2015-present**



CSM Research and Education

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- Graduate and post-graduate opportunities (first Ph.D. 2015)
- Programs enhanced by bidirectional IPA agreement exchanges between CSM and NASA
- State-of-the-art laboratories (e.g., exploration medicine)



Translational Research Institute (TRI)

Follow-on institute to NSBRI and USRA cooperative agreements supported by NASA's Human Research Program

Mission

To lead a National effort in translating cutting edge emerging terrestrial research into applied space flight human risk mitigation strategies for exploration missions

Duration

12 years

2016-2028

BCM-Led Bid for the Translational Research Institute

Partners

Consortium



Massachusetts Institute of Technology

NASA



Affiliates



WRIGHT STATE RESEARCH INSTITUTE





July 20, 2016
RELEASE 16-079

NASA Establishes Institute to Explore New Ways to Protect Astronauts

NASA is joining with Baylor College of Medicine in Houston to operate a new institute charged with researching and developing innovative approaches to reduce risks to humans on long-duration exploration missions, including NASA's Journey to Mars.

Work under the Translational Research Institute Cooperative Agreement, overseen by NASA's Human Research Program, begins Oct. 1.

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Major subcontractors are the California Institute of Technology in Pasadena and Massachusetts Institute of Technology in Cambridge. Services will be performed at the Texas Medical Center Innovation Institute in Houston. The agreement has a maximum potential value of \$246 million for a six-year performance period with one additional six-year period that could extend work to September 2028.

For more information on NASA's Human Research Program, go to:

<https://www.nasa.gov/hrp>

For more information about NASA's Journey to Mars, visit:

<http://www.nasa.gov/journeymars>



***First Human Lunar Landing
Apollo 11
July 20, 1969***



***First Martian Rover Landing
Viking 1
July 20, 1976***

New Opportunities

- **CSM expanding and integrating clinical activities with research, education and philanthropy**
- **Virgin Galactic contract signed for CMO and flight surgeon support**
- **Pleased to transition from affiliate to core member of FAA CEO CST**
 - **Leverage capabilities at BCM and the Texas Medical Center**
 - **Leverage NSBRI network and connections**
 - **Collaborations with TRI**
- **Other initiatives and collaborations in research, education and clinical practice**