



# MULTILATERAL COORDINATION OF ANALOG STUDIES

Ronita L. Cromwell, PhD

Universities Space Research Association

Flight Analogs Project Scientist

Human Health Countermeasures, Deputy Element Scientist



# PURPOSE

- To explain recent multilateral efforts to coordinate analog studies to permit comparisons across them regardless of the venue



- **Standardization**

- Bed rest international guidelines
- Isolation and Confinement Analogs
- ISS 1-year missions

# INTERNATIONAL STANDARDIZATION OF BED REST

- A study group of the International Academy of Astronautics (IAA) was formed in 2009 to standardize the 60-day, 6° head-down tilt bed rest platform
  - establish consistency across bed rest studies world wide
  - allow for increased data sharing and collaboration internationally
  - Standard conditions and standard measures included



# GUIDELINES FOR STANDARDIZATION OF BED REST STUDIES

## ■ Standard Conditions

- Subject selection
- Study integration
- Clinical support
- Dietary standards
- Biological sample handling
- Study management
- Data management

## ■ Standard Measures

- Sensorimotor
- Cardiovascular
- Exercise/Muscle
- Bone
- Nutrition
- Hematology
- Immunology
- Psychology

- Awaiting final approval by the IAA
- Drafting a publication to summarize the standardization guidelines for easy access by the scientific community.

# ISOLATION AND CONFINEMENT ANALOG STANDARD MEASURES

## ■ HERA

### ■ Behavioral health measures

- Stress
- Affect
- Morale
- Well-being
- expectations

### ■ Physiological measures

- Immune function
- Oxidative stress and damage
- Cortisol
- Catecholamines
- Blood pressure

## ■ HANA

- Plans for development of international standardization



# 1-YEAR MISSIONS

- NASA HRP is planning for a battery of standard measures to be used on subsequent 1-Year Missions on the ISS.
- Use of standard measures will allow for ease of planning the testing schedule
- Solicitations to analyze the collected measures will allow HRP to answer multiple research questions and make comparisons back to ground-based analog studies



**THANK YOU FOR YOUR  
ATTENTION**