

National Aeronautics and
Space Administration



Analog Missions: Exploring the Human Element

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EXPLORE MARSHALL

Analog Missions

Analogs simulate specific aspects of exploration mission environments, allowing NASA to test critical mission functions, without the risk and expense of being in the true environment

CHAPEA

Team Cohesion

Autonomy

Food Satisfaction

Performance

HERA

NEEMO

Isolation

Human Factors

Natural Extreme Environments

ECLSS

Cognition

HESTIA

Brookhaven
NASA Space Radiation Lab

Radiation

Physical Changes

Gravity

:envihab

HERA Basics

- HERA = Human Exploration Research Analog
- Multiple campaigns of 4 missions each, ranging from 1 week to 45 day missions, simulating a realistic mission profile and activities
- 2.5 story habitat at Johnson Space Center, roughly 650 sq ft
- ICC Analog
 - Isolated
 - Confined
 - Controlled
- Primarily a human factors & behavioral study, with some medical assessments as well
 - 'Astronaut-like' candidates are selected after undergoing rigorous physical and psychological evaluation

Commander
Gregory Sachs



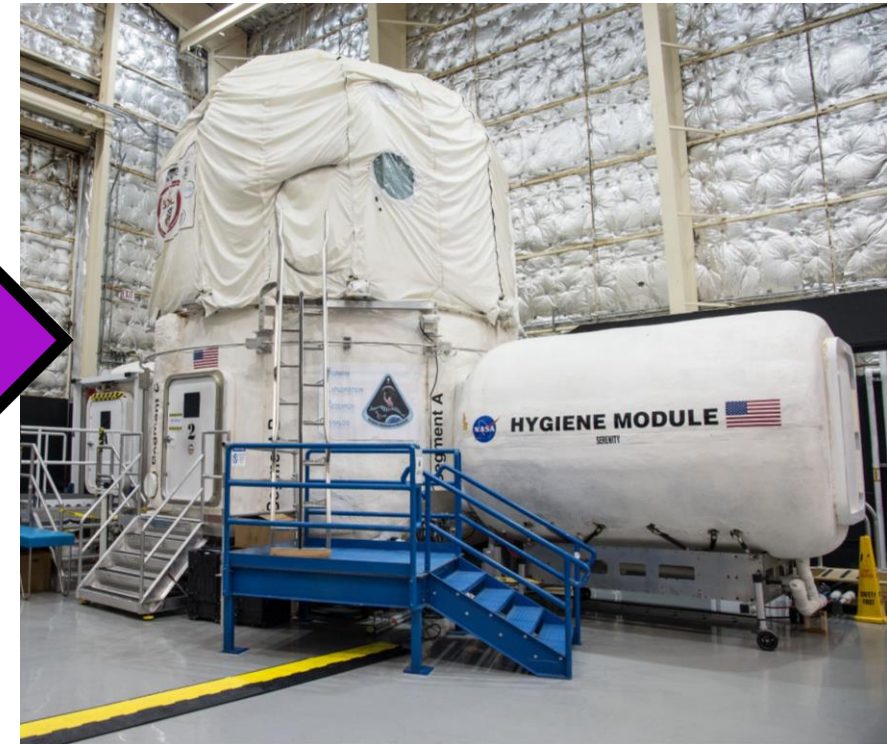
Flight Engineer
Jennifer Yen



Mission Specialist
Kent Kalogera



Mission Specialist
Erin Hayward





Day-to-Day Astronaut Life...

- Conduct scientific experiments
- Routine spacecraft maintenance
- Deal with anomalies
- Train for the mission
- Eat!
- Exercise
- Public outreach
- Fill out lots of surveys
- Fill “white space”
- Sleep!

Very Brief Overview of HERA Research Topics...

Sleep deprivation

- Measures - Cognitive

- Counter measures - Lighting

Isolation

- Autonomy / time delay

- Monotony

Teams

- Decision making & roles

- Crew selection

Health measures

