The Continuity of Human Spaceflight

William Gerstenmaier | Associate Administrator for Human Exploration and Operations | NASA
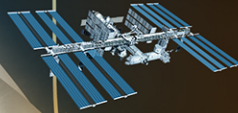
JOURNEY TO MARS

NASA

HUBBLE SPACE TELESCOPE

INTERNATIONAL SPACE STATION
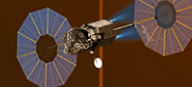
SPACE LAUNCH SYSTEM

ORBITERS

ROVERS AND LANDERS

TECHNOLOGY

EXPLORATION

SCIENCE

DEIMOS

PHOBOS

MARS TRANSIT HABITAT

COMMERCIAL CARGO AND CREW

ORION CREWED SPACECRAFT
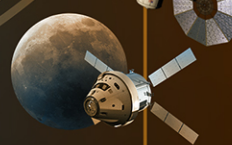
DEEP SPACE HABITAT

SOLAR ELECTRIC PROPULSION

ASTEROID REDIRECT MISSION

MISSIONS: 6-12 MONTHS
RETURN: HOURS
EARTH RELIANT

MISSIONS: 1-12 MONTHS
RETURN: DAYS
PROVING GROUND

MISSIONS: 2-3 YEARS
RETURN: MONTHS
EARTH INDEPENDENT

ISS Enables Long Duration Exploration

- Human Health and Performance
- Crew Habitability and Logistics
- Technology Test Bed
  - Docking System
  - High Reliability Closed Loop Life Support
  - Long Term System Performance
  - Logistics and Maintenance Reduction

- Commercial Cargo and Crew Transportation Services to LEO
- Commercial Application of Microgravity and Space Research for Terrestrial Application

ISS One-Year Mission

- 2016 marks the return to Earth of astronaut Scott Kelly and cosmonaut Mikhail Kornienko from ISS after 12 months – the longest mission ever assigned to a US astronaut
  - Joint US/Russian ISS research includes studies on: ocular health, immune and cardiovascular systems, cognitive performance testing, and effectiveness of countermeasure against bone and muscle loss

- HRP study of identical twins astronaut Scott Kelly, and retired astronaut, Mark Kelly
  - Provides unprecedented opportunity to research effects of spaceflight on twin genetic makeup, and better understand the impacts of spaceflight on the human body

http://www.nasa.gov/exploration/humanresearch/index.html
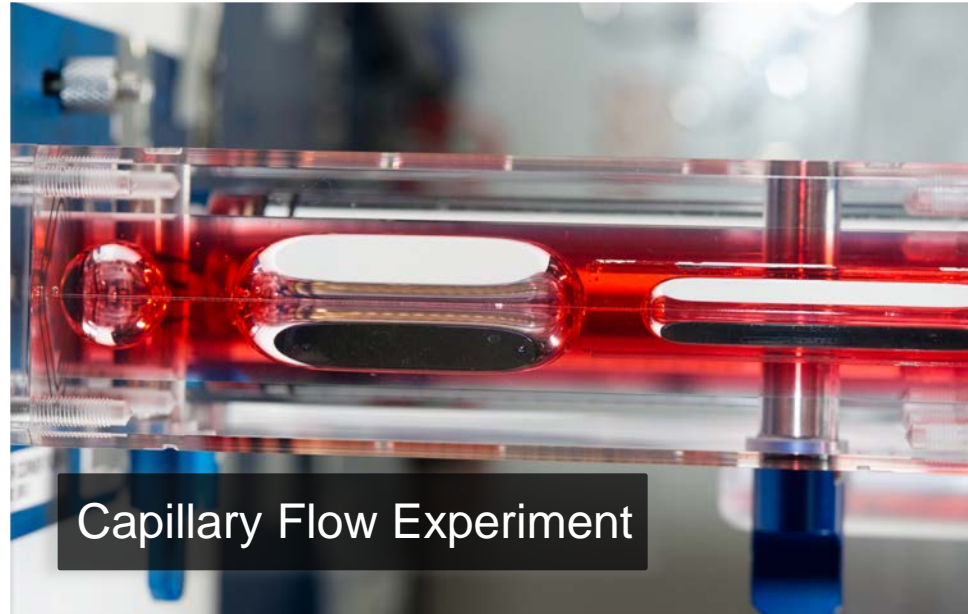

Scott Kelly
STS-103, STS-118,
ISS 25/26

Mikhail Kornienko
ISS 23/24

Retired astronaut Mark Kelly (left) and his twin brother, astronaut Scott Kelly, who will spend a year on ISS
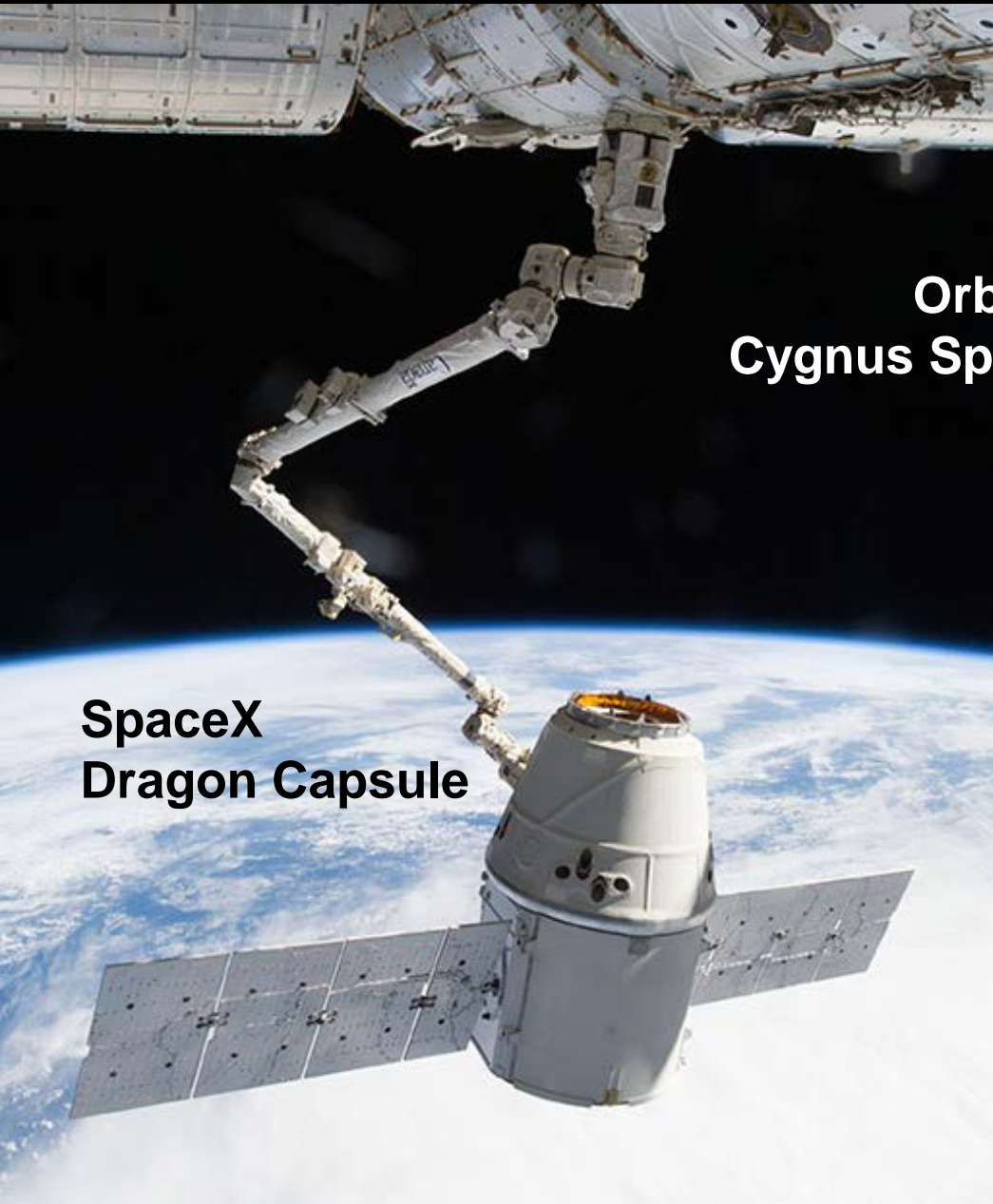
Bone Loss Study

Capillary Flow Experiment

VEGGIE Plant Growth

Environmental Control and Life Support Systems

Facilitating Commercial Transportation To Space

Orbital ATK
Cygnus Spacecraft

SpaceX
Dragon Capsule

Boeing Starliner

Beginning human missions beyond low Earth orbit as soon as practicable helps secure our future in space.

EXPLORATION MISSION-1

UNCREWED DISTANT RETROGRADE ORBIT

Our Purpose

Expand human presence into the solar system and to the surface of Mars to advance exploration, science, innovation, benefits to humanity, and international collaboration