OVERVIEW

SpaceX CRS-18 Mission

SpaceX's 18th contracted cargo resupply mission to the International Space Station for NASA will deliver more than 5,000 pounds of science and research, crew supplies and vehicle hardware to the orbital laboratory and its crew.

Launch is targeted for no earlier than Wednesday, July 24, 2019 at 6:24 p.m. EDT.

Launch Vehicle
Falcon 9 Rocket

- Two-stage rocket minimizes the number of separation events
- The SpaceX-18 booster previously launched on SpaceX CRS-17 on May 4, 2019

Launch Site:
Space Launch Complex 40,
Cape Canaveral Air Force
Station in Florida

Robotic Arm Operators for
Dragon Capture

Nick Hague (prime)
NASA

Christina Koch
NASA

Dragon Spacecraft

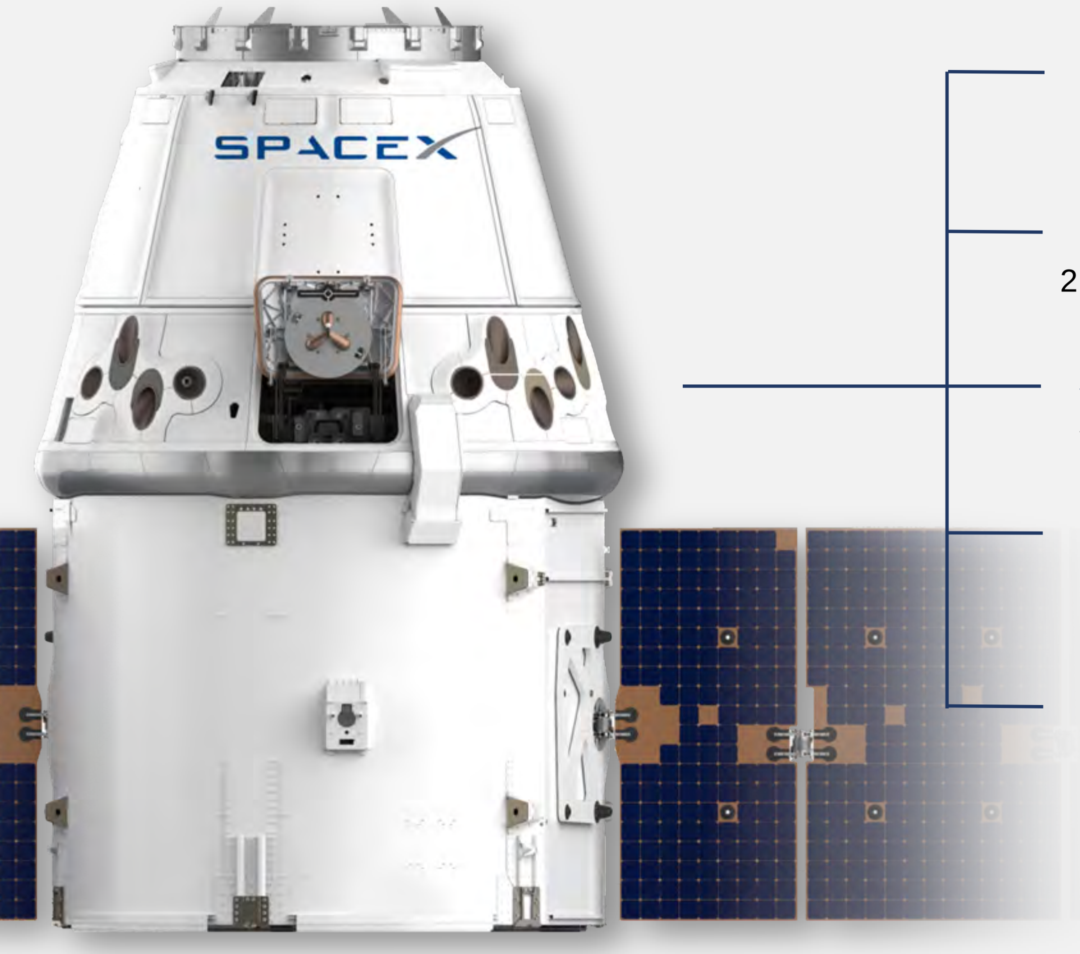
- Hardware and supplies will support dozens of science and research investigations.
- This Dragon previously flew on SpaceX CRS-6 and SpaceX CRS-13. It will be attached to station's Harmony module.
- In August, it will re-enter Earth's atmosphere and splash down in the Pacific Ocean off the coast of Baja California with 3,300 pounds of return cargo.

For more information, visit www.nasa.gov/spacex

CARGO

SpaceX CRS-18 Mission

*Masses are subject to change prior to launch



Crew Supplies
514 pounds / 233 kilograms

Science Investigations
2,628 pounds / 1,192 kilograms

Spacewalk Equipment
394 pounds / 179 kilograms

Vehicle Hardware
345 pounds / 157 kilograms

Computer Resources
38 pounds / 17 kilograms

Unpressurized Payloads:
(International Docking Adapter-3)
1,177 pounds / 534 kilograms

Total Cargo:	**5,097 pounds / 2,312 kilograms**
Total Pressurized Cargo with Packaging:	**3,920 pounds / 1,778 kilograms**
Unpressurized Payloads:	**1,177 pounds / 534 kilograms**

HARDWARE

SpaceX CRS-18 Mission

Hardware Launching

Cycle Ergometer with Vibration Isolation and Stabilization System (CEVIS) Cycle Ergometer: Spare CEVIS to support minimum on-orbit spares (MOOS) requirement due to a scheduled remove and replace (R&R) consuming the on-orbit spare.

Major Constituents Analyzer Mass Spectrometer: Spare to support MOOS requirement after an on-orbit failure consumed the on-orbit spare ORU.

Hydrogen Sensor ORU: Pre-positioned spare supporting a Hydrogen Sensor R&R in the Oxygen Generation Assembly (OGA) planned for August 2019.

Life Science Glovebox (LSG) Hardware: Critical spares to support sparing requirements and critical payload investigations.

- LSG Power Control Module (PCM)
- LSG Work Volume (WV) Fan
- LSG E-Box Assembly

International Docking Adapter-3 (IDA-3): Provides a second docking port for commercial crew vehicles to the space station on the space-facing side of the Harmony module.

POLARS (2): Supports the transport of payload investigations while maintaining cold temperatures.

Rodent Research Support Hardware: To support future Rodent Research investigations.

- Rodent Research Transporters (2)
- Rodent Research Habitats (2)

Hardware Returning

Failed or expended hardware no longer needed on the space station.

Komparus and Container: FGB communications switch that is being returned for refurbishment

Common Cabin Air Assembly (CCAA) Heat Exchanger (HX): Failed unit returning for refurbishment

NORS O2 and N2 Tank: Returning expended tanks for future launches

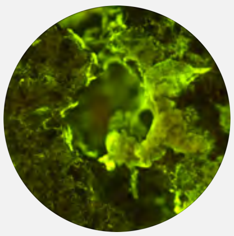
RPCM Type V: Failed unit returning for refurbishment

Air Quality Monitor: Failed unit returning for refurbishment

RESEARCH

SpaceX CRS-18 Mission

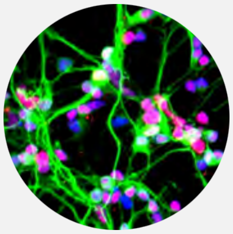
The SpaceX cargo spacecraft will deliver dozens of investigations to the International Space Station, including studies in biology, physics, and materials science.



The Biorock investigation examines the interaction between microbes and rocks in a liquid phase in microgravity. The reduction of thermal convection in low-gravity, and its absence in microgravity, minimizes the natural stirring in liquids and gases, and may restrict the supply of food and oxygen to the bacteria - leading to a suppression of growth, proliferation and mining performance. Common on Earth, bio-mining could eventually help explorers on the Moon or Mars acquire needed materials, lessening the need to use precious resources from Earth and reducing the amount of supplies that explorers must take with them.

Using 3D biological printers to produce usable human organs has long been a dream of scientists and doctors around the globe. However, printing the tiny, complex structures found inside human organs, such as capillary structures, has proven difficult to accomplish in Earth's gravity environment. The BioFabrication Facility (BFF) investigation, designed by Techshot, provides a platform to attempt printing of biological tissues on the space station. This investigation could serve as a first step toward achieving the ability to fabricate entire human organs in space.

Goodyear Tire investigation evaluates the creation of silica fillers using traditional techniques but in microgravity, potentially yielding results not possible on Earth. A better understanding of silica morphology and the relationship between silica structure and its properties could improve the silica design process, silica rubber formulation, and tire manufacturing and performance on the ground. Such improvements could include increased fuel efficiency, which would reduce transportation costs and help to protect Earth's environment.



Space Tango-Induced Pluripotent Stem Cells examines how microglial cells grow and move in 3D cultures and changes in gene expression that occur in microgravity. Understanding the way nerve cells grow and survive along with the accompanying changes in gene expression in microgravity is essential to protecting astronaut health, particularly on long-duration missions. Results may help provide novel approaches to characterizing, understanding, and developing therapies for Parkinson's disease and multiple sclerosis.

Space Moss compares mosses grown aboard the space station with those grown on Earth to determine how microgravity affects growth, development, gene expression, photosynthesis, and other features. This investigation could provide a better understanding of the mechanisms of moss response to microgravity, with potential applications for engineering plants to grow better on Earth and future bases on the Moon and Mars.