EXPLORE HUMANS in SPACE

INTERNATIONAL SPACE STATION

EXPEDITION 66

Soyuz MS-19 Launch: October 5, 2021
Landing: March, 2021

ANTON SHKAPLEROV (Roscosmos)
Commander

Born: Sevastopol, Crimea
Spaceflights: Exp 29/30, 42/43, 54/55
Bio: https://go.nasa.gov/2VUDpMf

MARK VANDE HEI (NASA)
Flight Engineer (Launched on Soyuz MS-18)

Born: Falls Church, Virginia
Spaceflights: Exp 53/54, 65
Bio: https://go.nasa.gov/2vzY0a8
Twitter: @Astro_Sabot

PYOTR DUBROV (Roscosmos)
Flight Engineer (Launched on Soyuz MS-18)

Born: Khabarovsk, Russia
Spaceflights: Exp 65
Bio: https://go.nasa.gov/30hV6am

Crew-3 Launch: November, 2021
Landing: April, 2021

RAJA CHARI (NASA)
Flight Engineer

Born: Milwaukee, Wisconsin
Spaceflights: First Flight
Bio: https://go.nasa.gov/3lKpJfB
Twitter: @Astro_Raja

TOM MARSHBURN (NASA)
Flight Engineer

Born: Statesville, North Carolina
Spaceflights: STS-127, Exp 34/35
Bio: https://go.nasa.gov/2ZhcUSE
Twitter: @AstroMarshburn

KAYLA BARRON (NASA)
Flight Engineer

Born: Pocatello, Idaho
Spaceflights: First Flight
Bio: https://go.nasa.gov/3Cm1cV4
Instagram: @astro_kayla

MATTHIAS MAURER (ESA)
Flight Engineer

Born: Sankt Wendel, Germany
Spaceflights: First Flight
Bio: https://go.nasa.gov/2Z69fH4
Twitter: @astro_matthias

EXPEDITION 66

Expedition 66 began in October 2021 and ends in March 2022. This expedition will include physical sciences and technology development, providing the foundation for continuing human spaceflight beyond low-Earth orbit to the Moon and Mars.

SCIENCE ON THE ISS

During Expedition 66, crew members will conduct experiments that could help us identify new materials with innate antimicrobial properties that could be used in designing future space craft. New hydrogen sensors will be tested on the station's oxygen generation system to determine their stability over time. Astronauts will also manufacture optical fibers in microgravity, and contribute to research aimed at improving the infectious disease risk assessment for astronauts. Follow the latest ISS Research and Technology news at: www.nasa.gov/stationresearchnews

Fiber Optic Production-2 (FOP-2)

Fiber Optic Production-2 (FOP-2) builds on previous work to manufacture commercial optical fibers in microgravity using a blend of elements called ZBLAN. Earlier theoretical and experimental studies suggest that ZBLAN optical fibers produced in microgravity exhibit qualities superior to those of fibers produced on Earth. Results from FOP-2 could help further verify these studies and guide manufacture of high value optical fiber aboard the space station for commercial use.

Host Pathogen

The Host Pathogen investigation focuses on better understanding the relationship between increased microbial virulence and reductions in immune cell function during microgravity/spaceflight conditions. In spaceflight analogue conditions, bacteria and immune cells from healthy, ground-based test subjects are cultured to observe immune cell response, while for spaceflight, ten crew members provide blood and saliva samples to assess their primary immune cells for alterations in host response. The results from this study are expected to aid in development of health countermeasures and improve the infectious disease risk assessment for astronauts.

OGA H2 Sensor Demo

The Advanced Hydrogen Sensor Technology Demonstration (OGA H2 Sensor Demo) tests new sensors for the International Space Station's oxygen generation system (OGS). The OGS produces breathable oxygen via electrolysis and has sensors for detecting hydrogen to protect it from failures. These current sensors, which are used to ensure that no hydrogen enters the oxygen product stream into the cabin, have sensitivity to humidity and drift over time, however, which limits their operational life. New sensors will be tested downstream of the existing OGA system in order to determine their stability over time; if these sensors prove to be superior to the current ones they may be integrated into the Advanced OGA which is geared for exploration missions.

ESA Biofilms-II

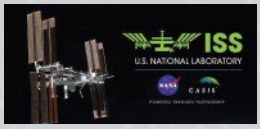
The goal of the Biofilm Inhibition On Flight Equipment and On Board the ISS Using Microbiologically Lethal Metal Surfaces (ESA-Biofilms) investigation is to compare how biofilms are formed in low gravity, in a liquid environment on inhibiting and non-inhibiting metal surfaces, for the purposes of spacecraft sanitation and crew health. Various species of bacteria exposed to microgravity, simulated Martian gravity and Earth gravity are tested not only on different metallic surfaces (copper, stainless steel and brass), but also on an array of different laser-etched surface treatments to ascertain whether or not topological differences influence biofilm formation in space.

The Expedition 66 patch celebrates the continued utilization of the International Space Station as a path for human and scientific space exploration. Its shape reflects the Route 66 highway sign, which once guided an earlier expansion into distant, remote lands. The arc of the Earth's atmosphere is reminiscent of the well-known stop-motion photos taken by astronauts and cosmonauts of the Earth in eclipse. Two future destinations are depicted, the Moon resting inside one of the numerals, and Mars to the right. A multicolored bridge containing the colors of each of this mission's international partner's flags (Russia, Germany, France, Japan, and the United States) draws the viewer from the perimeter of the patch into the numeral 66 just as the space station bridges the gap from low-Earth orbit to these distant exploration destinations.

INSPIRE - ENGAGE - EDUCATE - EMPLOY
The Next Generation of Explorers

NASA Education & Web Resources for

Expedition 66



Space Station Research Explorer At any given time on board the space station, a large array of different experiments are underway within a wide range of disciplines. Here, you can search the database of experiments to learn more about each experiment's objectives, descriptions, results, and imagery, as well as find links to additional information beyond this database.

https://www.nasa.gov/mission_pages/station/research/experiments/explorer/

STEMonstrations STEMonstrations fit the need for students and educators to have high quality, informative videos that cover the wide range of topics outlined in the Next Generation Science Standards (NGSS). Astronauts film videos instructing students in biology, chemistry, physics, Earth science, and space science. The videos align to a "Try This" one- to two-page lesson plan where students and educators can make connections to topics they are working on in the classroom.

https://www.nasa.gov/stemonstrations

Citizen Science Projects For years, solar system and exploration have brought excitement and inspiration to people of all ages. This is especially true now, with new opportunities for students and citizen scientists to directly participate in expanding our knowledge of the solar system. Amateur astronomers and students with wide ranges of equipment and expertise are making valuable contributions toour growing understanding of our nearest celestial neighbor. Learn how you can become part of the adventure!

https://science.nasa.gov/citizenscientists

Sally Ride EarthKAM Sally Ride EarthKAM (Earth Knowledge Acquired by Middle school students) is a NASA educational outreach program that enables students, teachers, and the public to learn about Earth from the unique perspective of space. Students can "program" the camera to take pictures of the Earth from space and study the images they receive.

https://www.earthkam.org/

Spot the Station Watch the International Space Station pass overhead from several thousand worldwide locations. It is the third brightest object in the sky and easy to spot if you know when to look up. Visible to the naked eye, it looks like a fast-moving plane only much higher and traveling thousands of miles an hour faster!

https://spotthestation.nasa.gov/

Story Time from Space While in space, astronauts videotape themselves reading books to children on Earth. In addition, cross-content curriculum is designed to support the Next Generation Science Standards and Common Core.

http://storytimefromspace.com/

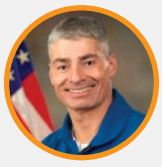
Amateur Radio on the ISS ARISS lets students worldwide experience the excitement of talking directly with crew members of the International Space Station, inspiring them to pursue interests in careers in science, technology, engineering and math, and engaging them with radio science technology through amateur radio.

www.ariss.org/

In-flight Education Downlinks Wouldn't it be great if students could talk with an astronaut aboard the International Space Station about what it is like to live and work in space? Well, they can! Educational organizations located in the United States can host an in-flight education downlink with space station crew members. Students pose questions and watch as astronauts answer the questions and demonstrate science, technology, engineering and mathematics concepts in ways that are impossible on Earth.

https://www.nasa.gov/audience/foreducators/stem-on-station/downlinks.html

https://www.nasa.gov/stemonstation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