

National Aeronautics and  
Space Administration



# EXPLORE 2021

**HUMANS** *in*SPACE

ON THE INTERNATIONAL SPACE STATION

# CALENDAR

# A message from the Program Manager for the **International Space Station**



*Earth observation taken during a day pass by the Expedition 62 crew aboard the International Space Station. Solar array visible.*



The International Space Station (ISS) is the largest and most-visited spacecraft in the history of spaceflight. Last year we celebrated 20 years of continuous human presence aboard the orbiting laboratory that enabled over 3,000 investigations conducted by more than 4,000 researchers from more than 100 countries.

I believe that 2021 will be an exciting year with new challenges and impressive strides in Low Earth Orbit (LEO) commercialization, flight and demonstration of life support technologies that will benefit our future missions to Mars, and numerous critical investigations. The ISS's continued success and advancements as a multi-dimensional platform is a tribute to the creativity, commitment and excellence of the entire ISS team.

Because of the incredible research conducted on this unique platform, our scientists and engineers have been able to learn more about creating extraterrestrial habitats for our explorers, how 3D printing can potentially be used to create spare parts, tools and materials on demand during journeys to the Moon and Mars; they have designed a space suit that can act as its own mobile life-support system, and much more.

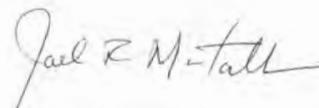
In addition to supporting further exploration of the universe, research and technology developed on the ISS has produced many benefits to humanity that we see on Earth. These benefits include advances in development of pharmaceuticals, better disaster response capabilities, improved materials for manufacturing, progression in robotics, and even bioprinting human tissue.

This year is going to be an especially active year in space as we join with our commercial partners to increase transportation of people and cargo to the ISS, opening the microgravity lab to even more types of research. This increased investigation capability will also add to the ongoing research and technology testing that are key to enabling future human exploration of the Moon and Mars.

There's a lot happening on the International Space Station, and the best way to keep up to date is to follow us on [NASA.gov](https://www.nasa.gov) and on our social media accounts listed on the back of this calendar.

Thank you for your interest in our International Space Station, and I wish you a prosperous 2021.

Regards,

  
**JOEL MONTALBANO**

**International Space Station Program Manager**



*COVER: A composite of the International Space Station with an image of the Sun emerging over the curvature of the Earth from space.*

*BACK COVER: View of the Moon pictured above the Earth's limb as the International Space Station orbits over the southern Indian Ocean just southwest of the African continent.*

# International Partner Program Managers



**Frank De Winne**

*European Space Agency (ESA) ISS Program Manager*

Frank De Winne became head of ESA's European Astronaut Center in Cologne, Germany in August 2012. Since 2017, he has been in charge of International Space Station operations at ESA, and in 2020 he became ESA's ISS Program Manager.



**Luc Dubé**

*Space Exploration Operations & Infrastructure*

Luc Dubé is Director of Space Exploration Operations & Infrastructure at the Canadian Space Agency (CSA). In this role he serves as Program Manager for Canada's Space Station Program, and he leads the teams and activities relating to CSA's Space Exploration systems (including the Mobile Service System – Canadarm2, Dextre and the Mobile Base) and payloads.



**Sergei Krikalev**

*Russian Human Spaceflight Program*

S.K.Krikalev is responsible for the implementation of the Russian Human Spaceflight program, particularly for the operation of the ISS Russian segment, the development and creation of new ISS Russian segment modules and a perspective manned transport system. He coordinates interaction with international partners in the frame of the ISS program and oversees international cooperation in the field of human space exploration.



**Junichi Sakai**

*Japanese Aerospace Exploration Agency (JAXA) ISS Program Manager*

The JAXA ISS Program Manager oversees all elements of the KIBO's operation, Japanese astronauts' activities, and cargo resupply by Japanese vehicles, as well as the study of low-Earth orbit activities looking ahead to post-ISS and the future. In addition, he is responsible for international coordination of ISS activities, he contributes to the creation and development of ISS achievements and promotes public understanding of the ISS programs.

# NASA ISS Program Management



**Kenneth Todd**  
*Deputy Program Manager*



**Dana Weigel**  
*The Vehicle Office*  
The Vehicle Office is responsible for keeping ISS systems and payload facilities sustained and safely operating for advancing these capabilities in order to support a continuous human presence, enhance research, test Mars-forward technologies and foster the success of commercial partners.



**William Spetch**  
*Mission Integration and Operations Office*  
The Mission Integration and Operations Office is responsible for keeping the ISS crew safely clothed, fed and productive while in orbit. The team accomplishes this through management of the flight schedule, cargo manifest and overall requirements and priorities.



**Mark Martin**  
*ISS Avionics and Software Office*  
The Avionics and Software Office is responsible for sustaining command and control system hardware and the software that operates all ISS core systems.



**Willie Lyles**  
*Safety and Mission Assurance/Program Risk Office*  
The Safety and Mission Assurance/Program Risk Office is responsible for the definition and implementation of plans and processes to assure that safety, reliability, maintainability and quality assurance requirements are met.



**William Cleek**  
*Program Planning & Control (PP&C) Office*  
The PP&C Office is responsible for providing the program with configuration management, information technology, resources/budget management, independent cost estimating/assessment and procurement support.



**Tricia Mack**  
*Human Space Flight Program – Russia*  
The Human Space Flight Program – Russia, based in Moscow, is the liaison between the ISS Program's colleagues in the U.S. and Russia. It is also responsible for all of NASA's coordination in Russia and leading operations in Kazakhstan for Russian Soyuz launch and landing operations.



**Jeffrey Arend**  
*Systems Engineering and Integration Office*  
The Systems Engineering and Integration Office is responsible for implementing vehicle integrated performance enhancements/changes, developing and analyzing upcoming ISS missions for visiting vehicles, robotic and Japanese Experiment Module Airlock activities and new or a change of the ISS external and internal configuration.



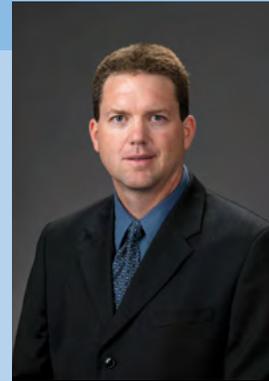
**Ven Feng**  
*ISS Transportation Integration Office*  
The Transportation Integration Office is responsible for integrating the fleet of U.S. and international spacecraft delivering crews, cargo and critical science to the ISS.



**Greg Dorth**  
*External Integration Office*  
The External Integration Office is responsible for establishing and maintaining partnerships and collaborations with international and domestic government agencies, academia and industry. The office develops and manages key messaging to inspire, inform and educate the world about the global benefits and opportunities of the ISS.



**Marybeth Edeen**  
*ISS Research Integration Office*  
The Research Integration Office is responsible for bringing new customers to the ISS research platform, as well as managing the current customers' needs and expectations. The office performs the strategic and tactical planning and integration of research to ensure the maximum utilization of the ISS.



**Christopher Hansen**  
*Extra Vehicular Activity (EVA) Office*  
The EVA Office is responsible for the safe, effective and affordable EVA capabilities to meet NASA's strategic goals that require spacewalks on ISS and Artemis programs.



**Whitney Maples**  
*Flight Operations Support*  
Flight Operations Support is responsible for planning, training and flying the flight controllers, instructors and crew members to make the ISS safe and successful.

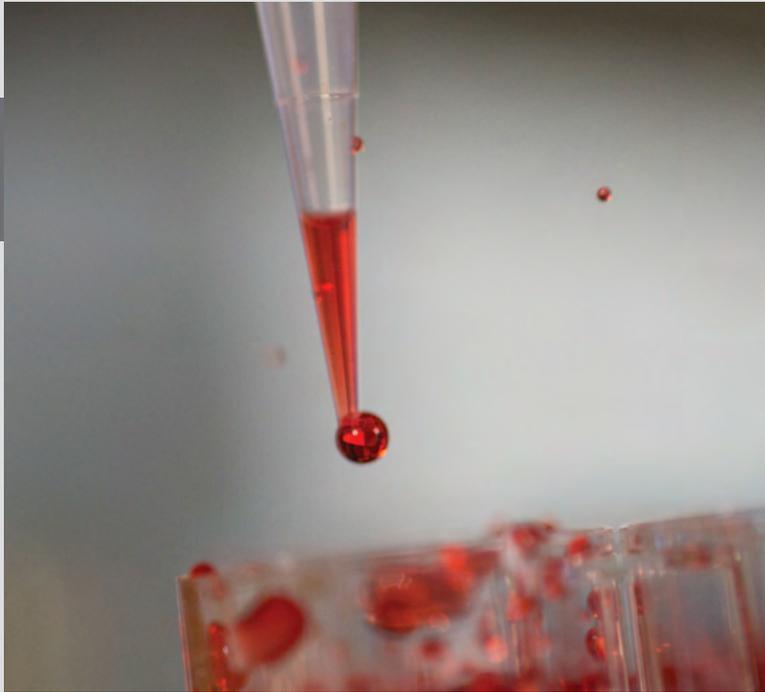


**Dwight Mosby**  
*Payload Mission Operations Division*  
The Payload Mission Operations Office is responsible for management of the ISS science operations, which requires coordinating and synchronizing the execution of science across the international partners and researchers.



**Josephine Burnett**  
*Exploration Research and Technology Programs*  
The Exploration Research and Technology Programs Office is responsible for ground processing, logistics, transportation and launch-site services that are key to sustaining the ISS and enabling utilization for our research customers.

# Building an Economy in Space



*Photographic documentation taken of samples and fixed media in tissue bags for the Lung Tissue investigation. This investigation was composed of four tests that aimed at characterizing liquid behavior in a microgravity environment.*



*The waxing crescent Moon is photographed just above Earth's limb and the bluish hue of the atmosphere at the beginning of an orbital sunrise. A portion of one of the International Space Station's solar arrays is seen in the left foreground as the orbital complex flew 258 miles above the Sea of Japan.*

Roughly 250 miles above our planet, the International Space Station (ISS) is hurtling through space. It's been the only passenger vehicle traveling along a one-lane path for more than two decades. While it has expanded our world in terms of research, technology development and our understanding of the universe, it has also reminded us how limited access to space is. But as we look toward the future, we can see this one small destination among the stars growing into a galactic marketplace, booming with businesses and patrons—and it's already beginning.

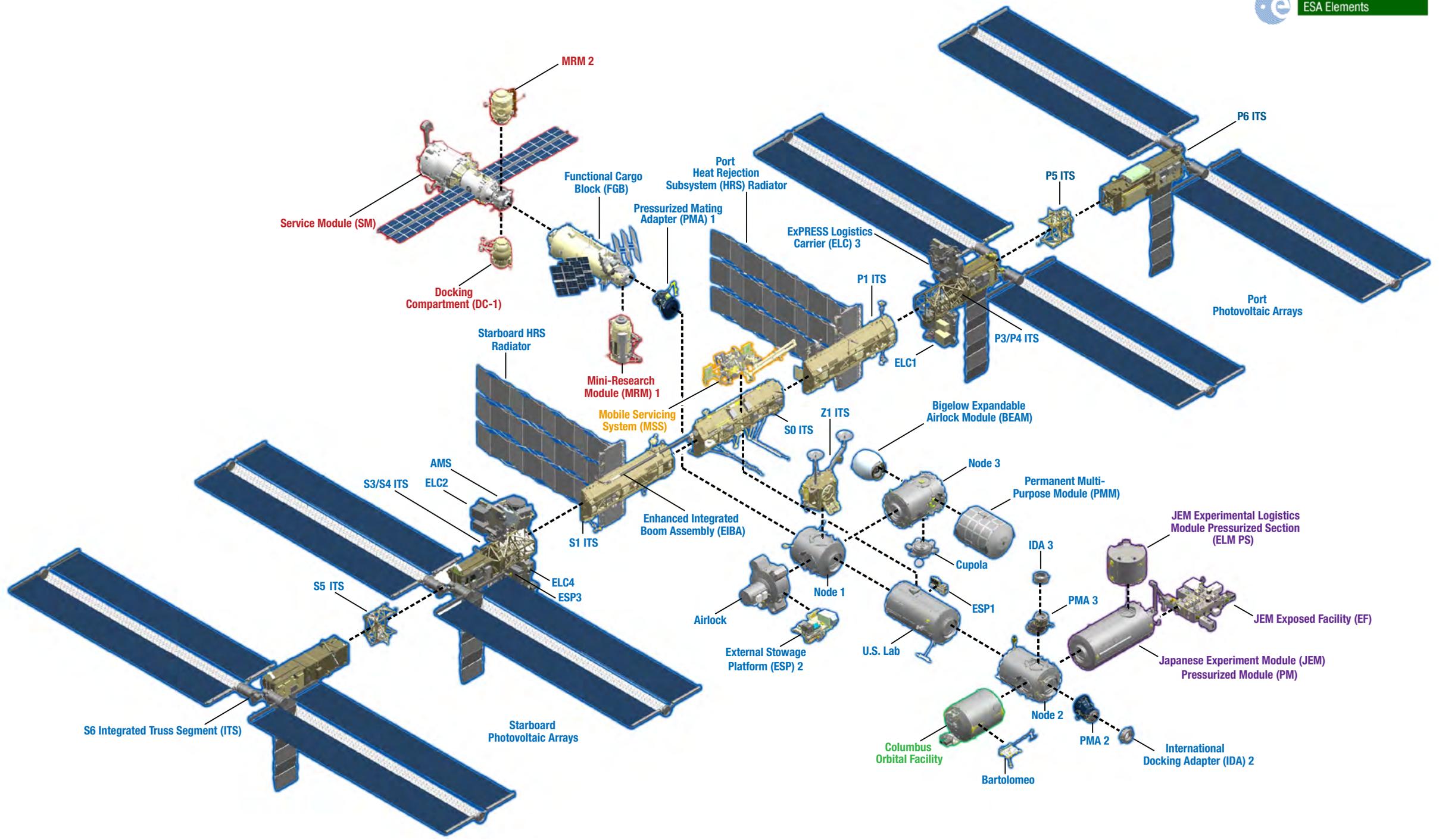
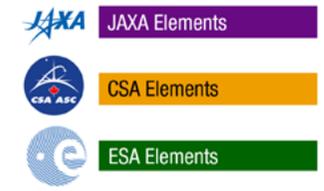
Building a robust economy in low-Earth orbit (LEO) has many advantages, including opportunities to improve lives on Earth. Research indicates removing the force of gravity from materials development processes might result in higher quality end products with fewer defects, making them more effective than if they were made on Earth.

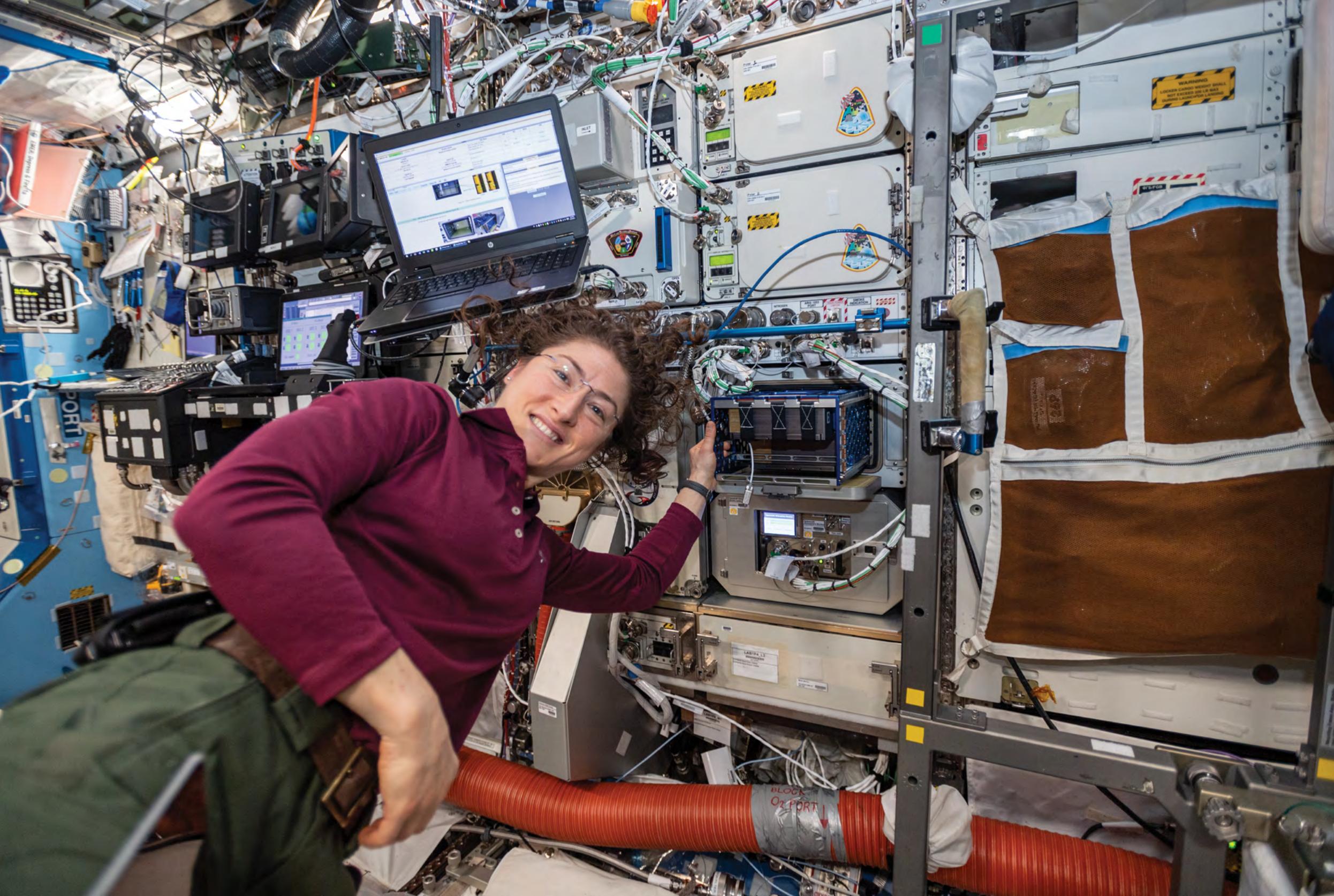
The microgravity environment of space is particularly advantageous to the medical field, specifically to companies that are developing delicate products, such as artificial tissues, that have benefits for humanity. LambdaVision and Space Tango, two of several companies NASA has chosen to help propel industry into space, are working together to explore the benefits microgravity might have on the production of artificial retinas, including reduced materials, lower costs and accelerated production. If successful, these products can be transported back to Earth and used to restore vision for patients with degenerative eye diseases, such as advanced retinitis pigmentosa or age-related macular degeneration, which is the leading cause of blindness in adults over 55 years old.

NASA's vision for the future is to see commercial space stations replace the ISS in low-Earth orbit. This will allow NASA to focus on deep-space exploration while continuing to have access to a LEO research platform. One of the first businesses moving forward with this mission is Axiom Space, a company that is aiming to develop a new commercial segment attached to the ISS. The company has announced plans to deliver new missions of private citizen astronauts to the ISS. Once the Axiom Segment is built out, it will eventually separate from the ISS and become its own destination.

In addition to manufacturing, new businesses in space could be beneficial for entertainment industries, potentially becoming a hub for film production or even microgravity sporting events. Marketing and sponsorship opportunities could also be available, as well as in-space assembly and servicing of large structures and satellites, and transportation of people and cargo to and from LEO for space tourism.

With the help of commercial partners, NASA will be able to move at the speed of industry, becoming a customer in this microgravity market. Part of NASA's goal in aiding the establishment of a LEO economy is to be able to pass off some production and research responsibilities to the private sector, allowing the agency to purchase goods and services that will propel future missions into deep space. The road ahead will be challenging, but there is a new era of human exploration at the end.





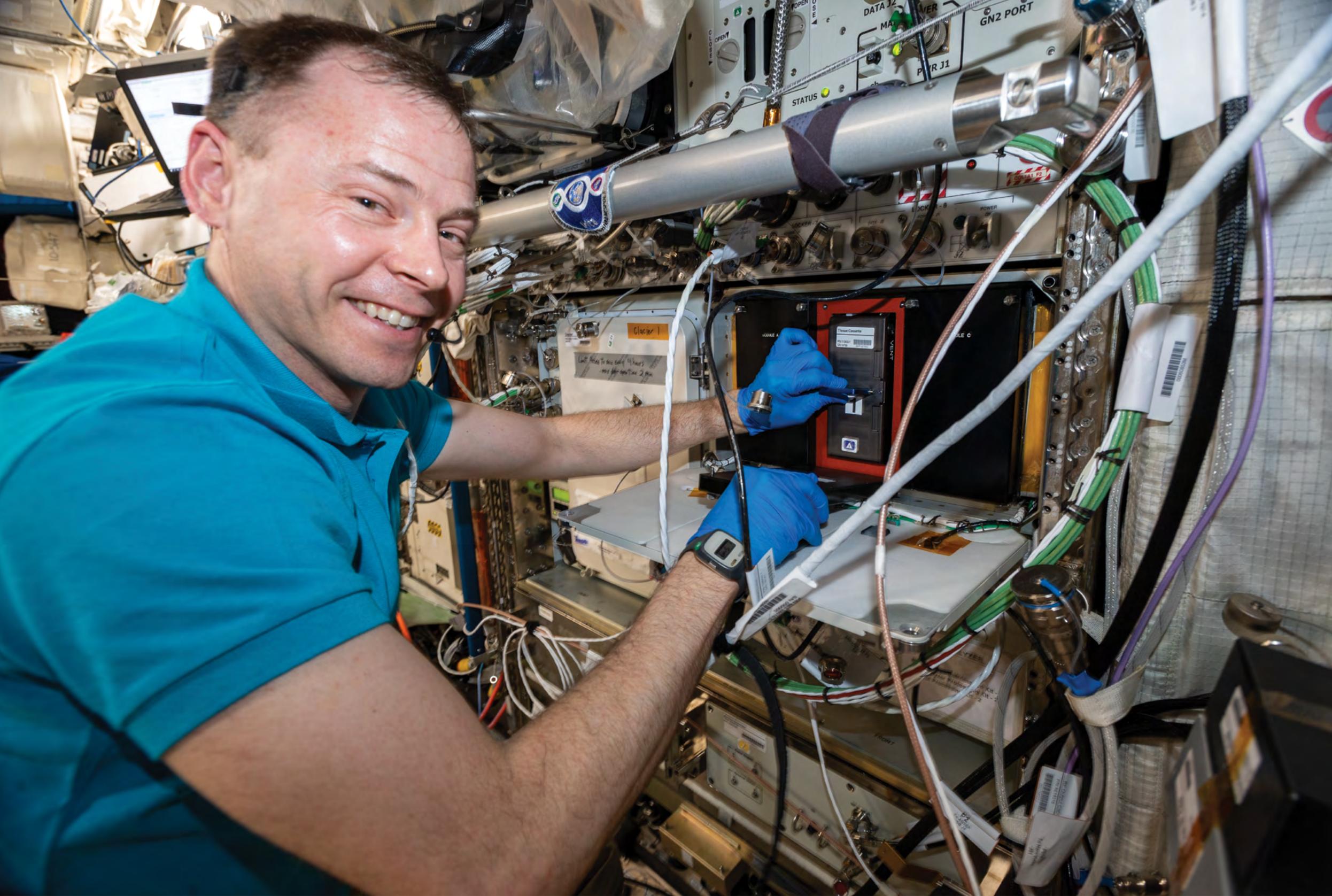
*View of Expedition 60 Flight Engineer Christina Koch loading a Test Print Cassette into the BioFabrication Facility. In 2019, Koch set the record for the single longest space mission by a woman to date.*

# JANUARY 2021

December												February						
												1	2	3	4	5	6	
6	7	8	9	10	11	12						7	8	9	10	11	12	13
13	14	15	16	17	18	19						14	15	16	17	18	19	20
20	21	22	23	24	25	26						21	22	23	24	25	26	27
27	28	29	30	31								28						

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 New Year's Day	2
3	4	5	6 	7	8	9
10	11	12 	13	14 2005: Cassini descends through the moon Titan's atmosphere and becomes the first probe to land on a planetary moon other than Earth's	15	16
17	18 Martin Luther King, Jr. Day	19	20 	21	22	23
24/31	25 1984: President Ronald Reagan directs NASA to build an international space station "within a decade" in his State of the Union address	26	27 1967: Apollo 1 fire	28  1986: Space Shuttle Challenger accident	29	30

\* Moon phases US Central Time Zone



*View of Expedition 60 Flight Engineer Nick Hague conducting science operations inside the Columbus module for the BioFabrication Facility experiment. The study is investigating the effectiveness of using 3D biological printers to produce usable human organs in microgravity.*

# FEBRUARY 2021

January							March						
					1	2		1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27
24/31	25	26	27	28	29	30	28	29	30	31			

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1 <b>2003:</b> STS-107 Space Shuttle Columbia accident	2	3	4 	5	6
7 <b>2008:</b> Columbus launched to the space station on STS-122	8 <b>2010:</b> Tranquility and Cupola launched to the space station on STS-130	9	10	11 	12 <b>2001:</b> First major laboratory module, U.S. Lab Module added to the space station	13
14	15 <b>Presidents' Day</b>	16	17	18	19 	20 <b>2002:</b> First U.S. spacewalk from the space station
21	22	23	24	25	26 <b>2004:</b> Expedition 8 crew C. Michael Foale and Alexander Y. Kaleri. spacewalk without a human crewmember inside	27 
28						



*The Space Station Remote Manipulator System Canadarm2 robotic arm grapples the Northrop Grumman Cygnus cargo craft as it approaches its capture point with the International Space Station. Image framed by window.*

# MARCH 2021

February							April									
	1	2	3	4	5	6							1	2	3	
	7	8	9	10	11	12	13			4	5	6	7	8	9	10
	14	15	16	17	18	19	20			11	12	13	14	15	16	17
	21	22	23	24	25	26	27			18	19	20	21	22	23	24
	28									25	26	27	28	29	30	

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	<p><b>1</b></p> <p><b>2013:</b> The second operational SpaceX Dragon cargo vehicle is the first commercial vehicle to carry externally mounted cargo to the space station. <b>2016:</b> Astronauts Scott Kelly and Mikhail Korvienko return to Earth after their One-Year Mission</p>	<p><b>2</b></p> <p><b>2019:</b> SpaceX DM-1 launches to the space station</p>	<p><b>3</b></p> <p><b>1969:</b> Apollo 9 first test flight of a lunar module with a crew</p>	<p><b>4</b></p>	 <p><b>5</b></p>	<p><b>6</b></p>
<p><b>7</b></p>	<p><b>8</b></p>	<p><b>9</b></p> <p><b>2008:</b> First European Automated Transfer Vehicle (ATV) launches to the space station</p>	<p><b>10</b></p>	<p><b>11</b></p>	<p><b>12</b></p>	 <p><b>13</b></p>
<p><b>14</b></p>	<p><b>15</b></p>	<p><b>16</b></p> <p><b>1926:</b> Dr. Robert H. Goddard launches the first liquid-propelled rocket</p>	<p><b>17</b></p>	<p><b>18</b></p>	<p><b>19</b></p>	<p><b>20</b></p>
 <p><b>21</b></p>	<p><b>22</b></p>	<p><b>23</b></p>	<p><b>24</b></p>	<p><b>25</b></p>	<p><b>26</b></p>	<p><b>27</b></p> <p><b>2015:</b> One Year Crew launches to the space station</p>
 <p><b>28</b></p>	<p><b>29</b></p>	<p><b>30</b></p>	<p><b>31</b></p>			



*Flight Engineer David Saint-Jacques conducts field calibration operations for the Bone Densitometer Validation experiment. Densitometry measures the mass per unit volume (density) of minerals in bone, which is key to the development of countermeasures for human crew members aboard the space station, as well as for bone loss syndromes on Earth.*

# APRIL 2021

March						May					
1	2	3	4	5	6						1
7	8	9	10	11	12	13	14	15	16	17	18
14	15	16	17	18	19	20	21	22	23	24	25
21	22	23	24	25	26	27	28	29	30	31	
28	29	30	31								

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
						
4	5	6	7 <b>2010:</b> The joining of the space station and STS-131 crews marks the first time four women are in space at the same time	8 <b>2016:</b> A Bigelow inflatable Expandable Activity Module becomes the first commercially designed, manufactured, and owned space station structure in orbit	9	10
						
11	12 <b>1961:</b> Vostok 1, Yuri Gagarin USSR, becomes the first human in orbit	13	14	15	16	17
						
18	19 <b>1971:</b> Salyut 1 launches from Baikonur; <b>2001:</b> SSRMS/Canadarm2 launches to the space station on STS-100	20	21	22 Earth Day	23	24 <b>1990:</b> Hubble Space Telescope launches
						
25	26	27	28	29	30	



*The SpaceX Crew Dragon (center right), the Japanese H-II Transfer Vehicle-9 resupply ship (center bottom) and Europe's Columbus laboratory module figure prominently in this photograph taken during a spacewalk conducted by astronauts Bob Behnken and Chris Cassidy. All three are attached to the U.S. Harmony module with the International Docking Adapter on top.*

# MAY 2021

April

June

1 2 3  
4 5 6 7 8 9 10  
11 12 13 14 15 16 17  
18 19 20 21 22 23 24  
25 26 27 28 29 30

1 2 3 4 5  
6 7 8 9 10 11 12  
13 14 15 16 17 18 19  
20 21 22 23 24 25 26  
27 28 29 30

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	 3	4	5 <small>1961: Alan Shepard Jr. becomes the first American in space</small>	6	7	8
9 <small>Mother's Day</small>	10	 11	12	13	14 <small>1973: Skylab 1 space station launches aboard the Saturn V</small>	15
16	17	18 <small>1969: Apollo 10, second flight of humans around the Moon, and final test of the complete Apollo system in preparation for the first moon landing</small>	 19	20 <small>1927: Charles A. Lindbergh makes the first solo nonstop flight across the Atlantic Ocean in the Spirit of St. Louis</small>	21	22 <small>2012: First SpaceX Dragon launches to the space station</small>
23/30	24/31 <small>2008: Kibo launches to the space station</small> <b>Memorial Day</b>	25 <small>1961: In a speech to Congress in Washington, D.C., President John F. Kennedy sets Apollo lunar landing and return goal within the decade</small>	 26	27	28	29 <small>2009: The first time a space station hosts a long-term crew of six crew members</small>



*Extravehicular crewmember 1 (EV1) Luca Parmitano, anchored in an Articulating Portable Foot Restraint, holds the Upgraded Tracker Thermal Pump System as he is moved to the Alpha Magnetic Spectrometer worksite. Photo was taken by EV2 during Extravehicular Activity 61.*

# JUNE 2021

May								July						
							1			1	2	3		
2	3	4	5	6	7	8		4	5	6	7	8	9	10
9	10	11	12	13	14	15		11	12	13	14	15	16	17
16	17	18	19	20	21	22		18	19	20	21	22	23	24
23/30	24/31	25	26	27	28	29		25	26	27	28	29	30	31

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						
		1	2	3 <small>1965: Gemini IV, First U.S. spacewalk by Edward White</small>	4	5
6	7	8 <small>2001: First Russian spacewalk on the space station</small>	9		10	11
13	14	15	16		17	18 <small>1983: STS-7, Sally Ride, first U.S. female in space</small>
20 <small>1944: V-2 missile V-177 becomes the first man-made object to reach the boundary of space</small> <b>Father's Day</b>	21	22	23		24	25
27 <small>1995: STS-71 Space Shuttle Atlantis launches, first Shuttle-Mir docking</small>	28	29	30			



*Expedition 60 Flight Engineer Christina Koch photographed the Soyuz MS-15 crew ship ascending into space after its launch from Kazakhstan. The Soyuz would dock a few hours later to the International Space Station with NASA astronaut Jessica Meir, Roscosmos cosmonaut Oleg Skripochka and Astronaut Hazzaa Ali Almansoori of the United Arab Emirates.*

# JULY 2021

June

August

1	2	3	4	5	1	2	3	4	5	6	7		
6	7	8	9	10	11	12	8	9	10	11	12	13	14
13	14	15	16	17	18	19	15	16	17	18	19	20	21
20	21	22	23	24	25	26	22	23	24	25	26	27	28
27	28	29	30	29	30	31							

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				 1		
						
<b>4</b> 2016: Juno successfully begins orbiting Jupiter <b>Independence Day</b>	5	6	7	<b>8</b> 2011: STS-135 Space Shuttle Atlantis launches to the space station on the final mission of the Shuttle Program	9	10
						
11	12 2000: Zvezda launches to the space station; 2001: U.S. Quest Airlock launches to the space station on STS-104	13	14 2015: New Horizons closest approach to Pluto	15	16	17
						
18	19	20 1969: Apollo 11 first human lands on the Moon	21	22	23	24
						
25	26	27	28	29 1958: President Eisenhower signs the National Aeronautics and Space Act of 1958, the birth of NASA	30	31



*This image of star trails was compiled from time-lapse photography taken by NASA astronaut Christina Koch from aboard the International Space Station, taken in July 2019. This composite image was made from more than 400 individual photos taken over a span of about 11 minutes as the station traveled from Namibia toward the Red Sea. The image includes many natural and artificial lights that an astronaut may see during an orbit at night. On the ground, stationary features like cities appear as pale yellow-white dotted streaks with each dot marking another frame captured. Many of the thinner dotted lines with darker orange hues are fires burning across Angola and the Democratic Republic of the Congo.*

# AUGUST 2021

July							September							
				1	2	3					1	2	3	4
4	5	6	7	8	9	10		5	6	7	8	9	10	11
11	12	13	14	15	16	17	12	13	14	15	16	17	18	
18	19	20	21	22	23	24	19	20	21	22	23	24	25	
25	26	27	28	29	30	31	26	27	28	29	30			

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6 <small>2012: Curiosity Rover lands on Mars</small>	7
						
8	9	10 <small>2015: Astronauts Scott Kelly, Kjell Lindgren and Kimiya Yui harvest and eat lettuce grown on the space station</small>	11	12	13	14
						
15	16	17 <small>1933: The GIRD-9, first Russian liquid fueled rocket, successfully launches, reaching 1,200 feet</small>	18	19	20	21
						
22	23	24	25	26 <small>1921: Max Faget, Chief Designer of Mercury, Apollo and Shuttle spacecraft born, British Honduras</small>	27	28
						
29	30	31				



Astronaut Norishige Kanai is photographed inside the Bigelow Expandable Activity Module (BEAM). Future space habitats for low-Earth orbit, the Moon, Mars, or other destinations need to be lightweight and relatively simple to construct. BEAM is an experimental expandable capsule that docks with the International Space Station. After docking, BEAM inflates to roughly 13 feet long and 10.5 feet in diameter to provide a habitable volume where a crew member can enter.

# SEPTEMBER 2021

August							October												
1	2	3	4	5	6	7							1	2					
8	9	10	11	12	13	14							3	4	5	6	7	8	9
15	16	17	18	19	20	21							10	11	12	13	14	15	16
22	23	24	25	26	27	28							17	18	19	20	21	22	23
29	30	31											24 <sup>31</sup>	25	26	27	28	29	30

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	 <b>6</b> Labor Day	7	8	9	10 <small>2009: First HTV launch to the ISS</small>	11
12 <small>1962: President John F. Kennedy delivers the "We choose to go to the Moon" address at Rice University, Houston, TX</small>	 13	14	15	16	17	18 <small>2013: First Cygnus launches to the space station</small>
19	 20	21 <small>2003: Galileo becomes first spacecraft to enter Jupiter's atmosphere</small>	22	23	24	25
26	27	 28	29	30		

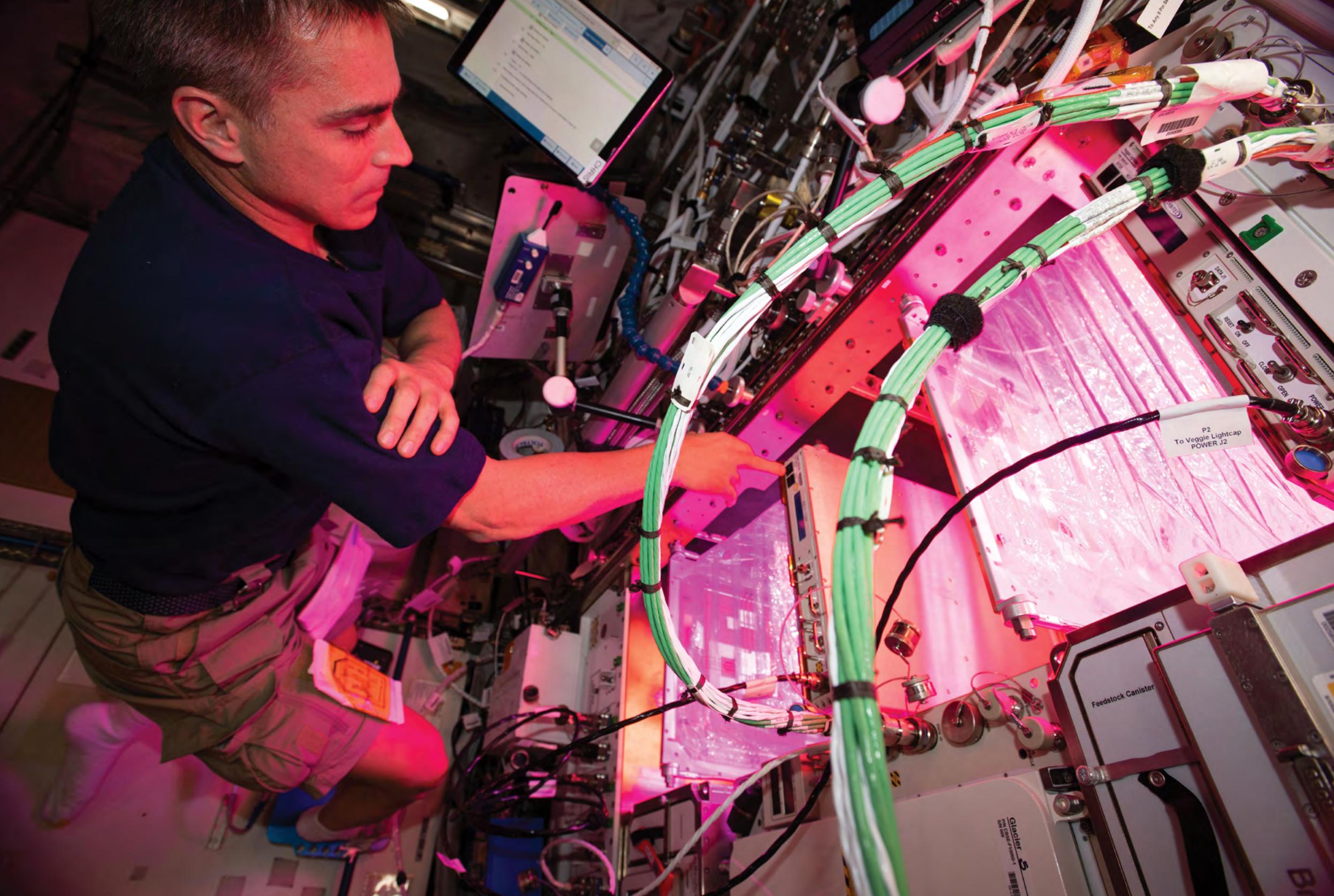


*The International Space Station Expedition 61 crew pauses for a photo as NASA Astronauts Jessica Meir and Christina Koch prepare to exit the space station to begin the first all-female spacewalk in history on October 18, 2019. The astronauts replaced a faulty battery charge discharge unit that failed to activate following the installation of new lithium ion batteries on the space station's exterior structure.*

# OCTOBER 2021

September							November								
			1	2	3	4				1	2	3	4	5	6
5	6	7	8	9	10	11	7	8	9	10	11	12	13	14	15
12	13	14	15	16	17	18	14	15	16	17	18	19	20	21	22
19	20	21	22	23	24	25	21	22	23	24	25	26	27	28	29
26	27	28	29	30			28	29	30						

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 <small>1958: First day of NASA operations</small>	2
3	4	5	6 	7	8	9
10 <small>2007: Peggy Whitson becomes the first female astronaut to command the space station</small>	11 <small>2000: Z1 truss launches to the space station on STS-92</small> <b>Columbus Day</b>	12 	13	14 <small>1947: X-1 first supersonic flight, Capt. Charles E. Yeager, Edwards AFB, California</small>	15	16
17	18	19	20 	21	22	23 <small>2007: Node-2/Harmony launches to the space station on STS-120</small>
24/31 <small>1946: First motion pictures are taken of Earth from space by a US-launched V2 rocket</small> <small>2000: First crew to live and work aboard the space station launched by Soyuz TM-31</small>	25	26	27	28 	29	30



*NASA astronaut and Expedition 63 Commander Chris Cassidy cleans botany research hardware after growing lettuce and mizuna greens inside the Columbus laboratory module. The Veggie Passive Orbital Nutrient Delivery System research facility seeks to demonstrate growing vegetables in space to support future crews on long-term missions.*

# NOVEMBER 2021

October										December						
								1	2			1	2	3	4	
3	4	5	6	7	8	9	10	11	12	5	6	7	8	9	10	11
13	14	15	16	17	18	19	20	21	22	12	13	14	15	16	17	18
23	24	25	26	27	28	29	30	31		19	20	21	22	23	24	25
										26	27	28	29	30	31	

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2 <small>2000: Expedition 1 arrives at the space station, beginning an era of continuous human presence in space that remains unbroken to this day</small>	3	4 	5	6
7	8	9	10	11 <small>Veterans Day</small> 	12	13 <small>1971: Mariner 9 becomes first spacecraft to orbit another planet – Mars. Transmitted 6,876 pictures. Launched May 30, 1971</small>
14 <small>1969: Launch of Apollo 12, second human mission to land on the Moon</small>	15	16	17	18	19 	20 <small>1998: FGB Zarya, the first launch of a component of the the space station, leaves Baikonur on a Proton K</small>
21	22	23	24	25 <small>Thanksgiving Day</small> 	26	27
28	29	30				



*A view of Bartolomeo in its final position on the Columbus module of the International Space Station (ISS). The European external platform Bartolomeo is an enhancement of the ISS European Columbus Module and its infrastructure. Designed to meet user requirements from the commercial and institutional sector, Bartolomeo is a new external payload hosting facility on the ram side of Columbus.*

# DECEMBER 2021

November							January						
1	2	3	4	5	6							1	
7	8	9	10	11	12	13	2	3	4	5	6	7	8
14	15	16	17	18	19	20	9	10	11	12	13	14	15
21	22	23	24	25	26	27	16	17	18	19	20	21	22
28	29	30					23/30	24/31	25	26	27	28	29

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3 <small>1958: The Jet Propulsion Laboratory (JPL) in Pasadena, California, is transferred from the U.S. Army to NASA</small>	 4 <small>1998: Launch of STS-88, the first crew to visit the space station, delivers the first US element of station, Node 1 Unity</small>
5	6	7	8	9	 10	11
12	13	14	15	16	17 <small>1903: Wright flyer makes the world's first heavier-than-air flight at Kitty Hawk, North Carolina</small>	 18
19	20	21	22	23	24 <small>1968: Apollo 8 becomes the first crewed mission to orbit the Moon</small>	25 <small>Christmas Day</small>
 26	27	28	29	30	31	

## International Space Station

[www.nasa.gov/station](http://www.nasa.gov/station)

## Space Station Research and Technology Overview

[www.nasa.gov/iss-science](http://www.nasa.gov/iss-science)

## Latest News About Station Research

[www.nasa.gov/stationresearchnews](http://www.nasa.gov/stationresearchnews)

## Space Station Research Benefits for Humanity

[www.nasa.gov/stationbenefits](http://www.nasa.gov/stationbenefits)

## Space Station Opportunities for Researchers

[www.nasa.gov/stationopportunities](http://www.nasa.gov/stationopportunities)

## Space Station Experiments/Results

<https://go.nasa.gov/researchexplorer>

## Space Station New Low-Earth Orbit Commercial Opportunities

[www.nasa.gov/leo-economy/low-earth-orbit-economy](http://www.nasa.gov/leo-economy/low-earth-orbit-economy)

## Space Station for Students and Educators

[www.nasa.gov/stemonstation](http://www.nasa.gov/stemonstation)

## Spot the Station Soaring Over the Sky Near You

[spotthestation.nasa.gov](http://spotthestation.nasa.gov)

