CU-Boulder hardware to fly on first-ever NASA-contracted resupply mission to space station

October 6 2012

Space hardware developed at CU-Boulder is flying on the first ever NASA-contracted resupply mission to the International Space Station. Credit: NASA

A University of Colorado Boulder space center is providing hardware and technical support for scientific experiments aboard the first-ever NASA-contracted resupply flight to the International Space Station, slated for launch Oct. 7 from Cape Canaveral, Fla.

BioServe Space Technologies, a NASA-funded center in CU-Boulder's aerospace engineering sciences department, has provided an automated, suitcase-sized incubator carrying fluid-processing devices for use by Montana State University researchers to test how a pathogenic yeast strain responds to the low gravity of space. The experiments will fly on

the unmanned Dragon cargo spacecraft developed by Space Exploration Technologies X, or SpaceX, which made history during a May 2012 demonstration flight by becoming the first commercial spacecraft to dock with the International Space Station, or ISS.

BioServe's incubator, known as a Commercial Generic Bioprocessing Apparatus, or CGBA, will provide space support for nearly 130 fluid-processing devices headed for ISS and loaded up with a common pathogen known as Canada albacans, said BioServe Business Development Manager Stefanie Countryman. The pathogen is under study by MSU faculty and students because it can cause localized infections in healthy people but can trigger potentially lethal infections in immune-compromised people.

Previous ground-based studies at MSU and elsewhere have shown C. albicans may become more pathogenic in near-weightless environments, a concern for astronauts whose immune systems can be compromised by working and living in the low gravity of space. The MSU studies are led by Sheila Nielson-Preiss, a former faculty member at the University of Colorado School of Medicine.

Several BioServe researchers are now at Cape Canaveral helping to integrate the MSU experiments into the space flight hardware that will be loaded onto the Dragon spacecraft in preparation for the Oct. 7 flight. BioServe, which has trained current and former ISS astronauts on how to use its flight hardware, will be available throughout the mission to provide remote support for the experiment as it is conducted on ISS, said Countryman. There currently are two CGBAs built by BioServe flying on ISS.

BioServe is a nonprofit center founded at CU-Boulder in 1987 to develop new or improved products through space life science research in partnership with industry, academia and government, said BioServe

Director Louis Stodieck. Since 1991 BioServe has flown more than 50 payloads in space, including 40 on NASA space shuttles before the fleet was retired in 2011.

In addition to space shuttles and ISS, BioServe hardware and experiments have flown on Russia's Mir space station (which operated from 1986 to 2001) two Russian spacecraft, Soyuz and Progress, and the Japanese spacecraft HTV-3. BioServe also has payloads and instruments manifested on a number of space missions launching from around the world in the next several years.

"Just because NASA's space shuttle fleet was retired does not mean we are cutting back on our work here at BioServe," said Countryman. "Our hardware and payloads will continue to fly as we collaborate with NASA, private companies, universities and other institutions, and we expect to play a significant role in the commercialization of space as the private sector ramps up spaceflight activities."

In September, two student space experiments selected as winners of an international science contest sponsored by YouTube, Lenovo and Space Adventures were made "flight-ready" by BioServe researchers and conducted on the ISS under the direction of NASA astronaut Sunita Williams. The experiments were live-streamed back to classrooms around the world.

"We would be unable to carry out all of our research without the help of CU-Boulder students," Stodieck said. "Both undergraduate and graduate students play an important role in designing, building and testing spaceflight payloads, activities that can give them a significant advantage when they move on to careers in the aerospace industry."

Founded in 2002 by former PayPal entrepreneur Elon Musk, SpaceX is modifying the current unmanned Dragon spacecraft into a manned craft

that the company hopes to use to shuttle astronauts to and from ISS within the next five years. In August, NASA announced up to $900 million in funding for three aerospace companies partnering with the space agency to developed manned spacecraft – SpaceX, Boeing and Sierra Nevada Corp., based in Sparks, Nev., and which is developing a spacecraft called the Dream Chaser at its Louisville, Colo., facility.

More information: For more information on BioServe visit www.colorado.edu/engineering/BioServe/index.html

Provided by University of Colorado at Boulder