

Space BD succeeds in first launch and recovery for high-quality protein crystal growth service

First space experiment completed aboard ISS Kibo as sole JAXA private partner



CRS-24 mission launch ©SpaceX

Tokyo — Space BD, a provider of general space industry services, announces that it has succeeded in its first high-quality protein crystal growth (PCG) experiments conducted on the Japanese Experiment Module Kibo on the International Space Station (ISS). In total eleven experiments were conducted based on contracts with four partners, including Japanese and overseas companies and research institutions.

These experiments were also the first in the drug discovery support business and made use of the opportunity allocated for private partner experiments on Kibo. The experimental samples were launched by the SpaceX Falcon 9 rocket from the Kennedy Space Center in Florida, U.S. on Tuesday, December 21, 2021 (EST), and after the experiments were conducted in Kibo from Thursday, December 23, samples were safely returned and recovered on Monday, January 24, 2022.

The purpose of the mission was to conduct agricultural drug discovery and novel coronavirus drug discovery research.

AgroDesign Studios (Kashiwa, Chiba) is conducting research and development on molecular agrochemicals that directly inhibit the function of essential proteins of pests and weeds in order to increase agrochemical safety. The use of space experiments allows for highly reliable protein crystal structure data to be obtained and makes efficient agrochemical design possible.

The National Synchrotron Radiation Research Center (NSRRC) (Hsinchu, Taiwan)¹ crystallized virus-like particles (VLPs) generated from E. coli in space, and X-ray analysis will be used to reveal the structure of the virus and the mechanism of infection.

The Brazilian Biosciences National Laboratory (LNBio) / Brazilian Center for Research in Energy and Material (CNPEM) (Sao Paulo, Brazil)² aims to understand the three-dimensional structure of the N proteins that make up the novel coronavirus (COVID-19) by crystallizing those proteins in the microgravity environment of space and using X-ray diffraction.

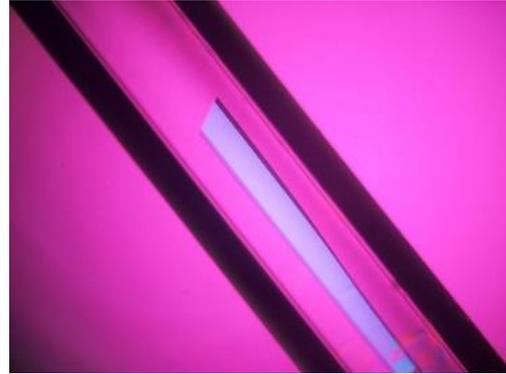
¹This agreement is a collaborative effort with HelioX Cosmos, our channel partner in Taiwan.

² This agreement is a collaborative effort with Airvantis, our channel partner in Brazil.

More information: [Space BD signed the first contract for 13 space experiments of the high-quality protein crystal growth service with international 3 organizations \(December 2, 2021\)](#)



A container floating in the microgravity environment
©JAXA/NASA



Protein crystals of amylase produced in the ISS
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■ JAXA's sole private sector partner in the protein crystal growth project

JAXA has conducted high-quality protein crystal growth experiments in Kibo onboard the ISS for over ten years, and by developing and providing Japan's original crystallization technology has produced various results leading to the design of new drugs. Amidst this, JAXA has been promoting the transfer of Kibo utilization projects to the private sector and collaboration with the private sector under the "Kibo Utilization Strategy," and thus invited private sector partners to participate in cooperation with JAXA. Space BD was selected as a partner on March 22, 2021, and a basic agreement between Space BD and JAXA was signed on May 6, 2021.

As the sole private sector partner selected by JAXA, Space BD will continue to provide flexible space experiment opportunities that meet the needs of users on a regular basis until 2024.

■ Life Sciences at Space BD

Building on this first set of space drug discovery experiments in Kibo on the ISS with these three companies, Space BD will focus on accumulating technology and know-how related to space utilization in general and creating a system to lower the hurdle for space utilization. In the future, Space BD will continue to take on the challenge of becoming a space business development firm, providing not only protein research, including drug discovery, but also R&D support in all areas of life science, including cells, tissues, and humans in space, as well as equipment development support for such R&D.

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