

ISU's Hydra-1 Experiment Launched to ISS

Florida, USA: On 5 December 2018 at 19:16 CET, ISU's Hydra-1 experiment was launched from Florida onboard a SpaceX Dragon capsule by a SpaceX Falcon 9 rocket for delivery to the International Space Station (ISS).

Hydra-1 is a plant synthetic biology experiment that brings together personnel at ISU, the Universities of California, Berkeley and Utah, CNRS-Strasbourg and the NASA Ames Research Centre.



Credit: ISU, Hydra-1 Integration Team – Yadvender Dhillon MSS15 MSS16B & James Bevington MSS15

Hydra-1 features two main parts, a plant-growth chamber and a control unit. Seeds travel to space inside the plant-growth chamber. Once on orbit, Hydra-1 will be installed in the Space Applications Services (SAS) ICE-Cubes Facility (ICF) in the European Space Agency (ESA) Columbus module where it will join two other ISU Hydra payloads launched last June.

The seeds will be hydrated using a water supply in the payload. The effect of the water plus the illumination from LEDs causes the germination of the seeds and their growth into plants. One set of plants prepared by UC Berkeley and University of Utah researchers then will change color to indicate a specific protein is being produced. This is observed in real time by a camera in the payload. After flight, the plant DNA is sequenced, and the molecules made by the plants are examined to better understand plant metabolism.

Once it has arrived at the ISS, been installed by ESA astronauts and been activated by ICE-Cubes, the ISU team will test and commission it. Once commissioned, the seeds will be wetted and monitored for a minimum of 14 days growth period during which the plants will be imaged regularly. At the end of the growth period the experiment will be removed from the ICF facility and stowed ready for return with the SpaceX CRS-16 mission in January 2019.

After landing and recovery, the experiment will be returned to ISU in February. The remains of the plants will be removed and undergo DNA analysis by the team of CNRS researchers affiliated with the University of Strasbourg.

Prof. Chris Welch, ISU Hydra project coordinator, said:

“All of the project team are very pleased to launch Hydra-1 to the ISS with ICE-Cubes and are looking forward to the high-quality science that its innovative design and operations can provide. Hydra-1 has been designed not just for this mission but to have elements applicable to lunar surface operations. We hope that this will not be its only trip to space.”



Credit: ISU, Hydra-1 pre-integration

The **International Space University**, founded in 1987 in Massachusetts, US and now headquartered in Strasbourg, France, is the world's premier international space education institution. It is supported by major space agencies and aerospace organizations from around the world. The graduate level programs offered by ISU are dedicated to promoting international, interdisciplinary and intercultural cooperation in space activities. ISU offers the Master of Science in Space Studies program at its Central Campus in Strasbourg. Since the summer of 1988, ISU also conducts the highly acclaimed two-month Space Studies Program at different host institutions in locations spanning the globe and Southern Hemisphere Space Studies Program. ISU programs are delivered by over 100 ISU faculty members in concert with invited industry and agency experts from institutions around the world. Since its founding, 30 years ago, more than 4600 students from over 100 countries graduated from ISU. www.isunet.edu