SEDS-ÉEDS CANADA

Students for the Exploration and Development of Space
Étudiants pour l'Exploration et le Développement Spatial

Four teams selected for CAN-RGX 2025-26

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Students for the Exploration and Development of Space (SEDS-Canada) has selected the four teams among a pool of applications for the 2025-26 Canadian Reduced Gravity Experiment Design Challenge (CAN-RGX). The competition challenged post-secondary students attending Canadian universities and colleges to submit a proposal for a small scientific payload to be tested onboard the National Research Council of Canada's (NRC) Falcon 20 research aircraft, capable of simulating reduced gravity environments, similar to those found in the International Space Station.

Four students per team will get to fly onboard the aircraft as Mission Specialists to operate their experiments. Each flight will consist of 8-12 parabolic maneuvers to allow students to run their experiments and collect all the necessary data for subsequent analysis on the ground. The Falcon 20 is one of the world's best microgravity planes; it provides the closest environment to that of real zero gravity. Each parabola will provide up to 20 seconds of near zero-G. As the NRC's only research aircraft capable of parabolic flight, the Falcon 20 is capable of helping the next generation of researchers realize their future potential in the space sector. With support from the NRC and the Canadian Space Agency (CSA), CAN-RGX is the only competition of its kind in Canada.

The selected teams are:

- **Team CLOT-LESS.** This team from the University of British Columbia will study how well alteplase, a thrombolytic medication, dissolves blood clots under reduced gravity conditions. Their project will use a miniaturized fluidic system with real-time pressure and video monitoring to compare alteplase-mediated dissolution of clots with different compositions (fibrin-rich vs platelet-rich) and under different flow rates (venous vs arterial). Through this project, the team aspires to help guide safer medical protocols for astronauts.

  [Team media contact: Adrian Tabari, atabari@student.ubc.ca]

- **Waterloo Space Soldering Team (WSST).** This team from the University of Waterloo will develop and evaluate a novel Automated Component-Level Centrifuge Soldering Device. Their project aims to demonstrate functional, component level soldering under reduced gravity conditions and builds on a centrifuge soldering concept tested as part of CAN-RGX 7, which aimed to reduce porosity of solder joints in microgravity. This device will attach electronic components onto printed circuit boards under controlled centrifugal acceleration. Using this device, the team aims to produce the first demonstration of automated microgravity soldering of functional electronic components, contributing to in-space repair for deep-space mission readiness.

  [Team media contact: Mysha Hamid, mhamid@uwaterloo.ca]

- **Team CanaDune.** This team from the University of Waterloo will explore a seed- and sandworm-inspired barbed nozzle used to generate stable, directed powder streams in reduced gravity. Their project will use a standard filament printer with a detachable, barbed nozzle vibrated at specific frequencies to direct transport of small magnetic beads towards a build plate. A high-speed camera will be used to evaluate print quality and flow rate in simulated microgravity. Through this project, the team aims to help enable technologies like microgravity additive manufacturing and precision powder delivery.

  [Team media contact: Disha Tandon, d2tandon@uwaterloo.ca]

- **Team Cristar.** This team from the University of Toronto aims to investigate laser-induced crystallization under both microgravity and hypergravity conditions. Their project will use a compact laser cavitation system to generate crystals under different gravity environments. The team will then compare the size, structure and purity of the resulting lysozyme crystals to determine how gravity influences morphology and structural characteristics. This work aims to reduce the cost of microgravity-grown crystals by leveraging short-duration suborbital flights.

  [Team media contact: Alexander Wainwright, Alexander.Wainwright@mail.utoronto.ca]

The four teams must now complete the Preliminary Design Review, which they will present to a panel of judges expert in microgravity sciences from CAN-RGX's collaborating agencies, including the NRC and the CSA. After finalizing their designs, the teams will build their experiments in order to submit the next milestone, the Critical Design Review. Finally, the team will demonstrate the functionality of their experiment for the Flight Readiness Review before they are cleared to fly onboard the NRC's Falcon 20.

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