



UNITED NATIONS
Office for Outer Space Affairs



HyperGES 3rd round Announcement of Opportunity Webinar



26 June 2023
10:30 & 16:30 CEST



Access to Space for All

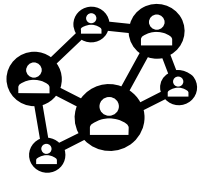
Welcome! Before we begin...



1) **USE THE chat box to ask questions** and do not raise your hand



2) Please **ANSWER OUR QUESTIONNAIRE** that we will put in the chat box later on



3) Please use the hashtag **#AccSpace4All #HyperGES** and follow, like, and share **@UNOOSA** to help us promote this event!





Access to Space for All

Hypergravity/Microgravity Track

HyperGES



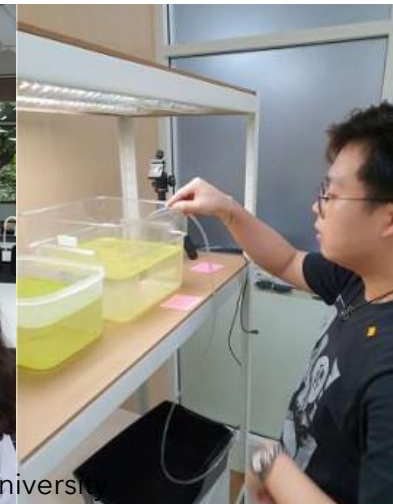
- Partner: European Space Agency (ESA)
- Established: 2019
- Aims to provide educational or research institutions with opportunities to conduct a series of **hypergravity experiments** at the Large Diameter Centrifuge (LDC) facility at the European Space Research and Technology Centre (ESTEC) in the Netherlands.
- The LDC allows samples to be exposed to acceleration forces of 1-20 times Earth's gravity. The experiment series consists of 1-2 weeks for on-site experiment integration/preparation and actual experiment campaign.
- The first round awardee from Thailand will test the effect of hypergravity on watermeal, as a **possible food source for space exploration**. The second round awardees from Macao that will analyse the medical and biotechnological potential of fungi for future space exploration and from Bolivia will examine the break-up of human red blood cells to get a better understanding of anaemia in space



©ESA



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Access to Space for All

Hypergravity/Microgravity Track



Learn from the Past Awardees!

Access to Space for All Awardees

Through the various programmes under the initiative, UNOOSA has awarded opportunities to 30 awardees from all regions. The awardees conduct various activities, not only for the development of science and technology, but also outreach, education, and other impactful actions. Learn more about the teams and their space/related activities.



UNITED NATIONS Office for Outer Space Affairs

About Us | Our Work | Space4SDGs | Information for... | Events | Space Object Register

Our Work > Access to Space for All

ACCESS TO SPACE FOR ALL
A joint initiative to offer access to space research facilities, infrastructure and information to promote international cooperation and the peaceful use of outer space.

For Member States | Partnerships | **Awardees** | Contribution to the SDGs | Brochure

Hypergravity/Microgravity Track | Satellite Development Track | Space Exploration Track

Workshops and Expert Meetings

Access to Space for All Latest Information

EVENT Access to Space for All will hold a hybrid side event at the 66th session of COPUOS on 31 May 2023, [read more](#) (26 May 2023)

EVENT KiboCUBE will hold a hybrid side event at the 66th session of COPUOS on 2 June 2023, [read more](#) (26 May 2023)

EVENT 1st Access to Space for All Expert Meeting has been held on 15-17 May 2023 online, [read more](#) (17 May 2023)

NEWS UNOOSA and ESA announced the 2nd round HyperGES awardees on 8 May, [watch here](#) (8 May 2023)



ACCESS TO SPACE FOR ALL AWARDEE PAGE

Our awardees

Access to Space for All Awardees News

- Hypergravity/Microgravity track awardees
- Satellite development track awardees
- Space exploration track awardees

HYPERGRAVITY/MICROGRAVITY TRACK AWARDEES

- ▶ Bartolomeo Awardees
- ▶ China Space Station Awardees
- ▶ Dream Chaser Awardees
- ▶ DropTES Awardees
- ▶ HyperGES Awardees

SATELLITE DEVELOPMENT TRACK AWARDEES

Our Current Partners

SPACE AGENCIES



RESEARCH INSTITUTIONS AND UNIVERSITIES



PRIVATE SECTOR



Partnership is a distinctive feature of the Initiative. The Access to Space for All Initiative is only possible thanks to partnerships with various public and private actors, who are contributing to the initiative in various manners. **New contributions to the Initiative are possible and encouraged.** Contact us at [unoosa-access-to-space \(at\) un \(dot\) org](mailto:unoosa-access-to-space@un.org).

[read more](#)





Access to Space for All

Education Component



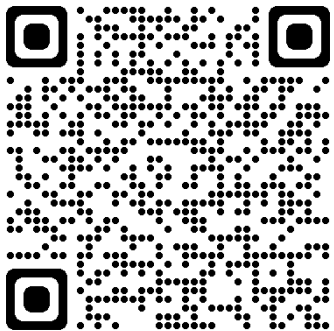
Conducting R&D in Hypergravity/Microgravity Webinar Series

9 webinars with 45 speakers from 40 entities in 13 nations

Covered technical and fundamental knowledge on:

- Benefits of conducting R&D in Hypergravity/Microgravity environment
- What type of R&D can be done (with examples from life science, physical science, and technology demonstration)
- Existing available platforms, opportunities, and networks

https://www.unoosa.org/oosa/en/ourwork/access2space4all/HMT_rack_Webinars.html#Tag6



| No. | Contents |
|-----|--|
| 1 | Introduction to Hypergravity/Microgravity |
| 2 | Life Science Part 1: Biology |
| 3 | Life Science Part 2: Physiology |
| 4 | Life Science Part 3: Pharmacology |
| 5 | Physical Science Part 1: Material Science |
| 6 | Physical Science Part 2: Fluid Dynamics |
| 7 | Technology Demonstration |
| 8 | UNOOSA Hypergravity/Microgravity Track Opportunities |
| 9 | Regional Hypergravity/Microgravity Activities |

Space Biology and Altered Gravity

Why study biological effects of microgravity?

- All life on earth have evolved in the Earth's gravitational field. We have little knowledge of what happens to organisms in the apparent absence of this force.
 - Studies in microgravity will tell us how biological systems acclimate and adapt to this new environment
 - Studies in microgravity will also reveal how gravity has driven evolution and continues to influence biological process on Earth.

Why study biological effects of hypergravity?

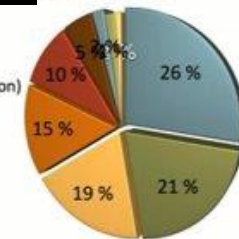
- During space flight, living systems are not only exposed to microgravity, but also experience around 3 g during launch and 3+ g more landing.
- Chronic hypergravity models can be used complement and predict microgravity-associated changes (i.e., the shift from 2 g to 1 g may recapitulate aspects of the shift from 1 g or microgravity.

Gravity has (mainly) impact on:

- Weight
- Hydrostatic Pressure
- Convection
- Buoyancy
- Sedimentation

NB: Spaceflight holds more variables: e.g. isolation, radiation, (pressure, gas composition), stress, training, ...

- Combustion
 - Fundamental Physics
 - Fluid Dynamics
 - Astrophysics (Planet Formation)
 - Materials Sciences
 - Biology
 - Hardware Tests
 - Student Programs
 - Chemistry
- › fundamental research
› technology development (mission preparations)



Any questions?

Contact us

 [**unoosa-access-to-space@un.org**](mailto:unoosa-access-to-space@un.org)

**Help us help
#AccSpace4All**



**For more stats and information,
check out the brochure!**

