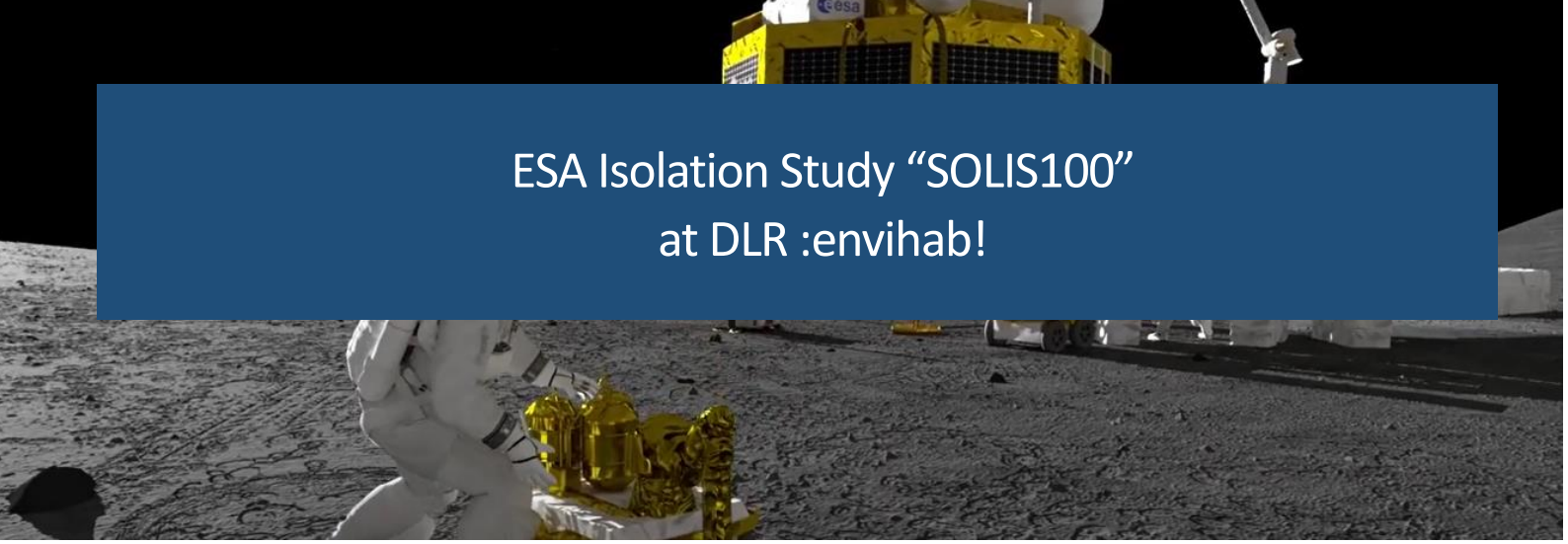

ESA Isolation Study “SOLIS100” at DLR :envihab!

The futuristic and state-of-the art :envihab research facility of the Institute of Aerospace Medicine at DLR, Cologne, Germany, where the SOLIS100 study will be performed. Images: DLR

Sleep boxes inside isolation facility. Images: DLR

SOLIS100: A Study on the Effects of 100 days of Isolation and Confinement on Human Health, Performance, and Well-Being; led by the European Space Agency (ESA) and organised and implemented by the German Aerospace Center (DLR) in Cologne, Germany.

As human space exploration moves beyond low Earth orbit, preparing astronauts for the psychological and physiological challenges of long-duration missions is more critical than ever. Missions to the Moon and Mars will demand resilience, autonomy, and the ability to thrive in isolated and confined environments. To ensure mission success, we must expand our understanding of how these extreme conditions impact human health, behaviour, and performance.

The European Space Agency (ESA) and the German Aerospace Center (DLR) are launching SOLIS100, a pioneering isolation and confinement study designed to advance human spaceflight research. This study will take place at the DLR aerospace research facility :envihab in Cologne, Germany, in the first half of 2026. We are inviting you to be part of the first international crew in this ground-breaking ESA-led isolation program.

Isolation studies have a long history as an analogue for long-duration space missions and are fundamental to investigate the effects of confinement and isolation on human health, behaviour, and performance. However, the currently available data base is still small and lacks methodological consistency to enable definite risks assessment and derive risk prevention and mitigation strategies. The upcoming ESA-led isolation and confinement study at DLR is aimed at assessing the risks related to space missions with prolonged isolation and confinement and autonomy, to broaden our understanding of the level and type of medical, nutritional, and psychological support future deep-space travellers will need.

Six carefully selected participants will live for 100 days in a confined, resource-limited environment, simulating the conditions of a deep-space mission. Their daily routine will mirror that of astronauts, involving teamwork, scientific research, and operational challenges. This study will provide crucial data on medical, nutritional, and psychological support needed for long-duration spaceflight.

To ensure meaningful and high-quality results, we seek exceptional individuals who meet the following criteria:

Core Requirements

- Age: 25–55 years
- Health: Physically fit individuals who pass a comprehensive medical screening
- Body Composition: BMI: 18.5 to 30 kg/m²
- Language Skills: Proficient in English (minimum B2 level) for communication and research tasks

Medical & Psychological Readiness

- Medical Screening: anamnesis, analysis of laboratory parameter, ECG. Medical screening will be conducted by your family doctor/the physician of your choice.
- Psychological Resilience: Candidates will undergo psychological assessment to confirm their suitability for a confinement mission. Psychological assessment will be conducted at DLR Hamburg, Germany.
- Nutritional Status: A nutritional assessment is required before selection.
- Insurance & PCC: Participants must demonstrate valid medical insurance and entry-free Police Clearance Certificate (aka Criminal Background Check, Certificate of Good Conduct)
- Consent: Participants have to sign an informed consent form.

Physical Fitness Requirements

- Physical Readiness: Regular training is an essential part of the study.

Education & Professional Background

- Bachelor's degree required (Master's or equivalent preferred, but relevant experience may substitute)
- Preferred expertise: Medicine, software engineering, technology, or other relevant fields
- Teaching experience is a plus

Time Requirement & Schedule

The study will comprise 126 days, incorporating four phases:

- Team Building Training 2 days
- Baseline Data Collection Phase 14 days
- Isolation Phase 100 days
- Recovery Phase 7 days

- Additionally, two follow-up sessions are planned after 30 days and after three to six months.
- Study start is currently scheduled for April 7, 2026. End of study will be on August 7, 2026.

Location

The study will be conducted in the :envihab research facility at the DLR Institute of Aerospace Medicine in Cologne, Germany

Expense allowance

For full participation in the entire study the expense allowance is 23.000 €.

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