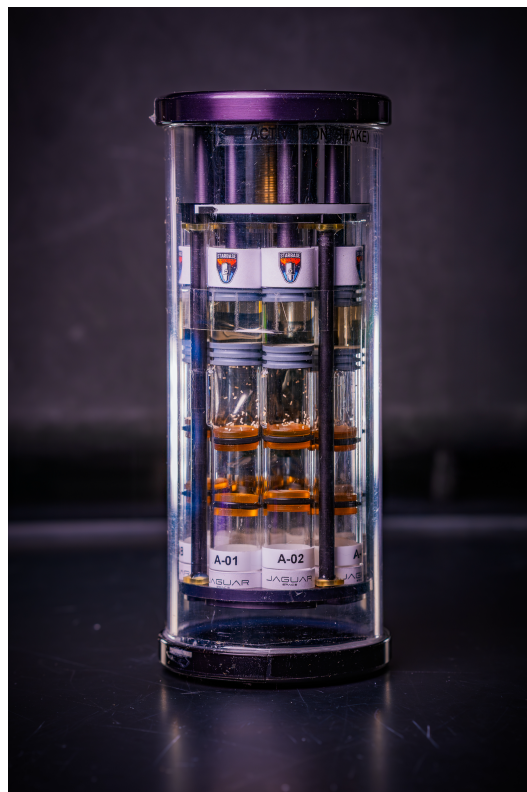




Starbase Brewing and Jaguar Space Launch Microbrew-1 Experiment to Study Fermentation in Microgravity.

“Astroyeast” to ferment wort in space for biomanufacturing basic & applied research.



Spaceflight hardware fully integrated and ready for launch. Wort and yeast will be sent to the ISS, where they will be mixed by an astronaut, for first-of-a-kind fermentation study. Image Credit: Jaguar Space/Ivan Castro Guatemala.

EMBARGOED UNTIL 9:00 AM EDT, JULY 30, 2025

Cape Canaveral, FL, USA – July 30, 2025 — Jaguar Space, the bioastronautics consulting and access-to-space firm, today announces that together with Starbase Brewing, it is launching the Microbrew-1 payload to the International Space Station aboard NASA's Crew-11 mission on July 31, 2025. The Falcon 9 rocket will lift off from Kennedy Space Center, with docking at the ISS expected in early August.

The Microbrew-1 experiment represents a pioneering investigation into fermentation processes in microgravity, mixing wort with yeast in space to study the physiological and metabolic processes critical for long-duration space missions. **This groundbreaking research addresses essential bioprocessing needs for future space exploration, including food and drink production, life support systems, biomanufacturing, and agricultural applications.**

The experiment utilizes eight Fluid Processing Apparatuses (FPAs) housed within a Group Activation Pack (GAP) developed by BioServe Space Technologies. Each FPA contains pre-loaded wort, the sugary liquid extracted from malted grains, and yeast, in separate chambers. Upon arrival at the International Space Station, an astronaut will activate the fermentation process by inserting a crank into the GAP and mixing the wort and the yeast. **This action initiates the fermentation experiment in microgravity, leading to the production of the first beer ever fermented in space and generating the product needed for the scientific analyses of this study.** While previous yeast fermentation studies have taken place on ISS, this is the first time that wort is used, integral for the production of food and beverages.

Key research objectives include examining how microgravity and cosmic radiation influence yeast activity and fermentation processes. The experiment will specifically observe the behavior of top-fermenting yeast in microgravity, a process that on Earth involves yeast rising to the surface. Researchers aim to understand how the absence of sedimentation, buoyancy, and convective flows affects yeast metabolism, fermentation kinetics, and overall bioprocess efficiency.

Fermentation represents a critical process for ensuring the safety and sustainability of long-duration space missions, supporting multiple essential systems required for human space exploration. **By exploring how fermentation differs in space, this study aims to reduce risks associated with fermentation-based processes for future missions to Mars and beyond.**

Following the fermentation period aboard the ISS, the payload will return to Earth for comprehensive analysis. The University of Texas Rio Grande Valley will conduct scanning electron microscopy and transmission electron microscopy to study cellular morphological changes in the yeast, while the Technical University of Munich will perform detailed chemical and sensory analysis of the fermented samples, including characterizing key fermentation constituents like esters and phenols.

Mission: NASA Crew-11 (Expedition 73/74)

Currently scheduled launch date/time: 12:09 p.m. EDT, July 31, 2025

Project Partnership

The Microbrew-1 experiment represents a unique collaboration between commercial brewing innovation and spaceflight research expertise:

Starbase Brewing, with CEO Nate Argroves, provides the brewing expertise and long-term vision for the project. The selection of wort and yeast was undertaken by Starbase Brewing with advice from Jaguar Space.

Jaguar Space provides access to space, spaceflight design and implementation support, pre-launch laboratory testing, coordinating with NASA, SpaceX, and BioServe to enable the experiment's execution aboard the International Space Station, with Dr. Luis Zea leading these efforts.



MicroBrew-1 Payload Patch.

About Starbase Brewing

Starbase Brewing is a Texas-based craft beer company aiming to be the first brewery on Mars. The goals of Starbase are to brew delicious beer, promote science and sustainability, and develop new brewing technologies optimized for humanity's future in space. Starbase's operations are powered by renewable energy and the company donates 1% of profits to science education. Starbase beers are distributed across Texas and in Cape Canaveral and has plans to expand distribution nationwide over the next few years. To learn more, visit: <https://mars.beer>

About Jaguar Space

Jaguar Space is a bioastronautics and access-to-space firm, helping customers turn space into a competitive advantage. With deep expertise in spaceflight research, international collaboration, and commercial strategy, Jaguar Space supports clients across government, academia, and industry in navigating and thriving within the global space economy. More at: <https://jaguarspace.net/>

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