

Duckweed Labs Is Teaching AI How to Grow Protein in Space

A NASA L'SPACE backed team has designed a compact, AI-enabled farming system aims to support astronaut nutrition on long- duration missions and beyond.

MIAMI, FL, UNITED STATES, April 2, 2026 /EINPresswire.com/ -- [Duckweed Labs](#), a multidisciplinary research and engineering team supported by a [NASA L'SPACE](#) seed fund, is developing a compact, self-sustaining farming system designed to grow fresh, high-protein food directly aboard spacecraft. The system, called the Duckweed Protein Supplement Dispenser (DPSD), is built to cultivate duckweed in microgravity, offering astronauts a reliable, renewable source of nutrition during long-duration space missions.

As human spaceflight pushes farther from Earth, maintaining crew health becomes increasingly dependent on onboard food production. Current space diets rely heavily on pre-packaged meals and resupply missions, which are costly, limited in variety, and can degrade nutritionally over time. Duckweed Labs' approach focuses on growing food where it is consumed; fresh, nutrient-dense, and with minimal crew involvement.

"Duckweed Labs' mission is to make plant growth more efficient and sustainable in harsh environments. We hope to bring astronauts and communities on Earth the nutrients they need at the touch of a button." - Thomas Liu, Principal Investigator.

Duckweed was selected for its unique biological advantages. The aquatic plant grows rapidly, can double its biomass in as little as 24 to 72 hours, requires relatively few resources, and contains



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up to 50 percent protein by dry mass. It is also rich in essential amino acids, omega-3 fatty acids, and antioxidants, nutrients critical for maintaining muscle mass, immune function, and overall health in space.

The DPSD is designed as a compact, automated growth and harvesting system optimized for spacecraft constraints such as volume, power, and crew time. Duckweed Labs is engineering methods to cultivate *Wolffia globosa*, one of the smallest flowering plants on Earth, in microgravity, while leveraging artificial intelligence to monitor growth conditions, manage nutrient delivery, and automate harvesting in real time. The goal is a low-maintenance system that integrates seamlessly into daily life aboard a spacecraft.

Supported by early funding through two grants from the NASA's L'SPACE program, the team has completed its initial prototype design and is currently manufacturing hardware, with flight testing planned as the next major milestone. The work aligns with broader efforts to enable sustainable human presence on the Moon, Mars, and beyond. While space is the primary focus, the team sees clear terrestrial applications as well.

Scalable, autonomous food systems like the DPSD could support communities on Earth facing food insecurity, limited agricultural resources, or climate-related disruptions. Duckweed Labs is a volunteer-driven collective of engineers, scientists, designers, and creatives, united by a shared interest in sustainable life-support systems for space Exploration.

About Duckweed Labs

Duckweed Labs is a multidisciplinary research team supported by a NASA L'SPACE seed fund, developing intelligent, compact farming systems for spaceflight. Its flagship technology, the Duckweed Protein Supplement Dispenser (DPSD), focuses on growing high-protein duckweed in microgravity to support astronaut nutrition on long-duration missions. Through bioregenerative design and automation, Duckweed Labs aims to help build a more sustainable future both off-planet and on it.

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