

OneCell

Turning CO₂ into nutritious protein

In a nutshell

Imagine a world where CO₂ is not a problem to be managed, but a resource to be transformed—directly into nutritious protein, with no need for fertile land, abundant water, or stable climate conditions. Imagine food production that no longer drives deforestation, pesticide pollution, and biodiversity loss, but instead allows landscapes to be reforested and ecosystems to regenerate. Imagine every nation being able to secure its own food supply, regardless of climate and geography. As we move toward a planet of 10 billion people, this is not just an aspiration—it's becoming a necessity.

By using renewable energy to convert CO₂ into an organic molecule through electrocatalysis, and feeding this to specialized fast growing microorganisms, OneCell aims to create high-quality protein-rich biomass. These so-called Single-Cell-Protein have a nutritional profile comparable to—or exceeding—traditional animal protein. The process is circular, ultra-efficient, and free from ethical concerns. This is food production reimagined: sustainable, resilient, and accessible anywhere.

Why is our technology important?

Our current food production system fuels green house gas emissions, destroys ecosystems, and consumes considerable water. As the population grows, it is approaching its very limits.

OneCell's technology not only breaks the historic dependence of protein production on land, water, and climate—it turns CO₂ itself into a valuable resource. By transforming CO₂ into nutritious microbial protein using renewable energy, we create a resilient and circular food-production platform that can operate anywhere—even where traditional agriculture struggles.

While other companies are developing Single-Cell-Protein following various approaches, our two-step system — converting CO₂ into an organic molecule with a CO₂ electrolyzer and then use it as a feed for microorganisms— represents the most energy-efficient pathway and avoids the safety risks associated with H₂-based systems.

The result is a circular system that strengthens food security, supports ecosystem restoration, and offers a viable way to feed a growing global population sustainably, without compromising the planet.

The benefits of our solution

- Circular carbon use: Converts CO₂ into valuable biomass, cutting emissions while producing nutrition.
- Decoupled from agriculture: Protein production no longer depends on fertile land, favorable climate, or large water resources.
- Minimal land & water use: Requires only a fraction of the land and water used in conventional agriculture and livestock production.
- No fertilizer or pesticide runoff: Eliminates nutrient pollution and chemical contamination of soils and waterways.
- High-quality protein: Produces a nutrient-rich profile comparable to or surpassing traditional animal protein.
- Safe and Energy-efficient pathway: Our approach avoids the handling and risks associated with explosive H₂ gas, increasing operational safety and scalability. The potential of the electrocatalytic process is higher in terms of energy efficiency than the other SCP approaches.
- Localized, resilient supply: Enables stable food and feed production anywhere, reducing reliance on long supply chains and strengthening food security.
- Ethics and sustainability aligned: No animal use, no ecosystem degradation, no ethical compromises—fully compatible with a regenerative future

Keywords

CO₂ utilization, Single-Cell-Protein, Electrocatalysis, Microbiology, Food Security, Circular Economy

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