

Transforming bad carbon dioxide into good oils – COLIPI does this with biology, innovative technologies and a great team from Hamburg

Since 2021, COLIPI's founding partners are dedicated to develop a scalable oil production where yeast and bacterial cultures upcycle industrial carbon side streams. This is a promising value proposition, especially with regard to CO₂ utilization, as bacteria can be fed with CO₂ and the extracted oil that mimics vegetable oils like palm oil can be used as feedstock for biofuel production or raw material for consumer products like cosmetics, detergents and others. Its carbon-footprint is lower compared to any other oil. But one first must make the arduous journey from the university laboratory to the free market.



Philipp Arbter and Jan de Witt explain the carbon utilisation process to visitors.

Today, raw materials for the food industry cause up to 80% of the corporate CO₂ – a challenging fact, as they should be net zero by latest 2050.

Building an international Research and Development Network

Along the way, COLIPI has shown several times, how to transform obstacles into milestones; and there are plenty, as the product development requires not only stable funding for customized bioprocess hardware but also a great deal of specialized knowledge in genetic engineering and extensive oil processing resources.

EEN with its Hamburg based host-organization TUTECH accompanied the start-up in some of their steps during the early phase:

To further improve the oil downstreaming process, the company was looking for contacts to universities or contract research organizations with relevant expertise, pilot plants and downstream equipment. The French Innovative ALLIANCE for the Eco-responsible Valorization of Biomass, bringing together the forces of PIVERT, ITERG and IMPROVE, has the common mission to guide companies towards the ecological transition and the adoption of biorefinery practices, embodying the factory of the future.



Nisha Agrawal and Angèle Rolling work in the genetic engineering lab.

COLIPI selected the ALLIANCE with its extensive expertise as ideal R&D partner to improve oil downstream processing and scale fermentation.

Presenting the aspired cooperation project as tech validation case within a pitch for EIT Food Accelerator Network led to an award of 30.000€ that COLIPI now spends on contract research with ALLIANCE partners. This includes characterization of oils incl. vitamins and proteins, applying oils and proteins in trial food and cosmetic products and scaling of fermentation.

Max, what are you planning for the next 12 months?

We just set up our brand new laboratory at TEMPOWERK. From here, we will scale fermentation to the cubic meter (1000s liters) scale.

We will determine the final downstreaming process at this scale (e.g. separation of biomass from water, cell disruption and extraction of oil).

And finally, we will push the commercialization of the first oils in the cosmetics world.

Are you looking for specific business partners?

We are actively seeking partnerships with Research and Contract Manufacturing Organizations to scale up our yeast fermentation process. Additionally, we aim to test more downstream unit operations, including biomass and water separation methods such as centrifugation, filtration, and drying, as well as cell lysis techniques.

We are also in search of industrial side streams rich in sugars and other carbon molecules to feed our yeasts.

For our bacteria, we are continuously looking for CO₂-containing off-gases to satisfy their carbon demand.

Maximilian Webers, Co-Founder, CEO