

Lab-grown food on the rise

CELLULAR AGRICULTURE Whether it's cultured meat, milk or fish – cellular agriculture activities are gaining momentum and many investors are attracted. In October, industrial biotech experts will meet at the EFIB conference in Vienna to discuss recent trends. Meanwhile, several SMEs launched a new lobby initiative in Brussels.

There is a sense of optimism and dynamic development ongoing, that nurtures a next wave of innovation in the food sector which is more than ever based on biotechnology know-how. Not a day goes by without someone stating to have started a new cooperation, investment or joint venture in the cultured food area to further push the field or stepping in. In Mid-September, for instance Givaudan, Bühler and Migros Industrie have joined forces to accelerate the development and market penetration of new cell-based meat products. To help grow start-ups in the field, the three industry titans have formed a new entity – The Cultured Food Innovation Hub – located in The Valley in Kemptthal outside of Zurich and just close by Nestlé's R&D accelerator for dairy products and plant-based dairy alternatives.

Boom of upscaling facilities

According to Givaudan, Bühler and Migros, the new centre will provide facilities and knowledge to help other companies scale their slaughter-free meat and catchless seafood, as well as develop new capacities in precision fermentation. "Cellular agriculture offers a solution in several areas from reducing land use and water, to animal welfare, to the safety and quality of the food chain," remarks Ian Roberts, CTO at Bühler. "The Cultured Food Innovation Hub will be equipped with a product development lab as well as cell culture and fermentation capabilities to help start-ups develop and commercialize their products. "Bühler contributes with solutions that are used in the scale-up and production of thousands of food products around the

world," says Fabio Campanile, Givaudan's global head of science and technology, Taste & Wellbeing.

"Givaudan brings in centuries of experience and knowledge in every aspect of taste, including all kinds of meat alternatives, and deep expertise in biotechnology, to product development; and Migros is known for its competence in customer interaction and market cultivation."

And the three companies are not alone: Other manufacturing companies are increasingly active in the field.



DR THOMAS HERGET
Head of the Silicon Valley
Innovation Hub of Merck, USA

? How to do you perceive the current cultured meat activities in regards to the technologies and approaches used?

! *The egg of Columbus has not yet been found. Everyone has to find out what the best technological and economic path is. Ultimately, we have to massively reduce production costs in the long-term to achieve competitive prices. It will be key to share know-how with start-ups and academics.*

"Everyone has to find out what the best technological and economic path is. Ultimately, we have to massively reduce production costs in the long-term to achieve competitive prices", says Thomas Herget, Head of the Silicon Valley Innovation Hub of Merck in USA, and China. "It will be key to share know-how with start-ups and academics.", he further admits. Not only for this reason, German Merck is a founding partner of the Cultivated Meat Model Consortium which aims at using computation methods to reduce the timeline for rolling out of cultivated meat manufacturing. Only recently, the company also entered a strategic cooperation in the field of bioreactor research and BioPrinting with Tufts University, USA, and Technical University of Darmstadt, Germany. The primary focus of the collaboration will be the development of next-generation, scalable bioreactor designs that can support meat and seafood manufacture on a commercial scale. "As a leading supplier to the biopharmaceutical industry, we aim to accelerate the emerging cell-based meat industry and become a technology enabler, from R&D to the safe and efficient scale-up of production. "Both approaches are quite early and we are not expecting ready-to-go products after the three years, but relevant patents," Herget explains. Furthermore, the company is focusing on new cell culture media strategies, tested with half a dozen start-ups. "We are particularly looking for cheap cell growth factors because this currently is one of the largest cost factors."

That start-ups are important partners in this game will be highlighted during this year's "European Forum for Industrial Biotechnology and Bioeconomy" (EFIB)



The Cultured Food Innovation Hub initiated by industry titans Bühler, Givaudan and Migros will be based in The Valley in Kemptthal, Switzerland, and go live in 2022.

taking place from 6-7 October in Vienna, Austria. Almost half of the founders represented in the Start-up Village are providing new solutions in the food manufacturing area and industry partner DSM together with the innovation campus PlanetB.io expect to engage with innovators to explore further new processes.

To which extent both sides – industry and start-ups – are relying on each others expertise was also demonstrated by the announcement of DSM in September to join forces with Netherlands food start-up Meatable. The two companies are not only looking into more affordable growth media, but are also committed to enhancing the taste and texture of cultivated meat products to more closely duplicate traditionally produced meat to appeal to more consumers. “Joining forces with DSM will accelerate our R&D trajectory significantly,” said Krijn de Nood, chief executive officer of Meatable, who co-founded the company in 2018 with Daan Luining and Mark Kotter PhD, using its proprietary opti-ox technology. “Together, we aim to develop the right nutritional ingredients in a fundamentally more cost-effective and scalable process, to become the leading consumer choice for cultivated meat.” It’s not the first time the two companies have collaborated, as Royal DSM’s venture capital branch, DSM Venturing, was part of the consortium that provided Meatable with a US\$47m-capital injection in April this year. One of the

largest ever Series A-financings of a precision fermentation company in Europe was raised by Berlin-based Formo that has received US\$50m financing in September. The round was led by EQT Ventures, with Elevat3 Capital and Lowercarbon Capital as co-leads and also saw participation from Lionheart Ventures, Happiness Capital, and Albert Wenger. Additionally, existing investors Agronomics, CPT Capital, Good Seed Ventures, Grazia Equity, and M Ventures participated. The start-up will use the cash injection to construct its pilot plant, fast-track its commercial-scale production, and grow the molecular biology and food science team. With the resulting increase in R&D capacity, Formo plans to expand its product portfolio to represent a wide variety of European dairy specialties such as mozzarella and ricotta, with techniques designed in collaboration with artisan cheesemakers.

New fund to focus on Europe

A completely new fund was established in September as well. Former Metro CEO Olaf Koch launched Zintinus, a new Berlin-based fund targeting a volume of €150m until spring 2022 with focus on investments in Europe. “What is missing in Europe are the appropriate capital structures, and we want to make a contribution here,” said Koch. The first closing in August raised €50m, with the support of family offices and private in-

dividuals. Well-known partners such as David Brown, formerly CEO of the US accelerator TechStars, form the Zintinus investment team. About 3,000 potential companies from Europe are in the database of the fund, it is said. “We are currently talking to a few dozen,” Koch says.

On a smaller but more global scale, the Berlin-based impact investor The New Meat Company AG (TNMC) also wants to benefit from the wave of innovation in the sector by actively searching for attractive investment candidates in the food process and production area. The listed platform company emerged from UpT-each AG after a reorientation in 2020 and, the new CEO Caroline Heil, is now driving the change. TNMC has already acquired a 10% stake in the German company Plantify of Meat. Now, there are plans to build a portfolio of four company divisions: developer of alternative proteins from plant-based or cultured meat; Food tech companies using blockchain technologies to optimize production and supply chains; Manufacturers of innovative machines and processes for food production as well as companies that optimize existing processes of conventional animal production with a view to sustainability. The search for suitable candidates is ongoing internationally. “Of course, we take a look at what Germany and Europe have to offer. At the same time, the USA and China are currently so interesting that we are definitely pursuing a global approach,” says Heil.

Meanwhile, in Brussels the new association ‘Cellular Agriculture Europe’ has been launched in September, bringing together 13 start-ups, among them larger ones such as Aleph Farms, Mosa Meat, Formo and Meatable or smaller teams such as Mirai Foods or Ivy Farm Technologies. “Our industry will play a critical role in helping to feed a growing Europe in a sustainable way. We look forward to engaging with policymakers and regulators about the benefits of cellular agriculture,” says Tim van de Rijdt, CBO at Mosa Meat, pointing towards the major bottleneck for current upscaling in Europe: the right regular environment.

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