

The novel food sector has gotten a boost in The Netherlands. Tasting has grown much easier, helping start-ups get customer feedback early on – a seemingly simple but important step.





# Steak hollandaise 2.0

**PRECISION FERMENTATION** As plant-based alternatives to meat take off, novel foods are no longer looking so novel – even when it comes to those that come only indirectly from animals. Many start-ups are pursuing the lab-based development of milk, meat or fish. What’s missing is the customer experience. The Netherlands is now seizing a position at the centre of the novel food movement in Europe by allowing early tasting events.

Food is no longer just food. It may come from traditional agriculture, which now includes products from land that’s extensively or intensively farmed with the digital help of drones to optimise pesticide use. But the term ‘food’ also covers products farmed according to dynamic-organic regulations that explicitly exclude chemistry, or ones that follow traditional methods, like planting and harvesting during certain phases of the moon. Not even to mention genetically modified crops. But much of the ‘food’ we buy from the supermarket may soon no longer require farmland at all. It can be blended by cultivation devices into a product that outwardly resembles the original fruit, vegetable, meat, fish or milk.

Sounds disgusting, inhuman or unnatural? Well, it’s already happening. It would just be a further step down a road that many foods in our industrialised world have taken. We often mix different ingredients and some natural raw materials to create products that taste like what is pictured on the packet. Just look at the ingredients list on the ice cream you buy in your favourite shop. Do you recognise them, or know what they are for?

The new movement of novel foods originating in the lab is actually in most cases aimed at giving consumers more insight, and talking openly about the processes of cultivation or fermentation. But the landscape is also hard to parse. On the one hand, there’s a lot of investor interest in cultured meat, precision fermentation and cow-less milk or cheese. On

the other, the sector is cooling down because the gulf between product and consumer is still pretty deep and wide. At least that’s true in Europe, where regulation of novel food approvals coordinated by European Food Safety Authority (EFSA) is very slow, to say the least. Consumer experiences of cultivated meat were first celebrated in London (2013), and have since also happened in Singapore. The cost of that complex first gen-

eration burger made of diced cellular matrices was a whopping €330,000.

The field has come a long way since those early days. Professor Mark Post from the University of Maastricht in the Netherlands cultured that first burger from muscle stem cells in fetal calf serum, so the method didn’t meet slaughter-free expectations from the start. But Post and his team at Mosa Meat have since learned to use other ingredients for cultivation, and now guarantee results where no animal was harmed.

So far, only California-based Good Meat (formerly known as Eat Just) has managed to have a cultured meat product approved for public sale. Regulators in Singapore – until recently the only country in the world to allow the sale of such products – greenlighted their cultured chicken in December 2020. “Cultured meat is real meat, but you don’t have to slaughter an animal,” said Josh Tetrick, CEO of Good Meat, in a BBC interview.

Now his home country is following suit. At the end of last June, the US Department of Agriculture gave a first-ever approval for cell-cultured meat produced by two companies: Good Meat and Upside Foods. Both grow small amounts of chicken cells into slaughter-free slabs. It was the final regulatory thumbs-up the California-based companies needed to sell and serve their products in the United States. The approval came less than a year after the US Food and Drug Administration (FDA) declared the companies’ products safe to eat, and is a major mile-



**MAARTEN BOSCH**  
CEO Mosa Meat

? Your comment about the new legislation in The Netherlands?

! We thank all 127 members of the Tweede Kamer who voted in favour of finding a way to make food from laboratories possible. Mosa Meat will use these controlled tastings to gather feedback, but also to educate stakeholders on the role that cellular agriculture can play in Europe to meet food sovereignty and sustainability goals.

stone for the burgeoning cultured meat industry.

But that doesn't mean cultivated steaks will be hitting supermarket shelves tomorrow. For now, both companies have just been given the go-ahead to sell chicken-only products to a select handful of restaurants. Marketing cell-cultured beef, pork or seafood will require further approvals.

### Dutch put the (meat)ball in play

The Netherlands is now building on the early successes of Mark Post and his team, and has taken up the baton from the US approval. In July, the announcement came that it will soon be possible to taste cultivated meat and seafood in the Netherlands. The Dutch government – in collaboration with producers Meatable and Mosa Meat, alongside industry representative Hollandbio – has successfully developed a 'code of practice' to allow tastings in controlled environments. The normal novel food approval process does not allow for pre-tasting. This proviso is what drives start-ups to countries and locations, like Singapore, where there is more openness to food innovation.

The historic decision makes the Netherlands the first country in the EU to allow pre-approval tastings of foods derived directly from animal cells prior to novel food approval in the bloc. It follows the government's 'National Growth Fund', which has committed €60m to build a robust cellular agriculture ecosystem to make the Netherlands a global hub for the emerging technology.

### Code of practice

The organisation set up to implement the National Growth Fund plan, Cellular Agriculture Netherlands, will be responsible for implementing the code of practice. It includes hiring a panel of experts to evaluate requests from companies to conduct tastings of cultured meat and seafood.

The code of practice was created following an intervention by the Dutch



Production plant for cellular chicken meat at Good Meat

House of Representatives in 2022. A motion sponsored by MPs Tjeerd de Groot (D66) and Peter Valstar (VVD) called on the government to enter into consultations with Dutch cellular farming producers to allow for pre-approval tastings under controlled and safe conditions. Companies welcomed the move. Krijn de Nood, CEO of Meatable, commented on the new framework: "This is great news for the Netherlands. We know that cultured meat can make a significant contribution to reducing climate change. By making it possible to taste cultured meat, the Netherlands continues to lead the way in Europe and beyond. For Meatable, this means that we can give consumers the opportunity to taste and experience our products, and use their feedback to make our products even better. Our goal is to make tasty cultured meat, indistinguishable from conventional meat, available to everyone, without harming people, animals or our planet."

Maarten Bosch, CEO of Mosa Meat, added: "We thank all 127 members of the Tweede Kamer who voted in favour of finding a way to make this possible, and Minister Kuipers, Minister Adema and their teams for their professionalism and cooperation in making this happen. Mosa Meat will use these controlled tastings to gather invaluable feedback on our products and to educate key stakeholders on the role that cellular ag-

riculture can play in helping Europe to achieve its food sovereignty and sustainability goals."

### Persuading parliament

The motion was supported by 14 of the 17 voting political parties, including the VVD, BBB, CDA, D66, Christen Unie, PvdA, GroenLinks and others. But it has been a long road to the new legislation, as Timen van Haaster from the Dutch biotech industry association Hollandbio told EUROPEAN BIOTECHNOLOGY. "It took years, starting with MPs Tjeerd de Groot (D66) and Peter Valstar (VVD) raising the issue in the Dutch parliament," said van Haaster. In the end, almost two years ago, they tabled a motion calling on the Dutch government to make room for tasting cultured meat in a safe and responsible way before applying for a Novel Food procedure.

Meatable and Mosa Meat are members of Hollandbio, but the cellular farming sector remains small. Because of the long history and the new global dynamics in the field, these few companies and the industry organisation felt they had to start putting cultured meat on the Dutch political agenda. That created more urgency to implement policies that would stimulate development in the field in the Netherlands. Without it, start-ups might have started looking abroad for friendlier policies. After the motion was passed by a

fairly wide margin in the Dutch parliament, the country's Ministries of Agriculture and Health – in cooperation with Meatable, Mosa Meat, Hollandbio and a regulatory expert – started working on a protocol to enable tastings. This process resulted in a 'code of practice' to which companies will adhere. It includes a procedure for assessing the application by independent experts in a committee that will be part of the Cellular Agriculture Netherlands Foundation.

### A blueprint for the EU?

The tasting of cultured meat and fish will be considered a pilot project that will run for a year, and will be evaluated throughout. The pilot project could then be extended for another year. The decision could then also be taken to make it common practice, or to abolish it if there are unresolvable issues.

A committee of several independent experts within the Cellular Agriculture Netherlands Foundation is expected to be set up in September. Once this committee is up and running, applications can be submitted, and the committee will have one month to respond. This means that the Dutch government's original expectation that a first tasting could take place before the end of 2023 is still on track. For the year of the pilot tastings, around 10-12 tast-

ings are planned, with up to 30 people attending. "The tasting is not a commercial launch; it's really about tasting and getting customer feedback early on. We think it will be quite an event, the first tastings of their kind in Europe," says van Haaster. He believes the impact of the events will go beyond the people in the room where the product is offered. "It's no longer Singapore or the US. Now we have such an event in Europe. It will stimulate the industry," he adds.

Allowing tastings and gathering data and insights could prove to be a first useful step for companies in the sector, to gain final EFSA Novel Foods approval.

### Interest ramps up

Hollandbio has received a lot of enthusiastic feedback from companies in the cultured meat and fish industry, including – and perhaps especially – from outside the Netherlands. Many start-ups want to know about the process framework, and how it might also work for them. For example, whether they would have to have an R&D site in the Netherlands before being allowed to apply for a tasting proposal (yes). So far, only the cellular meat and seafood sector is included in the code of practice for tastings, but the demand from other sectors is inevitable. "Start-ups, scale-ups and es-



Picture: © Meatable

Pork sausages made by Meatable, which is based in Delft in The Netherlands

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**Mark Post presents the first cultured hamburger made from animal muscle stem cells back in 2013.**

established companies from other areas of biotechnology have also asked how this could be done for fermentation, for example," says van Haaster. Biotech organisations from other countries have also started talking about the new legislation and how to get their own politicians to act. In light of the progress made in the Netherlands, the German biotech organisation BIO Deutschland has now called for significant improvements in the framework conditions for the development, produc-

tion, testing and approval of these novel foods in the EU and Germany, and has published a position paper on the subject.

However, this does not change the fact that the framework for the approval of novel foods in the EU is still more lengthy and uncertain than in places like Singapore, the US, but also possibly Switzerland or the UK. Hollandbio is actively working to raise Dutch government and stakeholder awareness of these necessary improvements, which will contribute

not only to a thriving biotech sector, but more importantly to healthier and more sustainable food production.

### **An example for Europe**

A pan-European organisation in the novel food industry, Food Fermentation Europe (FFE) is using the new regulation as an opportunity to step up calls for improved framework conditions. The new industry alliance represents companies like Better Dairy, Formo, Imagindairy, Onego Bio, Standing Ovation, Those Vegan Cowboys, and others. FFE spokesman Christian Poppe told EUROPEAN BIOTECHNOLOGY that the organisation welcomes the Netherlands initiative with open arms. "This is also a demand that we make of German politics," he said.

"Food Fermentation Europe (FFE) enthusiastically supports the Dutch initiative, which allows innovators in the cultivated meat sector to conduct pre-market tastings of their novel products. This not only provides consumers with an invaluable opportunity to engage with these products but also proves crucial as these companies approach the brink of commercialisation. FFE strongly encourages other European Union (EU) member states to follow the Dutch example by establishing comparable regulatory frameworks," FFE spokesman Poppe concluded.

After all, it is the customer who in the long run decides. And the earlier in the process that feedback can be fed back, the better.

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