Everything a journalist needs to know about cultivated meat and ingredients

A short handbook of key facts, statistics and resources.

Image credit: Aleph Farms

What is cultivated meat?

Cultivated meat aims to deliver chicken, pork, beef and seafood that is indistinguishable from the meat we eat today. It's made from animal meat and fat cells, which are cultivated in fermentors (like those used for brewing beer) and mixed with plant ingredients to develop familiar meat products. It's already available in the United States and Singapore, and European governments are investing in its development – but **how is it made, and why do we need it?**

Quick facts:

Singapore was the first country to approve the sale of cultivated meat to consumers in December 2020.

Since then, the United States and Australia have also granted approval.

In July 2023, the **first regulatory application in Europe** was made to Swiss regulators by Aleph Farms, shortly followed by an application in the UK.

In July 2024, French startup Gourmey submitted the **first application to sell cultivated meat in the EU**. Dutch startup Mosa Meat has also applied to sell cultivated beef fat as an ingredient.

The **Dutch Government invested €60 million in 2022** to help establish an ecosystem for cultivated meat and precision fermentation.

The **UK's £12 million cultivated meat** and precision fermentation research hub is one of the world's largest publicly funded alternative protein research centres.

In November 2023, the **German Government announced €38 million of investment** for sustainable protein, including cultivated meat.

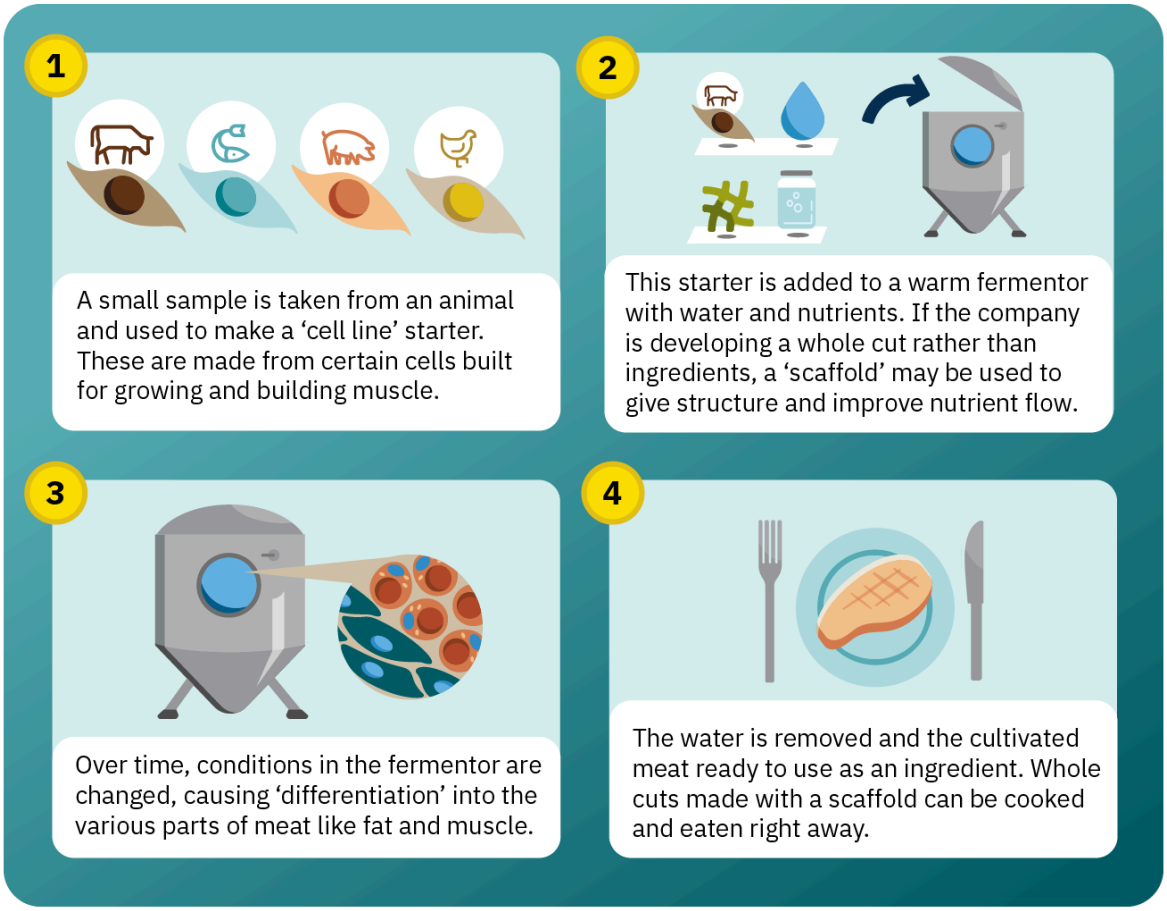
01 How is it made?

In one sentence:

Cultivated meat aims to deliver chicken, pork, beef and seafood that is indistinguishable from the meat we eat today using fermentors (like those used for brewing beer) instead of by farming animals.

In a little more detail:

Cultivating meat is similar to growing plants from cuttings in a greenhouse, which provides the warmth, fertile soil, water and nutrients the cutting needs to grow. This process develops ground meat or animal fat, which can be mixed with plant-based ingredients to make final products that are indistinguishable from conventionally produced meat.

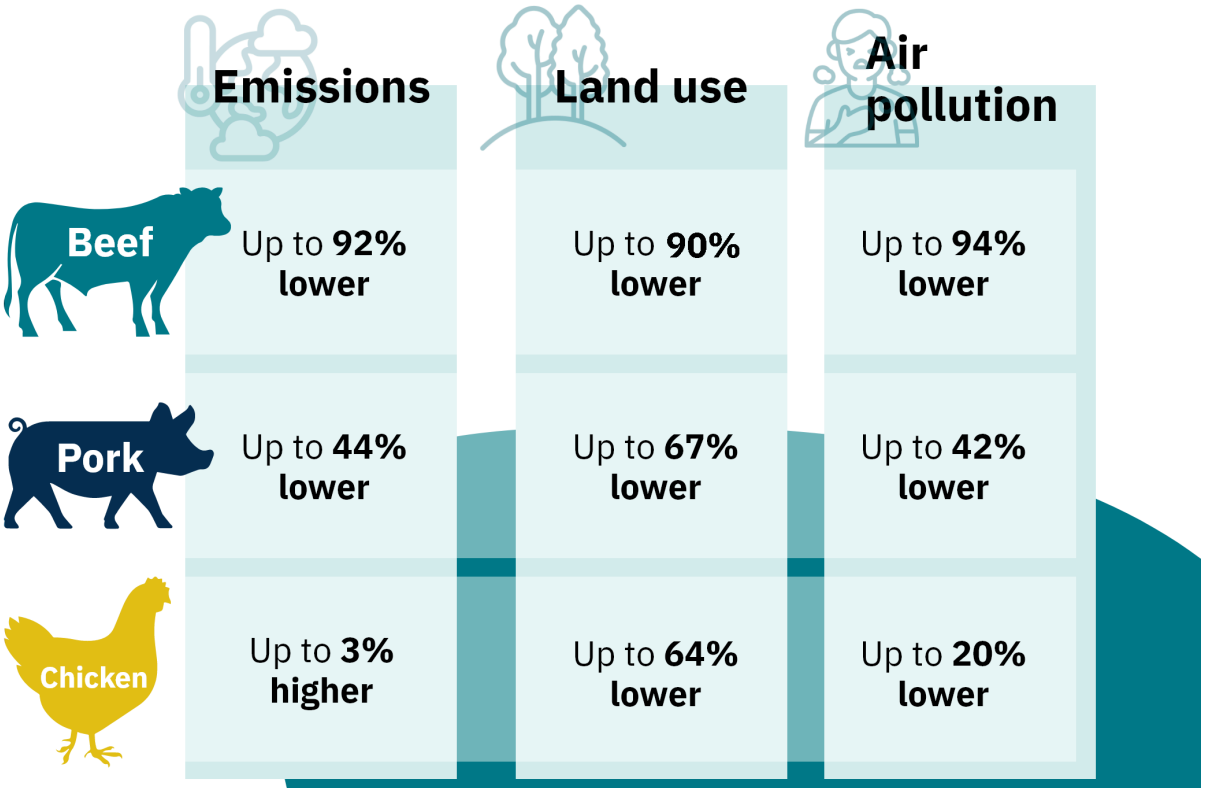


02 Why cultivate meat?

Environmental benefits

We have yet to see large-scale production of cultivated meat, so current analyses can only estimate the environmental impacts. However, most studies indicate that cultivated meat could reduce land use and climate impacts, assuming renewable energy is used in production.

A life cycle analysis (LCA) published in the International Journal of Lifecycle Assessment and based on the latest data from cultivated meat companies found that it could have a significantly lower environmental impact than conventionally produced meat across several important metrics.



Source: Sinke, P. et al. Int J Life Cycle Assess 28, 234–254 (2023). Figures compared to optimistic projections of conventional animal agriculture emissions by 2030. Assumes all systems use renewable energy sources.

Food security

Enhancing food security is a priority across Europe, as war, climate shocks and supply chain vulnerabilities drive inflation and food shortages. And yet, Europe feeds over 45% of the crops it grows to animals, and imports over 25 million tonnes of soy for animal feed each year.

The above study found cultivated meat could be up to 5.8 times more efficient at converting feed into meat – so it could help to reduce Europe's reliance on imported soy, feeding more people with fewer resources. It also suggests cultivated meat could require up to 90% less land than conventional beef, which means it could help enable 21% of European domestic farmland to be used to boost domestic food production.

Europe is the world's largest importer of seafood. Cultivated seafood can help to meet this demand locally – even in landlocked countries.

Green growth

Protein diversification can drive green growth and create highly skilled jobs. Europe is well-placed to reap these economic benefits. With the right support and investment, research suggests the cultivated meat sector could add up to €85 billion annually to the EU economy by 2050, and create up to 90,000 jobs.

Public health benefits

Making meat with a better nutritional profile. Cultivated ingredients offer the opportunity to improve the nutritional profile of conventional meat. The Spanish government has funded research aiming to develop cultivated meat that is healthier than conventional meat to reduce the rates of pressing health issues in Spain associated with red and processed meat consumption, such as high cholesterol and colon cancer.

Making meat without antibiotics. All animals get sick, particularly those raised in intensive conditions, so many farm animals are routinely given antibiotics either as a treatment or as a preventative measure if a disease begins circulating. Because of this more antibiotics are consumed by farm animals than by people in Europe, driving the growing antimicrobial resistance crisis – which causes an estimated 133,000 deaths per year in Europe. Cultivated meat can be made without antibiotics, and could help to protect and preserve these lifesaving medicines while still delivering the foods we love.

Making meat without driving pandemic risk. In Europe, 90% of chickens and 75% of pigs are intensively farmed, creating hotspots for ongoing animal pandemics such as African Swine

Fever and Bird Flu. These diseases pose a major risk to public health if they are able to jump into humans. Cultivated ingredients circumvent this problem entirely.

Making meat free of foodborne illness. Cultivated ingredients are made in environments free of disease-causing bacteria such as campylobacter and salmonella, reducing the risk of food poisoning and cross-contamination, which affect hundreds of thousands of Europeans per year.

Nature and sustainable farming

European leaders have set ambitious targets for expanding organic farming and restoring natural habitats to ensure food production works hand in hand with nature – but we can't make space for this without changing how we produce meat.

Research suggests that diversifying protein production, including by investing in cultivated meat, could enable 21% of European domestic farmland to transition to agroecological farming, or be used to boost domestic food production or restore natural habitats.

Animal agriculture is the biggest driver of deforestation, and global demand for meat is only increasing. Cultivated meat could use up to 90% less land, helping to satisfy demand while creating space for nature.

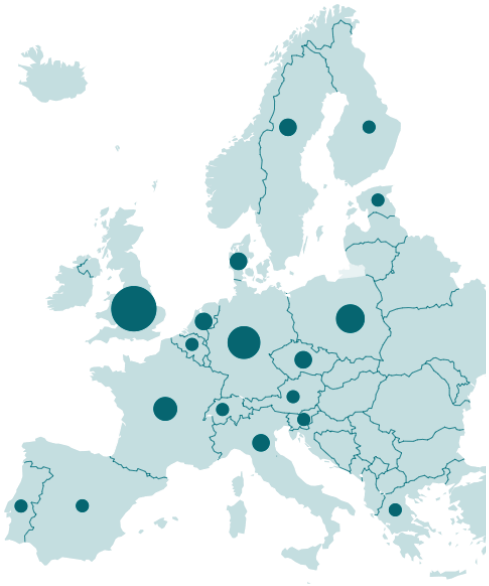
Animal welfare

Cultivated meat starts with a small cell sample from an animal, taken through a harmless procedure. These few cells can be multiplied over and over, producing huge quantities of meat or ingredients without harming animals.

Some companies have historically used a byproduct of cattle slaughter known as FBS to support cell cultivation, but this isn't viable for large-scale production of cultivated meat due to its high cost, inconsistent quality, and limited supply. The cultivated meat now available in Singapore is FBS-free, and many other cultivated meat companies have proven that they can run production without FBS.

03 Cultivated meat in Europe

The cultivated meat ecosystem in Europe is diverse and widespread, comprising **53 companies across 18 countries.**



Enabling cultivated meat to flourish in Europe

Europe is the birthplace of cultivated meat and has the potential to become a world leader in the field. However, as with renewable energy and electric cars, this sector can only deliver on its full potential with the right support.

We need public R&D funding.
Cultivated meat is still at an early stage. To make it affordable and accessible to everyone, and maximise the societal benefits, governments must invest in open-access research to accelerate the pace of progress.

We need a transparent path to approval.
European food safety regulations are the most robust in the world, and those standards must be upheld for cultivated meat and ingredients. But transparency and guidance from regulators can prevent unnecessary delays.

04 Frequently asked questions

When will cultivated meat be available in Europe?

The first cultivated products to become widely available in Europe are likely to be ingredients like cultivated fat, which can enhance the flavour of plant-based meat, or products containing small quantities of cultivated meat cells.

Since mid-2023, several companies have submitted applications to sell cultivated meat and ingredients in the EU, Switzerland and the UK. Regulators are now undertaking thorough and evidence-based assessments of the safety and nutritional value of cultivated meat, and the approval processes are expected to take at least 18 months, though in practice they can take several years.

Cultivated meat products have already been approved for sale in Singapore and the United States, so the fact that it has passed rigorous approval processes in those countries suggests it can play a role in a safe and sustainable future for Europe's food system. However, cultivated meat remains at an early stage in its development, and still requires significant investment from governments into research and infrastructure to support product development and scale-up before products with cultivated ingredients become widely available, and before 100% cultivated meat products become a reality.

Why call it "cultivated meat" rather than "lab-grown meat"?

GFI uses the term "cultivated meat" because it is grown in cultivators, which provide the warmth and nutrients cells need to become functional ingredients.

Many terms have been used to describe this food – from "slaughter-free meat" to "cultured meat" and "lab-grown meat". "Lab-grown meat" is an especially misleading term. At scale, cultivated ingredients are produced in cultivators, in a facility similar to a brewery. All sorts of food, from beer to bread, begins in a food lab – but we don't call cornflakes "lab-created cornflakes".

Will people eat cultivated meat?

Recent YouGov surveys of consumers in 15 countries suggest between 35% and 63% of Europeans are already interested in trying cultivated meat – even at this early stage, when only a small proportion of people know a lot about it.

People don't eat meat from industrial animal agriculture because of how it is produced – they eat meat in spite of how it is produced. And earlier research suggests a majority of consumers in France, Germany, Italy and Spain want to see alternatives to conventional animal agriculture developed.

Products made using cultivated ingredients are not yet available in Europe, so the industry has a long way to go before all those who are interested can try them. Even if just 10% of Europeans ultimately adopted cultivated meat, this would make a huge difference to the climate impact of our food system.

What are the biggest challenges for the cultivated meat sector?

To achieve its full potential, cultivated meat needs to match conventionally produced meat on taste, price and convenience – so researchers and companies are improving processes, scaling up production and bringing down costs.

Government investment in open-access research is crucial for overcoming the key technical barriers companies currently face, and accelerating progress by ensuring key breakthroughs can be exploited by the entire sector – not just the first companies to achieve them.

Priority challenges include reducing cell culture media costs, increasing cell line availability, improving scaffolding and building larger cultivators.

Italy has passed a ban on cultivated meat – what do you say to that?

This law shuts down the economic potential of this nascent field in Italy, holding back scientific progress and climate mitigation efforts, and limiting consumer choice. It prevents Italian scientists from undertaking crucial work, and Italian cultivated meat startups from existing at all. And it could prevent the 54% of Italians who already want to try cultivated meat from doing so.

Nobody wants to be told what they can and can't eat. If cultivated meat is approved by the EU, it should be up to consumers to decide whether or not they want to eat it.

Don't some researchers argue that cultivated meat isn't better for the environment?

Only one peer-reviewed study has so far been published based on data from actual cultivated meat production by companies. This found that cultivated meat using renewable energy could cut the climate impact by up to 92%, reduce air pollution by up to 94%, and use up to 90% less land compared with an ambitious scenario for conventional beef production. These benefits

could be greater still if this freed-up land could make space for rewilding, regenerative farming practices and carbon sequestration.

One study received a lot of attention for finding cultivated meat would not be better for the environment than beef, but this was based on a number of incorrect assumptions about how cultivated meat is produced, and its findings deviate significantly from other published research.

How will cultivated meat affect farmers?

Europe's farmers are facing a number of pressing problems, but research by the UK's Royal Agricultural University (RAU) suggests they don't think cultivated meat will be one of them anytime soon. Increasingly erratic weather, price pressures driven by growing competition from imports and the intensification of the meat sector are all far more of a threat to the livelihoods of family farms in Europe than cultivated meat.

Nevertheless, it is very important for cultivated meat researchers, startups and policymakers to work with farmers to help them seize the opportunities that cultivated ingredients could offer. While the RAU's research found that many farmers were understandably cautious about this emerging sector, they were also interested in potential collaboration, through both sourcing starter cells and producing the required inputs for cell culture medium. More research like this on how the two sectors can work together will be of growing importance as cultivated meat develops.

For more answers to frequently asked questions, check out our web page.

05 Resources

Interested in learning more or need resources to help communicate about cultivated meat and ingredients? Check out the resources below.

Illustrate your story

- **Library of free-to-use photos of real cultivated meat**
- **Toolkit of graphs and visualisations showing the key stats**

The sector

- **Latest GFI Cultivated Meat, Seafood and Ingredients State of the Industry report**
- **Private investment data**
- **Company database**
- **European consumer research**

The science

- **Guide to the science of cultivated meat**
- **Life cycle assessment of cultivated meat's environmental impacts**
- **How cultivated meat can help fight antibiotic resistance**

The policy

- **Latest GFI State of Global Policy report**
- **Key takeaways from the FAO's report on cultivated meat safety**

06 Contacts and experts

GFI Europe experts

The Good Food Institute Europe is an international NGO helping to build a more sustainable, secure and just food system by transforming meat production. We work with scientists, businesses and policymakers to advance plant-based foods, cultivated meat and fermentation – making these options delicious, affordable and accessible across Europe.

To speak to our experts, contact our communications team at europe-media@gfi.org or +44 (0)7521 490 839.

Science
Seren Kell, Head of Science and Technology

Business
Carlotte Lucas, Head of Industry

Regulation
Lea Seyfarth, Policy Manager

EU policy
Alex Holst, Deputy Head of Policy – EU

UK policy
Linus Pardoe, Senior Programme Manager, UK

Spanish policy
Carlos Campillos Martínez, Senior Regional Manager, Spain and Portugal

German policy
Ivo Rzegotta, DACH Lead