

Is there a place for cultivated meat on consumers' plates?

Exploring how novel proteins could empower people and improve the market of sustainable food choices



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Abstract

Ever-increasing emissions, and the undeniable impact of animal-based proteins for that matter, urge consumers to face the music: we need to cut back on our meat intake.

How?

Mainly by eating more vegetables. However obvious this may sound, the reality compels us to think that this alone might not do the job. It is a reality that reflects a poignant consumer dilemma: on the one hand people would like to reduce their meat consumption, on the other hand too many feel hindered by a lack of appealing, affordable, and appropriate alternatives.

So what more can be done to empower consumers to opt for sustainable food choices and improve the market so it can deliver on consumer-proof alternatives?

In the vast array of already existing alternatives like vegetables and vegetarian options, there is an interesting new kid in town that could complement consumers' choice: cultivated meat - meat produced by cultivating animal cells in a controlled environment. It is the most recent product developed in the category of novel proteins, a set of proteins from non-traditional sources intended to help consumers diversify their protein intake.

Driven by its mission to empower people to eat more sustainable by offering different attractive food options, Euroconsumers explores in this paper the potential opportunities - but also the challenges and risks that come along with it - offered by novel proteins in general, and cultivated meat in particular, for consumers, the environment and the European market.

Why focus on cultivated meat?

Because it is the most ambitious and challenging variant of novel proteins. Our aim is not to narrow it down, but on the contrary to approach it as a test case to demonstrate the up- and downsides, consumer attitudes and bottlenecks to diversifying our protein mix. At the same time, it exemplifies how technology can support the sustainable food transition and stands as a compelling case for Europe's competitiveness.

Based on in-depth consumer insights, our research outlines what conditions need to be met for consumers to consider cultivated meat on their plate. Next to the absolute requirement for it to be safe, it will explore reflections on taste, price, nutritional value and more.

At the same time, Euroconsumers is equally concerned to improve the market.

Making sure sustainable food options like i.e. novel proteins and cultivated meat are also available, attractive and affordable on our markets is just as critical. That's why this paper will also explore the critical conditions to capture and elevate the competitive potential offered by this innovative technology.



“Empower people, improve the market” for sustainable food

There is no doubt anymore. Stating consumers worry about climate change and care for sustainability would be kicking in an open door. It's equally clear that they want to do their part, including when it comes to food. Half of them indicate they have already acted upon it or are planning to.

That's great to hear. Because the inconvenient truth is that **food accounts for up to 30% of global greenhouse gas emissions and 70% of freshwater use.**¹ Even if we stopped burning fossil fuels tomorrow, emissions from food alone would take us up to 2°C global warming by the end of this century.²

This is not merely a fun fact. It shows that when talking sustainability, we cannot avoid speaking about food as well. And when talking our food footprint, we cannot longer dance around the impact of meat in all of this, as its environmental and health impact is particularly big.

So yes, when consumers say they are willing to change their food habits, that is good news. But good intentions alone won't do the job. At the same time consumers indicate some major barriers. Notably the cost and the availability of attractive sustainable alternatives are holding them back to shift to more sustainable diets.

Offering good and affordable alternatives is one of the essential preconditions for people to be empowered to make sustainable food choices. Next to plant-based and fermentation-based alternatives, also protein innovation is claiming its seat at the table. With cultivated meat - meat produced by cultivating animal cells in a controlled environment – as the newest kid in town.

In the vast array of already existing alternatives like eating more vegetables or more traditional vegetarian products, it represents an interesting new category of novel proteins that could complement consumers' choice.

However intriguing cultivated meat might sound, without consumers buy-in it will never fly.

So, what needs to be done for consumers to consider novel proteins, and more in particular cultivated meat, on their plate? What are the conditions for them to feel empowered to include it in their diet? And how can we improve the market of novel proteins like cultured meat and push it for the better? Let's explore!



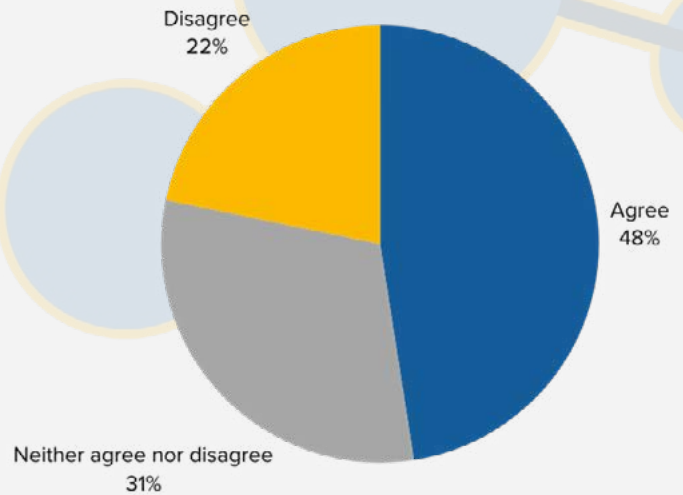
Setting the scene

1. Let's talk meat

Everyone needs proteins. To help maintain our muscles, our organs, and overall health. While a healthy diet requires a certain degree of protein intake, it is also true that protein production — especially from animal sources — has a particularly large ecological footprint.

Indeed, for consumers the most well-known and 'go to' kind of protein is meat. But it comes with an inconvenient truth: while our global food system in general is already responsible for up to **30% of global greenhouse gas emissions and 70% of freshwater use**³, there is a particularly poignant role reserved here for animal-based proteins. **Knowing that for example beef production generates 100 times more CO2 compared to plant-based proteins** like peas, it's clear we will need to talk about meat.⁴

In the next 10 years, eating less meat will become mainstream in (my country)



Can we match the need for a healthy diet with more respect for this planet's boundaries? Yes, it is possible.

Europeans on average eat up to twice the recommended levels of protein and could easily do with less.⁵ Next to that, the recommended way forward is to eat less meat and more plant-based proteins like vegetables and beans. European diets tend to be highly deficient in fibre anyhow, so substituting meat-based protein with plant-based ones would deliver a double health win.⁶

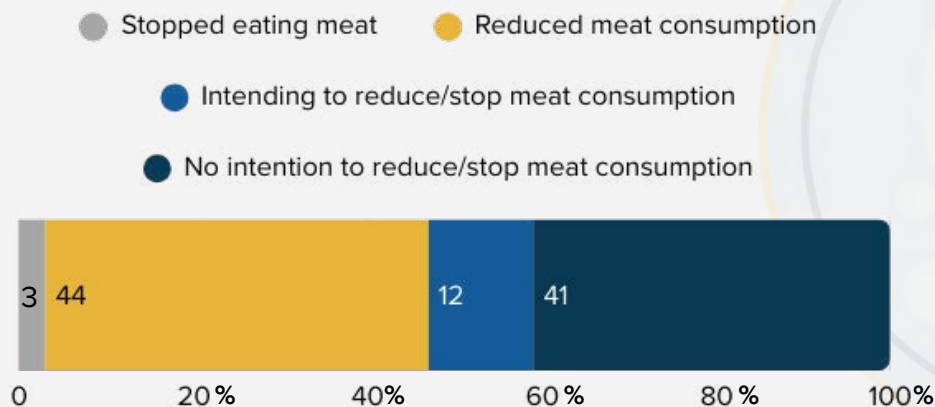
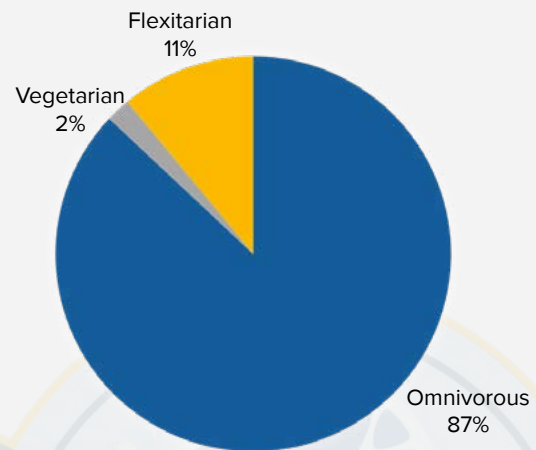
That's how it should be. The reality however is that meat consumption in Europe is going up.⁷ It is true that plant protein consumption is rising faster, still animals are expected to remain the dominant source of proteins for European consumers (60% of total consumption).⁸ If the entire world would follow the average European animal-protein based diet, it is estimated we would need 3,5 planets to be able to sustain our food system.



2. Meat and me

So where are consumers in Belgium, Italy, Spain and Portugal on this?

In a recent large-scaled Euroconsumer survey the majority labelled themselves omnivorous (87%), while one out of ten indicated to be a flexitarian (11%) and only 2% a vegetarian. **94% of respondents indicate they eat meat at least once per week.**



The good news is that almost half (44%) say to have already reduced their meat consumption or are intending to (12%). Equally half of them (47%) believe that in the next ten years eating less meat will become mainstream.

Next to that consumers also seem to have doubts about the impact they can create, believing their meat consumption is already modest so there is no need to do more, or they think that reducing their meat intake would not make any difference.

But also price and access play a role, stating that alternatives are just too expensive, or they cannot find them in their market. One in two respondents in Euroconsumers' survey would be willing to reduce their meat intake but deems the available meat alternatives too expensive and only 37% feels there are enough alternatives available to replace the meat in their diet.

While there does seem to be a level of awareness of the impact of meat production on the environment - 41% agree the impact is not minor – and six out of ten would like to have more clear information on the exact environmental impact of meat products (i.e. through labels), the numbers in Euroconsumers' survey equally show many consumers are still not acting upon it.

Which leaves us with the big question: what more can be done to empower people to choose more sustainable food options and create a dynamic and attractive market for meat alternatives?

Main barriers to meat reduction, for those who do not intend to reduce it



I love the taste of meat too much to eat less of it	43%	24%	44%	37%
Eating meat is a significant part of my culture and traditions	35%	34%	38%	32%
I'm not willing to change my eating habits	31%	28%	34%	35%
Meat is a better source of protein than plant-based alternatives	24%	28%	33%	38%
My meat consumption is modest, there is no need for me to reduce how much I eat of it	27%	29%	16%	23%
I don't believe reducing my meat consumption would make any difference	19%	12%	26%	27%
Protein alternatives are too expensive	12%	12%	18%	11%
I don't find good protein alternatives available in the market	9%	7%	13%	7%
I don't have enough information on alternative protein sources	7%	6%	5%	9%
I have tried to reduce my meat consumption before, but I found it too difficult	6%	5%	2%	7%
I don't know how to cook/prepare alternative proteins	4%	8%	3%	5%



3. Enter novel foods: mushrooms, microbes and man-made meat

The above unveils the difficult dilemma consumers face. On the one hand there is an interest to reduce meat consumption. On the other hand, too many feel hindered by a lack of appealing, affordable, and appropriate alternatives. For sure there is still a lot of scope to better promote the many benefits of eating more vegetables, yet looking at the feedback from respondents in Belgium, Italy, Spain and Portugal, that alone might not do the job.

Enter novel foods.

To increase the offer towards consumers of attractive and affordable meat alternatives and empower them to cut back on meat, novel foods come with some interesting opportunities. **Novel proteins are a set of proteins from non-traditional sources intended to help consumers diversify their protein intake.** They can be used to replace meat and fish, but also dairy or eggs. But they can also be enjoyed alongside traditional proteins as part of a varied diet. There are broadly three categories of novel proteins, namely: plant based, precision-fermented and cultivated meat:

- **Plant based products** such as soy burgers are probably the most well-known to consumers, but more innovations are on the horizon. Plants will increasingly be able to mimic the flavours that consumers know thanks to new production methods such as 3D printing and new ingredients like fungi-based fats that recreate animal fat texture and mouthfeel.
- **Precision fermentation** is another promising novel protein technology. It uses microbes to create products like dairy-free cheese or protein powder and is today already used to replace animal derived rennet in 70-90% of traditional cheeses.¹⁰ But manufacturers can also use precision fermentation techniques to develop new products that look and taste like meat but do not require animal cells.

“Precision... what?” The future food consumers have not heard of

Euroconsumers’ survey found that **73% of consumers in Belgium, Italy, Spain and Portugal had never heard of precision fermentation. Another 23% did hear of the technique but were not fully informed about it.**

Nonetheless, over 50% of respondents said they would be willing to give it a try but are mostly concerned with the nutritional make-up (42%), price (37%) and taste (36%) of it. While actually precision fermentation provides some of the most impressive promises in terms of taste, nutritional properties, and environmental benefits.¹¹ At the same time, it faces similar technical, investment and regulatory challenges as cultivated meat.

When talking novel foods there is also a third and interesting new kid in town: cultivated meat.

Cultivated meat is real meat grown from animal cells in controlled conditions without slaughtering animals. Probably the most technologically ambitious of all three novel food options, it will still require a lot of research and policy support to get to commercial scale, yet it offers some interesting opportunities to address the barriers indicated by consumers and complete the offer of meat alternatives towards them¹²

4. Why focus on cultivated meat?

All of these categories are currently experiencing rapid growth, and in the future, we will likely see an increasing amount of food products that are a combination of them (hybrids). Cultivated fat could for example make a soy burger tastier, while precision fermented protein could boost its amino acid profile. We have even already seen hybrids of plant-based and conventional minced meat, such as Lidl's hybrid minced meat launched in Dutch supermarkets in 2024.¹³

Euroconsumers' survey highlighted that overall consumers have very similar demands of a relatively unknown technology like precision fermentation as for the checklist of cultivated meat requirements. Many of the insights around cultivated protein can also be applied to innovations in precision fermented and plant-based proteins. However, the manufacturing process for cultivated meat is probably the most unconventional to traditional food production method, allowing for many misconceptions.

Exactly because cultivated proteins are the most ambitious and challenging variant, we will focus our further analysis on it. Not to narrow it down, but on the contrary to approach it as a test case to demonstrate the up- and downsides, consumer attitudes and bottlenecks to diversifying our protein mix. After all, these technologies are components of a holistic toolset and should not be seen as a binary decision for one or the other.



The Curious Case of Cultivated meat

1. What's in a name?

Put simply, cultivated meat, also known as cell-based meat, aims to be the closest we can get to real meat without slaughtering animals. **The process starts by taking a small sample of cells from a live animal. This is a very simple procedure, like taking some blood or skin cells.** These cells are then multiplied in a bioreactor: a device that creates ideal conditions for the cells to develop. As the cells multiply, they form tissues similar to those found in conventional meat.

Just like any other organism, the cells need food to grow. To support their growth, the cells are “fed” with a serum containing essential nutrients, growth factors, and proteins that mimic the conditions inside an animal’s body.¹⁴

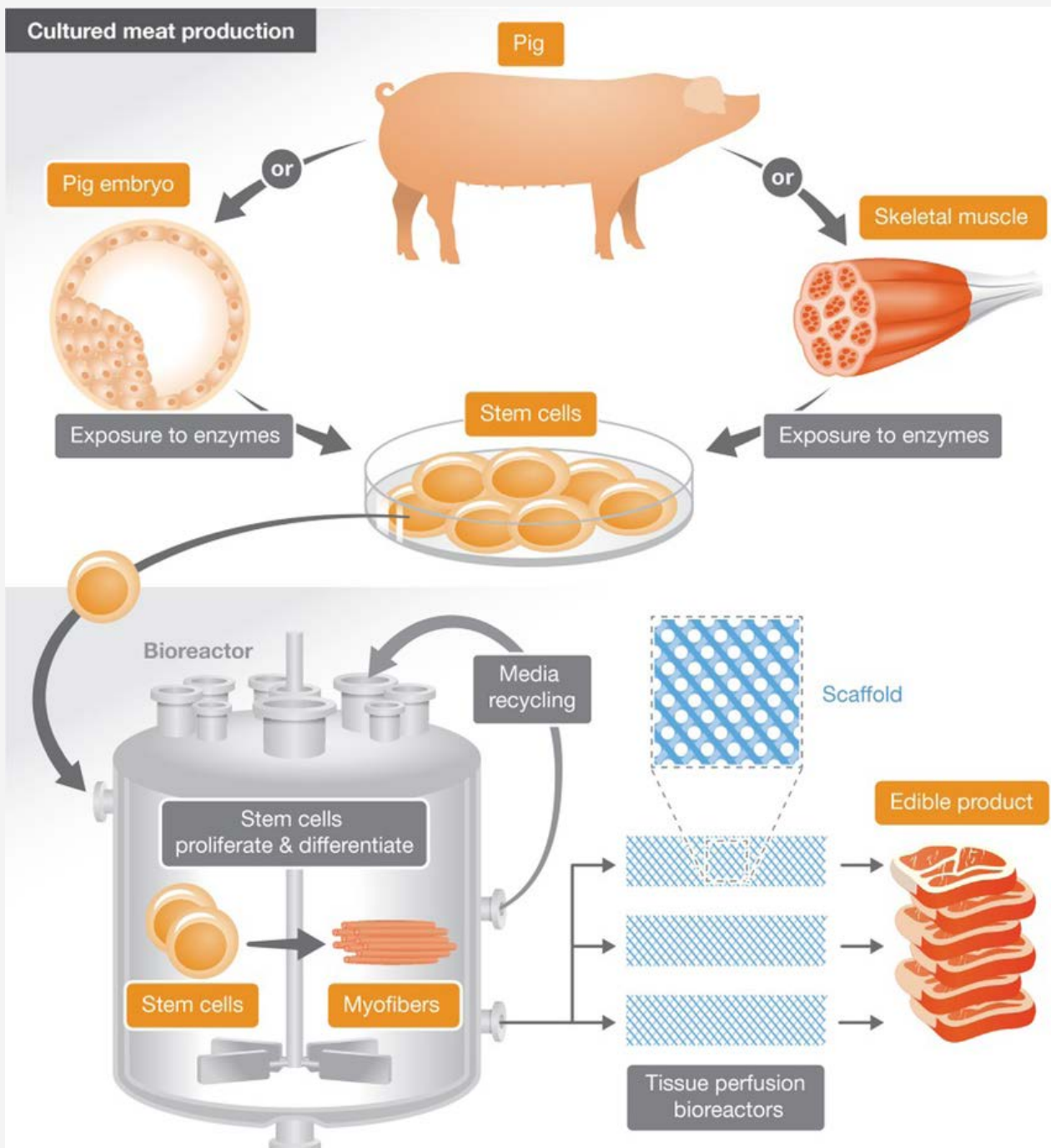


Image Source: Cultured Meat: Promises and Challenges - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/The-production-process-of-cultured-meat_fig1_350191516 [accessed 14 Apr 2025]

Looks like a duck, tastes like a duck, but... is it a duck?

Is cultivated meat identical to regular meat? Yes, and no. While on a biological level the tiny building blocks (the cells) are identical, those cells don't just float around on their own. Once they grow, they're placed onto a kind of edible "scaffold" or structure (usually made from plants like soy or algae) that helps give the meat its shape and texture, like a steak or a chicken breast.

The scaffold helps the meat look and feel like what you'd expect. So, while the cells are the same as those found in regular meat, the final product has some differences to regular meat. Producers could for example create a piece of "pork" meat that has higher levels of fibre and lower levels of fat than a regular piece of pork. Manufacturers could also create a different flavour profile by adjusting the amount and type of amino acids in the meat.¹⁵



2. The bigger picture: what cultivated meat has to offer

Ready to face environmental challenges

Since it is grown directly from cells rather than relying on raising animals, cultivated meat has the potential to significantly reduce the environmental impact of food production, while still offering "meaty" products. Just to give an idea: it takes approximately 25 kilograms of feed (e.g. grass, corn or soy given to cows) to produce just 1 kilogram of traditional beef, which comes with a vast resource consumption (including land, water, and energy) and contributes significantly to deforestation, greenhouse and methane gas emissions and waste.¹⁶



Cultivated meat, by contrast, bypasses the need to grow and sustain whole animals. Simply put, the production process only spends resources on growing the edible parts, resulting in a much lower environmental footprint¹⁷. Because cultivated meat also uses less land than traditional livestock agriculture, in theory it would be able to free up land for more circular agriculture or reforestation and unlock carbon capture.¹⁸

Does this mean cultivated meat is the miracle solution and doesn't come with any environmental challenges? No. Just like traditional meat, it generates waste and can use a significant amount of water.¹⁹ But all in all, the impact is still a lot lower and is expected to go down even more as the production process scales and optimises.²⁰

Impact compared

The table below shows the environmental impact of a piece of cultivated meat when compared with the traditional meat that it aims to replace. While most indicators show drastic reductions in environmental impact, traditional chicken meat (particularly from broiler chickens) is already fairly low in emissions. However, this does come at another cost, such as water pollution and animal welfare.²¹

Alternative protein	Comparison benchmark	Reduces GHG emissions by	Reduces land use by
Cultivated beef	Conventional beef (from non-dairy cattle)	-92%	-90%
Cultivated chicken	Conventional chicken	3%	-64%
Cultivated pork	Conventional pork	-44%	-67%

Overall, cultivated alternatives outperform traditional meat options on key environmental indicators like greenhouse gas emissions and land use.



In the public health interest

Another possible opportunity offered by cultivated meat is related to its impact on consumers' health. After all, our reliance on traditional meat comes with some important public health effects.

For example:

- **Food-borne illnesses:** slaughterhouses are major sources of infection, like i.e. *S. aureus* (38%).²² Cultivated meat is grown in a sterile environment and avoids slaughter and large-scale livestock rearing, meaning it would allow us to produce meat with a “theoretically non-existent” risk of infectious diseases, traces of veterinary drugs and other health hazards.²³
- **Antimicrobial resistance (AMR):** industrial meat production is good for 73% of all antibiotics used globally, creating drug-resistant harmful germs which in turns makes it harder to treat common infections.^{24 25} Cultivated meat offers a safer alternative, as its production only requires minimal antibiotics, primarily during early growth stages. As the technology develops, it may even be possible to phase out antibiotics use completely.²⁶
- **Zoonotic-based epidemics and pandemics:** More than 75% of new and emerging infectious diseases originate from animals.²⁷ Overcrowding, poor hygiene, and close human-animal contact increase the risk of zoonotic outbreaks such as COVID-19, avian flu, and swine flu. Cultivated meat bypasses these risks by eliminating live animal farming and slaughter, thereby providing a more secure food system.²⁸

Feeding Europe with a more resilient food system

Cultivated meat and other novel food do not merely offer a lot of food for thought; they can also fuel a much more resilient food system. The pandemic, the war in Ukraine, recent trade tariffs, and potentially more upcoming geopolitical and economic challenges: all of them underlined the need for Europe to build a more resilient food system.

1. The EU relies heavily on **imports for its protein supply**, particularly to feed our livestock.²⁹ This makes us vulnerable to external supply chain disruptions, as seen during COVID-19 and the war in Ukraine. If, next to reducing our animal protein intake, we could partially reduce our need for large-scaled imports of animal feed thanks to cultivated meat, this would already make us less reliant on foreign parties.
2. Add to that a **diet change scenario** including cultivated meat, and this could cut Europe's overseas land use to a third.
3. On top of that, production in controlled facilities makes cultivated meat **more resistant to climate disruptions** such as droughts, floods, and wildfires.³⁰ In short: good news for our food security.³¹



Animal welfare and circular agriculture

Cultivation avoids the rearing and slaughter of animals, something 25 % of consumers consider relevant to adopt cultivated meat in their diet. Animals will probably always remain part of our food system. Still, having fewer of them could make farming more sustainable and improve the conditions of the remaining ones.³²



Unlimited potential: applications beyond meat

The cultivation process is incredibly versatile and not limited to meat alone; it can be used to cultivate fish, caviar and even coffee.³³ This paper uses “meat” as shorthand, but fish and seafood are a particularly interesting opportunity for cultivation: Europeans are large consumers of fish and seafood, which are a great source of omega-3 fatty acids (EPA and DHA), and essential micronutrients like iodine, selenium, and vitamin D.

Much like meat, fish holds cultural significance in many European diets. However, European seas are highly over-fished.³⁴ Fish is also a huge driver of climate change as outdated fishing fleets are large emitters of greenhouse gasses. Destructive fishing practices, such as bottom trawling, not only disrupt marine ecosystems but also release significant amounts of carbon stored in the seabed, exacerbating climate change.³⁵ Next to pursuing more sustainable fishing practices, also cultured fish and seafood could offer some respite to our seas.

3. The known unknowns of cultivated meat

Even though cultivation shows promise, it is still a fairly new technology that has yet to be proven at scale. This comes with some outstanding questions.



What about nutritional value?

The nutritional value of cultivated meat is highly controllable by producers, but it should not be misused to cut nutritional corners. Poorly designed culture conditions could result in a product with inferior or unbalanced nutritional value. Key considerations include macronutrient content, fat type and proportion, and the presence of essential micronutrients such as iron, zinc, and vitamin B12—often naturally found in traditional meat but potentially lacking in cell-based products. Moreover, we need more research to understand how the body uses these nutrients, if they cause allergies and what are the consequences of long-term consumption in terms of nutrition and health.³⁶



What about energy usage?

Cultivated meat is an energy-intensive product.³⁷ Therefore, to reach its full potential it is crucial to ensure that cultivated meat makes use of renewable energy and the land freed up through livestock reductions is used for reforestation.



What about scaling costs?

So far, the decrease in price of cultivated meat has been impressive. The first burger made from cultivated meat cost USD\$325,000, producers have since slashed prices by more than 99%, to USD\$17 per pound.³⁸ Question is whether these cost reductions will persist at scale?³⁹ A recent report stated that if regulatory and political hurdles are overcome and the level of investment goes up, price and performance parity with meat is expected by 2035-45.⁴⁰ However, it is no secret that scaling will come with technical challenges and high costs that require large and risky up-front investments.



What about Health and Safety?

Some safety considerations would still benefit from further research. Many of these will be covered as part of the EFSA (European Food Safety Authority) approval process, but long-term effects can only be studied once the product is available to consumers.

What do we know about the safety of cultivated meat?

- **Known risks:** experts from the FAO and WHO have already assessed many of the risks associated with producing cultivated meat. Interestingly, most of these risks are not new: they have been handled before in cloning, animal breeding, fermentation, and regular food production. In most cases, existing safety rules can be used to manage them.⁴¹ Most of the allergies that are relevant to traditional meat will also apply to cultivated meat, and additional allergen risks could arise from components like textured soy that are absent in traditional meat.
- **Pre-market safety assessment by EFSA:** there are also some risks that are particular to cultivated meat, like trace materials from the growth medium, the growth of microbes during the cultivation process, or the risk of genetic stability of the cells themselves.⁴² Obviously, these will need to be rigorously studied and addressed before the product can enter the market.
- **Long-term consumption:** as with all novel foods, it is not possible to fully assess the effects of long-term consumption until the product is available on the market.⁴³ Just like we are still monitoring the effects of traditional meat, rigorous post-market surveillance is needed to detect health risks like slow-developing allergies or gut microbiome effects.^{44 45}

Cultivated meat on our plate? A consumer checklist

The environmental, societal, economic and geopolitical advantages of cultivated meat and other novel foods may be interesting, but will consumers buy it? Will it also fit their expectations and answer their call for attractive and affordable meat alternatives? And under what conditions? In short: what is needed for consumers to consider cultivated meat as a viable option in the array of sustainable alternatives and empower them to make more sustainable food choices.

For cultivated meat to take off, consumers will need to be on board.

They will need to trust it, support it, embrace it. And for that is absolutely crucial to hear their voices. So, what needs to be done for consumers to consider cultivated meat on their plate? A recent Euroconsumers study sheds some light on this question.⁴⁶

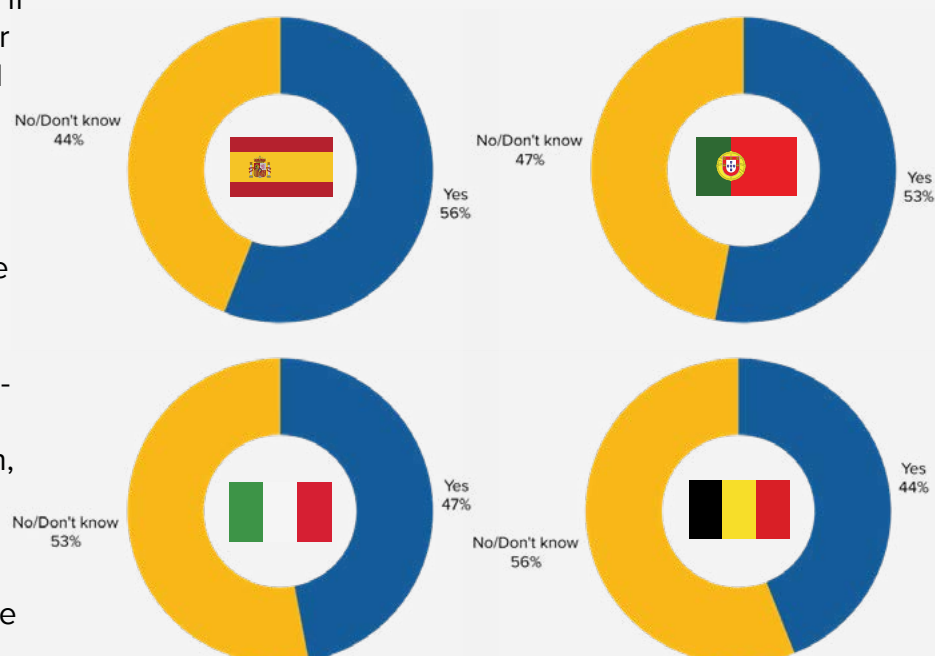
1. Ready to give it a try? Yes, but...

Half of respondents to Euroconsumers' survey would give cultivate meat a try if it were approved and available in their market, with Spain (56%) and Portugal (53%) ranking the highest, right after Italy (47%) and Belgium (44%).

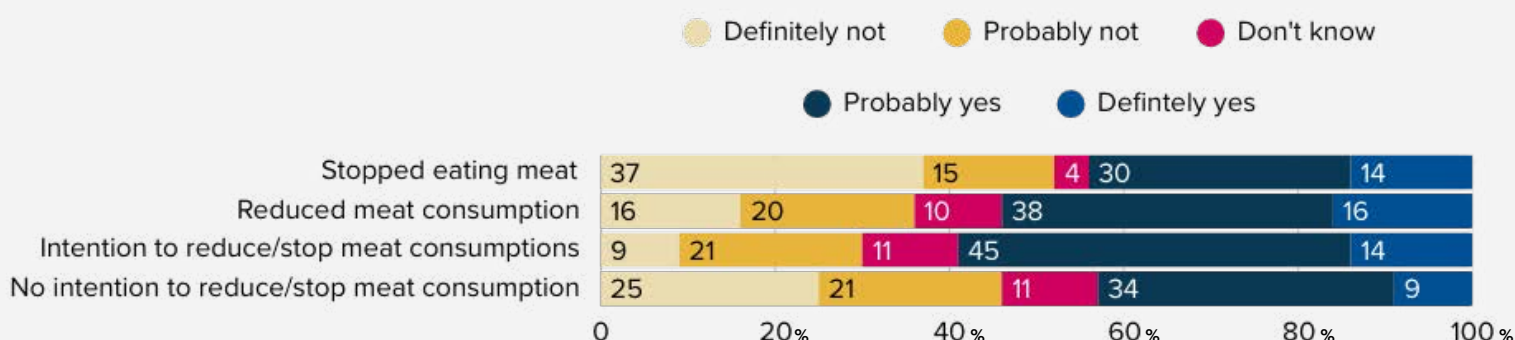
The most enthusiastic ones seem to be those consumers that already have reduced meat consumption or are intending to. But what makes is really interesting is that even 43% of respondents who indicated not having any intention to reduce meat consumption, would consider trying culture meat. Which underlines the possible impact of the most "meat like" of all novel proteins if this were to be added to the list of sustainable alternatives to consumers.

However, the conditions for consumers to consider cultivated meat can vary greatly from health benefits to taste, price and animal welfare. In-depth insights on these conditions, the barriers and opportunities they perceive, are key to turn cultivated meat into a consumer proof product and a success.

Would you try cultivated meat?



Willingness to try cultivated meat by intention to reduce meat consumption (%)



2. Safety first

If there is one thing consumers will not and should not give in on, it is food safety and any side effects on their health.

44% of all respondents in Belgium, Italy, Spain and Portugal state they simply do not trust eating cultured meat and half of them (51%) indicate they are afraid of the long-term health risks. Unsurprisingly, health tops the list of reasons for not including cultivated meat in their diet.

On the other hand, 38% state they would include it in their diet if it would be better for their health. Even among those not willing to try it, almost one out of three (29%) would re-consider because of health reasons. At the same time, consumers also acknowledge some safety opportunities:

One out of three respondents (31%) believe cultured meat could be safer than traditional meat due to its production process, which eliminates risks such as bacterial contamination and excessive antibiotic use found in conventional meat production.

To ensure that consumers' safety concerns are accounted for it is essential that existing safety protocols are carefully respected. To that regard respondents mainly lay their trust in European public bodies like the European Food Safety Authority (EFSA) - **68 % of respondents trust EFSA to judge whether cultivated meat would be safe for consumption** – or with their colleagues at the national public entities that hit an equal trust level.

When regulatory approval and oversight is ensured, this is immediately reflected in people's willingness to give cultivated meat a try:

50% of respondents in Belgium, Italy, Portugal and Spain would try cultivated meat if approved by EFSA



3. The taste of it

Mapping the conditions under which people would consider eating cultivated meat, taste reigns in second, **with almost half (48%) saying they would only buy it if it had the same taste and structure as traditionally produced meat.**

Although the cells in cultivated meat are bio-identical to the ones of traditional meat, research suggests that getting the fat and amino acid profiles right is key to be able to reach the same flavours as traditional meat⁴⁷. In any case, perfecting the taste of it should not be pursued by adding additives or artificial flavours.

This means that it might take some trial and error: despite glowing reviews at public tastings, research shows that current versions of the product may not be quite there yet. Getting it right is a crucial step to get consumers on board.⁴⁸

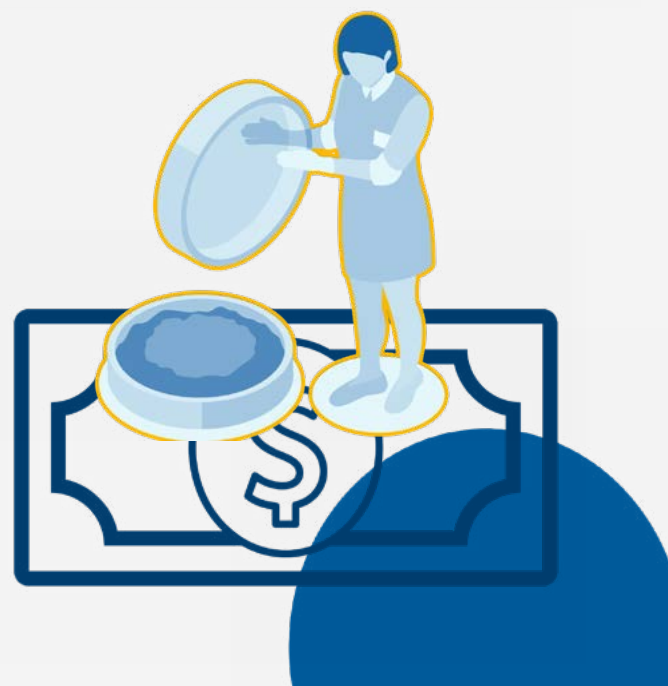
4. Price matters

An equal important dealbreaker is price. More than 6 out of 10 respondents believe cultured meat will only be successful if it is affordable for everyone. Indeed, only 15% would consider buying it if it was more expensive than traditional meat, while 36% would include it in their diet if it had a 'competitive' price, meaning similar to or lower than the price of animal meat. Consumer expectations are clear: **nearly half of respondents (47%) expect cultured meat to be cheaper than traditional meat.**

This shouldn't come as a surprise. It's no coincidence that having access to affordable sustainable food is one of the demands [that tops consumers' wish list](#) for the next five years, (76%). After all, inflation is still consumers' number one concern. This is confirmed as well in [Euroconsumers' Affordability Barometer](#) where more and more consumers indicate to be struggling to pay food prices.



All of this shows that there is a large role for both industry and policy makers to ensure that healthy, sustainable protein sources are not merely available to consumers, but also affordable for the big mass of them. Knowing that even with regards to the meat alternatives already available on our market half of respondents say that they **'would be willing to reduce meat consumption but the available alternatives are too expensive'**, one can only imagine the impact of price on the success of cultivated meat.



5. Essential nutrition

When buying regular meat, just under a third of respondents to **Euroconsumers' survey (31%) claim they pay a lot of attention to the nutritional value of it.** Nutrition appears to become relatively more important for omnivores, with 28% indicating they would not reduce their meat consumption because they believe that meat is a better source of protein than plant-based alternatives.

Reducing animal meat while keeping a good nutritional intake with cultivated meat is possible, but not always a given. While scientific research confirms very similar amino acid profiles can be achieved, assessment has to be made on a case-by-case basis.⁴⁹ In any case, EFSA will likely require a comprehensive protein digestibility and quality testing as part of the approval process.

It is vital that consumers are well-informed about how to integrate these novel proteins in their diet, and to what degree they meet their nutritional needs. However, a balanced diet is more than just protein. Traditional meat provides key nutrients like iron, vitamin B12, zinc, omega-3 fatty acids (EPA/DHA), vitamin D, and selenium. It will be crucial to ensure that cultivated meat manufacturers offer transparency about what is included and what is not.

At the same time, cultivated meat also offers an opportunity to enhance nutrition. **38% of respondents say they would include cultured meat in their diet if proven healthier than traditional meat. We can make this happen.** Via the scaffolds cultivated meat could offer higher fiber content and the production process allows to supplement it with for example Omega 3.⁵⁰

6. For the planet and animal welfare

Consumers already think sustainability when shopping: **72% say it has a medium to high impact on their decision making.** This makes cultivated meat an interesting case, as one out of five respondents would consider adding it to their diet if it would have a better impact on animal welfare (25%) or on the planet (22%).

This underlines the need for clear sustainability information to boost alternative proteins.

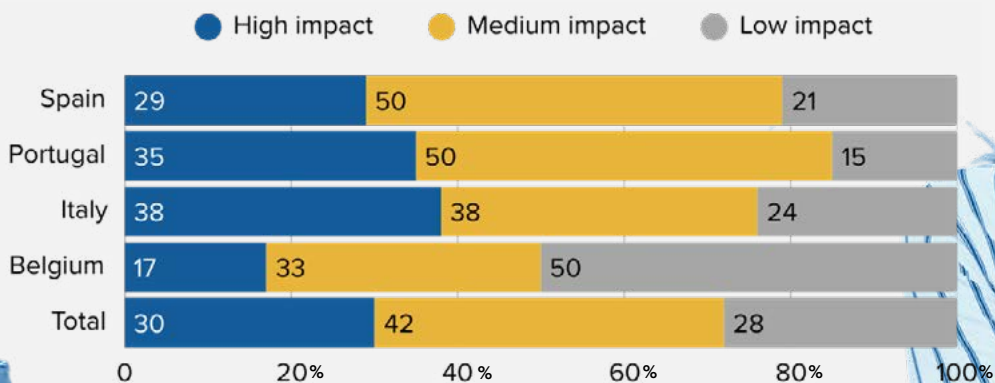
- Already one out of four believes cultured meat has a lower impact on the environment than traditional meat (44%) and would have a positive impact on climate change if approved in the EU (41%).
- An equal amount considers cultured meat would allow consumers to enjoy the taste of meat while eating more sustainably.

Which shows there is potential here.



But at the same time there is an equal number of respondents that don't have a clue. Knowing that the more people are informed, the more the perceived sustainability of cultivated meat goes up, **it is absolutely necessary to address the request of 60% of respondents in Belgium, Italy, Spain and Portugal to have clearer information about the environmental impact of meat products** (e.g. through disclaimers and labels).

Impact of environmental aspects on consumers decision making (%)



7. The hunt for information

But the need for information goes beyond sustainability or nutrition. It is the common line throughout the entire research.

It should be noted that only half of the respondents in Belgium, Spain, Italy or Portugal (52%) said they were aware of cultivated meat, and just 13% feel informed about it.

This is a crucial caveat, as on many questions about attitudes towards cultivated meat a significant part (30-40% of respondents) had no opinion at all. It underlines we need to step up information campaigns on what alternative proteins like cultivated meat are, how sustainable they are, but also what it means in terms safety and nutrition, if we would like consumers to consider it as an option on their plate.

After all, the data shows that consumers who call themselves informed on cultivated meat are more likely to believe that it has a positive climate impact (61%) than those who have never heard of it (35%).

What about farmers?

Farmers are the backbone of our European food system and rural communities. At the same time, we must face that European livestock farming is running into its environmental limits: local nature is bearing the brunt of the high emissions and waste streams, that in turn directly affect again European citizens across the Union.

Make no mistake about it:

There will always be a place for traditional agriculture, even if it needs to become more sustainable. Cultured meat is not here to replace traditional agriculture, rather to complete it, as an extra option to be offered to consumers next to the more traditional ones. Or even more to reinforce it. As part of the green transition, cultivated meat and other alternative proteins can offer farmers also new opportunities: a way to shift to more sustainable food growth.

Euroconsumers' survey data is clear: when it comes to ensuring the safety of cultivated meat consumers in **Belgium, Italy, Spain and Portugal put a lot of trust in farmers (27%), more so than in retailers (11%) or private companies (11%)**. This underlines the critical role farmers can play if cultivated meat ends up on consumers' plates.

One such opportunity could be **small-scale on-farm cultivated meat production**. After all, cultivated meat requires cells from an animal. Farmers could for example maintain a small herd of animals for this periodic cell collection and use on-site bioreactors to cultivate meat locally. The switch from grazing cows to cultivators frees up land and allows regenerative agriculture or rewilding. A recent feasibility study has shown that this model may be economically feasible as early as 2030.⁵¹

Moreover, growing cultured meat requires **raw materials**: proteins, sugars, and fats for the growth medium to structural supports ("scaffolds") that give the product its texture. An increased demand for cultivated meat and fish products will also drive an increased need for high-value crops like soybeans or mushrooms for cell culture, instead of feed for livestock.

Therefore, if Europe wants to grasp the innovation and competitive advantage offered by novel foods, it will need to start growing more of its plant protein crops locally and invest significantly in helping its farmers transition to more sustainable models. **Cultivated meat can offer opportunities for farmers—but only if we make smart choices now, keep things fair and make sure benefits don't just go to a few big players.**



A Competitive Innovation for Europe to seize

The question is not merely about whether this product should make it onto European plates, but also about how it will. There are valid concerns about who gets to develop and own novel protein technologies. Empowering people to opt for more sustainable food options is one thing, making sure they actually have a choice is another.

That's why next to empowering consumers, we also need to improve the market, so consumers indeed have access to affordable sustainable alternatives. On this, consumers are quite clear:

Nearly half (46%) would like the EU to be more proactive in supporting the production and commercialization of sustainable meat alternatives.

1. Europe's head start

Today is all about boosting Europe's competitiveness. The Draghi and Letta reports set out various solutions to kickstart the European economy. Cultivated meat is both a good example of Europe's competitiveness lag as well as a promising test case for the suggested solutions.

The EU had a head start on cultivated meat: it had the first patent to grow meat from stem cells by Willem van Eelen in 1999, the first cultivated meat burger by Dr Mark Post in 2013, and the first product tastings in London in the same year. Most of the initial technical development happened in Europe. This shouldn't come as a surprise, considering the EU holds world-class universities like Wageningen and the Danish Technical University specialised in tissue engineering, biotechnology and food science. It is also home to a strong biopharma industry, offering expertise in bioreactors, and world-leading agri-food and biotech clusters in i.e. Flanders and Bavaria.

Europe has lost the EV race to China and risks losing the AI race to the US; the crucial question right now is what we want to do with our head-start in biosolutions like cultivated meat: seize it, or squander it?



2. Another innovation exodus?

Despite this promising start, industry figures complain Europe is languishing in a “Valley of Death”: while there is capital to get started and produce a prototype, cultivated meat start-ups lack both the infrastructure and investments to bring their product to scale.

In the past decade a significant amount of foreign venture capital has been poured into the sector, especially into US-based firms, putting the European ones significantly behind. Leading organisations have equally slammed current public investment levels as “*widely insufficient, with investment into novel foods and food processes being less than 1% of the total public funding streams that support agriculture or innovation*”. The €7 million reserved for alternative proteins under Europe’s Horizon programme pales against the €135 million invested by Canada and €67.5 million by the UK.⁵²

As a result, a survey of 30 companies working on cultivated meat showed that despite its size, the EU was not one of the top markets for companies to focus on.⁵³ Industry complaints echo the analysis of Mario Draghi in his report on EU competitiveness: Europe’s strong innovation capacity is stifled by its lack of an integrated capital market.⁵⁴

3. Hunt for healthy competition

These problems exacerbate another major risk faced by the cultivated meat industry: corporate capture. As the venture capital firms that have poured capital into the sector want to see returns, they may well apply more pressure on the start-ups they have invested in to sell to larger, more established industry players. Indeed, large agri-giants already (co-)own a large part of the alternative-protein start-ups.⁵⁵

This type of concentration can stifle competition, limit consumer choice, and potentially exacerbate existing inequalities in the food system. It could also lead to the technology being acquired to be shelved entirely (“catch-and-kill”).⁵⁶ This is not just a hypothetical scenario. Traditional meat industry giants like Cargill and Tyson already own significant shares in cultivated meat companies. Moreover, they have in the past settled lawsuits over using their market power to illegally fix prices to the detriment of consumers.⁵⁷

To ensure that this technology does not get captured by a small number of companies, Europe should proactively create a plan on how to structure this industry. That’s also what consumers in Belgium, Italy, Spain and Portugal tell us to do: 63% of respondents believe that the production of cultured meat should be regulated by public authorities, to ensure access for everybody and prevent monopolies.



4. Supporting homegrown innovation

To prevent an innovation exodus and reinforce the world-leading role of the European biotech industry, Europe should foster a supportive ecosystem for biotech solutions like alternative proteins and cultivated meat.

How? Here are some ideas:

- **Improve access to public and private funding:** establish dedicated investment funds and grants to help alternative protein start-ups scale production and compete globally.
- **Create infrastructure for pilot-scale and commercial production:** a very large hurdle to scaling is access to bioreactors and fermentation facilities. Currently, multiple companies each have to build their own manufacturing infrastructure. A full-scale factory costs between €50-200 million, so a more intelligent strategy for pooling resources is called for, similar to for example dairy cooperatives.⁵⁸
- **Ensure fair competition:** re-evaluate the financial and regulatory advantages that conventional meat enjoys, including subsidies, to reflect environmental and public health impact. Enforce antitrust laws to prevent monopolization of these new technologies and to ensure a healthy market and fair consumer prices for sustainable food.
- **Implement open-source public R&D initiatives:** ensure that publicly funded research benefits all companies, rather than becoming proprietary knowledge for a few dominant players.
- **Focus on consumers:** no strategy will ever work if it doesn't empower consumers to shape this sector. Bringing consumers to the table is not a hurdle but an industrial asset, ensuring the chance for success. Euroconsumers aims to play a proactive role in shaping policy and funding priorities to ensure that the alternative protein market remains consumer-focused.



Improve the approval

Lack of investment isn't the only hurdle to overcome to improve the market of alternative proteins. Another often-heard industry complaint is that Europe's thorough regulatory regime adds a 3 to 5 year waiting time, which is too long for poorly funded start-ups to survive. Consequently, new products either fail or companies are forced to launch their products abroad.⁵⁹ For example, Mosa Meat, a cultivated meat front-runner that built a first-of-a-kind factory in Europe, still considers Singapore as one of the most likely first markets⁶⁰

However, consumers left no doubt about it in our survey: **safety is non-negotiable. So how can we match consumers' need for innovation, the potential of novel foods with the absolute requisite to ensure robust safety standards?**

1. How it works

Authorisation for cultivated meat, fermentation-enabled ingredients, as well as some plant-based foods all fall under the Novel Foods Regulation (Regulation (EU) No 2015/2283).

Novel food applications need to be addressed to the European Commission, which then decides whether a safety assessment is needed.

If so, it requests the European Food Safety Authority (EFSA) to conduct a risk assessment and provide a scientific opinion on the safety and nutritional aspects of the product.



In the event of a positive ruling, final approval rests with the European Commission and representatives from all EU member states.

EFSA is recognised and acclaimed worldwide for its robust approach on food safety, and consumers rely on it: three out of four respondents (76%) have at least moderate trust in European public entities such as EFSA. That trust is key for consumers' buy-in on novel foods. At the same time, the Novel Food Regulation has been criticised by i.a. academics for being "*procedurally and scientifically demanding [and dampening] the transformative potential of novel foods in Europe*".^{61 62} Applicants complain that the waiting time for approval is four times longer than in other jurisdictions, and that the high scientific and bureaucratic requirements favour larger companies with more resources.



Duckweed every day: what is a Novel Food?

Under the EU Novel Food Regulation (Regulation (EU) 2015/2283), a novel food is defined as any food that wasn't consumed to a significant degree by humans in the EU before 15 May 1997. Since then scientific measurement and also the burden of proof for novel foods has increased.

To give an example, Wageningen University & Research (WUR) identified water lentils (also known as duckweed) as a useful food crop to assist the protein transition. It grows very quickly, is a source of fatty acids like omega-3 and is a complete protein containing all of the essential amino acids. It could for example be used as a vegan alternative to cow-derived protein powder. It has been part of Southeast Asian diets for centuries. However, due to limited consumption in Europe before 1997, it was classed as a novel food. Consequently, it took WUR researchers nearly 10 years and a €600,000 research grant to get duckweed approved as a food fit for consumption by European consumers.⁶³

It is important to note that this high research requirement is not EFSA being overzealous: EFSA's rigorous requirements are in line with the Regulation. However, if a common but potentially transformative crop like duckweed cannot enter the market within a decade, that begs the question whether the regulation is fully fit for the purpose of facilitating sustainable diet change



2. How it could work

EFSA's Performance is currently under evaluation: for the first time since the agency was created in 2002.⁶⁴ Is it possible to facilitate faster access to crucial innovations without compromising on safety?

Here's what can help:



Review EFSA's budget and resources: the agency's own 2023 annual report called the state of its resources "strained", especially considering a significant increase in applications.⁶⁵ This situation has led to backlogs, with only 22 out of 42 novel food applications reviewed on time in 2023. Human resources play a large part in this, as EFSA needs to use national-level experts who are not very incentivised to contribute their time.



Extra funding, but not at the expense of impartiality: an option to get extra funding could be to ask industry for fees. To safeguard EFSA's independence, fees should only complement, not replace, EFSA's budget coming from the Member States. Moreover, these fees should be paid to a common, transparently administrated pot so that individual companies can in no way expect a positive verdict from EFSA just because they pay a fee.



Consider a fast lane for strategically important foods: dedicate additional or ring-fenced resources to a fast track for reviewing products that could help accelerate achieving the EU's climate goals.



Streamline data requirements: create more clarity about the level of detail required in applications and limit the number of additional requests when scientific literature, history of safe use or other information is available, to avoid the delays caused by multiple clock-stops.⁶⁶ More explicit guidance on the acceptable levels of characterisation for novel foods and the specific aspects of production processes requiring detailed documentation would also be helpful.



Evaluate the product, not the process: although process changes could introduce contaminants, currently any change to the production process would require a whole new application. Instead, there could be an accelerated procedure for minor changes to a previously approved production process. This would make innovation and process improvements less costly.



Setting Europe's table: the way forward

So, is there a place for cultivated meat on our plates? **Based on consumers feedback, its environmental, innovative and competitive potential, it should at least be an option we need to consider.**

Of course, cultivated meat is far from the only option to diversify our protein intake and reduce meat – eating more vegetables and legumes comes in first - but as the most “meat like” alternative to traditional meat it can appeal to a different segment of consumers that do not feel empowered yet to choose more sustainable food. That's why cultivated meat, and novel proteins more in general, offer an interesting extra option to add to the palette of choices available to consumers.

However, the secret of its success is conditioned by our ability to empower people and improve the market.

This is a decisive moment for Europe. The decisions made today will determine whether we become a leader or a follower on this path.

By empowering consumers, fostering innovation and ensuring fair market conditions, we can create a thriving alternative protein sector that benefits consumers, the environment and the economy.



EMPOWER PEOPLE.

Consumers are not just end-users but active participants in shaping this market. They need to be on board: trust it, support it, embrace it. And they made their conditions clear:

- **Safe to Eat:** cultivated meat must be EFSA-approved to guarantee safety. We also need post-market surveillance updates to reassure consumers about the long-term safety of cultivated meat.
- **Affordable for All:** it should be cheaper or at least be competitively priced compared to regular meat.
- **Nutrition-packed:** cultivated meat should offer high-quality protein and essential nutrients like B12 and iron. Products should come with clear information on the composition and labeling, enabling consumers to make an informed choice.
- **Tastes Like the Real Deal:** to ensure it has the same the same taste as traditional meat, perfecting fat and amino acid profiles is a must.
- **A Sustainable Choice:** the environmental benefit over traditional meat should be made clear for consumers, i.a. through clear and attractive labeling
- **Clear and Honest Information:** improve consumer awareness with impartial, science-based campaigns explaining the opportunities of novel foods and the comparative advantage towards traditional meat.

IMPROVE THE MARKET.

Empowered consumers are nowhere without a vibrant and fair market offering affordable sustainable food alternatives. Europe can take the lead on the innovation alternative proteins offer and turn it into a competitive advantage, provided that:

- **Include cultivated meat and other novel proteins in the Biotech Act:** Europe needs to make a strong declaration of intent to lead in biotechnology and biofood manufacturing, making it a leader in this industry.
- **Access to public and private funding:** establish dedicated investment funds and grants to help alternative protein start-ups scale production and compete globally. A clear public commitment will also unlock the private investments that are currently lacking in Europe.
- **Open-source public R&D:** where public money is used there should be conditions to open-source resulting innovations. This would allow more players to enter the market and pass cost savings down the production chain to consumers.
- **Secure fair competition:** re-evaluate the financial and regulatory advantages that conventional meat enjoys within the Common Agricultural Policy (CAP) to create a level playing field and enforce antitrust laws to prevent monopolization of these new technologies.
- **A smoother approval process:** review EFSA's approval process with the objective of making it faster and easier while ensuring robust safety checks. Consider adding staff, funding and ring-fencing budget for innovations that can help consumers diversify their protein intake.
- **A strong consumer voice:** invite consumers to the table, it's not a hurdle but an industrial asset: to shape good EU policy, improve the market of sustainable proteins, and ensure success.

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66 While officially the Safety Assessment is meant to only take 9 months, EFSA has the right to “stop-the-clock” every time it asks for more information, which it has the liberty to at any time. EFSA is also not obliged to ask for all missing information at the start of the process so that applicants can work on further information requests in tandem. It should be noted that conducting studies to provide more evidence is very time consuming, and often requires applicants to find a lab with availability and capacity, securing funding for the research and often hiring consultants to set up the research protocols. All in all, this means that the entire process takes longer than the official times might suggest (17 months): usually somewhere between 3 and 5 years for novel food applications.

About Euroconsumers

Gathering five national consumer organizations and giving voice to a total of more than 1.5 million people in Italy, Belgium, Spain, Portugal, and Brazil, Euroconsumers is the world's leading consumer cluster in innovative information, personalized services, and defense of consumer rights. Our European member organizations are part of the umbrella network of BEUC, the European Consumer Organization. Together, we advocate for EU policies that benefit consumers in their daily lives.

