Lab-grown protein products

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Food & Feed

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Executive summary

The reflection paper at hand examines the development and purported benefits as well as the safety, regulatory and terminology-related aspects surrounding the possible production and placing of lab-grown protein products on the Single Market. Lab-grown products are to be understood as products that aim to mimic foods of animal origin in terms of their organoleptic (taste, texture, form etc.) and nutritional properties as well as functionality. They are derived from terrestrial animal or fish cells and are grown separately from the entire organism and in a bioreactor.

Taking stock of the narrative put forward by the proponents of lab-grown protein products, the paper engages with the body of literature available with a view to articulating a comprehensive stance. In its five chapters, it discusses the links with agriculture, safety and nutritional aspects, the implications for sustainability, transparency for consumers and the potential socio-economic impact for producers, rural areas and the EU's food security. In addition to discussing the ethical and cultural considerations, it delves deeper into the unknowns surrounding the composition, long-term health impacts and societal consequences of lab-grown protein products.

Copa-Cogeca rejects the utilitarian view of food and food production that lab-grown protein products represent as this perspective overlooks the intricate relationship between nature, agriculture, biodiversity, and the socio-economic wellbeing of rural communities. It stresses that technological feasibility does not inherently justify implementation, especially when such innovations have the potential to disrupt the very foundation of food production and consumption and warns against reducing food production to a technological race with countries which either have lower standards and/or scarce natural endowments.

In its 12 policy demands, Copa-Cogeca calls for an adequate legislative framework and comprehensive impact assessment to consider the ethical, food safety, social, economic, and environmental challenges posed by lab-grown products. It advocates for broad consultations and demands strict adherence to the precautionary principle until these dimensions are thoroughly examined. Moreover, Copa-Cogeca stands against the misleading comparison of lab-grown products with foods derived from animals. It highlights the incompatibility of replacing traditional livestock farming with patented alternatives, underscoring the threat this poses to the resilience and diversity of our food production systems, rural economies, consumer prices and long-term food security.

In conclusion, Copa-Cogeca's vision for the future of food in the EU is one where innovation and greater environmental sustainability do not come at the cost of compromising public health, undermining the socio-economic fabric of rural communities, or eroding our cultural heritage. In the face of the potential market authorisation of lab-grown products, Copa-Cogeca emphasises the need for transparency, truthful information to consumers, and the protection of denominations. Ultimately, this reflection paper is a call to action, urging a comprehensive evaluation of the societal consequences of these innovations and stressing the importance of preserving the diverse tapestry of European agriculture.

Introduction

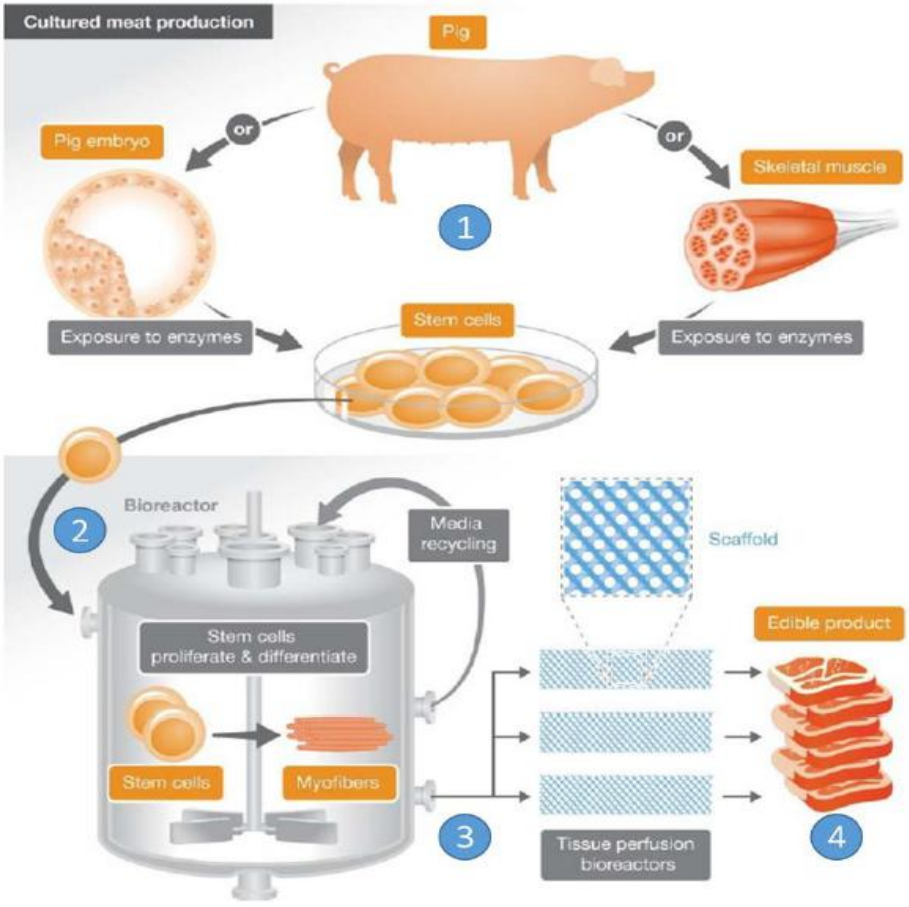
Alternative proteins are increasingly being hailed as an alleged sustainable alternative to the livestock agricultural system. Whether produced from plants, by means of precision-fermentation or in bioreactors, their proponents contend that these innovative products, if the change of scale allows it, would help meet the food demands of a growing world population – estimated to reach between 9 and 11 billion by 2050 – while producing food more sustainably at a cost equal to or lower than that of animal products. In addition to posing as sustainable solutions that could massively reduce the food system's environmental impacts and feed more with fewer resources, these alternatives also claim to do so in an ethical and healthy way.

While plant-based imitation products have existed for some time (discussed in a separate position paper) and some fermentation-derived[1] products are available to consumers, lab-grown products are still in their infancy. Yet, should they be approved and placed on the EU market, they could radically transform food systems (food production and consumption) and have a profound impact on the agricultural sector as they would involve producing food without farmers and land use.

In light of the above, it is critical to delve into their purported benefits as well as the safety, regulatory and terminology-related aspects surrounding their possible production and placing on the Single Market. In addition to the opinion of the European Food Safety Authority, whether or not such products end up being commercialised and adopted in the EU will rest, inter alia, on their ability to overcome the challenges of consumer acceptance, cost-efficiency, scalability and sustainability.

This reflection paper focuses on lab-grown products that aim to mimic products of animal origin in terms of their organoleptic (taste, texture, form etc.) and nutritional properties as well as functionality. They are to be understood as products derived from terrestrial animal or fish cells which are cultivated separately from an entire organism. It may also include foods of animal origin such as milk, honey, foie gras, or even plants.

Figure 1: Production process of lab-grown products mimicking meat (simplified)



1) Cell isolation: stem cells are extracted from an animal by biopsy. Cells are taken from muscle tissue or embryos.
2) Cell proliferation: Cells are placed in a bioreactor in a growth medium, causing them to proliferate.
3) Cell maturation and differentiation: Change in the medium composition, in combination with a scaffolding structure, pushes the cell to differentiate into muscle, fat and connective tissue
4) Cell harvesting and processing: differentiated cells are harvested, prepared, and packaged into final products.
Source: Tuomisto (2018).

Source: OECD[2]

There are 3 categories of fermentation for protein alternatives: traditional, biomass and precision. Traditional fermentation is used in alternative proteins to improve the flavour or functionality of plant ingredients. Biomass fermentation uses the high-protein content and rapid growth of microorganisms that reproduce within the ingredients for alternative proteins.

2 Frezal, C., C. Nenert and H. Gay (2022), "Meat protein alternatives: Opportunities and challenges for food systems' transformation", OECD Food, Agriculture and Fisheries Papers, No. 182, OECD Publishing, Paris, https://doi.org/10.1787/387d30cf-en.

Challenges for EU agriculture, impact, and remedies

1. The missing link with nature and agriculture

Lab-grown protein products represent **a real departure from agriculture and the relationship with nature**. Producing food in a laboratory is not remotely like agriculture consisting of cows grazing in fields, lambs being born after a 150-day gestation period or meat and cheese aging over days or months.[3] There is no link to territory, savoir-faire or acclaimed EU specialities resulting from the work proudly undertaken by our farmers and cooperatives in respect of tradition, culinary heritage, and dedication.

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Without a link to nature, there is no agriculture. That being said, lab-grown products are **merely artificial products** obtained through laboratory processing. They cannot be called "agricultural" products as per the definition stipulated in Annex I of the TFEU or "cultured". Nor can the technologies used in their production be considered forms of "agriculture". That being said, and in compliance with the precautionary principle, they should neither be authorised for production, sale, and promotion on the EU market nor benefit from public support intended for agriculture and EU agricultural products within the framework of the Common Agricultural Policy or the Promotion Policy, for instance.

2. Food safety, nutrition, and health concerns

Comprehensive nutritional data for lab-grown products is currently not publicly accessible[4] with companies keeping prototype data confidential. Nevertheless, as lab-grown products aim to closely mimic animal products at a molecular level, some scientists expect them to possibly serve as a substitute in terms of nutritional value[5]. This assumption has been rebutted by the latest **FAO report (2023)** which asserted that **lab-grown products cannot replace terrestrial animal source food in terms of nutritional composition**[6].
Indeed, certain nutrient compounds found in animal products are absent in lab-grown cells and will thus need to be supplemented. This is the case for Vitamin B12, which is only produced by bacteria[7], fatty acids or exogenous antioxidants[8]. Even when supplemented, these important micronutrients are unlikely to be absorbed to the same degree as when naturally present[9]. In addition to nutritional aspects, lab-grown and mixed products (a blend of animal-based products with lab-grown products) also raise serious health concerns linked to the cells used to start the culture, genetically modified cells or selected spontaneous mutations.[10]

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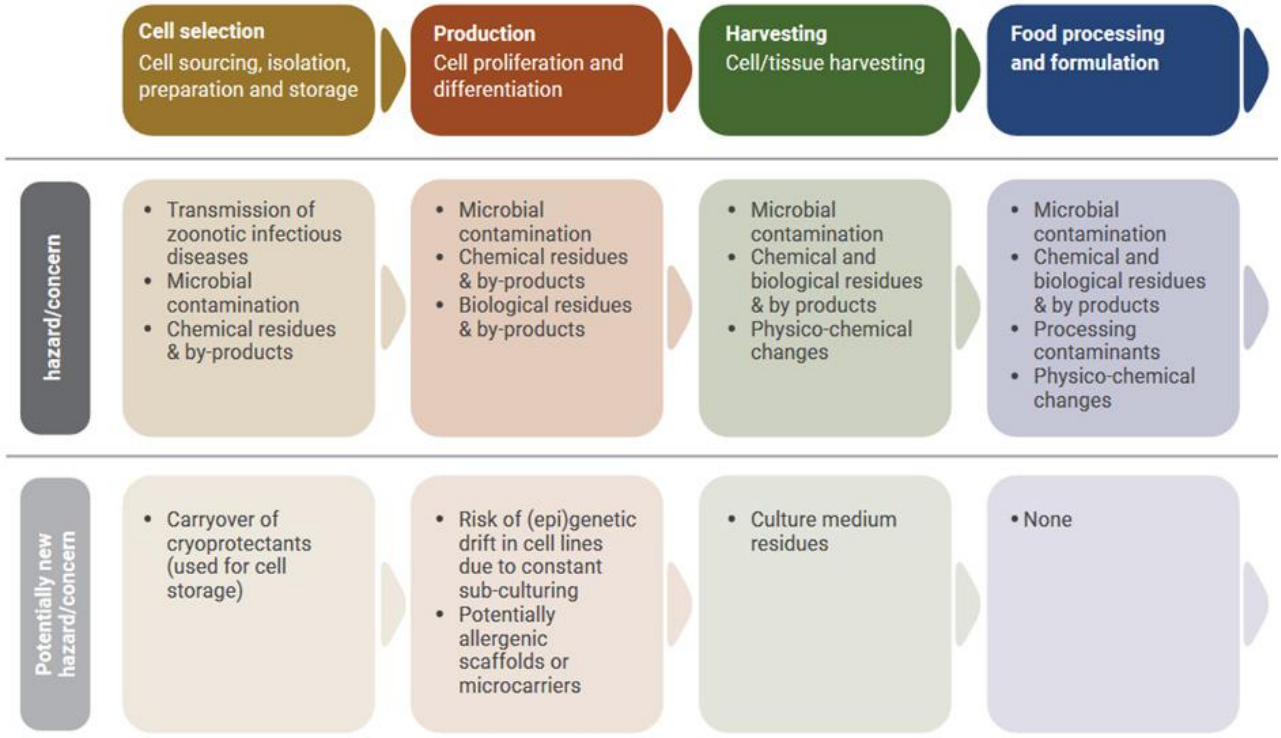
The few researchers that have currently studied this practice warn about the potential negative effects that it might have on human health[11] [12]. According to the comprehensive food safety hazard identification[13] conducted by the FAO-led Expert Consultation, *"while many hazards*

3 Harold McGee, "On Food and Cooking: The Science and Lore of the Kitchen", Hodder & Stoughton UK, 1984.
4 Frezal, C., C. Nenert and H. Gay (2022), "Meat protein alternatives: Opportunities and challenges for food systems' transformation", OECD Food, Agriculture and Fisheries Papers, No. 182, OECD Publishing, Paris, https://doi.org/10.1787/387d30cf-en, p. 3.
5 OECD (2022)
6 FAO. 2023. Contribution of terrestrial animal source food to healthy diets for improved nutrition and health outcomes – An evidence and policy overview on the state of knowledge and gaps. Rome, FAO. https://doi.org/10.4060/cc3912en
7 Rubio, N., N. Xiang and D. Kaplan (2020), "Plant-based and cell-based approaches to meat production", Nature Communications, https://www.nature.com/articles/s41467-020-20061-y.
8 Chriki, S., M.P. Ellies-Oury, J.F. Hocquette, (2022), "Is "cultured meat" a viable alternative to slaughtering animals and a good comprise between animal welfare and human expectations?", Animal Frontiers, Vol. 12, Issue 1, pp 35–42, https://doi.org/10.1093/af/vfac002
9 Fraeye, I., Kratka, M., Vandenburgh, H., & Thorrez, L. (2020). Sensorial and nutritional aspects of cultured meat in comparison to traditional meat: Much to be
10 Wang, Y., Chen, S., Yan, Z., & Pei, M. (2019). A prospect of cell immortalization combined with matrix microenvironmental optimization strategy for tissue engineering and regeneration. Cell & Bioscience, 9, 7. https://doi.org/10.1186/s13578-018-0264-9
11 Nawaz, M. et ali. (2019). Addressing concerns over the fate of DNA derived from genetically modified food in the human body : A review. Food and Chemical Toxicology: An International Journal Published for the British Industrial Biological Research Association, 124, 423-430. https://doi.org/10.1016/j.fct.2018.12.030
12 Hocquette, J.F, (2016), "Is in vitro meat the solution for the future?", Meat Science, Vol. 120, pp. 167-176. https://doi.org/10.1016/j.meatsci.2016.04.036
13 Hazard identification is the 1st step of the formal risk assessment process.
14 FAO & WHO. 2023. Food safety aspects of cell-based food. Rome. https://doi.org/10.4060/cc4855en

Figure 2. Examples of potential food safety hazards and concerns at different phases of the production of lab-grown products



Source: FAO & WHO. 2023.

are already well known and existing equally as well in conventionally produced food", the focus should be *put "on the specific materials, inputs, ingredients (including potential allergens) and equipment is more unique to cell-based food production"*.[14] The same view was echoed by the authors of the FAO report on TASF who suggested that *"further research is also needed to complete food-safety risk assessment for cell-cultured "meat" produced at industrial scale."*

Given the fact that these products and technologies have not been used before, it is essential that:

- the safety and nutritional value be meticulously and thoroughly examined;
- they undergo a periodic re-evaluation (e.g., every 5-years) in order to assess the long-term impact of their consumption.

3. Dubious environmental sustainability benefits

The production of lab-grown products is an energy-intensive process as industrial processes replace biological functions. Currently, producing 1 kg of lab-grown products requires significantly more energy than is required to produce 1 kg of meat[15]. Notwithstanding the fact that **lab-grown protein production is both expensive and a time- and energy-intensive process**, the industry is pitching the technology as a way of overcoming several challenges in agriculture. They promise that lab-grown products have the potential to be less resource-intensive, decrease methane emissions, deforestation, biodiversity loss, water use and water pollution[16].

Currently, the number of studies assessing the sustainability of lab-grown products is very limited with their results often being contradictory. Most studies state that the environmental impact of lab-grown products mimicking chicken and pigmeat is higher than their real animal counterparts. In a study commissioned by GFI and conducted by CE Delft[17], the potential environmental impact of lab-grown products was shown to be higher than that of poultry and pig meat, being just slightly lower than that of beef. However, new research from the University of California reveals that based on current and near-term production methods, **lab-grown products' environmental impact is likely to be "orders of magnitude" higher than that of retail beef**[18].

15 OECD (2022)
15 Good Food Institute (2023), "Cultivated meat" https://gfieurope.org/cultivated-meat/ (accessed on 10.10.2023)
17 Sinke, P., Swartz, E., Sanctorum, H. et al. Ex-ante life cycle assessment of commercial-scale cultivated meat production in 2030. Int J Life Cycle Assess 28, 234–254 (2023). https://doi.org/10.1007/s11367-022-02128-8
18 Risner, D., Kim, Y.S., Nguyen, C., Siegel, J.B., & Spang, E.S. (2023), "Environmental impacts of cultured meat: A cradle-to-gate life cycle assessment", bioRxiv. doi: https://doi.org/10.1101/2023.04.21.537778

The purported positive impact on environmental sustainability is only hypothetical and based on anticipatory LCAs and non-comparable data.

The purported positive impact on environmental sustainability is only hypothetical. Indeed, except for reduction in land use (which is to some extent offset by the development of industrial sites), there is high level of uncertainty surrounding these Life Cycle Analysis (LCA) estimates, in addition to the fact that the LCA is not a global environmental approach. The estimates are determined by only a few environmental indicators (CO2, N2O and CH4 emissions) and assumptions regarding the production technology and a switch to clean energy sources. Furthermore, the data is not fully comparable due to differences in the functional unit (e.g., protein, weight, calories) and systems' boundaries (e.g., cradle-to-gate, cradle-to-plate) as well as significant variations between regions and production systems considered for ruminant meats[19]. For beef production in Europe, for instance, aspects such as the carbon sink generated – which sometimes fully compensates its emissions – or its positive impact for landscape management, rural activities, water quality, biodiversity and territorial activities are not factored in.[20]

In general, environmental sustainability is one of the main selling and marketing arguments used by the advocates of lab-grown products which use direct comparisons with animal-based products to attract consumers and convince competent authorities and potential investors. As such **arguments are based on anticipatory LCAs and non-comparable data**, they constitute assumptions. It is essential, therefore, to verify whether the alleged benefits in increased sustainability actually materialise. Until the claims pertaining to the positive environmental impact of said products are corroborated by robust research and until the beneficial aspects of livestock farming – currently not accounted for in LCAs – are factored in, the assertion that animal products have a much higher environmental impact than alternative proteins' needs to be called into question[21]. In light of this, it is critical that:

- an appropriate comparative analysis of the environmental impact and benefits takes the positive externalities of animal production[22] into account, in particular carbon sinks, landscape management, water quality, manure availability and biodiversity;

- lab-grown protein companies make the nutritional and environmental data on their products public. Any environmental benefits must be weighed against the socio-economic and nutritional consequences of their consumption;

- comparisons of the environmental sustainability between animal-based foods and lab-grown protein products are avoided as they do not have the same nutritional bioavailability for humans and therefore cannot be considered to be similar products.

4. Misleading information to consumers and remedies

Consumer acceptance of lab-grown products hinges upon three critical factors according to EFSA: perceived naturalness, taste, and price[23]. For the OECD, besides price and nutritional composition, the technical and sensorial properties of these products are likely to be deciding factors when it comes to consumer demand. Animal welfare and other ethical considerations are also included as potential drivers.[24] Overall, by fudging the details of their own composition and nutritional value, lab-grown and mixed products try to foster higher levels of trust and perceived benefits, thereby influencing consumer acceptance and their willingness to purchase them (where currently commercialised).

19 Herrero, M. et al. (2013), "Biomass use, production, feed efficiencies, and greenhouse gas emissions from global livestock systems", PNAS, https://doi.org/10.1073/pnas.1308149110.
20 Allard, V., Soussana, J. F., Falcimagne, R., Berbigier, P., Bonnefond, J. M., Ceschia, E., et al. (2007), "The role of grazing management for the net biome productivity and green¬house gas budget (CO2, N2O and CH4) of semi-natural grassland", Agriculture, Ecosystems & Environment, Vol. 121, pp. 47–58. doi: https://doi.org/10.1016/j.agee.2006.12.004.
21 Rodríguez Escobar, M. I., Cadena, E., Nhu, T. T., Cooreman-Algoed, M., De Smet, S., & Dewulf, J. (2021), "Analysis of the cultured meat production system in function of its environmental footprint : Current status, gaps and recommendations", Foods, 10(12), 2941. https://doi.org/10.3390/foods10122941
22 FAO (2016), "The contribution of livestock species and breed to ecosystem services", brochure, available at https://www.fao.org/documents/card/fr/c/25208ece-20f2-44d8-a63e-7d7c84950a9d/
23 EFSA, 2023, accessed on 10.10.2023 and available at https://www.efsa.europa.eu/en/news/safety-cell-culture-derived-food-ready-scientific-evaluation
24 OECD (2022)

By fudging the details of their own composition and nutritional value, lab-grown and mixed products try to foster higher levels of trust and perceived benefits, thereby influencing consumer acceptance and their willingness to purchase them (where currently commercialised).

If lab-grown products were ever to be placed on the EU market, access to and transparency of information to consumers through proper labelling should be guaranteed. This should entail developers and promoters of lab-grown and mixed products making use of their innovation prowess to come up with their own names and marketing. Citing potential consumer confusion as an excuse for not using different names is a tenuous and indolent argument for justifying the lack of identity. Margarine is not butter; chicory is not coffee, horchata is not milk and nor do they claim to be.

For consumers, terms describing products and preparations for animal-based foods (denominations) are connotative of agricultural production methods, safety, composition, savoir faire, origin, nutritional and organoleptic properties as well as usage and functionality.

For consumers, terms describing products and preparations for animal-based products (denominations) are connotative of agricultural production methods, safety, composition, savoir faire, origin, nutritional and organoleptic properties as well as usage and functionality. By evoking these terms to sound familiar and more natural and healthier, protein alternatives are dodging scrutiny relating to their individual composition and they "lead" consumers to believe that they may be perfect substitutes. They are not! **Animal-based foods are composed of high-quality nutrients and boast high levels of bioavailability for humans, neither of which are characteristics of protein alternatives.** Therefore, alternative proteins need to have their own name, marketing and be transparent about their production process, composition, and origin (by providing nutrition declarations, a list of ingredients and bearing distinct front-of pack labelling, for instance).

Using meat and fish denominations is not only misleading to consumers but also constitutes an unfair trading practice. Besides usurping culinary heritage, they capitalise on decades of efforts to improve production methods, taste, nutritional value, reputation, and sustainability. Allowing lab-grown protein products to use the denominations of animal-based products would only result in rowing back on providing full and transparent information to consumers. Similarly, it would allow alternative proteins to continue expressly underlining their non-animal origin while playing on a direct contrast from that which they intend to imitate, thus escaping all scrutiny relating to their own composition and origin. To ensure consumers have access to faithful and transparent information, lab-grown products, should they ever be authorised and marketed in the EU, would have to:

- use their own distinct names and marketing;
- provide complete information about their composition and production process (i.e., nutrition declarations, lists of ingredients and distinct front-of pack labelling);
- be prohibited from using the denominations of animal-based products.

5. Potential socio-economic impact for EU producers

While the production costs of lab-grown products are currently very high[25], this might change in the future. Although they cannot be considered substitutes in terms of nutritional composition and value, production at industrial scale – should these products be authorised and placed on the EU market – could result in significant cost reduction that could place them in direct competition with animal-based products. Contrary to the industry's reassurances about complementarity, there is no room for it. Livestock farming and the

25 van der Weele, C. and J. Tramper (2014), "Cultured meat: every village its own factory?", Trends in Biotechnology, Vol. 32, Issue 6, pp. 294-296, https://www.cell.com/action/showPdf?pii=S0167-7799%2814%2900086-9. Small-scale, compared to large-scale, production of cell-based meat may be more technologically and socially feasible but economic hurdles represent a significant obstacle.
26 World Economic Forum, (2019), "Alternative Proteins", White Paper, prepared by the Oxford Martin School, Oxford University for the World Economic Forum's Meat: the Future dialogue series https://www3.weforum.org/docs/WEF_White_Paper_Alternative_Proteins.pdf

feed industry as well as meat processors and distributors could be hugely impacted in terms of both competition and employment. At present, the livestock sector represents 45% of total EU agricultural activity, employs 4 million people, indirectly supports the work of 30 million people and brings additional economic and social benefits to rural areas. If lab-grown products were to be accepted by consumers as products in their own right, this would create unemployment, especially in rural areas, causing farms to go out of business with knock-on effects for rural economies.[26] While it is not known how many jobs these new industries would create, considering a large part of production would be automated, these jobs would not be accessible to farmers and workers in and around the livestock sector due to them requiring a completely different skillset for which training is not possible (e.g., chemists, biologists, engineers etc.) or moving to new locations. Reskilling the workforce for employment in other sectors will be difficult and costly.

Contrary to the industry's reassurances about complementarity, there is no room for it.

Any promise of opportunities for diversification rests on very shaky foundations. Maintaining a small herd for genetical material for lab-grown or mixed products is unsustainable. No farmer can survive economically by selling only the genetic material from one pig, one chicken or one cow. And even if that were feasible, only a few farmers could make a living from it since the industry would only need a couple of cells. The option of swapping livestock farming for crops is, in most cases, not actionable either. Not all soils are fertile for all crops. In many mountainous areas, there is not much else to do besides livestock farming.

Any promise of opportunities for diversification rests on very shaky foundations.

There is an acute risk of market concentration with implications for consumer prices, the EU production systems and long-term food security.Due to the high level of technology and financial investments required and increasing returns to scale, there is a **non-negligeable potential for natural food production monopolies**[27,28]. As the development of expensive and complex processes will be protected by patents, a company is very likely to duplicate production to secure the whole market.[29] This is already happening in the EU and the US where nearly all patents for plant-based imitation products are owned by a handful of private firms or individuals. The US company, Impossible Foods, which owns half of the patents, is a good case in point. Such technology or capital is not accessible to farmers or small-scale actors. As is the case with capital-intensive sectors, the many start-up firms that exist today are likely to be absorbed and create an oligopoly at best. In the patented food production context, the main form of animal production in the EU, which is characterised by a large diversity of producers (including small and family farms), will be threatened with a slow death, whereas a large part of food production will end up in the hands of a few big (foreign) corporations. **A monopoly on a resource as vital as food could be extremely precarious for the stability and fairness of EU societies.**

There is an acute risk of market concentration with implications for consumer prices, the EU production systems and long-term food security.

The industry promises to solve the food security and availability issues that exist or will appear as the global population grows. However, the best safeguard against food insecurity is resilience, which can be achieved through a diversified food system combining local and efficient, large-scale production. For instance, in the EU, it was the diversity of production methods as well as the large number of actors in the livestock sector that provided enough resilience to secure a safe, sufficient and stable supply of quality and nutritious food during global crises such as the price spikes in 2007-2009, in 2011-12, during the COVID-19 pandemic or amidst the consequences of the war in Ukraine on the food supply chains. Additionally, **for most low-income regions in the world, food is not just a supermarket commodity**. Livestock farming

27 Christian Harbulot, (2022), "Viande artificielle, la révolution qui inquiète", Ecole de Guerre Economique, https://www.ege.fr/sites/ege.fr/files/media_files/Rapportviandeartificielle.pdf
28 Treich, N. (2021), "Cultured meat: Promises and challenges", Environmental and Resource Economics, Vol. 79, pp. 33-61, https://doi.org/10.1007/s10640-021-00551-3.
29 Treich (2021)

represents a significant share of national GDPs. Their producers and production types form **an essential part of the social fabric and economy of the regions** where they are located, supporting local economies and biodiversity conservation while taking care of the rural landscape. If food were to be grown in laboratories, rural populations would have to move to the urban areas or immigrate. In such a scenario, be it in third-countries or in the EU, **the question of who shall maintain the rural landscape** (managing pastures, rows of trees, paths etc.) **and at what cost arises**. This will reduce biodiversity, increase the risk of wildfires due to lack of landscape management, and ultimately impact tourism.

However, the best safeguard against food insecurity is resilience, which can be achieved through a diversified food system combining local and efficient, large-scale production.

It is, thus, essential:

- to ensure the socio-economic consequences are properly studied and weighed up;
- to safeguard the diversity of social and economic life in EU rural areas, as well as the EU production model, which is based on a variety of farm types, agricultural practices, and products.

Policy demands

Copa-Cogeca rejects the purely utilitarian vision of food that underpins the development of lab-grown products, whereby farm animals are conceptualised as "machines" with the only difference being how much value there is to be extracted.

Food is more than just input for subsistence; first and foremost, it is a cultural and social event with anthropological, ethical, economic, regional, and political ramifications. The consumption of animal-sourced products is interwoven with the development of agriculture (the domestication and breeding of animals) 10000 years ago and, by extension, civilisation. It is also inherent to nature, rural areas, biodiversity, and the economic survival of livestock farmers.

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Copa-Cogeca expresses its anthropological, ethical, cultural, and political opposition to the production, placing on the EU market and promotion of food grown in laboratories.
In addition to the many "unknowns" as regards their composition and the fact that the long-term impact on consumers' health cannot be assessed a priori, it is necessary to duly assess the consequences of such innovation for society. As with animal or human cloning, **just because technological innovation allows for something to be implemented does not mean that it should**.

In addition to the many "unknowns" as regards their composition and the fact that the long-term impact on consumers' health cannot be assessed a priori, it is necessary to duly assess the consequences of such innovation for society.

Lastly, Copa-Cogeca objects to the comparison of these products with animal-based products as well as to the constant reduction of the development of such products to a technological race with countries who either have more lenient rules and/or are poorer in natural endowments. Replacing livestock faming with patented "substitute" products is not only incompatible with the "European way of life", but also threatens the resilience and diversity of our food production which is based on a variety of farm types, agricultural practices, and products, as well as the socio-economic sustainability of rural areas.

Replacing livestock faming with patented "substitute" products is not only incompatible with the "European way of life", but also threatens the resilience and diversity of our food production which is based on a variety of farm types, agricultural practices, and products, as well as the socio-economic sustainability of rural areas.

In light of the aforementioned, **Copa-Cogeca disapproves the placing of lab-grown protein products on the EU market and calls for the following:**

Legislative framework and impact assessment

1. The ComAGRI INI report on the EU Protein Strategy noted that lab-grown products present "ethical, social, environmental and economic challenges, and the Novel Food regulation is not fit for purpose" when it comes to assessing these challenges. For as long as there is not an appropriate legislative framework which considers the ethical, social, food safety, environmental, and economic dimensions of lab-grown products in order to assess future requests for authorisation, the precautionary principle[30] should apply (Article 191 of the TFEU)[31,32].

2. An appropriate legislative framework for the possible regulation of lab-grown products should:

- **a.** be preceded by a comprehensive impact assessment of the ethical, social, food safety, environmental, and economic dimensions;
- **b.** require the European Commission and Member States to consult with , stakeholders prior to any possible authorisation;
- **c.** allow Member States to regulate the sourcing of inputs and the functioning of bioreactors (size etc.) when production takes place in their territory, as well as taxation of the activity and final product, with a view to limiting food safety hazards and protecting consumers;
- **d.** provide for the periodical re-assessment (every 5 years) of said products.

The aforementioned modifications are necessary considering the nature of these novel products and the fact that no such products have ever before been consumed. As such, the potential emerging risks and long-term effects on human health cannot be assessed a priori, nor without sufficient robust scientific data.

3. In line with the precautionary principle and until the ethical, social, health, environmental and economic dimensions of lab-grown products have been examined under an appropriate legislative framework, there should be no production, placing on the market or promotion of products isolated or produced from cultured cells in the EU.

4. The use of growth hormones in food production should remain strictly forbidden in the EU, as well as any similar products or practices aimed at stimulating cell multiplication.

5. National and/or international organisations as well as research institutes should be entrusted with carrying out research on the long-term effects on health, environment, society, and the economy.

Transparency

6. To ensure consumer transparency and provided that lab-grown products were to be authorised, companies should make the nutritional and environmental data of these products, the production process, and the list of ingredients public.

30 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:precautionary_principle
31 Article 191 of the Treaty on the Functioning of the European Union, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12016E191 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12016E191
32 Communication from the Commission on the precautionary principle (COM(2000) 1 final of 2 February 2000), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52000DC0001

Protection of consumers and denominations

7. The placing on the market of mixes of lab-grown products, if they were to be authorised, with products of animal origin or mainly made up of animal-sourced ingredients should not be allowed.

8. The denominations and marketing of all animal origin products must be protected at EU level, including against misleading comparisons and evocation. Lab-grown products, if they were to be authorised, should not be allowed to use denominations of animal origin products or of products mainly made up of animal-sourced ingredients.

9. The marketing of lab-grown products, if they were to be authorised, should be fully and unambiguously differentiated from those of animal origin to avoid unfair comparisons. The framing of them as substitutes should be forbidden.

10. Lab-grown products, if they were to be authorised, should have a distinct labelling and feature the words “lab-grown” or “in vitro” on the front-of pack label.

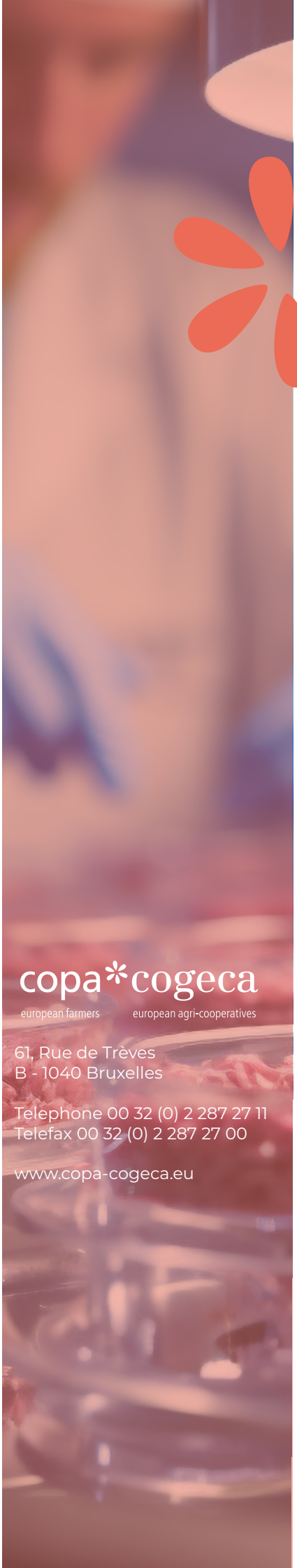
11. When served in the HoReCa sector or in public institutions (canteens, hospitals, prisons etc), information regarding the presence and geographical origin of lab-grown products, if they were to be authorised, must be provided. Such products should be strictly forbidden from school canteens.

Public funding

12. As essentially artificial products, lab-grown products are not and cannot be considered agricultural products. As such, if they were to be authorised, they should not benefit from any scheme providing public support to agricultural products and/or producers (i.e., CAP or promotion policy funding).

Conclusions

Following an examination of the development of lab-grown products in terms of safety and health risks, misleading information to consumers, dubious environmental benefits and socio-economic consequences for farmers, agri-cooperatives and rural areas, Copa-Cogeca calls for the application of the precautionary principle until an appropriate EU legislative framework is in place. Any possible authorisation should be preceded by a comprehensive impact assessment of the ethical, social, food safety, environmental, and economic dimensions and consultations with Member States, other relevant EU Institutions, and stakeholders. It argues against comparing these products with animal-based products and rejects a purely utilitarian approach to food production that views lab-grown and other alternative protein products as substitutes for animal-sourced products. It reiterates that food is also a culturally and socially significant aspect of human life, with anthropological, ethical, economic, and political implications. Lastly, it warns against reducing food production to a technological race with countries with scarce natural endowments as this may threaten the sustainability of rural areas and the European way of life. In summary, it calls for a more comprehensive evaluation of the societal consequences of these innovations and emphasises the importance of maintaining diverse food production methods and lively rural economies.



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Copa and Cogeca are the united voice of farmers and agri-cooperatives in the EU.

Together, they ensure that EU agriculture is sustainable, innovative and competitive, guaranteeing food security to half a billion people throughout Europe. Copa represents over 22 million farmers and their families whilst Cogeca represents the interests of 22,000 agricultural cooperatives. They have 66 member organisations from the EU member states.