

Giulia Formici
Maria Cecilia Mancini
Lucia Scaffardi *Editors*

Cell-Based Meat in the European Union and Beyond

An Interdisciplinary Study

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Foreword

As a proposed solution for an imminent global crisis to satisfy the growing demand for animal proteins, cultivated meat has reached a stage where marketing approvals in several countries have been slow but, in the end, granted. This sets the stage for large-scale production and consumption. Indeed, a handful of companies are scaling production to do so. During the decade-long development of cultivated meat, it has become clear that there are many societal ramifications of this technology, including legal, regulatory, social, market, and economic ones, many of them strongly interacting.

This volume provides an integrated, neutral, and highly academic exposé of the most pressing societal issues, with a strong focus on the European situation, which is arguably the most complex political and social landscape in the world. It is also the region where the concept of cultivated meat originated. Cultivated meat thrived through private money invested in startup companies and was relatively late followed by much-needed public funding. The present volume is the outcome of such public funding and as a result has a refreshing neutral and academic approach to the issues discussed. Each of the contributions is from world class academic experts in the field.

In the new academic field of cultivated meat, most papers and books cover scientific and technological aspects in addition to consumer acceptance studies. None of those span the entire societal panorama exposing and discussing the interaction between, for instance, the regulatory framework, nomenclature, policy, understanding of cultural background, and consumer behavior. This book is unique in providing that overview and understanding of the interactions. It is a highly recommended read for anyone interested in the societal issues of the upcoming protein transition.

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Mark Post

Preface

This book is one of the main outputs of the Research Project of Relevant National Interest (PRIN) 2022 “The Future of Food, the Food of the Future. Novel Food, Innovation, Sustainability and Legal Issues,” funded by the European Union—Next Generation EU (Mission 4, Component 2, CUP D53D23007160006). Coordinated by Professor Lucia Scaffardi (Principal Investigator) and involving three Research Units (University of Parma, University of Milan, and Roma Tre University), the project hosted several conferences and seminars dedicated to cell-based meat, a highly innovative and controversial Novel Food. The complex scientific, regulatory, and economic challenges of this emerging product—as well as the vibrant debate it has sparked—inspired this Volume.

Bringing together contributions from scholars affiliated with Italian and foreign Universities and Institutions, the present work offers an interdisciplinary analysis that draws on diverse expertise and research experience. It is intended as a resource for a vast audience, including policymakers, public authorities, food business operators, researchers, students, and citizens. The aim is to provide the clear, research-based insights needed to navigate an intricately topic and to counteract disinformation and purely ideological narratives.

The Editors thank all the Authors for their constant collaboration and precious contributions. The Editors would also like to thank Helen Ampt for revising the English, Maria Giulia Corazza for her meticulous formal review and enthusiastic participation in this editorial journey, the Springer team for embracing our book proposal and supporting its realization, as well as the anonymous reviewers for their constructive and valuable suggestions.

Finally, the Editors express their gratitude to the Department of Law, Politics and International Studies of the University of Parma for institutional support in the broader framework of the “Food for Future” Project (Department of Excellence 2023–2027), as well as to the Italian and EU Institutions that made the PRIN 2022 project possible, enabling us to publish this book as open access.

Parma, Italy

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Abbreviations

ANPR	Advance Notice of Proposed Rulemaking
BOAH	Board Of Animal Health
BSE	Bovine Spongiform Encephalopathy
CAFOs	Confined Animal Feeding Operations
CAP	Common Agricultural Policy
CFR	Code of Federal Regulations
CJEU	Court of Justice of the European Union
CM	Cell-based Meat
CRS	Congressional Research Service
CSR	Corporate Social Responsibility
DARPA	Defense Advanced Research Projects Agency
DOE	Department of Energy
EC	European Community
EESC	European Economic and Social Committee
EFSA NDA	EFSA Panel on Nutrition, Novel Foods and Food Allergens
EFSA	European Food Safety Authority
EPRS	European Parliamentary Research Service
ESCs	Embryonic Stem Cells
EU	European Union
F2F	EU “Farm to Fork” Strategy
FAO	Food and Agriculture Organization
FBOs	Food Business Operators
FBS	Fetal Bovine Serum
FDA	Food and Drug Administration
FFDCA	Federal Food, Drug, and Cosmetic Act
FMIA	Federal Meat Inspection Act
FPLA	Fair Packaging and Labelling Act
FRMD	Food Risk Management Department
FSA	Food Standards Agency
FSANZ	Food Standards Australia New Zealand
FSIS	Food Safety Inspection Service

FSSA	Food Safety and Security Act
FSVO	Food Safety and Veterinary Office
GAO	Government Accountability Office
GAP	Good Agricultural Practice
GEM	Genome-scale Model
GFI	Good Food Institute
GFSI	Global Food Safety Initiative
GFL	General Food Law
GHG	Green House Gas
GLEAM	Global Livestock Environmental Assessment Model
GMOs	Genetically Modified Organisms
GMP	Good Manufacturing Practices
GRAS	Generally Recognized as Safe
HACCP	Hazard Analysis Critical Control Points
HHS	Department of Health and Human Services
IIA	Israeli Innovation Authority
IPCC	Intergovernmental Panel on Climate Change
iPSCs	induced Pluripotent Stem Cells
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LCAs	Life Cycle Analysis
LEAP	Livestock Environmental Assessment and Performance
MAHA	Make America Healthy Again
MEWR	Ministry of the Environment and Water Resources
MSE	Ministry of Sustainability and the Environment
NACMCF	National Advisory Committee on Microbiological Criteria for Foods
NAMs	New Approach Methodologies
NASA	National Aeronautic Space Administration
NFC	Novel Food Committee
NFS	National Food Service
OECD	Organisation for Economic Co-operation and Development
OLFs	Other Legitimate Factors
OLS	Ordinary Least Squares
PAFF	Standing Committee on Plants, Animals, Food and Feed
PHPFL	Public Health Protection Food Law
PPFNL	Protection of Public Health Food and Nutritional Labelling
PPIA	Poultry Products Inspection Act
SD	Standard Deviation
SDGs	Sustainable Development Goals
SFA	Singapore Food Agency
SFAA	Singapore Food Agency Act
STS	Science and Technology Studies
TEA	Techno-Economic Assessment
TFEU	Treaty on the Functioning of the European Union
TRIS	Technical Regulation Information System

UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
UNGA	United Nations General Assembly
USA	United States of America
USC	United States Code
USCA	United States Cattlemen's Association
USDA	United States Department of Agriculture
USDA-FSIS	United States Department of Agriculture—Food Safety and Inspection Service
VAT	Valued Added Tax
WHO	World Health Organization
WMO	World Meteorological Organization
WTO	World Trade Organization

Animal Welfare as a Constitutional Value: The Debate in Comparative Law and the Emerging Role of Cultivated Meat



Cinzia Piciocchi

Abstract The chapter examines the process of legal recognition in the protection of animals, with a particular focus on constitutional law. After a brief analysis of comparative constitutional jurisprudence, especially regarding the potential to grant rights to animals, the various approaches to animal rights are explored. Specifically, the welfarist and dignitarian approaches are discussed, with a specific focus on their relevance to the current debate over cultivated meat and their implications for animal rights. The potential impact of cultivated meat in challenging traditional food systems and prompting a re-evaluation of the ethics surrounding animal exploitation and animal welfare is considered.

Keywords Constitutional law · Animals' Habeas Corpus · Constitutional jurisprudence · Welfarism/dignitarianism · Cultivated meat

1 Introduction

The law does not regulate all behaviours and potential human interactions. In our daily lives, for example, we follow various rules: we greet one another, dress and speak in ways appropriate to the context, behaviours (for the most part) not governed by legal systems but by social norms. The perception of whether a behaviour is public or private evolves over time, and as such, what is regulated by law can also change. Consider, for instance, the abolition of so-called “honour crimes,” alongside the increasing influence of scientific advances in genetics, reproductive health and social sciences, which have reshaped our understanding of human rights and individual autonomy. Certain matters are now regulated, though they were not in the

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past, simply because they did not exist before: it's not hard to find examples when considering scientific and technological advances, which create new realities and new choices for individuals that require legal frameworks. There are many concrete examples: from options in scientific research to the possibilities enabled by advances in artificial intelligence and progress in medicine. These advances have become embedded in daily life, from the most routine aspects (such as the opportunities created by apps) to the most existential (such as reproductive choices or end-of-life decisions), presenting a clear need for regulation. The legal literature has documented all these changes: by reviewing recent scholarly works, one can observe an increasingly interdisciplinary approach to analysing many topics, with a growing awareness of the need for a comprehensive perspective to fully grasp the various complexities involved.

Sometimes, the "new" areas where the law intervenes do not emerge from events that previously did not exist, but rather from existing phenomena that begin to be "seen" in light of changing social conditions. Examples can be drawn from various fields: regulation of the legal consequences of choices in affective matters (such as marriage, cohabitation, parenthood, etc.) are products of their time, largely influenced by social acceptance of relationships, choices and statuses that, if not recognized, could face ostracism and marginalisation. Similarly, many anti-discrimination laws protecting groups, minorities or regulations addressing individual vulnerabilities do not arise from the creation of categories that did not exist before, but rather from acknowledgment of their existence, and crucially, their needs.

The legal regulation of animals is not a recent development: animals have been an integral part of human history. They have stood alongside humans since the earliest cave paintings, which are evidence of their presence.¹ The need for regulatory norms is therefore intrinsic, animals being an integral part of human life. What has evolved over time is the recognition of animal welfare as a value to be protected for its own sake. This has led to the development of laws that prioritize the protection of animals, irrespective of their use or utility to humans. This cultural shift initially took root in philosophy and was later progressively adopted in legal frameworks.² Initially, the legal recognition of enhanced animal protection appeared in specific sectors (such as farming, scientific use and transport) before gradually pervading international and supranational law from a broader perspective. In this context, international declarations, particularly the Treaty on the Functioning of the European Union (TFEU) as amended by the Lisbon Treaty, are noteworthy.³ The TFEU

¹Regarding the relationship between animals and the law in antiquity, see for example Oylan and Rosenblum (2021).

²Cao and White (2016), in particular p. 111.

³See Article 13 of the Treaty on the Functioning of the European Union (TFEU, consolidated version, in OJ C 202 7.6.2016, p. 47): "In formulating and implementing the Union's agriculture, fisheries, transport, internal market, research and technological development and space policies, the Union and the Member States shall, since animals are sentient beings, pay full regard to the welfare requirements of animals, while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and

notably enshrined the recognition of animals as sentient beings, a pivotal definition that underpins their legal status.

At state level, normative sources addressing specific issues typically preceded constitutional provisions. The inclusion of animals in constitutional texts is in fact a relatively recent development, representing a significant milestone that elevates the protection of animal welfare to its highest form at the top of legal sources.

Here I examine the constitutional significance of animal welfare from a comparative law perspective, exploring potential links to the factual reality of cultivated meat, made possible by scientific advancement. This topic could have profound implications for the legal protection of animals. In Sect. 2, I explore the constitutional recognition of animals, analysing the values protected (such as dignity and welfare) and how this is done. In Sect. 3, I assess how the issue of cultivated meat aligns with these values (or otherwise), offering a critical review of the relevant doctrinal perspectives.

2 Animals in Constitutions

As previously mentioned, the inclusion of animals in constitutional texts is a relatively recent development. This does not imply that animals were not subject to legal regulation in the past, but rather that such regulation typically occurred through primary and secondary sources, often focused on specific areas. One of the earliest examples of constitutional intervention on this issue is Switzerland, where a reference to animals was added to the Constitution in 1973 following a referendum.⁴ Since then, several other countries have followed suit, including Egypt (2014), Italy (2022) and Germany (2002).⁵ It is also worth noting that both newdrafts of the Chilean Constitution (2022 and 2023; which ultimately did not pass) included reference to animals.⁶

Constitutional provisions on animal protection vary across countries, reflecting different structures and approaches. Some associate animal protection with the preservation of ecosystems, while others include the rights of future generations,

regional heritage". Regarding the protection of animals at international level, see Cao and White (2016), Kelch (2017) and Chapaux et al. (2023).

⁴See the *Arrêté fédéral concernant un article sur la protection des animaux qui remplace l'article 25bis actuel de la constitution fédérale* (27 June 1973), FF 1973 I 1633 on which Bolliger (2016). https://www.fedlex.admin.ch/eli/fga/1973/1_1685_1633_1397/fr. Accessed 4 April 2025.

⁵Examples of constitutional provisions regarding animals can be found at <https://animal.law.harvard.edu/>. Accessed 4 April 2025.

⁶Regarding the protection of animals in the 2022 and 2023 draft Constitutions of Chile, see Cerda-Guzman and Insunza (2024). From a more general perspective, with regard also to the constitutional amendments concerning animal protection, see Le Bot (2024).

sometimes combining all three elements in a single provision.⁷ The scope of protection also differs in the constitutional articles of various countries: some refer to general animal protection (e.g. Austria and Brazil), while others emphasize promoting and safeguarding animal welfare, such as Article 41 of the Luxembourg Constitution, which focuses on the protection of their welfare.

The Slovenian Constitution (1991) Article 72(4) specifically protects animals from torture, stating, “The protection of animals against torture shall be regulated by law.” The Egyptian Constitution calls for “kind treatment” of animals, which is similar in phrasing to the “compassion for living creatures” in Article 51A of the Indian Constitution. Likewise, the Russian Constitution (2020, Article 114(f5)) mandates that the federal government “shall undertake measures aimed at forming a responsible attitude in society towards animals”.⁸

It is also important to note that some of these constitutional provisions have been amended, sometimes affecting the values being protected. For example, the Swiss Constitution was amended in 1992 after a referendum to include reference to dignity of living beings, a concept that has since been interpreted in various ways in its application.⁹ The same principle (dignity) was later reaffirmed in Swiss law with the adoption of the Animal Welfare Act in 2005, or even earlier in the Swiss Civil Code, which explicitly stated in 2003 that animals are not things. However, legal scholars

⁷This being the case, for example, of the Italian constitution, whose Article 9, para 3 was amended by Constitutional Law of 11 February 2022, No. 1, (in Official Journal no. 44 of 22 February 2022): “The Republic [...] shall safeguard the environment, biodiversity and ecosystems, also in the interest of future generations. State law shall regulate the methods and means of safeguarding animals” (English translation available at <https://www.cortecostituzionale.it/>. Accessed 4 April 2025). See also Article 20a of the German Constitution: “Protection of the natural foundations of life and animals. Mindful also of its responsibility towards future generations, the state shall protect the natural foundations of life and animals by legislation and, in accordance with law and justice, by executive and judicial action, all within the framework of the constitutional order” (English translation available at <https://www.gesetze-im-internet.de/>. Accessed 4 April 2025). See also Van Hoorick and Veriners (2024), p. 227.

⁸Eisen (2017) and Le Bot (2023). English translations taken from <https://animal.law.harvard.edu/what-we-do/projects/constitutional-law/>. Accessed 4 April 2025.

⁹Art. 120 of the Swiss Constitution provides: “Human beings and their environment shall be protected against the misuse of gene technology. The Confederation shall legislate on the use of reproductive and genetic material from animals, plants and other organisms. In doing so, it shall take account of the dignity of living beings as well as the safety of human beings, animals and the environment, and shall protect the genetic diversity of animal and plant species” (English translation available at <https://www.fedlex.admin.ch/eli/cc/1999/404/en#fnbck-d7e4606>. Accessed 4 April 2025). The data related to the referendum are available at this web address <https://www.bk.admin.ch/ch/i/pore/va/19920517/index.html>. Accessed 4 April 2025; while the data regarding the voting in the individual cantons can be found here <https://www.bk.admin.ch/ch/i/pore/va/19920517/det378.html>. Accessed 4 April 2025. See also Michel and Kayasseh (2011); Toomey (2020); Giménez-Candela (2018), p. 22; Kurki (2024), also mentioning other Constitutions or statutes that refer to animal dignity, such as those of Belgium, Luxembourg, Denmark, Finland and the Americas.

have pointed out that the actual application of dignity in relation to animals has not been consistent.¹⁰

Given the recent nature of some of these reforms (such as the amendment to Article 9 of the Italian Constitution in 2022),¹¹ jurisprudence—particularly that of the constitutional courts—will play a key role in shaping their interpretation, and the meaning will become clearer with time.¹²

Beyond the specific terminology used to define the object of protection in the Constitutions of different countries, the literature has highlighted certain cross-cutting values that from a comparative perspective, seem to be common across various legal systems when it comes to the constitutional protection of animals: welfare and dignity. The relationship between these two concepts has drawn significant attention from scholars, who identify them as the basis for two distinct approaches—welfarism and dignitarianism—both aimed at guiding animal protection, though from different perspectives.¹³ While welfarism focuses primarily on ensuring animal welfare by preventing suffering, pain or distress, dignitarianism emphasizes respecting the animal as an individual, independent of mistreatment or suffering, and recognizing essential aspects of its identity.¹⁴

Both concepts attract significant scholarly attention and it is precisely in the debates exploring the relationship between welfarism and dignitarianism that insights, valuable for understanding the implications of the constitutionalization of animal protection, arise.¹⁵ One line of reflection focuses on the parallels that can be drawn with human rights: the differences between animal rights and human rights in constitutional frameworks are a broad theme, the contours of which are still being defined. Given the recent inclusion of animals in constitutions, some aspects remain the subject of ongoing debate. These discussions primarily address two issues: the direct holding of rights and their balancing.

From the first perspective, certain organizations have been actively working to extend direct rights to certain animals, such as granting *habeas corpus* to specific species (mainly large mammals such as primates and elephants). Concerning fundamental rights, these activities target various levels, seeking both the introduction of

¹⁰Blattner (2019) who underlines that while animal dignity has “become a bedrock principle of Swiss animal law”, as a value it has “been applied to a few case groups”, p. 331.

¹¹The constitutional amendment is reported above at note 7. On the reform, see Rescigno (2023).

¹²For example, a case much cited in the literature was decided by the South African Constitutional Court: the Court sought to recognise the intrinsic value of animals, CCSA (8 December 2016) CCT 1/16 *National Society for the Prevention of Cruelty to Animals v Minister of Justice and Constitutional Development and Another*. See also Bilchitz and Wilson (2022).

¹³Kurki (2024).

¹⁴See for example Perry (2023) and Fasel (2019).

¹⁵Of course, welfarism and dignitarianism show different possible gradations and the intersections between them can also have different dynamics. A synthesis of these concepts has been proposed in these terms by Kurki (2024): “My overall claim can be put as follows: the notion of dignity is used in animal law discourse to express claims of *more-than-welfarism*. Whereas welfarism is premised on the humane treatment of animals and the prevention of unnecessary suffering, animal dignity is premised on respect for animals”.

direct fundamental rights for animals into Constitutions and the initiation of legal actions to have such rights recognized by courts. One example of the first type is a referendum proposed in Switzerland, which aimed to introduce recognition of the rights of non-human primates to life and physical and mental integrity into the Constitution of the Basel-City canton. The referendum was promoted by the opinion group “Sentience Politics” and held in February 2022. Its outcome was negative: participation was 51% with 25.5% of voters in favour.¹⁶

On the judicial front, there is a notable diversification of outcomes, ranging from rulings in favour (a minority, such as in Pakistan and Argentina),¹⁷ to rejections (currently the majority, especially in the United States, where the *Nonhuman Rights Project* has long been promoting lawsuits aimed at securing such recognition).¹⁸

It should be clarified that the issue of direct rights of animals must be distinguished from the protection of animals *per se*, which is already ensured by sector-specific legislation. The debate does not therefore concern the legal protection of animals, but rather extension of direct rights to them. The arguments in support of this extension are often presented by associations advocating for it: the evolution of fundamental rights, which views the expansion of rights—from those who had none to those who gain them—as a step forward in the development of civilization. In other words, the categories frequently cited in this process of evolution are women, slaves and minors, who, it is argued, did not have all or some of the rights once, but today these rights are considered inherent to all human beings, grounded in the principles of equality and human dignity, and in line with the post-revolutionary declarations of fundamental rights.¹⁹ The courts, however, hesitate on several fronts regarding this recognition, offering further arguments: from the difficulty of associating responsibilities with rights in the case of animals, to the complexity of the consequences such recognition might bring. This very complexity (a “labyrinth of consequences,” as phrased in one ruling) seems to be the general basis for the courts’ reluctance, beyond the specific arguments put forth.²⁰ This reluctance can be inter-

¹⁶The initiative is reported at <https://sentience.ch/en/>. Accessed 4 April 2025. See also Blattner and Fasel (2022).

¹⁷See the cases reported by Jaleel (2024) and Moore (2023).

¹⁸See the numerous cases reported on the website www.nonhumanrights.org. Accessed 4 April 2025.

¹⁹See for example the US District Court for the Northern District of California (24 April 2018) in the *Nonhuman Rights Project Statement on Naruto v. Slater*: “The court also claimed implicitly and repeatedly that the word “person” is synonymous with “human being,” when that has never been true, is not true today and will never be true. For centuries many humans beings, including slaves, women, children, Jews and fetuses were not ‘persons’, but ‘things’, while around the world, courts and legislatures have characterized a chimpanzee, a bear, a national park, a river, a Hindu idol, a mosque, the Amazon rain forest and other nonhumans, as ‘persons’.” <https://www.nonhumanrights.org/blog/nhrp-statement-monkey-selfie-case/>. Accessed 4 April 2025.

²⁰See Court of Appeals of New York (14 June 2022) Slip Op. 385, *Nonhuman Rights Project, Inc. v. Breheny* in which the Court of Appeals recalls the words of the Appellate Division (which ruled on the same dispute): “The Appellate Division also cautioned that a judicial determination that nonhuman animals are legal “persons” would “lead to a labyrinth of questions that common-law

preted as an awareness of the potential intertwining effects of such recognition, which due to its complexity and partially unpredictable nature, would find a more appropriate place in the legislative framework. Such awareness may thus be primarily linked to the inadequacy of the source (jurisprudence), given the intricate series of intersecting effects that would be better addressed in the domain of legislative authority.

While the issue of direct rights is a relatively recent frontier concept, accompanied by various challenges (such as the representation of animals in court, which remains essential regardless of whether they directly hold rights), another key view is the balancing of competing interests. In this regard, the fundamental characteristics of the current framework of animal rights and the primary differences with human rights become clear.

Firstly, animal rights can be subject to a balancing of interests, even in areas where this would be impossible for humans. One example is the possibility of animals being bought and sold—a practice that, thankfully, is unthinkable for humans but remains permissible for animals, albeit with respect for their sentience. For example, while it is legal to purchase a pet, it is not permissible to harm or kill it, unlike an inanimate object; it is possible to buy a chair and destroy it without legal repercussions, but purchasing an animal comes with the responsibility to treat it humanely, and harming or killing it arbitrarily is prohibited. The right to life, which is unconditional for humans, can, in certain circumstances, be denied to animals, provided a valid justification can be demonstrated. A clear example of this is the use of animals in the food industry, a sector deeply influenced by the cultural traditions and practices of different countries. Social changes can significantly impact this, particularly in the case of individuals whose diets are dictated by religious or other principles (such as vegans or vegetarians). The spread of such dietary preferences can affect consumer demand and also lead to lobbying efforts aimed at securing legal provisions that accommodate these choices (e.g. in schools, prisons, hospitals, etc.), inevitably influencing the market and judicial disputes as well. The cultural changes underlying food choices are and will be fundamental in shaping the supply chain that involves animals, profoundly influencing the meat market and, consequently, the topic of slaughter and cultivated meat.²¹

The legal debate also prompts consideration of another foundational principle of constitutional law: equality. The constitutionally protected rights of individuals are recognized in an egalitarian framework, reinforced by the principle of dignity, which especially since the post-World War II era, has solidified the equality of all human beings, without distinction.²² This, however, does not apply to animals, whose status is influenced by a variety of factors: their level of development and sentience, as well as the perceived “closeness” to humans, including the role of

processes are ill-equipped to answer,” noting that “the decisions of whether and how to integrate other species into legal constructs designed for humans is a matter better suited to the legislative process”.

²¹ On the cultural relevance of food choices, see materials and references in Piciocchi (2024).

²² For all, see the seminal volume by Barak (2015).

emotional attachment to certain animals, such as pets. These criteria are informed by science, but social perceptions also play a key role. For example, social and legal activism often focuses on animals with higher cognitive development. This can be seen in legal actions aimed at granting direct rights, which typically—as seen above—involve large mammals, such as elephants and primates. Similarly, movements like the “Great Apes Project” have sometimes resulted in specific legal consequences: in New Zealand, for instance, a legislative ban was introduced on the scientific use of great apes.²³

In this regard, direct rights and equality appear to be closely linked, this connection being reflected in the hesitations surrounding the granting of direct rights, as noted by some courts. These concerns can be framed as a “slippery slope” of rights: if, for example, habeas corpus is extended to great apes, would the extension of such rights to cattle or pigs, based on the principle of equality, be a logical next step? A positive answer to this question would undoubtedly have a profound impact on the agri-food sector, with significant economic and labour-related repercussions.

In areas where constitutional protection for animals is applied, there is often a need to balance animal welfare with human needs. For example, their lives are protected, but with the understanding that, in some cases, animals may be sacrificed (e.g. in the food industry); their well-being is ensured, even though they may be used in certain contexts (e.g. circuses or zoos) and so on. It is important to emphasize that even in practices where the use of animals is accepted, sector-specific regulations are in place to safeguard animal welfare. The suffering of sentient beings is therefore regarded as a value to be protected, even when their death is accepted as a necessary outcome due to their intended use.²⁴ From a general perspective, the balancing of opposing needs, both constitutionally protected, is a well-established and widely used judicial technique, forming an integral part of comparative constitutional jurisprudence. However, in cases involving the constitutional protection of animals, the “core” around which the balancing of interests takes place can often be identified in the concept of necessity. Indeed, the definition of necessity frequently appears in legal acts and jurisprudence, signifying that the use of animals, still permitted in certain areas, is contingent on the existence of a need, the definition of which, like much of the law on this issue, is still being defined.

What exactly does “necessity” mean? Does it refer to the use of animals in the food industry? In entertainment activities? Does the tradition of a people constitute a form of necessity, even when the practices associated with it could be modified?

²³ See the website of the Great Apes Project <https://www.projeto-gap.org/en> and the list of countries that have implemented restrictions regarding experimentation with great apes provided on the R&R (Release & Restitution) project website at the following address: <https://www.releasechimps.org/laws/international-bans>. Both accessed 4 April 2025. See also the New Zealand Animal Welfare Act (1999 No 142) available at <https://www.legislation.govt.nz/act/public/1999/0142/latest/whole.html> (accessed 4 April 2025) defining “non-human hominid means any non-human member of the family Hominidae, being a gorilla, chimpanzee, bonobo, or orangutan” and providing that “the use of the non-human hominid in the research, testing, or teaching is in the best interests of the non-human hominid.”

²⁴ See for example the consideration made by Natrass (2004).

And religion? The perception of necessity, in fact, can be tied to complex factors, blending customs and traditions of a country. This is not only in reference to food habits, which are deeply intertwined with the history of the country in which they are practiced, but also cultural manifestations in a broader sense, which reflect rooted traditions, including, though not exclusively, religious practices.²⁵

It is not coincidental, in the opinion of the author, that comparative jurisprudence provides several examples of interventions against cultural practices, often deeply rooted in the traditions of countries, where the necessity of such practices does not seem sufficient to justify the sacrifice or suffering of animals. In this regard, several recurring examples in the literature can be highlighted: *Jallikattu* (a practice widespread in certain Indian territories, involving bulls that a crowd of people attempts to grab), which has been deemed contrary to animal welfare, and for this reason, the subject of an unfavourable ruling in 2014. While balancing these practices against animal welfare, the Indian Supreme Court ruled that the latter should take precedence, and that in the absence of any necessity, the welfare of bulls should not be ignored solely for human pleasure.²⁶ Similar considerations have been made by the Brazilian Federal Supreme Court, which has ruled against certain traditional practices deemed contrary to animal welfare, such as *farra do boi* (which involves the violent killing of cattle),²⁷ cockfighting²⁸ and the *vaquejada*, a type of rodeo considered violent.²⁹ Cultural and religious traditions fall under constitutional protection: from freedom of religion to freedom of expression, as well as the protection of groups and minorities whose identity is often closely tied to rituals and traditions involving animals. In addition to these aspects, there are considerations surrounding freedom of economic initiative: it has been noted that some of the events debated, even in judicial disputes, also have an economic dimension, as they represent shared gatherings of many people with significant impact on the local economy. Thus various interests come into play, all constitutionally protected, but an evolving concept of necessity emerges as the key factor in determining which prevails in each case.

This change in the concept of necessity is likely to have a significant impact on the constitutional value of animal protection, even more than the question of direct rights, in my opinion. From a very general perspective, we are witnessing the development of a concept that represents the “animal condition” at the constitutional level, and appears to be moving toward a synthesis of the two concepts mentioned above (welfarism and dignitarianism). Particular importance seems to be placed on

²⁵ See *Food Justice in Religious Laws: Hypotheses on Cultivated Meat* by Anello in this volume.

²⁶ Supreme Court of India (7 May 2014) 2014 (7) SCC 547, *Animal Welfare Board of India v. A. Nagaraja and Others*.

²⁷ See the decision of the Supremo Tribunal Federal of Brasil (3 June 1997) n. 153.531-8/SC, *Recurso Extraordinário*, on which Frota Pestana de Aguiar (2021).

²⁸ See the two decisions of the Supremo Tribunal Federal of Brasil (26 May 2011) n. 1856, *Briga de Galos, Lei Fluminense no. 2.895/98* and Supremo Tribunal Federal of Brasil (29 June 2005) n. 2.514, *Lei n. 11.366 do Estado de Santa Catarina*, on which Kohler (2019).

²⁹ See the decision of Tribunal Supremo Federal of Brasil STF, n. 24,165/2016, *Ação direta de inconstitucionalidade*, on which Neto (2018), p. 172.

respecting the ethological characteristics of animals, which is not necessarily limited to merely refraining from behaviours harmful to animal welfare, but also involves respecting the species in question and the animals' inherent traits. The references proposed in literature point, for example, to actions that humiliate animals (e.g. circus performances), or even to respecting their inanimate bodies: a theme that is indeed comparable to the protection of the inanimate human body, where the issue of dignity plays a significant role.³⁰

3 Cultivated Meat and Constitutional Protection of Animals

The relationship between the constitutional protection of animals and the prospects that cultivated meat offers for their welfare involve several complex elements. Primarily, both topics are still evolving. The constitutional protection of animals and their welfare has already been discussed: amendments to constitutions to include animals occur at different times, but understanding their full implications requires an analysis of judicial, administrative and private-sector applications. Over time, we will be able to determine how and in what areas these principles have been (or will be) applied. Cultivated meat, too, is an evolving subject: although research in this field dates back some time, its industrial and commercial applications are still in their early stages for several reasons. Firstly, commercialization remains limited; for example, entry into the European market will be contingent on approvals from food safety authorities, as is the case for all Novel Foods.³¹ Secondly, different regulations pose challenges: some countries, such as Italy and Hungary, have already imposed or are trying to impose bans or restrictions on the future commercialization of cultivated meat. These regulations are designed for the future, regulating not what exists but what is to come.³² Finally, the cost factor plays a significant role in the spread and commercialization of cultivated meat, impacting its availability to consumers, alongside the cultural acceptance of this food, which will play an equally important role.³³ Many of the considerations that can be made regarding the

³⁰ Foster (2011).

³¹ See *Cell-Based Meat in the European Union: A Regulatory Crossroads* by Corazza and Formici in this volume.

³² See the Italian law: *Disposizioni in materia di divieto di produzione e di immissione sul mercato di alimenti e mangimi costituiti, isolati o prodotti a partire da colture cellulari o di tessuti derivanti da animali vertebrati nonché di divieto della denominazione di carne per prodotti trasformati contenenti proteine vegetali* (in OJ no. 281, 1 December 2023), on which Soccol et al. (2024) and Lanzoni et al. (2024). The Hungarian ban on cultivated meat was notified and rejected by the European Union in 2024 (see the Communication from the Commission TRIS/(2024) 1869, Directive 2015/1535 notification 2024/0394). For a comparative analysis of the legal bans regarding cultivated meat, see Fino et al. (2024). See also *Cell-Based Meat in the European Union: A Regulatory Crossroads* by Corazza and Formici; *The Legal Debate on Cultured Meat Around the World: Comparative Insights from the United States, Singapore and Israel* by Pitto in this volume.

³³ See *Cell-Based Meat and Food Policy*, by Mancini in this volume.

impact of cultivated meat on animal welfare, therefore, focus on future and potential scenarios.

In particular, definitions seem to play a very important role: a theme that is traditionally foundational in the legal field, where falling under one definition or another has precise legal consequences. The possibility of relating cultured meat to the different definitions of “food”, “meat”, etc., presents issues not dissimilar to those of Novel Foods, with the same intertwining of scientific and legal considerations.

The range of terms used for cultivated meat, however, has also a somewhat different relevance, since more than on the legal plane (which must indeed be based on scientific elements to establish a definition), these terms are aimed at consumers and may determine the potential success and circulation of the product. Here, we are therefore more on a cultural and social level than on a legal one.³⁴ This is an aspect that is naturally not without consequences in the political arena, which inevitably absorbs social demands and influences the laws that Parliament chooses to pass. From this perspective, it is likely that “Frankenstein meat” will have less success than “clean meat”, though both terms refer to the same product. In fact, there is a significant body of literature addressing the definitions of this food product and its potential consequences.³⁵

While the legal relevance of this issue, as mentioned, is only tangential, it is important to highlight the reference to another concept, “nature”, which represents a principle explored in constitutional law. Its broad scope, however, makes it subject to interpretations that can vary significantly.³⁶ Reference to nature in the legal field is often ambiguous: beyond “nature” referring to the ecosystem, which pertains to an object with a more univocal meaning, the concept of naturalness is invoked in relation to death, procreation, family and so on. According to these arguments, there is a way to die, procreate and form a family that follows the dictates of nature, while behaviours that deviate from these modes are against nature. What goes against these notions of nature is stigmatized, with different aspects of nature being invoked in relation to specific issues. When trying to understand what is meant by this concept, nature ends up taking on different meanings, depending on the boundaries drawn between it and what is presented as contrary to nature. Science and medicine, for example, can be seen as two fields inherently opposed to “nature”: the fight against cells that begin to grow abnormally in the human body, for instance, can be viewed as unnatural use of pharmaceutical therapies, just as surgery to remove them is seen as even less natural. Similarly, it is difficult to identify the “naturalness” of the objects that surround us every day, from electric light bulbs to mobile phones and computers. Even in relation to cultivated meat, the concept of nature sometimes

³⁴ Pasca and Arcese (2025).

³⁵ On the definitions of cultivated meat and their importance, see Bryant and Barnett (2019) and Dilworth and McGregor (2015).

³⁶ See *The Regulatory Landscape of Cultured Meat and Fish: Terminology and Consumer Information Provisions* by Rolandi and Sirsi; *Who Hates Cultured Meat? Examining Public Opposition to Cellular Agriculture* by Broad and Glenna in this volume.

emerges in the narrative of this “bio-object” (if it can so be called)³⁷ and the product that will be (or in some cases already is) introduced to the market. In this case, too, definitions play an important role, because while “clean meat” evokes the idea of greater protection for animal welfare, on the other hand, the concept of “nature” appears to be in contrast with a food product created in a laboratory.

On a more relational level, “nature” has also been linked to the connection with animals, which the disappearance of non-cultivated meat may impact.³⁸ From this perspective, the appeal to nature seems to imply more of a return to non-intensive farming practices, in line with the idea of a “nature” in which the intersections between food and science are minimized (at least in the aspects that exist in cultivated meat).³⁹ On the other hand, the reduced contact between humans and animals could, according to some, have a positive effect by lowering exposure to animal-borne diseases: yet another perspective to consider.⁴⁰

By combining the elements considered so far and looking towards the future, two main areas of intersection between animal welfare and the prospects related to cultured meat can be identified.

From an initial perspective, animal welfare is considered within the scope of strict welfarism, meaning the absence of suffering and respect for the animal’s ethological characteristics as mentioned above. This debate, in particular, highlights the different connections between the concept of animal welfare—which, as we have seen, is enshrined as a constitutional principle—and the potential developments that cultured meat could bring. The first, most immediately perceptible, issue concerns how concretely these new techniques will allow for the bypassing of animal use in their corporeal dimension. The number of interventions necessary on their bodies (such as biopsies or the use of fetal bovine serum)⁴¹ undoubtedly impacts the reflections on animal welfare, both from the perspective of ethical treatment and the possibility of moving away from practices involving the animal’s body.

From this viewpoint, a particularly debated issue concerns the use of fetal bovine serum.⁴² The use of fetal bovine serum has been at the centre of criticisms from those who highlight its problematic animal-welfare aspects. The extraction of bovine serum has been analysed both as a scientific issue and as an ethical concern. From the ethical standpoint, particular attention has been given to the methods used to obtain the serum and to potential fetal suffering.⁴³ Various opinions have been

³⁷ Regarding the definition of bio-objects, see Webster et al. (2016).

³⁸ Mancini and Antonioli (2020).

³⁹ Van der Weele and Driessen (2013).

⁴⁰ Mancini and Antonioli (2020). See also contributions in Part “Scientific and Sustainability Challenges” of this volume.

⁴¹ Chriki and Hocquette (2020).

⁴² On the use of Fetal Bovine Serum (FBS) for the production of cultivated meat, see *What Is Cell-Based Meat? Food Safety and Sustainability Aspects* by Cheli et al. and *Safety Assessment of Cell-Culture-Derived Food: The Role of the European Food Safety Authority* by Dall’Asta and Gjoni, both in this volume.

⁴³ See for example Jochems et al. (2002).

raised concerning the methods of fetal euthanasia and the potential for suffering. While this is primarily an ethical issue, it is also based on technical and scientific considerations.⁴⁴ Debate on the ethics of using bovine fetal serum focuses on an element that is eminently scientific and central to the field of animal rights: sentience. The debate revolves around whether the bovine fetus can experience pain or other negative consequences and the most suitable methods to avoid these consequences.⁴⁵

From this perspective, the potential impact of progress on the use of this type of material will be crucial.

It should be noted that this kind of evolving relationship is typical of issues involving law and science. Those who study the relationship between legal norms and the life sciences, for example, must always keep in mind that the factual bases on which legal reasoning rests can change, sometimes rapidly, given the pace of scientific advances in certain fields. Once again, this is not exclusive to the scientific or technological realm, as cultural advancement also represents shifting aspects that often influence legal norms (in the examples provided above, cultural changes in food practices could affect legal systems, such as prohibitions on certain foods or their regulation, i.e. the potential commercialization of insect flour). However, in the scientific field, we witness rapid changes, sometimes difficult to reconcile with the timelines of democratic debate in parliaments. There are several examples in this regard, starting with the beginning of life: in very specific cases, science fundamentally alters the factual realities underlying legal regulation, or even our understanding of scientific facts themselves.⁴⁶ On a broader scale, some areas have taken a different shape precisely because of scientific advances. A prime case is the emergence of medically assisted procreation techniques and the profound consequences they have had in family law. The definition of death is another classic example, as is the protection of genetic data, or anything related to data in the context of information technology.

As stated, this is a typical aspect of the relationship between law and science, and it is known from the outset that many areas will be subject to change. However, the debate does not become obsolete: it will become so for the subject matter itself, which may change or cease to exist, but the comparison between the various aspects involved scientific, ethical and legal retains its usefulness: a kind of “laboratory” in which the spaces and areas occupied by each aspect are outlined, as well as their possible interactions with the others. The debate on bovine fetal serum, in fact, may be destined to disappear.

If the use of animals were completely excluded, there would be a convergence between welfare and dignity approaches, as the possibility of obtaining meat for consumption without the use of animals. From a welfare perspective, there would

⁴⁴Nielsen and Hawkes (2019), Versteegen et al. (2021) and Hahn et al. (2024).

⁴⁵McCann and Treasure (2022).

⁴⁶A well-known and striking example is the drug Levonorgestrel, whose contraceptive and non-abortion nature has only been established over time, following a number of studies. See for example Adashi et al. (2023).

be alignment with the focus on reducing animal suffering, as evidenced by current regulations on slaughter, including the recent debate on unconscious slaughter.⁴⁷ Similarly, attention to ritual slaughter highlights the search for methods that respect animal welfare as much as possible, with recent calls for reversible stunning.⁴⁸

From this perspective, an “unexpected alliance” mentioned later becomes clear. Cultivated meat marks an unforeseen convergence: while animal rights groups and scientific research are often at odds when it comes to the use of animals for human purposes, in this context, they appear to be aligned. Animal rights organizations themselves, in fact, have highlighted the reduced role of fetal bovine serum (on which see *supra*) in the production of cultivated meat.⁴⁹

From a second perspective, however, some considerations related to the concept mentioned above may arise. These considerations highlight how they connect with environmental concerns, which are of particular interest also in relation to the concept of animal welfare. This reference can also be interpreted from different angles. From a more immediate perspective the intersection between cultivated meat and principles of a constitutional nature concerns the environment, which as mentioned, is often involved in the juridification of animals at constitutional level, typically within the triad of animals, environment and future generations. This perspective also seems to be evolving: much progress can be made, especially regarding energy consumption, which will help reduce not only costs but also criticisms that identify cultivated meat production as unsustainable. The comparison with the resources required for cattle farming is relevant. And this is also an evolving topic, because both monetary and energy costs will be subject to scientific changes.

⁴⁷ About the concept of unconscious slaughtering, see Santori (2018), p. 110, who defines it in these terms: “Some solutions for a ‘good life’ of the animal and for an unconscious slaughter are already available. A free-range or semi-free-range animal - and therefore one in more acceptable ethological conditions - can be stunned and slayed at the breeding place without being transported to the slaughterhouse (legal rules already accept emergency slaughter and the use of a mobile slaughterhouse). Moreover, the butchery can be carried out in unconscious conditions obtained by the use of drugs that can be quickly assimilated and the residues of which are not dangerous for man”.

⁴⁸ With regard to the debate on reversible stunning and ritual slaughtering, see the European Court of Human Rights decision (4 July 2022), 16760/22 *Executief van de Moslims van België and Others v. Belgium*, and among others, Bottoni (2024). See also the decision of the Court of Justice of the European Union (17 December 2020), C-336/19 *Centraal Israëlitisch Consistorie van België and Others*.

⁴⁹ See for example PETA statement *From Lab to Table: PETA Keeps Cultivated Meat Free From Animal Testing*, 3 March 2025 in <https://www.peta.org/>. Accessed 4 April 2025. Or, in Italy, the Antivivisection League (LAV) comments on the development of food production from cellular agriculture as a solution to the environmental and climate crisis, September 2023, available at <https://static.lav.it>. Accessed 4 April 2025. See also the Eurogroup for Animals press statement *The correct conversation around cultivated meat: more sustainability and animal welfare, less fear mongering*, 24 January 2024 Available at <https://www.eurogroupforanimals.org/news/correct-conversation-around-cultivated-meat-more-sustainability-and-animal-welfare-less-fear>. Accessed 17 August 2025.

In this case as well, progress will be crucial in calibrating comparison of the ecological impact (such as water, energy and land use) of meat produced by “traditional” farming with that required for cultivated meat.⁵⁰

The reference to the environment, however, can also be framed in terms of animal welfare, in a second perspective that highlights how the arguments at the intersection of science and law can be quite complex.

In fact, the comparison between animals and the ecosystem reappears, with animals as part of the whole, so that, from one perspective, the replacement of farming could be viewed differently in relation to intensive farming or small-scale farmers, who according to some authors would play a role in relation to the environment.⁵¹ It is clear that in this perspective, animal welfare is only one of the aspects involved, but within the framework where it is linked not to the interests of farmers, but to more sustainable farming practices, we return to the realm of balancing interests. A perspective in which cultivated meat leads to the replacement of animals for food purposes is accompanied by another perspective where respect for animals is placed within a context where biodiversity is combined with other values, looking at how we care for animals, in their interest and in the interest of the environment, but deeming their killing acceptable, from a perspective that views welfare as a quality of life compatible with the use of animals themselves. This is a debate that looks toward the future with current perspectives, where welfarism ends up being characterized by new nuances, similar to those that consider reversible stunning or unconscious slaughter. However, the point of contention remains the acceptability of using animals for food or not. Finally, it is interesting to note how some classic themes of constitutional law are being re-proposed in relation to cultivated meat. Another, in this case classic, theme concerns the relationship between animal dignity and cultivated meat: dignitarianism is indeed evoked not only with reference to animal rights in general but also more specifically in relation to cultivated meat. However, as already observed, and one could say, as always in reference to dignity, interpretations of this principle and its applications in this area may not be unanimous.

On one hand, it has been noted that cultivated meat separates food from animals.⁵² This is another recurring theme in science, which not only alters realities assumed by legal norms (as seen in the examples above) but also causes dissociations. Just as science separates procreation from the sexual relationship between a man and a woman, or the genetic relationship with parents, or genetics dissociates the ownership of data from the possible social family group, so too does cultivated meat, upon closer inspection, create a separation between food and animals. It is precisely in this separation that the concept of dignity arises in debates about the acceptability of cultivated meat. The degree of dissociation between food and

⁵⁰See *What Is Cell-Based Meat? Food Safety and Sustainability Aspects* by Cheli et al. in this volume.

⁵¹Chriki and Hocquette (2020).

⁵²Chauvet (2018).

animals seems to be a determining factor, for those who accept the use of animals for food, in evaluating the acceptability of cultivated meat. In this perspective, it appears that even in relation to animals, we see a range of nuanced meanings, making dignity a broad concept that can be interpreted differently depending on the context in which it is considered.⁵³ With reference to the degree of separation between meat and animals (and without intending to delve into the realm of philosophy of law), one can discern a concept of dignity in this case linked to the use of animals for food. This concept of dignity seems incompatible for those who believe that the use of animals for such purposes is not acceptable.⁵⁴

More generally, a problem can be identified in the connection between cultivated meat and the use of animal-derived cells: even in small quantities, this link may be unacceptable for those who reject animal-derived products. Naturally, the connection to animals presents a higher level of unacceptability when linked to concerns about their suffering, as in the debate surrounding fetal bovine serum. From this perspective, overcoming the need for serum does not change the situation for those who consider not the well-being of animals or the dissociation between animals and food, but the very possibility of using animals as a means. An additional argument thus emerges, that of the “illusion” of “victimless consumption”, where the dissociation between meat and slaughter takes on a particular meaning. In this context, the concept of the failure to respect animal dignity seems to appear.⁵⁵

This argument is of great interest because it goes beyond the connection with practices associated with animals (even in the absence of suffering) and goes somehow to the heart of the concept of dignity. This issue concerns the view that consuming meat still represents an acceptance of the possibility of using animals, the existence of a dichotomy between “us” and “them”, which implies a failure to recognize dignity as an intrinsic value of the animal itself.⁵⁶ From this perspective, the two approaches in the field of constitutional protection of animals—focused respectively on welfare and dignity—seem to be evoked.

However, the specific issue addressed here allows us to observe an interesting aspect: the potential areas of conflict between the two approaches, with differing views on the significance to be attributed to the actual use of animals for food and the symbolic value of their use. This can lead to a sometimes problematic confrontation between the two, in which cultivated meat could play an important role.

⁵³ Obviously, this is a subject we are only mentioning here in relation to the much broader and more complex topic, for which see for example Nussbaum (2006a, b).

⁵⁴ Chauvet (2018).

⁵⁵ See for example the debates and opinion reported by Dilworth and McGregor (2015).

⁵⁶ Chauvet (2018).

4 Conclusions

The themes of constitutional protection of animals and cultivated meat offer a valuable opportunity for comparison. Both represent an ongoing process, the analysis of which necessarily presents the undefined contours of what is currently unfolding rather than something explored *ex post*. The constitutional protection of animals is a widespread and in many countries, recent phenomenon that lends itself to different interpretations, particularly jurisprudential ones, on which the actual impact of such provisions will depend. This will also relate to the evaluation of the constitutionality of various sector-specific regulations that embody the protection of animal welfare in the different areas where it is at stake. How the development of the cultivated meat sector intersects with this ongoing process and the constitutional values involved will be determined by the spread of this product in the food market. This will depend on many factors: competitiveness, consumer acceptance and technological advancement. Above all, cultural aspects will be crucial, as they will determine the success of this and other changes in food habits.

I think the same can be said, for example, of insect flours, where consumer acceptance will largely depend on cultural acceptance of what are defined as Novel Foods⁵⁷—a designation that reflects not only their legal framework but also their essence and the issues that arise from it.

Cultural aspects are also significant in the intersections between constitutional animal protection and cultivated meat. Compared to other themes, these intersections present very different refracted and nuanced facets, which like in a kaleidoscope, take on different shapes. The very concepts of animal welfare and animal dignity can indeed align with the possibilities opened by cultivated meat, especially if the focus is on elimination of animal slaughter for food. However, the aspects previously mentioned and discussed in the literature focus on other potential considerations, such as departure from a “natural” dimension and the preference for sustainable farming. Cultural factors may also require total dissociation of cultivated meat from any animal cell—an aspect that is currently not possible but could potentially be impacted by scientific progress.

Only scientific and technological development will indicate the paths that this new food product will take, but a complex set of factors will determine its spread, particularly in terms of how it is deemed compatible with the values and principles that constitutionally protect animals. The protection afforded to animals could better define the contours of this product, which are not yet clear but may depend on varying sensitivities that attribute different degrees of importance to the protection of nature, environment, animal welfare and the dignity of sentient beings. Definitions in progress not only seem to be evolving but also to be situated differently according to the cultural standpoint of the observer. As mentioned at the beginning, it is a very complex matter.

⁵⁷ See *Socio-Demographic and Behavioural Determinants of Consumer Attitudes to Cell-Based Meat and Insect-Flour-Based Products: An Empirical Study of Italians' Propensity to Accept New Foods for Human Nutrition and Pet Food* by Degli Antoni and Faillo in this volume.

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