

Unfamiliar familiarity: A scoping review on the role of familiarity in consumer acceptance of cultivated meat

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ABSTRACT

The potential introduction of cultivated meat products to the market, framed as sustainable alternative to conventional animal-source foods, underscores the need to examine psychological barriers and predisposing factors influencing consumer acceptance. Familiarity is often considered a facilitating factor, based on the premise that higher familiarity with cultivated meat is associated with greater acceptance. However, evidence remains contradictory and poorly integrated. This review examines and organizes the literature on familiarity with cultivated meat and its influence on consumer acceptance.

A scoping review of peer-reviewed and grey literature was conducted on June 7, 2024, following PRISMA-ScR and Joanna Briggs Institute guidelines. Comprehensive searches across Scopus, Web of Science, PubMed, and PsycInfo included no restrictions on participant type, geographic location, social and cultural contexts, language, or publication time. 63 articles were analyzed to examine (i) definitions of familiarity, (ii) methodologies measuring familiarity with cultivated meat, and (iii) evidence regarding its influence on consumer acceptance of cultivated meat.

Results indicate that current research on familiarity is largely based on non-representative samples, with data recency limitations, and inconsistent operationalization. Familiarity is often conflated with the related yet distinct constructs of awareness and knowledge, revealing a lack of clarity in literature. The review also identified various approaches for assessing familiarity, all lacking psychometric rigor, hindering replicability and comparability of findings. This review highlights the need for further research to clarify the theoretical and operational definition of familiarity and its role in consumer acceptance of cultivated meat.

1. Introduction

Protein transition represents a shift from a diet rich in animal-based proteins to a broader range of alternative protein sources (Duluins & Baret, 2024a). This approach is gaining popularity as a means to drive sustainable food system transformation and address the challenges associated with conventional animal farming (Duluins & Baret, 2024b).

The category of 'alternative protein' sources encompasses a variety of food products with a similar or even indistinguishable sensory profile to that of conventional animal-source foods and produced through new scientific approaches (United Nations Environment Programme [UNEP], 2023). Among these products, cultivated meat has emerged as a promising option.

Cultivated meat is a novel food product obtained by using tissue-

engineering techniques to enable the in-vitro growth of animal cells (Post, 2012). The notion of producing animal products in vitro was first introduced in the 1890 utopian novel *Mizora* (Lane, 1890, p. 61), and gained global attention in 2013 following the public tasting of the world's first lab-grown hamburger (Jha, 2013). Ten years later, the number of cultivated meat and seafood companies worldwide had risen to 174, with total investment capital reaching \$226 million in 2023 (Good Food Institute, 2023). Furthermore, in 2024, a hybrid product containing 3 % of cultivated meat was introduced for the first time in a Singaporean retail outlet (Flood, 2024), while in Europe, the French company Gourmeu announced the submission of its cultivated foie gras for approval to the European Food Safety Authority (EFSA), marking the first such application in the European Union (Mathieu, 2024). As cultivated meat products become more widely available to consumers, their

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success will be largely determined by how consumers perceive and respond to this novel food product.

In this context, understanding the psychological barriers and predisposing factors that influence consumer acceptance of cultivated meat is critical and is becoming an increasingly important area of research (Song et al., 2024). This growing significance is reflected in an expanding body of primary and secondary scientific literature (e.g., systematic reviews), within the field of consumer science, as exemplified by a meta-review published in early 2024 (Onwezen & Dagevos, 2024). However, numerous scholars have emphasized the need for greater standardization in methodologies and definitions related to the psychological constructs influencing consumer acceptance of cultivated meat. Specifically, the operationalization of key constructs and measurement approaches across studies remain significant challenges, highlighting the need to examine how research on specific drivers of acceptance is conducted (Arango et al., 2024; Bryant & Barnett, 2018; Hanan et al., 2024; Onwezen et al., 2021).

Among the various factors examined in literature, product familiarity has emerged as a central construct, particularly in the study of the dietary development process and novel food acceptance (Aldridge et al., 2009; Bekker et al., 2021; Tan et al., 2025; Tuorila & Hartmann, 2020). Product familiarity has been defined as “the number of product-related experiences that have been accumulated by the consumers” (Alba & Hutchinson, 1987, p. 411). Yet, given the limited commercial availability of cultivated meat, measuring familiarity through direct product-related experiences remains a challenge (Carlsson et al., 2022; Padilha et al., 2022). Nevertheless, familiarity has been identified as a significant predictor of cultivated meat acceptance (Hanan et al., 2024; Pakseresht et al., 2022), based on the premise that higher familiarity with cultivated meat is associated with greater acceptance of the product (Bekker et al., 2017; Wilks & Phillips, 2017). However, a consensus on the precise relationship between familiarity with cultivated meat and consumer acceptance has not been reached yet: Bryant and Barnett (2018) argue that the link between familiarity and acceptance remains untested statistically, while Onwezen and Dagevos (2024) call for further investigation into the role of familiarity, pointing to the limited empirical evidence on the subject within the context of cultivated meat.

Notably, the concept of familiarity also appears to significantly shape the very development of cultivated meat products. The current predominant approach in cultivated meat product development is based on mimicking conventional meat, not only by replicating its sensory attributes but also by creating a novel product with a ‘meat-like ontology’ (Stephens, 2010; Wurgaft, 2020). While the ethical debate surrounding this approach is beyond the scope of this article (for a broader discussion, refer to Bacchini & Bossini, 2023; Wurgaft, 2020), the referential identity of cultivated meat, shaped by its resemblances and contrasts with conventional meat, reflects an effort in positioning cultivated meat within familiar food categories, with the aims of making it more acceptable to consumers (Bekker et al., 2021; Bryant & Barnett, 2018). Indeed, the Featural Familiarity Hypothesis (Kamas & Reder, 1995), categorization theory (Gregan-Paxton & John, 1997; Medin & Rips, 2005), and prototype theory (Rosch & Mervis, 1975), suggest that when consumers encounter an unfamiliar stimulus, it is categorized based on its attributes and its resemblance to existing familiar category representations. Memory heuristics and cognitive shortcuts, as demonstrated by Tversky and Kahneman (1974) and Gilovich et al. (2002), facilitate this process by aiding the retrieval of salient information and matching novel features with familiar cognitive schemas. Therefore, by following this approach, cultivated meat companies aim to facilitate consumers’ recognition of the novel stimulus, allowing them to categorize it as ‘familiar’, thereby reducing uncertainty (Park & Lessig, 1981; Schwikert & Curran, 2014) and mitigating neophobic behaviors that arise when new products fail to align with existing cognitive schemas (Tuorila & Hartmann, 2020).

Given this duality surrounding familiarity, with, on one hand, the cultivated meat industry’s mimesis-based approach to enhance product

familiarity, and on the other hand, the mixed findings and ongoing calls for more research on the role of familiarity in consumer acceptance of cultivated meat (Kouarfata & Durif, 2023; Monaco et al., 2024; Onwezen & Dagevos, 2024; Onwezen et al., 2021), a comprehensive review of the existing evidence becomes essential. This article, therefore, aims to examine the literature on familiarity with cultivated meat and the current evidence regarding the influence of familiarity on consumer acceptance of cultivated meat. Based on these premises, the primary research question (RQ) that this scoping review aimed to address was the following:

RQ. *What is known about the role of familiarity in consumer acceptance of cultivated meat?*

This broad research question enabled to ensure a large literature recruitment as required by the nature of scoping reviews (Munn et al., 2018). In order to answer the primary question, the following three sub-questions (SQ) were operationalized:

SQ1. *How is the term ‘familiarity’ defined in the literature on consumer acceptance of cultivated meat?*

SQ2. *How is familiarity investigated in the literature on consumer acceptance of cultivated meat?*

SQ3. *What evidence has been obtained on the facilitating or hindering role of familiarity in consumer acceptance of cultivated meat?*

Among the different tools, a scoping review appears to be the most suitable approach to answer this RQ due to its methodological features. Scoping reviews are highly recommended for clarifying key concepts and definitions, assessing how research is conducted on a specific topic, and identifying essential characteristics related to a concept (Munn et al., 2018). A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews and JBI Evidence Synthesis was conducted and no current or underway systematic reviews or scoping reviews on the topic were identified. While several systematic reviews on general consumer acceptance of cultivated meat have been conducted (e.g., Hanan et al., 2024; Onwezen et al., 2021; Pakseresht et al., 2022), to the best of our knowledge, this is the third scoping review specifically examining a driver of acceptance. It follows those by To et al. (2024), which focus on the sensory characteristics of cultivated meat, and Tsvakirai et al. (2024), which address consumer attitudes towards cultivated meat.

The next section outlines the methodology employed, key definitions, and search protocol, followed by the results of the scoping review. The discussion section then interprets the findings in relation with the research question and explores their practical implications.

2. Methodology

2.1. Protocol and definition

The review was conducted in accordance with an *a priori* protocol registered on the Open Science Framework on the June 6, 2024 (available at: <https://osf.io/46jgn/>).

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis guideline for scoping review (PRISMA-ScR) was implemented as a reporting guideline (Tricco et al., 2018) with the Joanna Briggs Institute (JBI) guidance as the methodological guideline (Peters et al., 2020).

In this scoping review, cultivated meat was defined as “meat produced directly from animal cells, by extracting cells from a living animal and growing them in bioreactors”, following the definition proposed by the United Nation Environmental Protection agency (UNEP, 2023).

Product familiarity was defined as “the number of product-related experiences that have been accumulated by the consumers”, following the definition proposed by Alba and Hutchinson (1987). However, consistent with the *a priori* protocol, this definition was not considered a strict eligibility criterion allowing for the inclusion of a broader range of operationalization of this construct, in line with the exploratory scope of scoping reviews.

2.2. Inclusion criteria

In accordance with the JBI methodological guidelines and the exploratory scope of scoping reviews, we considered all types of participants, geographic location, social and cultural contexts, gender-based interests, language, and publication times as eligible for inclusion. To enhance the desirable sensitivity of the scoping reviews, we included all available sources of evidence from the four consulted databases and grey literature, without excluding non-peer review articles (e.g., working papers) or papers containing non-empirical data (e.g., review papers). For inclusion in this review, articles had to meet the following criteria.

- 1. The study involved the concept of cultivated meat (UNEP, 2023). Studies on other foods produced through cellular agriculture (e.g., seafood) were also considered.
- 2. The study investigated the construct of familiarity (Alba & Hutchinson, 1987). Given the broad nature of this definition and the sub-questions posed, the inclusion criteria required the term ‘familiarity’ (or ‘unfamiliarity’) to be present in the research investigation, regardless of alignment with the chosen definition. Studies that included the construct of familiarity, even if it was not the main focus, were included.

For exclusion from this review, studies had to meet the following criteria.

- 1. Studies that did not separate results on cultivated meat from other sources (e.g., insects) or that did not investigate cultivated meat.
- 2. Studies that did not explore the construct of familiarity in relation to consumer acceptance of cultivated meat.
- 3. Studies focused solely on the technical production of cultivated meat without involving consumers.

2.3. Search strategy and information sources

The search strategy aimed to locate both published and unpublished studies aligned with the topic of the scoping review. Following the JBI methodological guidelines (Aromataris et al., 2024), a three-step search strategy for the published literature was implemented with support from the University Library Services of the University of Turin (author BM). Firstly, an initial limited search on Scopus and Web of Science Core Collection (WOSCC) databases was performed to identify relevant articles on the topic of consumer acceptance of cultivated meat. Keywords from titles and abstracts, as well as index terms, were analyzed to develop a comprehensive and specific search strategy for each included database. Secondly, database-specific searches were conducted in Scopus, Web of Science, PubMed, and PsycInfo. Thirdly, the reference lists of the retrieved studies were reviewed to identify additional relevant studies. The final search string applied for Scopus is detailed in Table 1.

Table 1
I Search string implemented implement in Scopus, June 7, 2024 (other databases available in Appendix A).

#	Search string ^a	No. of documents
1	TITLE-ABS-KEY ('cultured meat' OR 'cultivated meat' OR 'artificial meat' OR 'alternative meat' OR 'Lab-grown meat' OR 'in vitro meat' OR 'Cell-based meat' OR 'laboratory meat' OR 'lab-grown meat' OR 'Clean meat' OR 'new meat' OR 'synthetic meat' OR 'meat alternatives' OR 'meat replacement' OR 'meat substitute' OR 'victimless meat' OR 'alternative proteins' OR 'cellular agriculture products' OR 'Animal-friendly meat' OR 'eco friendly meat')	5708
2	ALL (familiar*)	595,068
3	#1 AND #2	228

^a No limitations on article type, publication date, or language were included.

The search queries for the other databases are reported in Appendix A. The final search was conducted on June 7, 2024.

The validation process to evaluate the quality and completeness of the electronic search strategy was guaranteed by adopting the Peer Review of Electronic Search Strategies (PRESS; McGowan et al., 2016) process with support from the University Library Services of the University of Turin.

For unpublished and grey literature, non-peer reviewed publications and the book of abstracts from key conferences in the field of alternative proteins and cultivated meat were retrieved and assessed. The list of grey literature included in the evaluation is reported in Appendix B.

2.4. Record screening and data extraction

Following the literature search, all identified citations were collated and uploaded into the Rayyan web-tool software (Ouzzani et al., 2016), and duplicates were removed. Titles and abstracts of the studies were then screened against the inclusion criteria for the review. Full texts of sources deemed potentially relevant were retrieved and evaluated to ensure they met the eligibility criteria. Reasons for exclusion at the full-text stage were recorded and are reported in Fig. 1. The reference lists of all included sources were screened for additional relevant records using a backward and forward citation chasing approach (Haddaway et al., 2022). The list of articles retrieved through citation chasing is reported in Appendix C. Both the title and abstract screening and the full-text evaluation were conducted by two independent reviewers (authors PR and IS), with disagreements resolved through discussion.

Data from included papers were extracted using a data extraction tool developed by the authors adapting the JBI Appendix 10.1 from Aromataris et al. (2024). The data extraction form is available as Appendix D. The data extraction process was performed independently by one author (PR) and reviewed for consistency by a second author (IS). Data extracted included background information about the studies (e.g., article title, article type, authors' names and affiliations, publication year, DOI, aim of the study, country, and period in which the study was conducted), along with the implemented methodology for measuring familiarity (e.g., definition, question and item formulation, response scale, and type of product under evaluation), information on the framing used (e.g., type and position relative to the familiarity question), study participants (e.g., sample representativeness and participant types), and study results (e.g., evidence on the facilitating or hindering role of familiarity). Authors of the papers were contacted to request additional data when necessary. Consistent with the research questions formulated, the data extraction tool focused on identifying all available information regarding the role of familiarity in the context of consumer acceptance of cultivated meat, including the definitions used, the research methodologies implemented, and the results obtained.

Finally, the VOSviewer software was employed to analyze the co-occurrence of keywords provided by both the authors and the indexed sources, selecting a minimum threshold of five co-occurrences per keyword. The software generates clusters based on co-occurring terms, which are displayed in a two-dimensional map. In this visualization, the distance between terms reflects the frequency of their co-occurrence, with keywords that appear together more often positioned closer. Each link in the map represents a connection between two keywords, with “link strength” values indicating the frequency of their co-occurrence, whereas the “total link strength” of a term represents strength of its links with other terms. VOSviewer is a tool designed for visualizing extensive bibliometric maps, facilitating the interpretation of complex co-occurrence relationships across studies (van Eck & Waltman, 2010).

3. Results

The search strategy identified a total of 440 records, with the majority originating from the Scopus database ($n = 228$), followed by

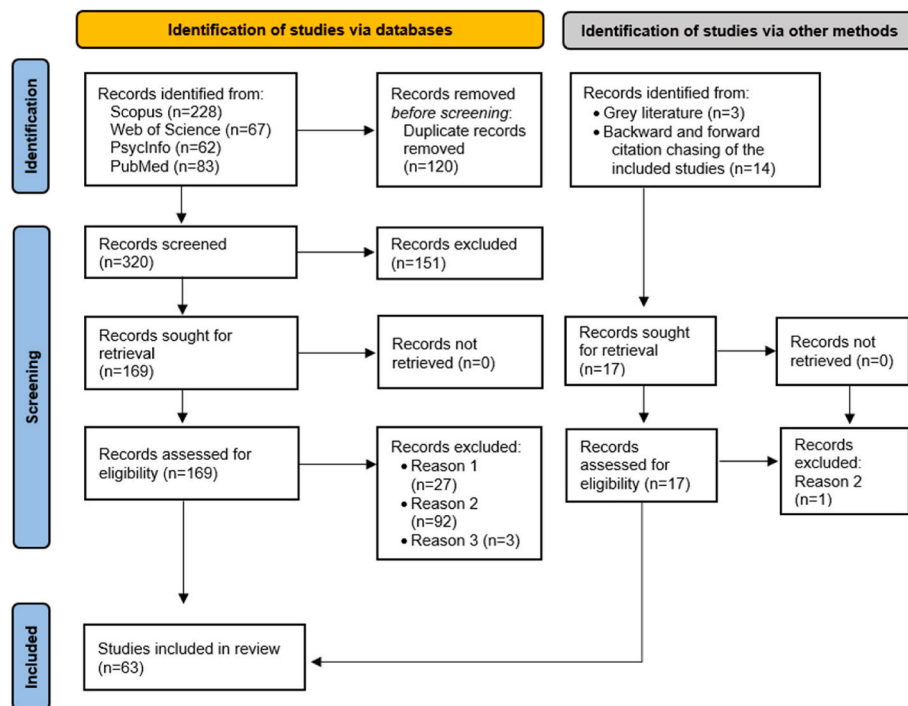


Fig. 1. PRISMA flowchart of the scoping review process (Tricco et al., 2018). Exclusion criteria #1: studies that did not separate results on cultivated meat from other sources or that did not investigate cultivated meat. Exclusion criteria #2: studies that did not explore the construct of familiarity in relation to consumer acceptance of cultivated meat. Exclusion criteria #3: studies focused solely on the technical production of cultivated meat without involving consumers.

PubMed ($n = 83$), Web of Science ($n = 67$), and PsycInfo ($n = 62$). After removing 120 duplicates, 320 articles remained for screening based on title and abstract. This initial screening phase excluded 151 records that did not align with the objectives of the scoping review. Consequently, 169 articles were selected for full-text retrieval and assessed against the eligibility criteria. At this stage, 27 records were excluded failing to investigate cultivated meat or for not separating results related to cultivated meat from other sources (Reason 1), 92 records were excluded because they did not examine the construct of familiarity in relation to cultivated meat acceptance (Reason 2), and three records were excluded due to their exclusive focus on the technical production of cultivated meat without involving consumer perspectives (Reason 3). This resulted in 47 articles being included. Additionally, three records were identified in the grey literature from key conferences on alternative proteins and cultivated meat and non-peer review publications (Appendix B). Backward and forward citation chasing of the included studies led to the identification of an additional fourteen studies (Appendix C). During the full-text screening of these records, one additional study was excluded for Reason 2, resulting in a final count of 63 studies included in the scoping review (Fig. 1).

3.1. Sources overview

Descriptive information about the studies' characteristics is provided in Table 2 and complete results of the data extraction are reported in Appendix E. The included records were categorized according to their publication type, with the majority being research articles ($n = 52$), followed by eight systematic reviews, two conference proceedings (Pivoraite et al., 2024; Vad Andersen et al., 2024), and one opinion article (Wurgalt, 2020).

3.1.1. Study design and sample characteristic

Out of the 52 research articles identified, 46 utilized a quantitative research method; four studies employed a mixed-methods approach, whereas the remaining two were qualitative. Quantitative research was

conducted mostly online, either through online surveys ($n = 32$) or combined with online experimental approaches ($n = 11$). Furthermore, two studies included a face-to-face survey (Hamlin et al., 2022; Munz Fernandes et al., 2021), while the research by Dupont and Fiebelkorn (2020) opted for a paper-based survey. The included studies varied significantly in sample size, ranging from 20 participants in the study by Fox et al. (2021)

To 5418 participants in the study by Hocquette et al. (2022) among French consumers, although this larger sample was not representative of the general population. The majority of the articles involving consumers focused on the general population aged 18 years and older ($n = 46$). Four studies specifically targeted university students (Bekker et al., 2017, 2021; Hamlin et al., 2022; Nghiêm-Phú, 2023), while Dupont and Fiebelkorn (2020) examined public secondary school students in the federal state of Lower Saxony, Germany. Notably, Vad Andersen et al. (2024) focused on Danish kitchen professionals, and Chong et al. (2024) investigated diners at the Huber's Butchery and Bistro in Singapore, the world's first facility to serve cultivated meat (GOOD Meat, 2023). Regarding sample representativeness, most included articles reported using non-representative samples, with only 15 explicitly indicating their samples were adequately representative of the target population (Appendix E).

3.1.2. Countries studied

Overall, familiarity with cultivated meat was studied across 26 countries (Table 2). The research was mostly realized in the United States ($n = 9$) and Europe ($n = 29$), with Germany ($n = 6$) and the Netherlands ($n = 5$) being the most frequently studied countries. A smaller number of studies focused on Asian consumers (four in China, two in Japan and Singapore, and one in Vietnam), as well as Brazilian consumers ($n = 3$), with additional studies from New Zealand ($n = 3$) and Australia ($n = 1$). Notably, only the studies by Szejda, Stumpe, et al. (2021), and Tsvakirai et al. (2023) involved participants from an African country (Fig. 2). A subset of studies ($n = 8$) was dedicated to cross-country comparisons, including comparisons between Nordic

Table 2

I Characteristics of the 63 included studies, including journal name, geographical location, period of data collection, and study aim.

Reference	Journal	Geographical location	Period of data collection	Aim
Baum et al. (2021)	<i>Food Quality & Preference</i>	Germany	May and Jun 2020	To examine the effects of information and how real-world statements shape attitudes toward cultivated meat
Baum et al. (2023)	<i>Food Quality & Preference</i>	Germany	2021	To examine whether and how image focus influences consumer evaluations of cultivated meat
Bekker et al. (2017)	<i>Appetite</i>	The Netherlands	Fall 2012	To explore how positive or negative information affects attitudes toward cultured meat
Bekker et al. (2021)	<i>Food Quality & Preference</i>	The Netherlands	Fall 2014 and Spring 2018	To investigate how cultured meat is categorized based on similarity to meat or substitutes, through three studies
Bryant and Barnett (2018)	<i>Meat Science</i>	Not applicable	Not available	To provide an updated overview of consumer acceptance of cultured meat
Bryant and Barnett (2019)	<i>Appetite</i>	Not available	Before Aug 1, 2018	To investigate how different names for in vitro meat affect consumer acceptance
Bryant et al. (2019)	<i>Frontiers in Sust. Food Systems</i>	USA, India and China	2018	To investigate consumer acceptance of clean meat in three countries, and to explore acceptance of plant-based meat including key drivers
Carlsson et al. (2022)	<i>Ecological Economics</i>	Sweden	Apr 2020	To assess if price changes could effectively shift current meat consumption through policy
Chia et al. (2024)	<i>Food Quality & Preference</i>	Singapore	Nov 2021–Mar 2022	To examine factors influencing acceptance attitudes towards three alternative proteins food products
Chong et al. (2024)	<i>Future Foods</i>	Singapore	Apr–Jun 2023	To assess if serving cultivated chicken in a familiar meal encourages repeat consumption and recommendations
Chriki et al. (2021)	<i>Foods</i>	Brazil	5 Aug-5 Nov 2020	To explore Brazilian consumers' attitudes and willingness to engage with cell-based meat
Coffin et al. (2024)	<i>Climatic Change</i>	USA	Mar 2022	To test the perception of alternative protein burgers compared to conventional ones
Cornelissen and Piqueras-Fiszman (2023)	<i>Journal of Food Science</i>	The Netherlands	Dec 2020	To explore Dutch consumers' perceptions and willingness to consume cultured meat compared to other meat and meat alternative products
de Oliveira da Silva and da Cunha (2022)	<i>Brazilian Journal of Marketing</i>	Brazil	26-27–28 May 2020	To understand current perceptions of cultivated meat and identify factors influencing its perception
Dupont and Fiebelkorn (2020)	<i>Food Quality & Preference</i>	Germany	Nov 2018	To examine factors influencing the willingness of children and adolescents to consume insect-based foods or cultured meat
Dupont et al. (2022)	<i>Foods</i>	Germany	Jun 19, 2019	To assess how Theory of Planned Behaviour variables affect the intention to consume a cultured meat burger
Engel et al. (2024)	<i>Appetite</i>	Norway, Denmark and Finland	Feb–Mar 2021	To propose and test a framework of determinants influencing behavioral intentions toward cultured proteins
Etter et al. (2024)	<i>Food Quality & Preference</i>	Switzerland	Feb 2023	To identify promising alternative protein sources and explore consumer expectations and acceptance drivers
Faletar and Cerjak (2022)	<i>Sustainability</i>	Croatia	Jun–Aug 2021	To explore consumer perceptions of cultured meat and identify segments based on the perceptions
Faunalytics (2018)	<i>Not Applicable</i>	USA	Jan–Feb 2018	To identify best approaches for describing clean meat
Fidder and Graça (2023)	<i>Food Quality & Preference</i>	United Kingdom	Nov 30, 2022	To assess the impact of different cultivated meat framings on consumers' attitudes and willingness
Font-i-Furnols and Guerrero (2022)	<i>Meat Science</i>	Not applicable	Not available	To examine ethical and socio-cultural dilemmas of meat alternatives and their impact on meat consumption
Fox et al. (2021)	<i>Appetite</i>	USA (California and Nebraska)	Aug 2018–Feb 2019 and Jun–Jul 2019	To explore the mental models influencing food decisions and identify challenges and opportunities in transitioning towards a healthy and sustainable diet
Franceković et al. (2021)	<i>Nutrients</i>	Croatia, Greece and Spain	12 days in Oct 2020	To identify consumer segments and investigate their views on cultured meat across three countries
Giezenaar et al. (2023)	<i>Sustainability</i>	New Zealand	Oct–Nov 2021	To explore attitudes toward cultured meat, identify motivators and barriers, and predict future adopters
Gousset et al. (2022)	<i>Livestock science</i>	France	Early Oct 2020	To analyze French consumers' perceptions of muscle cell culture for food
Hallman and Hallman (2020)	<i>Journal of Food Science</i>	USA	18-days between Feb and Mar 2020	To evaluate the performance of proposed names for cell-based seafood products, aiming to determine their acceptability
Hamlin et al. (2022)	<i>Meat Science</i>	New Zealand	Jan 2020	To examine how consumer attitudes toward cultured meat are formed.
Hocquette et al. (2022)	<i>Meat Science</i>	France	Jun–Dec 2020	To explore the impact of positive or negative information on explicit attitudes toward cultured meat in France
Huang and Uehara (2023)	<i>Frontiers in Sust. Food Systems</i>	China and Japan	Japan: 10–11 Mar 2023. China: 8–12 Apr 2023	To examine young consumers' perceptions and preferences for plant-based and cultured meat in China and Japan
Jacobs et al. (2024)	<i>Frontiers in Nutrition</i>	Germany	Jan 15, 2021–Jan 25, 2022	To analyze sociodemographic impacts on intentions towards artificial meat, and its challenges in Germany
Jung et al. (2022)	<i>Journal of Retailing and Consumer Services</i>	USA	Mar 2020	To understand how supermarket credibility and price affect purchase intentions for novel versus familiar foods
Kamei et al. (2024)	<i>Frontiers in Nutrition</i>	Japan	8 Oct and Dec 9, 2023	To develop and examine the validity of a Japanese version of the revised Alternative Food Neophobia Scale
Klößner et al. (2022)	<i>Frontiers in Sust. Food Systems</i>	Norway, Denmark and Finland	Feb–Mar 2021	To explore Nordic consumers' attitudes toward cultured proteins and how product changes affect their attractiveness
Li et al. (2023)	<i>Meat Science</i>	China	Jan 2022	To examine Chinese consumers' attitudes toward cultured meat and the effects of names and information
Liu et al. (2021)	<i>Foods</i>	China	15 Jun-30 Aug 2020	To explore Chinese consumers' attitudes and willingness to engage with artificial meat

(continued on next page)

Table 2 (continued)

Reference	Journal	Geographical location	Period of data collection	Aim
Malavalli et al. (2021)	<i>Sustainability</i>	New Zealand	Mar–Sept 2019	To explore New Zealanders perceptions about in-vitro meat
Mancini and Antonioli (2019)	<i>Meat Science</i>	Italy	Sept 2017–Mar 2018	To assess acceptance of engineered food among plant-based and traditional food consumers for ethical reasons
Mancini and Antonioli (2020)	<i>Animals</i>	Italy	Sept 2017–Mar 2018	To assess how positive information affects Italian consumers' intention towards cultured meat.
Mancini and Antonioli (2022)	<i>Meat Science</i>	Italy	Not available	To assess Italian literature on consumer perceptions of cultivated meat, insect-based foods, and novel plant-based products
Marcu et al. (2015)	<i>Public Understanding of Science</i>	Belgium, Portugal and United Kingdom	Jul and Oct 2012	To examine how people make sense of synthetic meat
Monaco et al. (2024)	<i>Appetite</i>	Not applicable	Feb 2022	To identify heuristics and biases in novel food perception research, and examines their impact
Muiruri and Rickertsen (2024)	<i>Future Foods</i>	Norway	Oct 2019–Feb 2020 and Oct 2021–Feb 2022	To investigate willingness to try cultured meat based among Norwegian consumers
Munz Fernandes et al. (2021)	<i>British Food Journal</i>	Brazil	14–23 Oct 2019	To analyze meat consumers' attitudes towards cultured meat in Brazil
Nghiêm-Phú (2023)	<i>Food Research</i>	Vietnam	Jan–Feb 2021 (2 weeks)	To segment the in vitro meat market by consumer perceptions, familiarity, and attachment
Onwezen et al. (2021)	<i>Appetite</i>	Not applicable	Jun 2020	To provide an overview of key drivers affecting Western consumers' acceptance of alternative proteins
Onwezen et al. (2022)	<i>Food Quality & Preference</i>	The Netherlands	2015 and 2019	To explore trends in alternative protein acceptance and identify drivers of change
Onwezen and Dagevos (2024)	<i>Food Quality & Preference</i>	Not applicable	Jun 2023	To review consumer studies focused on the two Rs: reduction and replacement of meat products
Padilha et al. (2022)	<i>Food Quality & Preference</i>	Australia	Oct and Nov 2018	To compare consumer beliefs about key attributes across conventional, lab-grown, and plant-based meats, and identify influencing factors
Pakseresht et al. (2022)	<i>Appetite</i>	Not applicable	May 31, 2020	To synthesize recent evidence on consumer acceptance of cultured meat
Pivoraite et al. (2024)	<i>Lecture Notes in Business Information Processing</i>	Not applicable	2023	To establish a theoretical framework to support food innovators and marketers in understanding perceptions and attitudes toward cultured meat
Possidónio et al. (2021)	<i>Appetite</i>	Portugal	5 Dec 2018–7Jan 2019 and 14 Mar–5 Apr 2019	To enhance understanding of consumer perceptions of meat and alternatives to support transitions to healthier, sustainable diets
Siddiqui, Khan, et al. (2022)	<i>Applied Sciences</i>	Not applicable	Not available	To analyze the current state of cultured meat, marketing challenges and strategies for its public promotion
Sikora and Rzymiski (2023)	<i>Nutrients</i>	Poland	Mar–Jul 2023	To evaluate Polish adults' perceptions of cultured meat and factors influencing its acceptance
Szejda, Bryant, and Urbanovich (2021)	<i>Foods</i>	USA and UK	Oct 2020	To evaluate consumer markets and preferences for cultivated meat in the USA and UK
Szejda, Stumpe, et al. (2021)	<i>Frontiers in Sust. Food Systems</i>	South Africa	Feb 2021	To evaluate the likelihood of consumer adoption of plant-based and cultivated meat in South Africa
Tsvakirai et al. (2023)	<i>Scientific African</i>	South Africa	May 2022	To develop and validate a novel cultured meat neophobia scale
Vad Andersen et al. (2024)	<i>Not applicable</i>	Denmark	Sept–Oct 2023 and Dec 2023–Jan 2024	Examine factors influencing cultivated food use among kitchen professionals and investigate cell-based food perceptions, drivers, and barriers
van Dijk et al. (2023)	<i>Food Quality & Preference</i>	The Netherlands and Finland	Apr–May 2021	To examine omnivores' and flexitarians' attitudes toward meat alternatives and key drivers across two countries
Weinrich et al. (2020)	<i>Meat Science</i>	Germany	Aug 2018	Explores the German market's readiness for cultured meat and the predictors involved
Wilks and Phillips (2017)	<i>PloS One</i>	USA	Mar–Jun 2016	To investigate perceptions of in vitro meat in the USA and assess its potential in a market supportive of innovation
Wilks et al. (2021)	<i>Appetite</i>	USA	Dec 2019	To explore psychological motivations for rejecting cultured meat
Wurgalt (2020)	<i>Osiris</i>	Not applicable	Not applicable	To examine cultured meat through the lens of mimesis and nature imitation

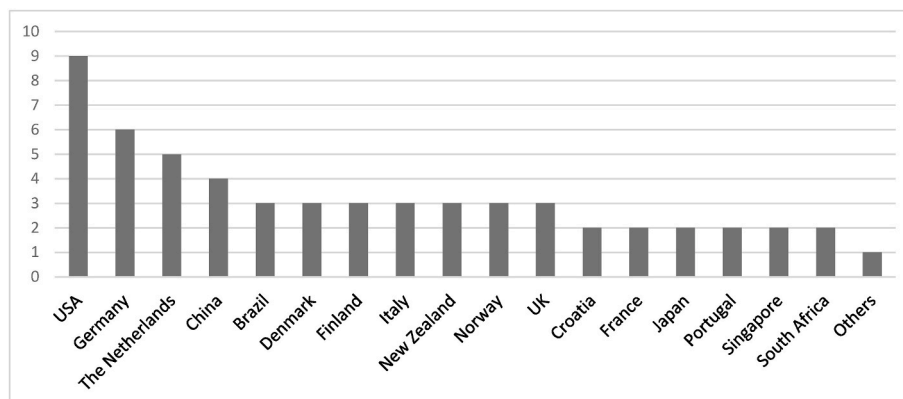


Fig. 2. I Geographic distribution of the studies based on participants location.

countries (Klößner et al., 2022; van Dijk, 2023), Mediterranean countries (Franceković et al., 2021) and several populous countries, such as USA, India, and China (Bryant et al., 2019).

In terms of the corresponding authors' affiliations, the most prolific contributions originated from German ($n = 8$) and US ($n = 8$) universities, followed by institutions located in the Netherlands ($n = 6$). Notably, Wageningen University (The Netherlands) was the leading institution, with five articles included in this review.

3.1.3. Year of publication and data collection

Fig. 3 illustrates the distribution of the included articles by publication year and data collection period. Most studies were published between 2021 and 2024 ($n = 50$), indicating increasing academic interest in the field. In terms of data collection, the majority of studies were conducted over four years ago. Specifically, 23 studies concluded before the World Health Organization declared COVID-19 a pandemic on March 11, 2020 (WHO, 2020), while 33 studies collected data after this date, including 12 during 2020. Two studies (Muiruri & Rickertsen, 2024; Onwezen et al., 2022) collected data in two longitudinal rounds, and five articles did not provide data collection details. The earliest data collection occurred in July 2012 (Marcu et al., 2015), and the most recent between December 2023 and January 2024 (Vad Andersen et al., 2024).

3.1.4. Publication outlets and Co-occurrences of keywords

The journals of *Food Quality and Preference* ($n = 11$) and *Appetite* ($n = 9$) have been the most prominent in terms of publication outlets. They were followed by *Meat Science* ($n = 7$) and *Foods* ($n = 5$), which are journals of the Agricultural and Biological Sciences research area; *Frontiers in Sustainable Food Systems* ($n = 4$) and *Sustainability* ($n = 3$) journals, belonging to the Environmental Science research area. The remaining journals included less than two articles (Table 2).

Fig. 4 illustrates the co-occurrence of keywords from the included articles, highlighting the relationships between terms based on their simultaneous occurrence across multiple studies. A total of 460 keywords were ranked, among which 39 high-frequency keywords surpassed the threshold of five occurrences. The keywords with the highest total link strength included 'human' (297), 'meat' (283), 'consumer attitude' (280), 'consumer behaviour' (265), and 'food preference' (252). Three main clusters were identified. The first cluster (red colour) is predominantly related to consumer attitudes and perceptions, encompassing various nomenclatures for cultivated meat. The second cluster (green colour) focuses on demographic factors, featuring keywords such as 'adult', and 'female'. Finally, the third cluster (blue colour) centers on health and technology, including keywords like 'food

handling' and 'attitude to health'.

3.2. Conceptualization and definition of familiarity

The vast majority of the included articles lacked explicit definitions for the construct of familiarity with cultivated meat. Furthermore, the term 'familiarity' was often used interchangeably with related but distinct constructs, such as 'knowledge', 'prior knowledge', 'previous information', or 'awareness'. This finding suggests potential ambiguities in the literature on consumer acceptance of cultivated meat concerning these terms. However, a range of authors offered clearer definitions or sought to differentiate familiarity from associated constructs. Specifically, [Nghiem-Phú \(2023\)](#) conceptualized familiarity with cultivated meat as a cognition-based notion describing it as "the extent to which an individual is technically exposed to the information about or is habitually adapted to the consumption of alternative meat or protein-linked products [...]" (p. 185). Additionally, this study distinguished product familiarity across three levels: informational, experiential, and cultural. [Monaco et al. \(2024\)](#) utilized the definition of familiarity proposed by [Alba and Hutchinson \(1987\)](#) and adopted for this scoping review. Their study reported on the connection between familiarity and the 'mere exposure' effect ([Zajonc, 2001](#)), citing it as a mechanism through which repeated exposure may familiarize consumers with a novel product. Similarly, [Chong et al. \(2024\)](#) drew upon the insights of [Rioux et al. \(2018\)](#), positing that exposure serves as the "basis of familiarity, with technical knowledge ranking only as a secondary factor". Their research explicitly distinguished various dimensions of familiarity. These included familiarity with cultivated meat (i.e., product familiarity), the meal context, the social environment, and the dish, thereby differentiating familiarity from product knowledge. Further contributions from the included studies are the review by [Pakseresht et al. \(2022\)](#) and the Cultured Meat Attitude and Perception Assessment (CAPA) Framework by [Pivoraite et al. \(2024\)](#). The former attempted to establish a logical sequence among these constructs, suggesting that awareness and familiarity serve as foundational elements in the initial phase of accepting a novel food produced using an innovative technology, which fosters curiosity and subsequently leads to knowledge acquisition. The latter considered familiarity as a sub-dimension of knowledge, alongside awareness and comprehension, and linked them to the broader construct of cultivated meat perception ([Pivoraite et al., 2024](#), p. 117). Notably, both [Carlsson et al. \(2022\)](#), and [Padilha et al. \(2022\)](#) highlighted the impossibility of assessing familiarity with cultivated meat, due to its current unavailability in the market. [Padilha et al. \(2022\)](#) further noted that the relationship between behavioral intention and familiarity may evolve once the product becomes accessible to consumers.

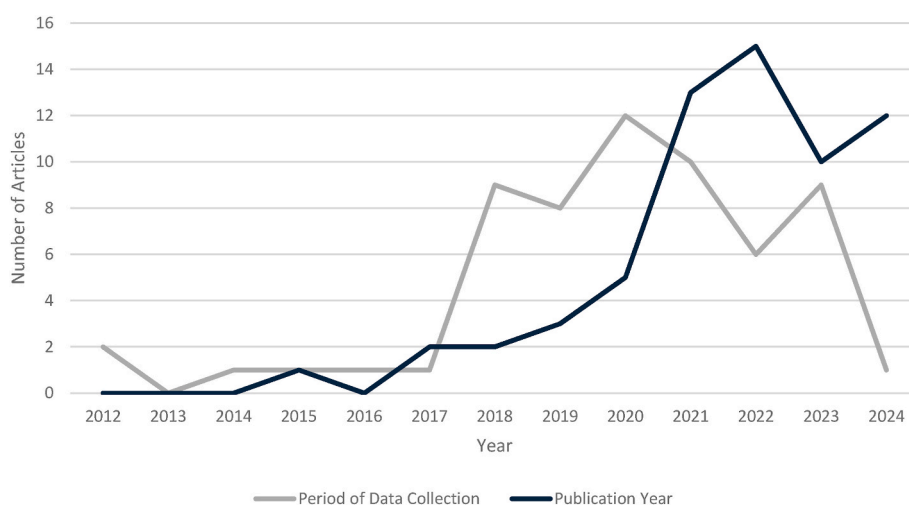


Fig. 3. I Number of articles per year, differentiated by data collection period and year of publication. Review articles were excluded from the data collection line.

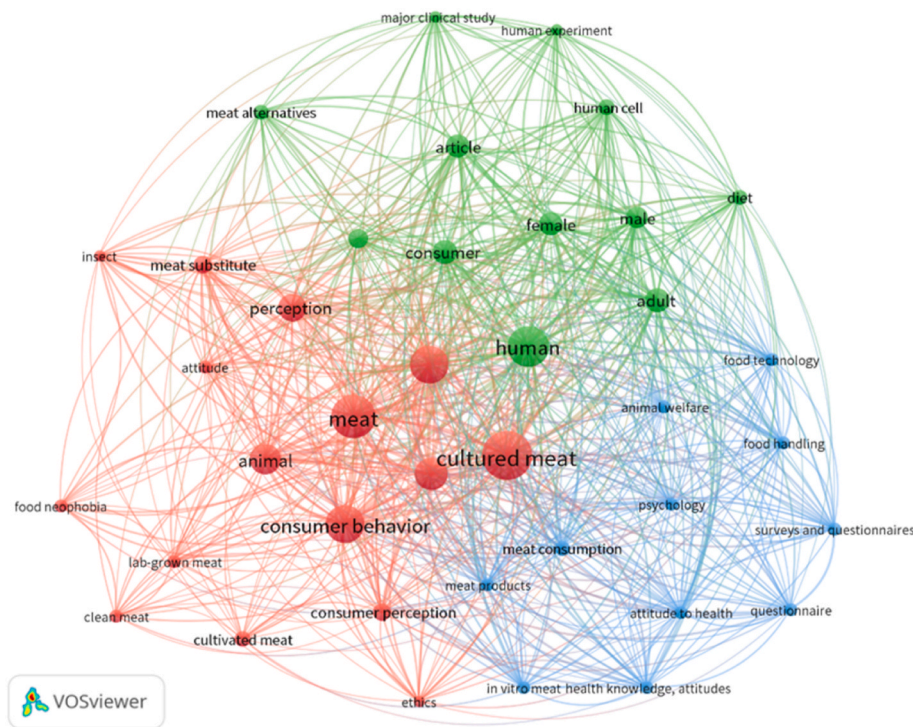


Fig. 4. I Keywords co-occurrence map of the included articles, with a threshold of five occurrences. Developed using VOSviewer.

Consequently, in their research, familiarity with cultivated meat was defined as exposure to information rather than direct personal experience with the product.

3.3. Methodologies for measuring familiarity

3.3.1. Questions phrasing, wording and response scale

The operational definition used to measure familiarity with cultivated meat varied significantly across the studies (Table 3). In most cases, familiarity was assimilated to the conventional socio-demographic attributes and treated as a background variable usually aimed at determining whether consumers had previously encountered cultivated meat. Specifically, in 22 of the studies included, participants were asked a single-item question regarding whether they had previously heard of cultivated meat. Some studies posed this question in slightly different ways, such as inquiring whether participants heard that “in vitro meat can be produced and eaten” (Dupont et al., 2022) or about the possibility of “being able to eat cultured meat” (Dupont & Fiebelkorn, 2020). In addition, Gousset et al. (2022) inquired about how participants heard about cultivated meat, while Dupont et al. (2022) asked from whom or where participants had heard of it. Discrepancies were noted among these studies regarding the response scales employed. Most authors opted for a 3-point scale, formulated as follows: “1 = No, I’ve never heard of it; 2 = Yes, I’ve heard of it, but I don’t know what it means; 3 = Yes, I’ve heard of it, and I know what it means”. Six studies utilized a dichotomous response scale, offering “Yes” and “No” as options, while those by Engel et al. (2024), Klöckner et al. (2022) and Sikora and Rzymiski (2023) employed a 4-point scale, albeit with different formulations. Notably, only this latter article by Sikora and Rzymiski (2023) included a reference to familiarity with the production process of cultivated meat (“I understand the way it is produced”) in the response scale, whereas the other articles seemed to focus more on familiarity with the meaning or concept of cultivated meat.

Another group of 20 articles collected evidence on the construct of familiarity by directly asking “How familiar are you with cultivated meat?”. In most cases, it was followed by a 5-points response scale ranging from “1 = Not familiar at all” to “5 = Extremely familiar”. The

studies by [Padilha et al. \(2022\)](#) and by [Wilks et al. \(2021\)](#) used a different response scale. Specifically, the former used a scale from “1 = Have not heard of it” to “3 = Know enough it to explain to a friend”, whereas the latter employed a scale ranging from “1 = Not at all familiar (I have never heard of the term)” to “5 = I am very familiar (I regularly read new articles and keep updated with new developments)”. Additionally, [Gousset et al. \(2022\)](#) included also a question about participants’ familiarity with the innovation sector, while [Coffin et al. \(2024\)](#) assessed familiarity with cultivated meat using an agreement scale, ranging from “0 = Strongly disagree” to “100 = Strongly Agree” with the statement “This cultured beef burger is familiar”. The research by [Szejda, Bryant, and Urbanovich \(2021\)](#) referred to this question to prior familiarity with the new way of producing real meat directly from cells, rather than explicating a specific nomenclature of cultivated meat.

The study conducted by [Faunalytics \(2018\)](#) implemented a sequential approach by first measuring awareness with the question “Have you heard the term ‘clean meat’ before?”. This was followed by a textual framing about cultivated meat, and then by an assessment of familiarity, asking “Prior to this study, to what extent were you familiar with ‘clean meat’?”. This method of combining both measures, with awareness preceding familiarity within the same study, was not observed in other studies included in this review.

Onwezen et al. (2022) evaluated the relevance of familiarity in routine food purchases by adopting the Food Choice Questionnaire as revised by Fotopoulos et al. (2009). Similarly, Muiruri and Rickertsen (2024) explored several relevant factors influencing food purchase, by including the importance of having previously eaten a product as a synonym of food familiarity. This construct was also operationalized by measuring the consumption frequency of plant-based or alternative-meat products and linking the findings to cultivated meat acceptance (Baum et al., 2023; Carlsson et al., 2022; Nghiem-Phú, 2023; Possidónio et al., 2021).

Li et al. (2023) considered awareness and familiarity to be equivalent constructs and distinguished both from product knowledge. In contrast, Baum et al. (2023) separately assessed familiarity with meat substitutes (excluding cultivated meat) based on their consumption frequency and prior awareness of cultivated meat, defined as having previously heard

Table 3I Formulation of questions and response scales used to measure familiarity with cultivated meat.^a

Question	Response scale	References
Have you previously heard of cultivated meat?	1 = Yes; 2 = No 1 = Yes; 2 = No; 3 = Unsure 1 = No, I've never heard of it; 2 = Yes, I've heard of it, but I don't know what it means; 3 = Yes, I've heard of it, and I know what it means 1 = Yes, I have heard, and I understand the way it is produced; 4 = I cannot recall 1 = I never heard about it; 4 = I heard about it, and I have a clear idea about what it is	Chriki et al. (2021); de Oliveira da Silva and da Cunha (2022); Hocquette et al. (2022); Jacobs et al. (2024); Liu et al. (2021); Vad Andersen et al. (2024) Faletar and Cerjak (2022); Faunalytics (2018); Gousset et al. (2022); Li et al. (2023); Wilks et al. (2017) Baum et al. (2021); Baum et al. (2023); Dupont and Fiebelkorn (2020); Dupont et al. (2022); Franceković et al. (2021); Mancini and Antonoli (2019); Mancini and Antonoli (2020); Tsvakirai et al. (2023) Sikora and Rzymiski (2023)
How familiar are you with cultivated meat?	1 = Yes; 2 = No; 3 = I am not sure 1 = Unfamiliar; 2 = A little bit familiar; 3 = Familiar 1 = No; 2 = Yes, no understanding; 3 = Yes, understanding 1 = Never heard of it; 2 = Heard of it; 3 = Already knew what it is 1 = Have not heard of it; 2 = Have heard of it but know very little or nothing about it; 3 = Know enough about it that I could explain to a friend 1 = Very unfamiliar; 4 = Very familiar 1 = Not familiar at all; 5 = Extremely familiar	Engel et al. (2024); Klöckner et al. (2022) Weinrich et al. (2020) Bekker et al. (2017, 2021) Cornelissen and Piqueras-Fiszman (2023) Bryant and Barnett (2019) Padilha et al. (2022) Fox et al. (2021) Bryant et al. (2019); Chia et al. (2024); Chong et al. (2024); Faunalytics (2018); Hallman and Hallman (2020); Jung et al. (2022); Malavalli et al. (2021); Szejda, Bryant, and Urbanovich (2021); Szejda, Stumpe, et al. (2021); van Dijk et al. (2023) Wilks et al. (2021)
I think that when it enters the market cultivated meat will be familiar	1 = Not at all familiar (I have never heard of the term); 5 = I am very familiar (I regularly read new articles and keep updated with new developments)	Kamei et al. (2024)
If cultivated meat was more familiar than conventional meat, I would have	1 = Not at all familiar (do not know what this ingredient is); 6 = very familiar (eat this burger often, make it often)	Coffin et al. (2024)
When purchasing food for yourself and your household, which factors do you consider to be particularly important?	0 = Strongly Disagree; 100 = Strongly Agree 1 = Strongly disagree; 7 = Strongly agree	Fidder and Graça (2023)
Which of the following reasons will make you more/less likely to eat cultivated meat if it becomes available in more restaurants?	1 = Much less positive attitude; 5 = Much more positive attitude	Engel et al. (2024); Klöckner et al. (2022)
Frequency of eating a meat alternative	Having eaten the food product before (Check all that apply) 1) Is familiar; 2) Is like the food I ate when I was a child; 3) Is what I usually eat, ranking from 1 = Not important at all to 7 = Very important When it's/it's not part of a familiar dish or meal (Check all that apply)	Muiruri and Rickertsen (2024) Onwezen et al. (2022) Chong et al. (2024)
Please indicate your opinion regarding the consumption of cultivated meat	1 = Never; 2 = Occasionally; 3 = Regularly 1 = I have eaten a veggie-burger; 2 = Not sure what a veggie burger tastes like 1 = Rarely or never; 2 = Monthly; 3 = Weekly; 4 = Multiple times each week; 5 = Daily	Nghiêm-Phú (2023) Carlsson et al. (2022) Baum et al. (2023)
Which of the following most closely represents your prior exposure to cultivated meat before this study?	1 = Never found; 7 = I found frequently	Possidónio et al. (2021)
I am aware of cultivated meat	1 = It was completely new to me; 2 = I've heard of it before; 3 = I felt well informed	Hamlin et al. (2022)
Food Neophobia Scale	1 = Strongly disagree; 7 = Strongly agree 1 = Do not agree at all; 7 = Fully agree	Giezenaar et al. (2023) Etter et al. (2024)
Please judge whether the following statements on cultivated meat are correct or not	1 = True; 2 = False; 3 = I don't know	Huang and Uehara (2023)

^a Further detail available in [Appendix E](#).

of the product. Notably, only the study by [Chong et al. \(2024\)](#) provided a real-life consumption setting. Participants were first asked about their familiarity with cultivated meat before tasting the product, followed by questions regarding whether the presence of cultivated meat in a familiar dish or meal would increase the likelihood of consuming the product again as it becomes more widely available in restaurants.

Several articles referenced previous research in their methodological discussions on familiarity. Specifically, the studies by [Dupont and Fiebelkorn \(2020\)](#), [Dupont et al. \(2022\)](#), and [Padilha et al. \(2022\)](#) cited the study conducted by [Verbeke \(2015\)](#) on consumer acceptance of insects. In that research, Verbeke introduced a methodology designed to assess

consumer awareness of “what the eating of insects is about” through three response categories, ranging from “Yes, I have heard of the eating of insects, and I know what it means” to “No, I have never heard of the eating of insects.” This approach was based on the assumption that familiarity with novel food products is primarily derived from information exposure, rather than product usage or consumption which was presumed to be minimal. Consequently, familiarity was indirectly measured as a form of self-reported awareness. A similar approach was applied to cultivated meat by [Verbeke et al. \(2015\)](#) and was later referenced by [Baum et al. \(2023\)](#).

Notably, only [Engel et al. \(2024\)](#), based on the [Klöckner et al. \(2022\)](#)

dataset, compared cultivated and conventional meat in the formulation. Their approach included a prospective question examining how attitude shifts might depend on familiarity levels with cultivated meat relative to conventional meat. None of the 63 included studies assessed whether the industry's strategy of mimicking conventional meat effectively enhances product familiarity and, potentially, consumer acceptance of cultivated meat.

3.3.2. Nomenclature and product form of cultivated meat

A variety of approaches to name cultivated meat were observed across the included studies. The term 'cultured meat' was used in all the review articles, with the exception of Mancini and Antonioli (2022) and Monaco et al. (2024), which consistently referred to the product as 'cultivated meat' throughout their studies. Similarly, most research articles adopted the term 'cultured meat' or its equivalent in the national language in their questionnaires and measurement instruments. Specifically, as shown in Fig. 5, studies from Wageningen University (The Netherlands) and most American universities predominantly utilized the term 'cultured meat', while research from the University of Clermont Auvergne (France) favored the term 'artificial meat'. As a result, most data on cultivated meat familiarity have been collected worldwide employed the term 'cultured', whereas results from French, Brazilian, and Chinese consumers were predominantly derived using the term 'artificial meat'. Additionally, a group of studies examined familiarity by adopting the terms 'cultivated meat' ($n = 11$) and 'in vitro meat' ($n = 7$), while other terms, such as 'synthetic meat' ($n = 3$), 'clean meat' ($n = 3$), and 'lab-grown meat' ($n = 1$), were utilized in a smaller number of studies. Finally, several articles aimed to assess the effects of different names by testing multiple terms for cultivated meat within their experimental conditions (e.g., Bryant & Barnett, 2019; Cornelissen & Piqueras-Fiszman, 2023; Faunalytics, 2018; Li et al., 2023; Padilha et al.,

2022; Szejda, Bryant, & Urbanovich, 2021).

In contrast to the other studies included, the research conducted by Hallman and Hallman (2020) uniquely focused on cultivated seafood rather than on cultivated meats derived from terrestrial animals. Most studies examined the concept of cultivated meat without specifying its product form. Only six studies explicitly referred to the product form; five by including a cultivated meat burger in their questionnaires (Coffin et al., 2024; Dupont et al., 2022; Dupont & Fiebelkorn, 2020; Fox et al., 2021; Kamei et al., 2024) and one by including a cultivated steak (Szejda, Bryant, & Urbanovich, 2021). No other forms of cultivated meat were identified in the analyzed literature.

3.3.3. Cultivated meat framing approaches in the included studies

The framing of cultivated meat plays a pivotal role in shaping how results are interpreted and compared across studies (Bryant & Dillard, 2019). Of the articles reviewed, most employed some form of cultivated meat framing ($n = 47$), with 28 introducing it after assessing familiarity and the remaining 19 doing so beforehand. The majority adopted either textual framing ($n = 32$) or a multimodal approach, combining text and visuals ($n = 13$). Notably, Marcu et al. (2015) based their findings on participant responses to a video titled "Would You Eat Synthetic Meat?", which may have introduced a negative framing from the outset, by using the term 'synthetic'. It is worth highlighting that the study by Dupont et al. (2022) used an image of an insect-based burger (sourced from the BugFoundation© website) as framing in their research on cultivated meat acceptance. This approach mirrored the visual used in an earlier study by Dupont and Fiebelkorn (2020), which examined both cultivated meat and insect-based products, thereby ensuring continuity between the studies. However, this framing introduced a potential disconnect, as the image shown did not correspond to the actual product being studied (cultivated meat burger), possibly influencing participant perceptions.

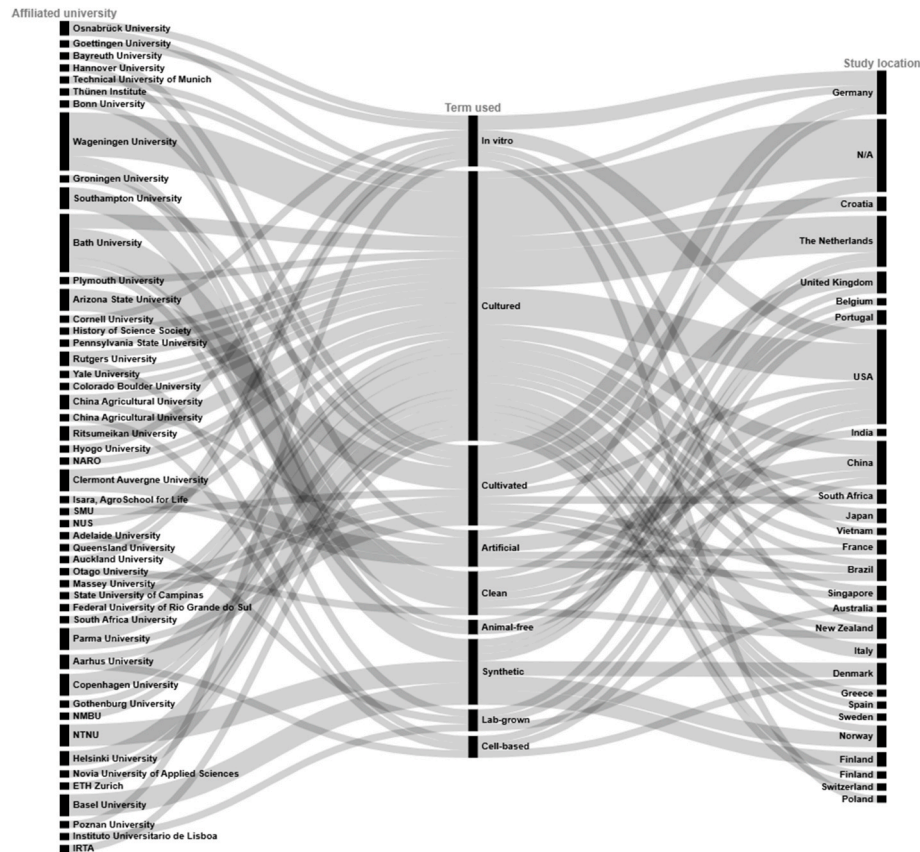


Fig. 5. I Nomenclature of cultivated meat by university affiliation of the corresponding author (left) and study location (right). 'N/A' for study location refers to review articles.

In contrast, the study by [Chong et al. \(2024\)](#) uniquely framed cultivated meat by providing a real sample tasting, serving cultivated chicken either in a sandwich with fries and mixed greens or with spring vegetable orecchiette at a restaurant in Singapore. The study by [Fidder and Graça \(2023\)](#) examined how various framing approaches for communicating cultivated meat influence consumers' behavioral intentions. Their findings indicated that a framing strategy emphasizing product consumption, rather than production techniques or positioning cultivated meat as a general alternative food, resulted in the highest familiarity scores, which were subsequently linked to more favorable attitudes and intentions. Notably, an approach to minimize the framing influence on participants' responses was employed by [Szejda, Bryant, and Urbanovich \(2021\)](#). In their study, a brief description of technology was included as a first introduction to the concept, deliberately avoiding the explicit use of the term 'cultivated meat'. After measuring familiarity with the technology introduced, they subsequently introduced an expanded technology description that included this term.

3.4. Evidence of the role of familiarity on consumer acceptance of cultivated meat

Despite the varied approaches to framing, formulation, and methodology across the research articles included in this review, the majority reported that familiarity with cultivated meat plays a facilitating role in consumer acceptance ($n = 34$). Specifically, [Bryant et al. \(2019\)](#) identified greater familiarity with cultivated meat as a predictor of increased acceptance in the USA, India, and China. They also suggested that growing familiarity with the product is likely to enhance acceptance in the future. Similarly, [Giezenaar et al. \(2023\)](#) found that individuals who were more aware of cultivated meat exhibited more favorable attitudes compared to those with lower levels of awareness. In contrast, [Bekker et al. \(2021\)](#) reported that this relationship was observed only for explicit attitudes, not for implicit attitudes. The research by [Szejda, Bryant, and Urbanovich \(2021\)](#) and [Szejda, Stumpe, et al. \(2021\)](#) applied the Diffusion of Innovations Theory ([Rogers, 1983](#)) to segment the population and assesses varying familiarity levels across segments. Their findings indicated that early adopters, defined as those who are the first to adopt an innovation, exhibited slightly higher familiarity levels compared to the general population, though familiarity remained low overall. Additionally, early adopters showed greater openness and support for cultivated meat technology, despite this limited familiarity, suggesting that certain population segments may be inclined to accept the product regardless of familiarity levels. Notably, nearly one-third of the studies in this group ($n = 13$) relied on data collected prior to the COVID-19 pandemics ([Appendix E](#)).

Another group of nine research articles reported that familiarity with cultivated meat had no influence on product acceptance. For instance, the study by [Muiruri and Rickertsen \(2024\)](#), which focused on a representative sample of the Norwegian population, rejected the hypothesis that placing emphasis on familiarity would influence the willingness to try cultivated meat. Similarly, both the study by [Dupont et al. \(2022\)](#), who tested the role of familiarity within the broader theoretical framework of the Theory of Planned Behaviour ([Ajzen, 1991](#)), and the research by [Dupont and Fiebelkorn \(2020\)](#) found no significant effect of having previously heard about cultivated meat on the intention to consume the product. In another study, [Li et al. \(2023\)](#) highlighted significant differences between awareness (considered synonymous with familiarity) and knowledge of cultivated meat, by testing various naming conditions on Chinese participants. Their findings revealed that, while many participants had previously heard of 'artificial meat', their understanding of the term was limited, indicating that familiarity alone does not suffice. Additionally, another study assessing the term 'artificial meat' among Chinese consumers pointed out that results based on this term could be biased by a confounding effect in the nomenclature ([Liu et al., 2021](#)). Specifically, 'artificial meat' may be misinterpreted as plant-based meat rather than cultivated meat. These findings suggest

that collection strategies that measure familiarity by asking about having previously heard of the product are actually capturing familiarity with the name rather than with the product itself. This conclusion is also supported by [Bryant and Barnett \(2019\)](#), who tested different naming conditions to examine the role of familiarity in consumer acceptance. Although participants reported higher familiarity with terms like 'lab-grown meat' and 'cultured meat', their lower acceptance levels suggested that this familiarity was linked to perceptions of the names rather than a deeper understanding of the product itself. Furthermore, when familiarity was referred to the meal or dish in which cultivated meat was served, it did not significantly influence participants' intentions to eat it again in a restaurant. In contrast, the tastiness of the cultivated meat product emerged as a more critical factor than the familiarity of the dish in which it was presented ([Chong et al., 2024](#)).

Another group of nine studies measured familiarity with cultivated meat but did not discuss the implications of these results within the context of their findings.

Regarding the review articles included, the majority identified familiarity as a facilitating factor in consumer acceptance of cultivated meat ([Font-i-Furnols & Guerrero, 2022](#); [Mancini & Antonioli, 2022](#); [Monaco et al., 2024](#); [Onwezen & Dagevos, 2024](#); [Onwezen et al., 2021](#); [Pakseresht et al., 2022](#); [Siddiqui, Khan, et al., 2022](#)). Notably, the review by [Onwezen et al. \(2021\)](#) cited [Hoek et al. \(2011\)](#) to suggest the relevance of familiarity in cultivated meat acceptance. However, the Hoek et al. research focused on plant-based meat and did not assess familiarity in relation to cultivated meat. Additionally, the review by [Font-i-Furnols and Guerrero \(2022\)](#) presented a figure illustrating the familiarity of cultivated meat across several studies. This figure serves as a clear example of the interchangeability in the usage of the constructs of familiarity, awareness, and knowledge, which is prevalent in the literature on cultivated meat acceptance. Specifically, the response modalities depicted in the figure connected having heard about cultivated meat with both familiarity and knowledge. However, the figure included results from [Rolland et al. \(2020\)](#), where having heard about cultivated meat was used to assess prior awareness of consumers, rather than 'familiarity,' a term that was not mentioned throughout the article. Furthermore, the figure included results from [Verbeke et al. \(2015\)](#), in which having previously heard about cultivated meat was not explicitly considered a measure of familiarity but was intended to measure initial consumer reactions and awareness. Finally, the lack of a clear distinction among these constructs has also been highlighted in the review by [Pakseresht et al. \(2022\)](#).

4. Discussion

"When I bit into it, one of my biggest concerns was that it was going to be unfamiliar." With these words spoken after the first public tasting of cultivated meat in 2013, Josh Schonwald emphasized the crucial role that familiarity plays in the introduction of this innovation ([Maastricht University, 2013](#)). Indeed, familiarity has been extensively examined in scientific literature on consumer behaviour. It is recognized as a pivotal construct influencing dietary development and reactions to novel food products ([Aldridge et al., 2009](#); [Cooke, 2007](#); [Karaağaç & Bellikci-Koyu, 2023](#)). Food acceptance is episodic in nature, shaped by various psychological and contextual factors ([Martin et al., 2018](#)). Through a process known as 'learned safety' ([Kalat & Rozin, 1973](#)), mere exposure to novel products, followed by continual exposure, can transform initial unfamiliarity into familiarity, fostering acceptance. Familiarity thus serves as a "heuristic cue to safety" ([de Vries et al., 2010](#), p. 322) reassuring consumers about the product's safety and mitigating anxiety or neophobic responses ([Mattavelli & Rizzoli, 2022](#)). This protective function of familiarity aligns with the "omnivore paradox" ([Lin-Hi et al., 2022](#)), whereby humans balance curiosity for novel foods with caution, using both familiarity and disgust as safeguards: disgust to repel the prospect of oral incorporation of a potential offensive object ([Rozin & Fallon, 1987](#)), and familiarity to signal the product's safety. In this

context, familiarity can be likened to the concept of *querencia*, which refers to a state of trust, safety, and emotional security (Ault, 2008) that fosters liking and shapes preferences for familiar foods over unfamiliar ones (Fisher & Frewer, 2009; Monin, 2003; Schwikert & Curran, 2014).

In a groundbreaking article that pioneered research in the field of cultivated meat, Mark Post (2012) explicitly identified mimicry and the recreation of conventional meat as essential requisites for achieving consumer acceptance. This approach can be considered as an effort to position cultivated meat within a framework of familiarity (Bryant & Barnett, 2018). However, Siegrist and Hartmann (2023) have raised concerns regarding this strategy, arguing that ‘imitation’ may automatically associate the original product (conventional meat) with a gold standard, thereby devaluing the imitating product (cultivated meat). Despite this critique, numerous studies indicate that product familiarity significantly influences consumer adoption of cultivated meat (Hanan et al., 2024; Pakseresht et al., 2022; Siddiqui, Alvi, et al., 2022). Nevertheless, several authors have highlighted the limited empirical support for this claim (Onwezen & Dagevos, 2024) and recommended future research on this construct (Monaco et al., 2024), whereas concerns regarding the lack of clarity in the familiarity conceptualization had already been raised in the early 1980s with Marks and Olson (1981) describing efforts to measure familiarity as “*vague approaches*” (Marks & Olson, 1981, p. 146), and persisted in more recent publications (Bell et al., 2018; Franzen et al., 2022).

Consequently, analyzing theoretical definitions, operationalization and the existing evidence surrounding the construct of familiarity and its facilitating or hindering influence on consumer acceptance of cultivated meat is deemed necessary.

4.1. Representativeness of evidence

Before addressing the research sub-questions (SQ), we first examined the descriptive characteristics of the reviewed articles. The results indicated that the included records reflect trends previously observed in other studies on consumer acceptance of cultivated meat (Hanan et al., 2024; Lewisch & Riefler, 2023). Specifically, the majority of data originated from a limited range of countries, particularly the United States and some European nations, such as Germany and the Netherlands, leaving large portions of the global population underrepresented. This is particularly relevant considering that one of the central arguments for advancing cultivated meat is its potential to contribute to global food security in response to population growth (Soice & Johnston, 2021). However, as this review demonstrated, there is a lack of evidence from regions expected to undergo the most significant demographic expansion (UNEP, 2023). Additionally, only a quarter of the research articles included explicitly stated that they analyzed a representative sample of the target population, 11 of which relied on data collected before 2021 (Appendix E). The demographic characteristics of the studies suggested that much of the evidence on familiarity stems predominantly from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Muthukrishna et al., 2020). Similarly, the analysis of corresponding authors' affiliations revealed a consistent contribution from authors affiliated with WEIRD countries, which aligns with the findings of Otterbring and Folwarczny (2024) regarding authors publishing in journals related to food research and psychological sciences.

The results indicated a growing interest in scientific publications on consumer acceptance of cultivated meat and the construct of familiarity. However, unlike previous reviews, we did not limit our analysis to the year of publication. Instead, a closer examination of the data recency revealed that, in several cases, the evidence is outdated. Much of the data corresponds to earlier periods or coincides with significant events, such as the COVID-19 pandemic, which impacted psychological constructs influencing food choice motives (Skalkos & Kalyva, 2023). Furthermore, the extensive debate around vaccine technologies during this period may have heightened consumer sensitivity toward novel technologies, potentially influencing their perception and willingness to

accept them (Fatur Rahman et al., 2021). As a result, the comparability of these findings with current post-pandemic trends may be limited. Additionally, the data collection period, rarely covered in existing reviews on cultivated meat acceptance, should be reported to allow for more accurate inferences from the analyzed studies.

The research areas of the publishing journals indicated a significant focus on environmental, agricultural, and biological sciences, aligning with the findings of Lewisch and Riefler (2023). Additionally, the keyword co-occurrence analysis revealed a clear emphasis on the consumption domain. This analysis has been included in other reviews on cultivated meat acceptance, such as those by Chriki et al. (2020) and Song et al. (2024). The alignment of keyword clusters with the broader consumer acceptance field further demonstrates the effectiveness of the inclusion and exclusion criteria in selecting the most relevant studies for the aim of this scoping review. However, it is worth noting that the term ‘familiarity’ was not among the most frequently occurring keywords, highlighting how this construct has been often assimilated to the socio-demographic attributes and treated as a background variable, rather than being considered a primary focus of research.

Overall, the descriptive analysis of the included studies revealed that current research on consumer acceptance of cultivated meat, particularly regarding the construct of familiarity, is poorly representative of the global population. Furthermore, the limited comparison between countries, variations in data collection periods and the differing participant demographics raise concerns about the generalizability of the existing evidence in scientific literature surrounding familiarity with cultivated meat.

4.2. Defining familiarity with cultivated meat

To clarify the relationship between familiarity and consumer acceptance of cultivated meat, SQ1 first examined existing definitions and conceptualization of this construct. Addressing SQ1 required an in-depth analysis of both texts and research tools used to determine how different authors conceptualize familiarity. The results revealed that nearly all included records lacked a valid and consistent definition of familiarity. Notably, this construct was often intertwined with the related yet distinct constructs of product awareness and product knowledge, raising concerns about conceptual clarity in literature on consumer acceptance of cultivated meat.

In consumer research, product awareness marks the initial stage of consumer engagement (Bambang, 2012), where individuals become conscious of a product's existence and basic attributes, allowing them to recognize and recall a product as part of a specific category (Keller, 1993). In contrast, product familiarity is often described as involving a more profound cognitive engagement, which may extend beyond simple recognition to foster stronger associations and evaluations of the product (Aldridge et al., 2009). Consequently, while awareness may be considered as a precursor to familiarity, the two constructs appear distinct: awareness tends to denote basic recognition, whereas familiarity may suggest a deeper level of engagement with the product (Jeske & van Schaik, 2017). In turn, familiarity can lead to product knowledge through information-seeking behaviors and the development of consumer expertise (Alba & Hutchinson, 1987), characterized by a more detailed understanding of the product, its features, and its broader context (Banović et al., 2012; Williams & Moulin, 2015), potentially enabling consumers to make more informed and rational decisions (Chocarro et al., 2009; Ferreira & dos Santos, 2019). Therefore, the degree of exposure to a product is central to shape familiarity and distinguish it from related constructs (Aldridge et al., 2009). Accordingly, several included studies have raised concerns regarding the feasibility of assessing familiarity with cultivated meat, as consumers have not yet been exposed to it (Carlsson et al., 2022; Padilha et al., 2022). Suggesting that current measurement approaches may be capturing awareness rather than familiarity, as the latter would imply some level of exposure to the product.

Only the study by [Chong et al. \(2024\)](#) further operationalized familiarity beyond product familiarity, incorporating factors such as familiarity with the meal context, the social environment, and the dish itself. Although not explicitly stated by the authors, this appears to be a first attempt to align with the familiarity dimensions proposed by the review of [Aldridge et al. \(2009\)](#), which include visual familiarity, taste familiarity, contextual familiarity and categorical familiarity. Additionally, we noted a persistent lack of references to existing literature that defines product familiarity (e.g. [Alba & Hutchinson, 1987](#); [Giacalone et al., 2015](#)) and distinguishes it from related constructs (e.g. [Williams & Moulin, 2015](#)). Therefore, in response to SQ1, we argue that the construct of ‘familiarity’ has not been fully recognized, conceptualized and consequently defined in the literature surrounding consumer acceptance of cultivated meat. This could imply significant opportunities for further research, particularly in distinguishing the conceptualization of awareness, familiarity, and knowledge in relation to cultivated meat, informed by the increasing exposure of consumers to the product worldwide.

4.3. Measuring familiarity with cultivated meat

SQ2 focused on examining the approaches to measure familiarity with cultivated meat in current research and connecting it to previous literature on this construct. Notably, the measurement of familiarity has been relatively underexplored in the food acceptance domain and encompasses different approaches ([Fandos Herrera & Flavián Blanco, 2011](#)). Historically, familiarity has often been measured through the frequency of product usage. For instance, the Food Familiarity Scale employed by [Predieri et al. \(2020\)](#), based on the earlier work of [Tuorila et al. \(2001\)](#), assessed familiarity with 96 food items using a response scale ranging from “1 = I do not recognize it” to “5 = I regularly eat it”. A similar approach was noticed in a few studies included in this review ([Baum et al., 2023](#); [Carlsson et al., 2022](#); [Nguyễn-Phú, 2023](#); [Possidónio et al., 2021](#)). Other approaches used in consumer science literature have relied on subjective assessment of individuals’ familiarity ([Coupey et al., 1998](#); [Zhou & Nakamoto, 2007](#)). However, these self-report measures can limit comparability across participants, as individuals may apply different personal criteria when evaluating their familiarity ([Park & Lessig, 1981](#)). Nevertheless, this approach remained popular in cultivated meat acceptance literature, with 19 research articles in our review using a self-reported measure answering the question “How familiar are you with cultivated meat?”. The specific formulation and response scales, however, varied significantly across the studies, posing further challenges for comparing results.

The most common approach in the studies we reviewed was a single-item question asking whether participants had previously ‘heard’ of cultivated meat. Notably, most studies using this method ($n = 16$) were conducted in the past five years, suggesting that this approach has been predominantly adopted by recent research ([Appendix E](#)). Although many of these papers did not reference the original source, this approach appears to derive from Flycatcher’s market research on Dutch consumers acceptance of cultivated meat ([Flycatcher, 2013](#)). In peer-reviewed literature, the first referenced research to explicitly adopt this approach was [Verbeke \(2015\)](#) on insect-based foods. Given the limited exposure to insects (operationalized as consumption frequency or product usage), the author treated the question as a measure of self-reported awareness. However, the author noted that having previously heard about insect consumption was used both as an indication of awareness and as an indirect variable for self-reported familiarity, thereby fostering a conflation between the two constructs. Notably, this measure was not significantly associated with any other explanatory variables in the model ([Verbeke, 2015](#)). In the context of cultivated meat, the first peer-reviewed study to adopt this approach was the exploratory study of [Verbeke et al. \(2015\)](#), which applied it to a convenience sample of university students. In this research, the question about having heard of cultivated meat was interpreted as a measure of

awareness. Since the construct of familiarity is linked to the levels of exposure to a product ([Aldridge et al., 2009](#)), this approach, relying on a recall task, appears to serve as a more appropriate measure of awareness rather than familiarity. Importantly, this highlights a further significant limit to current literature. As our results showed, the industry’s strategy of mimicking conventional meat to enhance familiarity and acceptance, based on the assumption that greater resemblance will lead to higher product familiarity and, in turn, greater consumer acceptance, remains largely unassessed in current literature. The predominance of familiarity measures based on awareness with the concept of cultivated meat rather than actual product familiarity, limits our ability to evaluate the validity and effectiveness of this approach, which, although theoretically logical, still requires empirical testing within the cultivated meat field.

Additionally, consumer perceptions of cultivated meat are strongly influenced by the nomenclature used to describe it ([Chong et al., 2023](#)). Therefore, asking participants if they had previously heard of cultivated meat is likely influenced by the specific terms employed, which may introduce reaction bias due to the wording of the question, as participants may respond to the object mentioned rather than to the actual intent of the item ([Furnham, 1986](#); [Liu et al., 2021](#)). Despite such concerns, this approach has been widely used in the majority of reviewed studies, with varying nomenclatures of cultivated meat and response scales from the original studies, further hampering cross-study comparisons. Additionally, the reliance on a single-item question to measure complex psychological constructs has been widely criticized in consumer research and psychological literature ([Bagozzi & Youjae, 1991](#); [Bell et al., 2018](#); [Loo, 2002](#)). This methodological concern was further highlighted in a recent review of cultivated meat acceptance studies by [Hanan et al. \(2024\)](#), which emphasized the limitations of such an approach for capturing familiarity. Moreover, none of the approaches reported so far have undergone validation with a psychometric approach, which raises serious concerns about the validity of these measurement methods and the conclusions drawn about familiarity with cultivated meat.

Notably, several articles reviewed at the full-text screening stage used similar formulation regarding participants having previously heard about cultivated meat, yet did not apply this to measure familiarity, resulting in their exclusion. For instance, [Asioli et al. \(2021\)](#) employed this methodology, dividing participants into subgroups based on different ‘hearing’ conditions. However, their study made no reference to the familiarity construct. A similar issue arose in the research by [Ford et al. \(2023\)](#) and the [Good Food Institute Europe \(2024\)](#), where this measure was connected to awareness rather than familiarity. Additionally, the study by [Piochi et al. \(2022\)](#) used a similar approach, where not having heard about cultivated meat was considered as a lack of knowledge. These findings suggest that not only definitions, but also items used across the articles included in this review frequently conflated familiarity with other, distinct constructs.

The methodologies used to measure familiarity with cultivated meat in the included articles rarely specified the form of cultivated meat. While this omission does not directly undermine the findings, it does raise concerns about how they should be interpreted. Indeed, as demonstrated by [Dupont et al. \(2022\)](#), general attitudes toward cultivated meat are fully mediated by specific attitudes towards specific forms of cultivated meat, which offer a better evaluation. Among the few studies that did specify a product form, most referred to a burger. Although a detailed discussion on the various forms of cultivated meat falls outside the scope of this review, it is noteworthy to consider why the burger, rather than other shapes, has been chosen. In part, this could reflect the fact that burgers are one of the simplest forms of meat to replicate for the cultivated meat industry ([Siddiqui, Bahmid, et al., 2022](#); [Wurgaft, 2020](#)). Moreover, the burger has also been reported to be a familiar foodstuff in Western cultures, making it easily recognizable and thus readily integrated into familiar cognitive schemes ([Sexton, 2018](#)).

Overall, the type of framing used in the included articles highlighted

that cultivated meat is still largely present as a hypothetical product (To et al., 2024). Notably, only the study by Chong et al. (2024) involved a real product in their research. The placement of the framing in relation to the question on familiarity is a critical detail, given its influence on how familiarity was assessed. Specifically, six articles introduced the cultivated meat and an explanation of its production process before asking participants if they had previously heard of it (Chriki et al., 2021; Dupont et al., 2022; Dupont & Fiebelkorn, 2020; Gousset et al., 2022; Jacobs et al., 2024; Liu et al., 2021). This sequencing may raise concerns about the validity of the findings on familiarity from these studies, as prior discussion of cultivated meat could bias participants' responses to the question of whether they had heard of it.

Overall, addressing SQ2, there is sufficient evidence to assert that the literature on consumer acceptance of cultivated meat presents a variety of strategies to measure familiarity. However, we argue that the complexity of the construct of familiarity could be inadequately represented by the current approaches reviewed in the included studies. Specifically, questions regarding whether participants have heard about the product appear to serve as better indicators of awareness rather than familiarity. Significant challenges arise from variations in nomenclature, framing, and formulation, which hinder the replicability and comparability of research findings. Additionally, the total absence of a psychometric approach in the reviewed articles suggests potential issues with the validity and the reliability of the measures employed to date on this construct.

4.4. The role of familiarity in consumer acceptance of cultivated meat

In light of the insights from the previous results, the evidence produced to answer SQ3 appears to be characterized by limitations in the definition and operationalization of the familiarity construct. Nevertheless, the reviewed articles can be categorized into three groups according to their conclusion on whether familiarity acts as a facilitator or barrier to consumer acceptance of cultivated meat (Appendix E).

The first group of studies reported familiarity to be a facilitating construct. However, these studies largely lacked a rigorous analysis of the methods best suited for measuring familiarity, especially concerning the use of psychometric tools and their differentiation from related constructs, such as awareness and knowledge. Among the 34 research articles in this group, only two (Baum et al., 2023; Padilha et al., 2022) referenced prior literature when introducing their measures of familiarity. Furthermore, the approaches to measure familiarity were inconsistent across studies, which limits the comparability of findings and calls for caution in interpreting the construct's facilitating role. Notably, the segmentation approach used by Szejda, Bryant, and Urbanovich (2021) and Szejda, Stumpe, et al. (2021) suggests that familiarity's influence may vary depending on population openness to cultivated meat technology, with early adopters showing greater support for adoption despite low familiarity levels. Accordingly, tailoring interpretations regarding the role of familiarity on consumer acceptance of cultivated meat by segments could offer a more effective approach for future research.

In the second group of studies, familiarity was assessed within a more structured context and results suggested a non-significant role of this construct. Specifically, when familiarity was integrated into widely validated theoretical frameworks, such as the Theory of Planned Behaviour (Randall et al., 2024), it demonstrated no effect on intentions to consume cultivated meat (Dupont et al., 2022). This is particularly relevant given that the broader literature on cultivated meat acceptance often lacks a strong theoretical basis for assessing psychological constructs, as noted in recent reviews (Hanan et al., 2024; Onwezen & Dagevos, 2024). Since familiarity was found to be non-significant in the few studies that adopted a theoretical framework, this could raise doubts about the validity of the results claiming its positive role on cultivated meat acceptance, as well as the measurement procedures and analyses commonly used to draw conclusions on it. Additionally, this group

includes studies that tested familiarity with cultivated meat using different product nomenclatures, with findings indicating that current approaches are influenced by the specific name used (Bryant & Barnett, 2019; Li et al., 2023; Liu et al., 2021). This further highlights the possibility that evidence from the first group of studies may be biased by variations in product names, as these studies did not account for such variations in their research.

The third group of studies did not address the implications of the findings related to familiarity, indicating that in some of the reviewed articles, this construct was treated merely as a background variable.

Given that most of the reviews analyzed were based on articles in the first group, familiarity was considered as a construct facilitating the consumer acceptance of cultivated meat. However, some reviews also expressed concerns regarding the existing evidence surrounding this construct (Bryant & Barnett, 2018) and emphasized the need for further research (Monaco et al., 2024; Onwezen & Dagevos, 2024).

While scoping reviews are not expected to draw conclusions about the effectiveness of a phenomenon due to the absence of critical appraisal and advanced data synthesis methods (Pollock et al., 2023), the findings in this review suggest a potential gap in robust evidence supporting the facilitating role of familiarity in consumer acceptance of cultivated meat. These preliminary observations could benefit from further investigation through a systematic review. In response to SQ3, although the potential impact of familiarity with cultivated meat on enhancing its acceptance could be theoretically anticipated, the empirical evidence across the 63 articles analyzed lacks the clarity, consistency and methodological rigor needed to substantiate this claim definitively. In light of the above, until familiarity's role is tested using robust measures and models, the current findings regarding its role in consumers acceptance of cultivated meat should be interpreted with caution.

4.5. Implications for future research

The findings of this scoping review suggest several key directions for future research on the construct of familiarity within the context of consumer acceptance of cultivated meat. Firstly, further data collection on familiarity is needed beyond WEIRD societies, as many countries and populations remain underexplored. Expanding geographic scope is critical not only to enhance data comprehensiveness, but also to validate assumptions regarding cultivated meat's potential to achieve food security and sustainability in the future. Additionally, even within extensively studied WEIRD countries, population representativeness remains limited. Future research should therefore prioritize a more inclusive approach, ensuring that data collection extends to underrepresented segments, such as low-income individuals and those in vulnerable situations. The methodology outlined by Gómez-Corona et al. (2025) offers a valuable framework for addressing these inclusivity challenges.

Moreover, familiarity should be examined across diverse population segments, extending beyond socio-demographic variables to include, for instance, different dietary habits and levels of innovation adoption. The segmentation methodology proposed by Szejda, Bryant, and Urbanovich (2021) based on the Diffusion of Innovation Theory (Rogers, 1983) could serve as a useful approach in this regard, for example by assessing how different measures of familiarity (e.g., with cultivated meat production techniques) vary in significance across different adopter categories.

Since cultivated meat is anchored in a referential identity with conventional meat, it would be valuable to explore the role of product familiarity not only with cultivated meat itself but also with the conventional meat it aims to replicate. Additionally, it will be crucial to investigate whether the current mimicking approach in developing cultivated meat effectively enhances consumer familiarity and how it influences acceptance, as our examination showed that current literature on familiarity with cultivated meat does not focus on or does not

seem appropriate for assessing it.

Future studies should place greater emphasis on defining the familiarity construct and citing prior research in the methodological sections to enhance the validity and reliability of the results. At present, the absence of a unified theoretical definition hinders the operationalization of the construct in the context of cultivated meat acceptance. Furthermore, awareness, familiarity, and knowledge are probably part of a nomological network of convergent constructs, yet they refer to distinct semantic domains. We encourage future research (e.g., systematic reviews) aimed at clarifying and distinguishing how also awareness and knowledge have been assessed in studies on cultivated meat acceptance. This seems to be a necessary step to enable a statistical evaluation about the role of familiarity across the different measurement approaches identified in this scoping review and, ultimately, developing standardized and psychometrically validated measurement scales.

As this scoping review demonstrated, familiarity with cultivated meat predominantly refers to a general understanding of its meaning or concept, and assessed through measures of awareness, such as recalling whether participants have previously “heard about the product”, or through single-item assessments, that might not be fully adequate to capture the complexity of this construct. Nevertheless, given the current limited exposure of consumers to cultivated meat products, an important question arises regarding the feasibility of measuring product familiarity and whether scholars should first focus on assessing awareness of cultivated meat. Based on the definitions and the findings of this review, we argue that only the potential introduction of cultivated meat products into the global market will allow scholars to assess familiarity in real consumption settings and across varying levels of consumer exposure, which are critical factors in the development of product familiarity. Furthermore, future research should provide greater precision regarding the specific product forms and terminology used in cultivated meat studies. This will be particularly relevant in cross-country research, as the most effective terminology for describing cultivated meat appears to be influenced by cultural and geographical context.

Overall, there remains significant potential to explore different facets of the familiarity construct and to develop new, coherent measurement tools. The theoretical contributions by [Alba and Hutchinson \(1987\)](#) and [Aldridge et al. \(2009\)](#) could provide valuable guidance in this process. Additionally, incorporating a psychometric approach in the development and validation of these tools is essential, as seen with other predictors of cultivated meat acceptance ([Tsvakirai et al., 2023](#)). It is also crucial that the role of familiarity will be tested within validated theoretical frameworks, as this aspect remains largely underexplored in cultivated meat research ([Hanan et al., 2024](#); [Onwezen & Dagevos, 2024](#)).

5. Limitations

This scoping review aimed for comprehensiveness, intentionally avoiding restrictive criteria regarding language, publication type, and publication period, which are common limitations reported in other literature reviews. However, we recognize that the search did not extend to certain specialized databases (e.g. AGRIS - International System for Agricultural Science and Technology, CAB Abstracts, or FSTA-Food Science and Technology Abstracts) and that the grey literature search could be further expanded to include additional catalogues, conference proceedings, and non-peer reviewed repositories. Nevertheless, this scoping review encompassed a final count of 63 articles, a higher number than other reviews on cultivated meat acceptance with broader scopes. Additionally, due to the unexpected conflation in the literature between familiarity and related constructs, such as awareness and knowledge, these latter terms were not included in the search query. Consequently, it is possible that several articles employing one of the methodologies discussed in this review to measure familiarity, albeit for different constructs, have been excluded, as exemplified in the study conducted by [Asioli et al. \(2021\)](#). Therefore, future research should

consider an expanded search query that incorporates terms such as ‘awareness’ and ‘knowledge’ to capture a more comprehensive set of relevant studies.

6. Conclusion

The market success of cultivated meat will largely depend on how consumers perceive it. Familiarity with cultivated meat has been identified as a construct that predicts its acceptance among consumers. This scoping review examined the current state of knowledge regarding this proposition, focusing on the definitions and measurement approaches of familiarity, and conclusions drawn by researchers globally.

Challenges in understanding familiarity reflect broader limitations in consumer acceptance of cultivated meat research, including an over-reliance on WEIRD samples, insufficient specificity regarding product forms, and inconsistent terminology, all of which complicate a proper understanding of consumer acceptance and its constructs. Specific limitations related to the construct of familiarity with cultivated meat include significant conflation among the constructs of familiarity, awareness, and knowledge, complicating the clear separation of findings related to familiarity from those pertaining to other constructs. Furthermore, the approaches employed to measure familiarity varied significantly among the reviewed articles, thereby hindering the comparability of evidence and resulting in divergent conclusions about its role in consumer acceptance of cultivated meat.

The scoping review has proven to be an effective tool for examining the conduct of research on this topic, clarifying conceptual definitions within the literature, and identifying the extent of available evidence. Nevertheless, the limited application of scoping reviews in the literature on consumer acceptance of cultivated meat presents an opportunity for future studies aimed at standardizing measurement tools, thereby enhancing comparability and reproducibility.

In conclusion, while research on cultivated meat continues to progress, the evidence concerning the role of familiarity in facilitating its acceptance remains constrained by methodological and operationalization limitations. As such, current findings related to this construct should be interpreted with caution; the proposition that greater familiarity with cultivated meat enhances acceptance is currently supported primarily by theoretical, and somewhat speculative considerations than by robust evidence.

CRedit authorship contribution statement

Pericle Raverta: Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Data curation, Conceptualization. **Irene Sandi:** Writing – review & editing, Investigation. **Barbara Martin:** Writing – review & editing, Investigation, Data curation. **Barbara Loera:** Writing – review & editing, Validation, Supervision, Methodology, Funding acquisition, Conceptualization.

Ethical statement

This manuscript presents a comprehensive literature review, and as such, it does not involve original research or direct experimentation on human or animal subjects. Given the nature of the study, no ethical approval was sought or obtained, as it solely relies on publicly available and previously published data and information.

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Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Pericle Raverta reports a relationship with The Protein Diversification Academy that includes: board membership. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A

Bibliographic research conducted on the June 7, 2024.

Table 1

Databases and search query to identify literature related to cultivated meat from 4 databases (Scopus, Web of Science, PubMed, and PsycInfo).

Database	#	Search strings	Limits	Documents
Scopus	1	TITLE-ABS-KEY ("Ocultured meat" OR "cultivated meat" OR "artificial meat" OR "alternative meat" OR "Lab-grown meat" OR "in vitro meat" OR "Cell-based meat" OR "laboratory meat" OR "lab-grown meat" OR "Clean meat" OR "new meat" OR "synthetic meat" OR "meat alternatives" OR "meat replacement" OR "meat substitute" OR "victimless meat" OR "alternative proteins" OR "cellular agriculture products" OR "Animal-friendly meat" OR "eco friendly meat")	No limits	5708
	2	ALL (familiar*)	No limits	595,068
	3	1# AND #2	No limits	228
Web of Science	1	TS=("cultured meat" OR "cultivated meat" OR "artificial meat" OR "alternative meat" OR "Lab grown meat" OR "in vitro meat" OR "Cell-based meat" OR "laboratory meat" OR "lab-grown meat" OR "Clean meat" OR "new meat" OR "synthetic meat" OR "meat alternatives" OR "meat replacement" OR "meat substitute" OR "victimless meat" OR "alternative proteins" OR "cellular agriculture products" OR "Animal-friendly meat" OR "eco-friendly meat")	No limits	2507
	2	ALL=(familiar*)	No limits	144,705
	3	#1 AND #2	No limits	67
PubMed	1	"cultured meat" [Title/Abstract] OR "cultivated meat" [Title/Abstract] OR "artificial meat" [Title/Abstract] OR "alternative meat" [Title/Abstract] OR "lab-grown meat" [Title/Abstract] OR "in vitro meat" [Title/Abstract] OR "Cell-based meat" [Title/Abstract] OR "laboratory meat" [Title/Abstract] OR "clean meat" [Title/Abstract] OR "new meat" [Title/Abstract] OR "synthetic meat" [Title/Abstract] OR "victimless meat" [Title/Abstract] OR "cell* agriculture" [Title/Abstract] OR "Animal-friend* meat" [Title/Abstract] OR "eco-friend* meat" [Title/Abstract] OR "test tube meat" [Title/Abstract] OR "future meat" [Title/Abstract] OR "animal-free meat" [Title/Abstract] OR "sustainable meat" [Title/Abstract]	No limits	167
	2	"familiar*" [Title/Abstract] OR "Consumer Behaviour"[Mesh] OR "Food Preferences"[Mesh] OR consumer* behaviour [Title/Abstract] OR food preference* [Title/Abstract]	No limits	3685
	3	#1 AND #2	No limits	83
PsycInfo	1	TI"cultured meat" OR AB"cultured meat" OR KW"cultured meat" OR TI"cultivated meat" OR AB "cultivated meat" OR KW"cultivated meat" OR TI"artificial meat" OR AB"artificial meat" OR KW"artificial meat" OR TI"alternative meat" OR AB"alternative meat" OR KW"alternative meat" OR TI"lab-grown meat" OR AB"lab-grown meat" OR KW"lab-grown meat" OR TI"in vitro meat" OR AB"in vitro meat" OR KW"in vitro meat" OR TI"Cell-based meat" OR AB"Cell-based meat" OR KW"Cell-based meat" OR TI"laboratory meat" OR AB"laboratory meat" OR KW"laboratory meat" OR TI"clean meat" OR AB"clean meat" OR KW"clean meat" OR TI"new meat" OR AB"new meat" OR KW"new meat" OR TI "synthetic meat" OR AB"synthetic meat" OR KW"synthetic meat" OR TI"victimless meat" OR AB"victimless meat" OR KW"victimless meat" OR TI"cell* agriculture " OR AB"cell* agriculture " OR KW"cell* agriculture " OR TI"Animal-friend* meat" OR AB"Animal-friend* meat" OR KW"Animal-friend* meat" OR TI"eco-friend* meat" OR AB"eco-friend* meat" OR KW"eco-friend* meat" OR TI"test tube meat" OR AB"test tube meat" OR KW"test tube meat" OR TI"future meat" OR AB"future meat" OR KW"future meat" OR TI"animal-free meat" OR AB"future meat" OR KW "animal free meat" OR TI"sustainable meat" OR AB"sustainable meat" OR KW "sustainable meat"	No limits	88
	2	TI familiar* OR AB familiar* OR KW familiar* OR DE "Consumer Attitudes" OR DE "Consumer Research" OR DE "Consumer Behaviour" OR DE "Consumer Ethics" OR DE "Eating Attitudes" OR DE "Eating Behaviour"	No limits	129,774
	3	#1 AND #2	No limits	62

Appendix B

Table 2

List of key conferences on alternative proteins and cultivated meat. The following list of conferences was used to source relevant studies for the scoping review.

Name of the Conference	Location	Dates	Relevant studies for the scoping review
1st International Cellular Agriculture Conference	Helsinki (Finland)	June 14, 2023–15.06.2023	NA ^a
2nd International Cellular Agriculture Conference	Aarhus (Denmark)	12.06.2024–13.06.2024	Vad Andersen, B., A. Vastarella, and I. Jakobsen, 2024. Kitchen professionals' drivers and barriers to acceptance of cell-based food.
Good Food Conference 2023	San Francisco (USA)	18.09.2023–20.09.2023	NA ^a

(continued on next page)

Table 2 (continued)

Name of the Conference	Location	Dates	Relevant studies for the scoping review
International Scientific Conferences on Cultured Meat	Maastricht (The Netherlands)	1st to 9th edition (2023)	NA ^a
Food 4 Thought Festival	Harvard University (USA)	12.04.2023-14.04-2023	NA ^a

^aNA = Not Applicable. The studies retrieved did not have a focus on familiarity in the context of consumer acceptance of cultivated meat.

Table 3

List of key non-peer review publications on cultivated meat acceptance included in the eligibility assessment.

Title	Author(s)	Date	URL
Attitudes to cultivated meat across 15 European countries – a representative survey	The Good Food Institute Europe in collaboration with YouGov	April 2024	https://gfieurope.org/wp-content/uploads/2024/07/YouGov-survey-of-attitudes-to-cultivated-meat-in-15-countries.pdf
Messages to Overcome Naturalness Concerns in Clean Meat Acceptance: Primary Findings	Faunalytics	2018	https://faunalytics.org/wp-content/uploads/2018/11/Clean-Meat-Acceptance-Primary-Findings.pdf

Appendix C

Table 4

List of relevant studies retrieved through backward and forward citation chasing of the included articles.

Title	Author(s)	Doi	Journal
Acceptance of Cultured Meat in Germany—Application of an Extended Theory of Planned Behaviour	Dupont, J., T. Harms, and F. Fiebelkorn. 2022.	https://doi.org/10.3390/foods11030424	Foods
Aligning cultivated meat with conventional meat consumption practices increases expected tastefulness, naturalness, and familiarity	Fidder, L. and J. Graça. 2023.	https://doi.org/10.1016/j.foodqual.2023.104911	Food Quality and Preference
Brazilian Consumers' Attitudes towards So-Called "Cell-Based Meat"	Chriki, S., V. Payet, S. B. Pflanzner, M. P. Ellies-Oury, J. Liu, É Hocquette, J. H. Rezende-de-Souza, and J. F. Hocquette. 2021.	https://doi.org/10.3390/foods10112588	Foods
Chinese Consumers' Attitudes and Potential Acceptance toward Artificial Meat	Liu, J., É Hocquette, M. P. Ellies-Oury, S. Chriki, and J. F. Hocquette. 2021.	https://doi.org/10.3390/foods10020353	Foods
Consumers' Perception of In-Vitro Meat in New Zealand Using the Theory of Planned Behaviour Model	Malavalli, M. M., N. Hamid, K. Kantono, Y. Liu, and A. Seyfoddin. 2021.	https://doi.org/10.3390/su13137430	Sustainability
Development and Validation of Japanese Version of Alternative Food Neophobia Scale (J-FNS-A): Association with Willingness to Eat Alternative Protein Foods	Kamei, M., M. Nishibe, F. Horie, and Y. Kusakabe. 2024.	https://doi.org/10.3389/fnut.2024.1356210	Frontiers in Nutrition
German Consumers' Attitudes Toward Artificial Meat	Jacobs, A. K., H. W. Windhorst, J. Gickel, S. Chriki, J. F. Hocquette, and M. P. Ellies-Oury. 2024.	https://doi.org/10.3389/fnut.2024.1401715	Frontiers in Nutrition
Norwegian Consumers' Willingness to Try Cultured Meat	Muiruri, S.W., and K. Rickertsen. 2024.	https://doi.org/10.1016/j.fufo.2024.100409	Appetite
Perception of Cultured Meat as a Basis for Market Segmentation: Empirical Findings from Croatian Study	Faletar, I., and M. Cerjak. 2022.	https://doi.org/10.3390/su14126956	Sustainability
Perception of Cultured "Meat" by French Consumers According to Their Diet	Gousset, C., E. Gregorio, B. Marais, A. Rusalen, S. Chriki, J. F. Hocquette, and M. P. Ellies-Oury. 2022.	https://doi.org/10.1016/j.livsci.2022.104909	Livestock Science
Perceptions of Cultivated Meat in Millennial and Generation X Consumers Resident in Aotearoa New Zealand	Giezenaar, C., A. J. R. Godfrey, O. J. Ogilvie, P. Coetzee, N. R. P. Weerawarna, M. Foster, and J. Hort. 2023.	https://doi.org/10.3390/su15054009	Sustainability
Psychological Factors Influencing Consumer Intentions to Consume Cultured Meat, Fish and Dairy	Engel, L., K. Vilhelmsen, I. Richter, J. Moritz, T. Rynänen, J. F. Young, R. J. F. Burton, U. Kidmose, and C. A. Klöckner. 2024.	https://doi.org/10.1016/j.appet.2024.107501	Appetite
South African Consumer Adoption of Plant-Based and Cultivated Meat: A Segmentation Study	Szejda, K., M. Stumpe, C. E. Raal, and Tapscott. 2021.	https://doi.org/10.3389/fsufs.2021.744199	Frontiers in Sustainable Food Systems
US and UK Consumer Adoption of Cultivated Meat: A Segmentation Study	Szejda, K., C. J. Bryant, and T. Urbanovich. 2021.	https://doi.org/10.3390/foods10051050	Foods

Appendix D

Data extraction tool for the scoping review.
STUDY OVERVIEW.

1. Title of the study
2. Type of the study
 - o Review
 - o Research article
 - o Conference paper

- oEditorial
- oOpinion article
- oPerspective article
- oOther (e.g., grey literature)
- 3 . Authors
- 4 . Authors affiliation
- 5 . Corresponding authors – country of origin [location of the university]
- 6. Country where the study was conducted [if applicable]
- 7. Publication year
- 8. When was the study conducted? [period of data extraction for reviews]
- 9. Language
 - oEnglish
 - oOther [specify]
- 10 DOI
- 11. Aim of the study

FAMILIARITY.

- 12. Used definition of familiarity [if any - ev. Report the reference paper]
- 13. Question formulation – report the question's content
- 14. N. of items
- 15. Relevant items' formulation
- 16. Response scale
- 17. Response scale formulation
- 18 .Response scale type
 - oLikert-type
 - oSemantic differential
- 19. Method-Study design
 - oOnline survey
 - oOnline experiment
 - oPaper-based survey
 - oQualitative
 - oMixed-method
 - oN/A
- 20. Type of product evaluated
 - oCultivated meat in general
 - oCultivated meat burger
 - oCultivated sea-food product
 - oOthers cultivated
 - oGeneral on cellular agriculture

FRAMING.

- 21 Framing of the product?
 - oYes
 - oNo
 - oN/A
- 22. Position of the framing
 - oBefore the question on familiarity
 - oAfter the question on familiarity?
 - oN/A
- 23. Type of framing
 - oWritten text
 - oImage
 - oReal product or samples
 - oVideos
 - oScenario-based framing
 - oOther [specify]
 - oN/A

PARTICIPANTS.

- 24 Representative sample?
 - oYes
 - oNo
 - oN/A

25. Geographic location of the participants

26. Type of participants

oStudents

oGeneral population

oExperts

oOther [specify]

RESULTS.

27. Evidence about familiarity

oFacilitating role

oHindering role

oNeutral role

oN/A

28. Overall conclusion of the study – *if relevant and linked to familiarity*

Appendix E

Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
1	Acceptance of Cultured Meat in Germany—Application of an Extended Theory of Planned Behaviour	Research article	Dupont, J. Harms, T. & Fiebelkorn, F.	Foods	Osnabrück University (Germany)	Germany	June 19, 2019	2022	https://doi.org/10.3390/foods11030424
2	A focused ethnographic study on the role of health and sustainability in food choice decisions	Research article	Fox, E. L., Davis, C., Downs, S. M., McLaren, R., & Fanzo, J.	Appetite	Cornell University (USA)	USA (California and Nebraska)	From August 2018 to February 2019 (semi-structured interviews). June to July 2019 (pile-sorting survey).	2021	https://doi.org/10.1016/j.appet.2021.105319
3	A meta-review of consumer behaviour studies on meat reduction and alternative protein acceptance	Review	Onwezen, M. C., & Dagevos, H.	Food Quality & Preference	Wageningen University (The Netherlands)	N/A (Review)	Extraction: June 2023	2024	https://doi.org/10.1016/j.foodqual.2023.105067
4	Aligning cultivated meat with conventional meat consumption practices increases expected tastefulness, naturalness, and familiarity	Research article	Fidder, L., & Graça, J.	Food Quality & Preference	University of Groningen (The Netherlands)	United Kingdom	November 30, 2022	2023	https://doi.org/10.1016/j.foodqual.2023.104911
5	Analogies, metaphors, and wondering about the future: Lay sense-making around synthetic meat	Research article	Marcu, A., Gaspar, R., Rutsaert, P., Seibt, B., Fletcher, D., Verbeke, W., & Barnett, J.	Public Understanding of Science	University of Southampton (UK)	Belgium, Portugal and the United Kingdom	July 2012 (Online study); October 2012 (focus groups)	2015	https://doi.org/10.1177/0963662514521106
6	An empirical assessment of common or usual names to label cell-based seafood products.	Research article	Hallman, W. K., & Hallman, W. K., II.	Journal of Food Science	Rutgers University (USA)	USA	18-day period in February and March 2020	2020	https://doi.org/10.1111/1750-3841.15351
7	A segmentation of the expected future in vitro meat market: a study in Vietnam	Research article	Nghiêm-Phú, B.	Food Research	University of Hyogo (Japan)	Vietnam	Period of two weeks in late January and early February of 2021	2023	https://doi.org/10.26656/fr.2017.7(4).935
8	A Survey of Consumer Perceptions of Plant-Based and Clean Meat in the USA, India, and China	Research article	Bryant, C., Szejda, K., Parekh, N., Deshpande, V., & Tse, B.	Frontiers in Sustainable Food Systems	University of Bath (UK)	USA, India, China	2018	2019	https://doi.org/10.3389/fsufs.2019.00011
9	A systematic review on consumer acceptance of alternative proteins: Pulses, algae, insects, plant-based meat alternatives, and cultured meat	Review	Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H.	Appetite	Wageningen University (The Netherlands)	N/A (Review)	Extraction: June 2020	2021	https://doi.org/10.1016/j.appet.2020.105058
10	Attitudes and acceptance of young people toward the consumption of insects and cultured meat in Germany	Research article	Dupont, J. & Fiebelkorn, F.	Food Quality & Preference	Osnabrück University (Germany)	Germany	November 2018	2020	https://doi.org/10.1016/j.foodqual.2020.103983

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Studies overview								
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year DOI
11	Attitudes to in vitro meat: A survey of potential consumers in the United States.	Research article	Wilks, M., & Phillips, C. J. C.	PloS One	University of Queensland (Australia)	USA	Between March and June of 2016	2017 https://doi.org/10.1371/journal.pone.0171904
12	Brazilian Consumers' Attitudes towards So-Called "Cell-Based Meat"	Research article	Chriki, S., Payet, V., Pflanzner, S. B., Ellies-Oury, M.-P., Liu, J., Hocquette, É., Rezende-de-Souza, J. H., & Hocquette, J.-F.	Foods	Isara, AgroSchool for Life (France)	Brazil	From 5 August to November 5, 2020	2021 https://doi.org/10.3390/foods10112588
13	Chinese Consumers' Attitudes and Potential Acceptance toward Artificial Meat	Research article	Liu, J., Hocquette, É., Ellies-Oury, M. P., Chriki, S., & Hocquette, J.F.	Foods	Université Clermont Auvergne (France)	China	Between 15 June and August 30, 2020	2021 https://doi.org/10.3390/foods10020353
14	Complexity of consumer acceptance to alternative protein foods in a multiethnic Asian population: A comparison of plant-based meat alternatives, cultured meat, and insect-based products	Research article	Chia, A., Shou, Y., Wong, N. M. Y., Cameron-Smith, D., Sim, X., Van Dam, R. M., & Chong, M. F.F.	Food Quality & Preference	National University of Singapore and National University Health System (Singapore)	Singapore	Between November 2021 to March 2022.	2024 https://doi.org/10.1016/j.foodqual.2024.105102
15	Consumer acceptance of cultured meat: A systematic review	Review	Bryant, C., & Barnett, J.	Meat Science	University of Bath (UK)	N/A (Review)	N/A	2018 https://doi.org/10.1016/j.meatsci.2018.04.008
16	Consumer acceptance of cultured meat in Germany	Research article	Weinrich, R., Strack, M., & Neugebauer, F.	Meat Science	University of Goettingen (Germany)	Germany	August 2018	2020 https://doi.org/10.1016/j.meatsci.2019.107924
17	Consumer perceptions of conventional and alternative protein sources: A mixed-methods approach with meal and product framing	Research article	Possidónio, C., Prada, M., Graça, J., & Piazza, J.	Appetite	Instituto Universitario de Lisboa (Portugal)	Portugal	Study one: between the December 5, 2018 and January 7, 2019. Study two: between 14th March and April 5, 2019.	2021 https://doi.org/10.1016/j.appet.2020.104860
18	Consumers' attitudes towards lab-grown meat, conventionally raised meat and plant-based protein alternatives	Research article	Padilha, L. G. de O., Malek, L., & Umberger, W. J.	Food Quality & Preference	University of Adelaide (Australia)	Australia	October and November 2018	2022 https://doi.org/10.1016/j.foodqual.2022.104573
19	Consumers' perception of cultured meat relative to other meat alternatives and meat itself: A segmentation study	Research article	Cornelissen, K., & Piqueras-Fiszman, B.	Journal of Food Science	Wageningen University (The Netherlands)	The Netherlands	December 2020	2023 https://doi.org/10.1111/1750-3841.16372
20	Consumers' perception of In-Vitro meat in New Zealand using the Theory of Planned Behaviour Model	Research article	Malavalli, M. M., Hamid, N. Kantono, K. Liu, Y. & Seyfoddin, A.	Sustainability	Auckland University of Technology	New Zealand	From March to September 2019	2021 https://doi.org/10.3390/su13137430
21	Consumers' perception of novel foods and the impact of heuristics and biases: A systematic review	Review	Monaco, A., Kotz, J., Al Masri, M., Allmeta, A., Purnhagen, K. P., & König, L. M.	Appetite	University of Bayreuth (Germany)	N/A (Review)	Extraction: February 2022	2024 https://doi.org/10.1016/j.appet.2024.107285
22	Consumption behaviour and purchase intention of cultured meat in the capital of the "state of barbecue," Brazil	Research article	Munz Fernandes, A., Teixeira Costa, L., de Souza Teixeira, O., dos Santos, F. V., Palma Revillion, J. P., & Leal de Souza, A. R.	British Food Journal	Federal University of Rio Grande do Sul (Brazil)	Brazil	Between October 14 and 23, 2019	2021 https://doi.org/10.1108/BFJ-08-2020-0698
23	Development and validation of a cultured meat neophobia scale: Industry implications for South Africa	Research article	Tsvakirai, C. Z., Nalley, L. L., & Makgopa, T.	Scientific African	The University of South Africa	South Africa	May 2022	2023 https://doi.org/10.1016/j.sciaf.2023.e01641
24	Development and validation of Japanese version of alternative food	Research article	Kamei, M., Nishibe, M.,	Frontiers in Nutrition	National Agriculture and Food Research	Japan	October 8, 2023 and on December 9, 2023	2024 https://doi.org/10.3389/fnut.2024.1356210

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Studies overview								
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year DOI
	neophobia scale (J-FNS-A): association with willingness to eat alternative protein foods		Horie, F., & Kusakabe, Y.		Organization of Japan			
25	Does the future of meat in France depend on cultured muscle cells? Answers from different consumer segments	Research article	Hocquette, É., Liu, J., Ellies-Oury, M.-P., Chriki, S., & Hocquette, J.-F.	Meat Science	Université Clermont Auvergne (France)	France	June–December 2020	2022 https://doi.org/10.1016/j.meatsci.2022.108776
26	Explicit and implicit attitude toward an emerging food technology: The case of cultured meat	Research article	Bekker, G. A., Fischer, A. R. H., Tobí, H., & van Trijp, H. C. M.	Appetite	Wageningen University (The Netherlands)	The Netherlands	Fall 2012	2017 https://doi.org/10.1016/j.appet.2016.10.002
27	Exploring consumers' attitude towards cultured meat in Italy	Research article	Mancini, M. C., & Antonioli, F.	Meat Science	University of Parma (Italy)	Italy	From September 2017 to March 2018	2019 https://doi.org/10.1016/j.meatsci.2018.12.014
28	First impressions and food technology neophobia: Examining the role of visual information for consumer evaluations of cultivated meat	Research article	Baum, C. M., De Steur, H., & Lagerkvist, C.-J.	Food Quality & Preference	Aarhus University (Denmark)	Germany	2021	2023 https://doi.org/10.1016/j.foodqual.2023.104957
29	Food neophobia, food choice and the details of cultured meat acceptance	Research article	Hamlin, R. P., McNeill, L. S., & Sim, J.	Meat Science	University of Otago (New Zealand)	New Zealand	January 2020	2022 https://doi.org/10.1016/j.meatsci.2022.108964
30	Framework for Understanding Consumer Perceptions and Attitudes to Support Decisions on Cultured Meat: A Theoretical Approach and Future Directions	Conference proceeding	Pivoraite, G., Liu, S., Roh, S., & Zhao, G.	Lecture Notes in Business Information Processing	University of Plymouth (United Kingdom)	N/A (Conference proceeding)	2023	2024 https://doi.org/10.1007/978-3-031-59376-5_9
31	German consumers' attitudes toward artificial meat	Research article	Jacobs, A.-K., Windhorst, H.-W., Gickel, J., Chriki, S., Hocquette, J.-F., & Ellies-Oury, M.-P.	Frontiers in Nutrition	University of Veterinary Medicine Hannover (Germany)	Germany	from January 15, 2021 to January 25, 2022	2024 https://doi.org/10.3389/fnut.2024.1401715
32	How Do Consumers Perceive Cultured Meat in Croatia, Greece, and Spain?	Research article	Franceković, P., García-Torralba, L., Sakoulageorga, E., Vučković, T., & Perez-Cueto, F. J. A.	Nutrients	University of Copenhagen (Denmark)	Croatia, Greece, and Spain	12 days during October 2020	2021 https://doi.org/10.3390/nu13041284
33	How much does it take? Willingness to switch to meat substitutes	Research article	Carlsson, F., Kataria, M., & Lampi, E.	Ecological Economics	University of Gothenburg (Sweden)	Sweden	April 2020	2022 https://doi.org/10.1016/j.ecolecon.2021.107329
34	Information, attitudes, and consumer evaluations of cultivated meat	Research article	Baum, C. M., Bröring, S., & Lagerkvist, C.-J.	Food Quality & Preference	University Bonn (Germany)	Germany	May and June 2020	2021 https://doi.org/10.1016/j.foodqual.2021.104226
35	Italian consumers standing at the crossroads of alternative protein sources: Cultivated meat, insect-based and novel plant-based foods	Review	Mancini, M. C., & Antonioli, F.	Meat Science	University of Parma (Italy)	Italy	N/A	2022 https://doi.org/10.1016/j.meatsci.2022.108942
36	Kitchen professionals' drivers and barriers to acceptance of cell-based food	Conference proceeding	Vad Andersen, B., Jakobsen, I., & Vastarella, A.	Conference paper (2nd International CellAg Conference - Aarhus 2024)	Aarhus University (Denmark)	Denmark	Study A: Sep 2023–October 2023. Study B: Dec 2023–Jan 2024	2024 N/A: https://pure.au.dk/portal/en/publications/kitchen-professionals-drivers-and-barriers-to-acceptance-of-cell-
37	Laboratory-Grown Meat as a Study in Copying	Opinion article	Wurgaft, B. A.	Osiris	History of Science Society (USA)	N/A	N/A	2020 https://doi.org/10.1086/709259
38	Marketing Strategies for Cultured Meat: A Review	Review	Siddiqui, S. A., Khan, S., Murid, M., Asif, Z., Oboturova, N. P., Nagdalian, A. A., Blinov, A. V., Ibrahim, S. A., & Jafari, S. M.	Applied Sciences	Technical University of Munich (Germany)	N/A	N/A	2022 https://doi.org/10.3390/app12178795

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Studies overview								
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year DOI
39	Messages to Overcome Naturalness Concerns in Clean Meat Acceptance: Primary Findings	Research article	Faunalytics	N/A	Faunalytics	USA	January–February 2018	2018 https://faunalytics.org/wp-content/uploads/2018/11/Clean-Meat-Acceptance-Primary-Findings.pdf
40	Milk, Meat, and Fish From the Petri Dish—Which Attributes Would Make Cultured Proteins (Un) attractive and for Whom? Results From a Nordic Survey	Research article	Klößner, C. A., Engel, L., Moritz, J., Burton, R. J., Young, J. F., Kidmose, U., & Ryyänänen, T.	Frontiers in Sustainable Food Systems	Norwegian University of Science and Technology (Norway)	Norway, Denmark, and Finland	February and March 2021	2022 https://doi.org/10.3389/fsufs.2022.847931
41	No meat, lab meat, or half meat? Dutch and Finnish consumers' attitudes toward meat substitutes, cultured meat, and hybrid meat products	Research article	van Dijk, B., Jouppila, K., Sandell, M., & Knaapila, A.	Food Quality & Preference	University of Helsinki (Finland)	The Netherlands and Finland	April and May 2021	2023 https://doi.org/10.1016/j.foodqual.2023.104886
42	Norwegian consumers' willingness to try cultured meat	Research article	Muiruri, S. W., & Rickertsen, K.	Future Foods	Norwegian University of Life Sciences (Norway)	Norway	First round conducted between October 2019 and February 2020. Second round conducted between October 2021 and February 2022	2024 https://doi.org/10.1016/j.fufo.2024.100409
43	On-site sensory experience boosts acceptance of cultivated chicken	Research article	Chong, M., Leung, A., & Fernandez, T. M.	Future Foods	Singapore Management University (Singapore)	Singapore	From April to June 2023	2024 https://doi.org/10.1016/j.fufo.2024.100326
44	Perceived naturalness predicts public support for sustainable protein technology	Research article	Coffin, S.G., Eichhorst, W., Carrico, A. R., Inbar, Y., Newton, P., & Van Boven, L.	Climatic Change	University of Colorado Boulder (USA)	USA	March 2022	2024 https://doi.org/10.1007/s10584-024-03679-5
45	Perception of Cultured Meat as a Basis for Market Segmentation: Empirical Findings from Croatian Study	Research article	Faletar, I., & Cerjak, M.	Sustainability	Thünen Institute of Market Analysis (Germany)	Croatia	Between June and August 2021	2022 https://doi.org/10.3390/su14126956
46	Perception of cultured "meat" by French consumers according to their diet	Research article	Gousset, C., Gregorio, E., Marais, B., Rusalen, A., Chriki, S., Hocquette, J.-F., & Ellies-Oury, M.-P.	Livestock Science	Université Clermont Auvergne (France)	France	Early October 2020	2022 https://doi.org/10.1016/j.livsci.2022.104909
47	Perceptions of Cultivated Meat in Millennial and Generation X Consumers Resident in Aotearoa New Zealand	Research article	Giezenaar, C., Godfrey, A. J. R., Ogilvie, O. J., Coetzee, P., Weerawarna N. R. P., M., Foster, M., & Hort, J.	Sustainability	Massey University (New Zealand)	New Zealand	October and November 2021	2023 https://doi.org/10.3390/su15054009
48	Positive emotions explain increased intention to consume five types of alternative proteins.	Research article	Onwezen, M. C., Verain, M. C. D., & Dagevos, H.	Food Quality & Preference	Wageningen University (The Netherlands)	The Netherlands	2015 and 2019	2022 https://doi.org/10.1016/j.foodqual.2021.104446
49	Psychological factors influencing consumer intentions to consume cultured meat, fish and dairy	Research article	Engel, L., Vilhelmsen, K., Richter, I., Moritz, J., Ryyänänen, T., Young, J. F., Burton, R. J. F., Kidmose, U., & Klößner, C. A.	Appetite	University of Basel (Switzerland)	Denmark, Finland, and Norway	February and March 2021	2024 https://doi.org/10.1016/j.appet.2024.107501
50	Review of factors affecting consumer acceptance of cultured meat	Review	Pakseresht, A., Ahmadi Kaliji, S., & Canavari, M.	Appetite	Novia University of Applied Sciences (Finland)	N/A (Review)	Extraction: May 31, 2020	2022 https://doi.org/10.1016/j.appet.2021.105829

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Studies overview								
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year DOI
51	South African Consumer Adoption of Plant-Based and Cultivated Meat: A Segmentation Study	Research article	Szejda, K., Stumpe, M., Raal, L. & Tapscott, C. E.	Frontiers in Sustainable Food Systems	Arizona State University	South Africa	February 2021	2021 https://doi.org/10.3389/fsufs.2021.744199
52	Stuck in the middle with you: The role of similarity information on categorizing cultured meat	Research article	Bekker, G. A., Fischer, A. R. H., Tobi, H., & van Trijp, H. C. M.	Food Quality & Preference	Wageningen University (The Netherlands)	The Netherlands	Study 1 and 2: fall 2014. Study 3: spring 2018	2021 https://doi.org/10.1016/j.foodqual.2021.104265
53	The Heat about Cultured Meat in Poland: A Cross-Sectional Acceptance Study	Research article	Sikora, D., & Rzymiski, P.	Nutrients	Poznan University (Poland)	Poland	Between March and July 2023	2023 https://doi.org/10.3390/nu15214649
54	The impact of supermarket credibility on purchase intention of novel food	Research article	Jung, I. N., Sharma, A., & Mattila, A. S.	Journal of Retailing and Consumer Services	Pennsylvania State University (USA)	USA	March 2020	2022 https://doi.org/10.1016/j.jretconser.2021.102754
55	To What Extent Are Consumers' Perception and Acceptance of Alternative Meat Production Systems Affected by Information? Te Case of Cultured Meat	Research article	Mancini, M. C., & Antonioli, F.	Animals	University of Parma (Italy)	Italy	Between September 2017 and March 2018	2020 https://doi.org/10.3390/ani10040656
56	Understanding the future meat consumers	Review	Font-i-Furnols, M., & Guerrero, L.	Meat Science	IRTA-Food Quality and Technology (Spain)	N/A (Review)	N/A	2022 https://doi.org/10.1016/j.meatsci.2022.108941
57	Understanding the perception of potential consumers of cultured meat using free word association	Research article	de Oliveira da Silva, M. B., & da Cunha, C. F.	Brazilian journal of marketing	State University of Campinas (Brazil)	Brazil	May 26, 27, and 28, 2020	2022 https://doi.org/10.5585/remark.v20i5.18560
58	US and UK Consumer Adoption of Cultivated Meat: A Segmentation Study	Research article	Szejda, K., Bryant, C. J. & Urbanovich, T.	Foods	Arizona State University	USA	October 2020	2021 https://doi.org/10.3390/foods10051050
59	What does it mean to say that cultured meat is unnatural?	Research article	Wilks, M., Hornsey, M., & Bloom, P.	Appetite	Yale University (USA)	USA	December 2019	2021 https://doi.org/10.1016/j.appet.2020.104960
60	What's in a name? Consumer perceptions of in vitro meat under different names	Research article	Bryant, C. J., & Barnett, J. C.	Appetite	University of Bath (UK)	Not recorded, but all english-speakers	Not reported in the participants paragraph, but before the August 1, 2018	2019 https://doi.org/10.1016/j.appet.2019.02.021
61	Which are the most promising protein sources for meat alternatives?	Research article	Etter, B., Michel, F., & Siegrist, M.	Food Quality & Preference	ETH Zurich (Switzerland)	German-speaking part of Switzerland	February 2023	2024 https://doi.org/10.1016/j.foodqual.2024.105226
62	Will cultured meat be served on Chinese tables? A study of consumer attitudes and intentions about cultured meat in China	Research article	Li, H., Van Loo, E. J., Trijp, H. C. M. van, Chen, J., & Bai, J.	Meat Science	China Agricultural University (China)	China	January 2022	2023 https://doi.org/10.1016/j.meatsci.2022.109081
63	Young consumers' perceptions of and preferences for alternative meats: An empirical study in Japan and China	Research article	Huang, S., & Uehara, T.	Frontiers in Sustainable Food Systems	Ritsumeikan University (Japan)	Japan and China	Japan: from March 10 to March 11, 2023; China: from April 8 to 12, 2023	2023 https://doi.org/10.3389/fsufs.2023.1290131

Studies aim**N Study aim**

- 1 To assess how attitudes, norms, and control affect the intention to consume a cultured meat burger
- 2 To explore the mental models influencing food decisions and identify challenges and opportunities in transitioning towards a healthy and sustainable diet
- 3 To support the goal of making the 2020s a decade of action by conducting a meta-review of consumer studies focused on the two Rs: reduction and replacement of meat products
- 4 To assess whether framing cultivated meat influences consumers' attitudes and willingness to consume it. And to examine whether perceived naturalness, familiarity, and tastefulness of the product mediate the differences between frames
- 5 To examine the process of sense-making around synthetic meat (SYNM). Specifically, it investigates the strategies people use to understand SYNM, how the 'familiar' to which SYNM is anchored is constituted, the reasoning patterns these anchors provide, and the extent to which anchoring reduces unfamiliarity
- 6 To evaluate the performance of proposed names for cell-based seafood products, aiming to determine their acceptability among relevant stakeholders
- 7 This study builds on previous research by segmenting the potential consumer market for in vitro meat based on their opinions, including perceptions, familiarity, and attachment to this future food product
- 8 Aims to investigate consumer acceptance of clean meat in the U.S., India, and China, and to explore acceptance of plant-based meat along with two relevant theoretical constructs: food neophobia and meat attachment
- 9 To advance this field of research by offering a comprehensive overview of the key drivers influencing Western consumers' acceptance of, or willingness to purchase or consume, various alternative proteins

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
10	Examine which factors determine the willingness to consume insect-based foods or cultured meat among children and adolescents								
11	To investigate perceptions of in vitro meat in the USA, aiming to understand the potential for public engagement in a country generally supportive of innovation and a major potential market								
12	Seeks to explore the responses of a large group of Brazilian consumers to relevant questions, aiming to investigate their attitudes, perspectives, potential acceptance, and willingness to engage with “cell-based meat,” and to provide a broader Brazilian reference for the global “cell-based meat” market								
13	Seeks to engage a large group of Chinese consumers to better understand their attitudes, perspectives, potential acceptance, and willingness to engage with artificial meat, using appropriate questions to provide a comprehensive Chinese reference for the global artificial meat market								
14	To examine the association between sociodemographic factors and acceptance of alternative protein foods, and investigated attitudes towards consuming plant-based meat alternatives, cultured meat, and insect-based products within a multi-ethnic Asian population in Singapore (Chinese, Malays, and Indians)								
15	To provide an updated and comprehensive overview of consumer acceptance of cultured meat. The findings aim to assist researchers studying public understanding of novel food technologies and industry professionals developing cultured meat								
16	To explore the German market’s readiness for cultured meat by examining consumer intentions, attitudes, and the strength of their drivers, as well as identifying demographic predictors and their influence on the attitude-intention relationship								
17	To enhance understanding of consumer perceptions of meat and meat alternatives, with the goal of providing insights to support transitions toward healthier and more sustainable diets								
18	To compare consumer beliefs about six key attributes (health, safety, affordability, enjoyment, animal welfare, and environmental impact) across five protein products: conventionally raised chicken and beef, lab-grown chicken and beef, and plant-based alternatives. Additionally, to identify factors associated with increased willingness to consume lab-grown chicken and beef, such as beliefs, familiarity, consumption frequency, and socio-demographic characteristics								
19	To explore Dutch consumers’ perceptions and the drivers of their willingness to consume cultured meat compared to other products within the meat and meat alternatives category								
20	To explore the perception of “In-Vitro” meat by New Zealand consumers								
21	To identify heuristics and cognitive biases in primary research on novel food perception, and examines how these, along with other psychological factors, shape consumer perceptions. To explore the influence of these perceptions on the regulatory framework and provides insights for future regulation of novel foods								
22	To analyze the attitudes of meat consumers in Rio Grande do Sul, Brazil, towards cultured meat								
23	To develop and validate a novel cultured meat neophobia scale								
24	To develop a Japanese version of the alternative Food Neophobia Scale (FNS-A), the most recent revised version, and to examine its validity								
25	To study French consumers’ perception of cultured meat and determine whether, in 2020, cultured meat could have a future on plates in France in the coming years								
26	To explore the impact of positive or negative information on explicit attitudes toward cultured meat								
27	To assess the extent to which consumers strongly oriented towards plant-based and traditional food are willing to accept a highly engineered food due to its positive ethical externalities								
28	To examine whether and how image focus influences consumer evaluations of cultivated meat								
29	Examining the mechanisms of consumer attitude formation regarding the concept of cultured meat								
30	To establish a conceptual framework on cultured meat perceptions and attitudes, named as the CAPA framework, to support food innovators and marketers in their decision-making								
31	To analyze the impact of sociodemographic characteristics on willingness to try (WTT), regularly eat (WTE), or pay (WTP) for artificial meat, and to assess its expected societal challenges, general acceptance, and future potential development in Germany								
32	To identify consumer segments based on conventional meat consumption and investigate their awareness, perception, and intentions regarding cultured meat in Croatia, Greece, and Spain, countries with a shared Mediterranean diet								
33	To assess whether price changes could be a viable component of a policy package to induce shifts in current meat consumption								
34	To establish the separate effects of information valence and complexity, and to explore how real-world-oriented statements influence attitudes and evaluations of cultivated meat								
35	To provide an assessment of the literature on consumers’ perceptions of three novel protein sources—cultivated meat, insect-based foods, and novel plant-based products—within the Italian context								
36	Aim Study A: Explore attitudes and increase awareness by identifying key factors influencing the acceptance and use of cultivated food in professional kitchens Aim Study B: Investigate perceptions, drivers, and barriers to the acceptance of cell-based food, with a focus on familiarity and kitchen type								
37	To examine cultured meat and explore the questions raised by efforts to replicate meat through the lens of the mimesis concept and nature imitation								
38	To analyze the current state of cultured meat and examine the marketing challenges and strategies used to promote it to the public								
39	To identify approaches for describing clean meat that could address concerns regarding its naturalness and enhance consumer acceptance of it								
40	To explore Nordic consumers’ general attitudes towards and willingness to consume cultured proteins, marking the first assessment of its kind in Nordic countries, and to examine how changes or improvements in product attributes affect their attractiveness								
41	To investigate the attitudes of Dutch and Finnish omnivore and flexitarian consumers toward meat substitutes, cultured meat, and hybrid meat products. Additionally, it examines how food neophobia, meat attachment, and knowledge of food sustainability relate to these attitudes								
42	To investigate the willingness to try (WTT) cultured meat using data from a large survey conducted in Norway								
43	To assess whether presenting cultivated chicken in a familiar meal and dining setting motivates repeat consumption and recommendations. This study is the first in the world to test in a real-life setting whether familiarity—by incorporating cultivated meat into a known meal and social context—predicts repeat consumption and recommendation								
44	To test whether people support newer alternative protein burgers (cultured beef, plant-based, and plant-based fermentation) less than conventional burgers (grass-fed beef, grain-fed beef, veggie), and whether they perceive the newer burgers as riskier, less beneficial, less familiar, and less natural								
45	To analyze French consumers’ perceptions of muscle cell culture for food purposes, with a focus on how responses vary according to dietary preferences								
46	To explore consumer perceptions of cultured meat using a tested pool of perceptual items and to identify consumer segments based on their perceptions of cultured meat								
47	To explore attitudes towards cultured meat (CM), investigate motivators and barriers to engaging with CM, and predict the characteristics of future adopters among a-NZ consumers with varying levels of meat and plant-based meat alternative (PBMA) consumption								
48	To explore trends in consumer acceptance of alternative proteins over time and identify the drivers that explain changes in acceptance								
49	To propose and test a comprehensive framework of determinants influencing behavioral intentions towards cultured proteins								
50	To identify, critically review, and synthesize empirical findings from existing studies, providing an extensive overview of recent evidence on consumer acceptance of cultured meat								
51	To evaluate the likelihood of consumer adoption of plant-based and cultivated meat in South Africa, applying the Diffusion of Innovations framework								
52	To investigate how cultured meat is categorized within the meat category based on three types of categorization—relational, mere appearance, and literal similarity. The research question explores how consumers categorize cultured meat after receiving information about its similarity to meat or meat substitutes. The article includes three studies addressing this topic								
53	To evaluate Polish adults’ perceptions of cultured meat and understand the factors influencing its acceptance and rejection, including demographics, education, dietary patterns, openness to experience, and attitudes toward the environmental impact of animal farming								
54	To understand how supermarket credibility and price influence consumers’ purchase intentions for novel compared to familiar foods								
55	To assess how positive information influences Italian consumers’ perceptions and their willingness to try, buy, and pay a premium price for cultured meat								
56	To examine and analyze dilemmas related to ethical and socio-cultural issues, animal welfare, sustainability, and meat alternatives from a consumer perspective, and assess their impact on current and future meat consumption								
57	To understand potential consumers’ current perceptions of cultivated meat and identify the dimensions that affect this perception								

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Studies overview

N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
58	To evaluate consumer markets and preferences for cultivated meat in the US and UK regarding nomenclature, genetic modification, health benefits, and other attributes, applying the Diffusion of Innovations framework								
59	To explore the psychological motivations behind the rejection of cultured meat, with a particular focus on the perception of it being unnatural								
60	To investigate how different names for in vitro meat (IVM) affect consumer acceptance								
61	To identify the most promising alternative protein sources for use in meat alternatives. Additionally, the study explores the dimensionality of consumer expectations by examining correlations between different rating dimensions and compares the influence of relevant personality characteristics on the acceptance of various alternative protein sources								
62	To investigate the attitudes and intentions of Chinese consumers toward cultured meat (CM). This study also examines the framing effects of different product names ("cultured meat," "artificial meat," and "cell-based meat") and the impact of information provision on these attitudes and intentions								
63	To examine young consumers' perceptions of and preferences for plant-based and cultured meats in China and Japan								
Familiarity Operationalization									
N.	Used definition	Question formulation	N. items	Items formulation (relevant)	Response scale	Response scale formulation	Type of scale		
1	No explicit definition provided. From the free-list activity the participants reported: " <i>Childhood background, comfortable, convenience, experience with product, familiar, familiarity, routine, staples, sticking with favorites, what used to eat with family</i> "	Rating task for different food items, including an evaluation on familiarity	42	in-vitro meat burger	1 to 4	1 = very unfamiliar; 2 = somewhat unfamiliar; 3 = somewhat familiar; 4 = very familiar.	Likert-type		
2	" <i>Extent to which an individual is technically exposed to the information about or is habitually adapted to the consumption of alternative meat or protein-linked products</i> ". Distinguish three levels of familiarity: informational - experiential and cultural familiarity. Informational familiarity represents the basic knowledge and initial interest in these products, which can influence public attitudes and curiosity. Experiential familiarity involves personal experience and habitual consumption, meaning individuals who have tried imitation meats and other alternatives are more acquainted with these products than those who have not. Cultural familiarity is the highest level, encompassing how one's cultural background shapes their knowledge and acceptance of alternative meat products, reflecting the broader influence of cultural context on familiarity and attitudes.	Frequency of eating certain sources of protein	10	Imitation meat (<i>plant-based meat</i>). in vitro meat term adopted in the article	1 to 3	1 = never; 2 = occasionally, 3 = regularly	Other		
3	No explicit definition provided.	Prior to reading this description, how familiar were you with this new way of producing meat, called "clean meat"?	1	clean meat	1 to 5	1 = Not familiar at all, 2 = Slightly familiar, 3 = Moderately familiar, 4 = Very familiar, 5 = Extremely familiar	Likert-type		
4	No explicit definition provided, but considered as a product-related factor and connected to " <i>related concepts, such as previous experience with alternative proteins (i.e., past behaviour; Florkowski & Park, 2001)</i> "	N/A	N/A	Cultured meat term adopted in the review	N/A	N/A	N/A		

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
	<i>and knowledge of and experience with plant-based meat alternatives".</i>								
5	No explicit definition provided. “ <i>Being familiar with a specific food or behaviour</i> ”.	N/A (review)		N/A	cultured meat term adopted in the review	N/A	N/A		N/A
6	No explicit definition provided, but linked to the category of “knowledge of cultured meat as a foodstuff”.	1) The next questions are about how familiar you are with the topic of “in vitro meat as food”. Have you heard that in vitro meat can be produced and eaten? 2) After, participants were asked to indicate from whom or where they had heard about cultured meat	1) 1; 2) 5		in vitro meat	1) 1 to 3; 2) Multiple answers possible	1) ‘1 = No, I’ve never heard of it.’, Other ‘2 = Yes, I’ve heard of it, but I don’t know what it means.’ and ‘3 = Yes, I’ve heard of it, and I know what it means’. Following Verbeke (2015) on insects. 2) ‘Friends/Acquaintances’, ‘Television’, ‘Internet’ and ‘Newspaper’, ‘Free text field’.		
7	No explicit definition provided - considered as perceived familiarity. It was hypothesized to act as a mediator together with perceived naturalness, and between the different frames provided to participants. Different framings about consumption, production, and general alternative food.	“Please tell us your opinion about cultivated meat. I think that when it enters the market ...”	1		Cultivated meat will be familiar	1 to 7	1 = Strongly disagree, 7 = Strongly agree		Likert-type
8	No explicit definition provided.	1) How familiar you are with the conventional seafood depicted in general? 2) How familiar you are with “the idea of producing just the parts of salmon/tuna/shrimp that people eat, instead of catching or raising them whole”?	1		Idea of producing just the parts of salmon/tuna/shrimp that people eat, instead of catching or raising them whole.” 4 conditions: 1) “Cultivated from the Cells of;” 2) “Cell-Based,” 3) “Cell-Cultured,” and 4) “Grown Directly from the Cells of”	1 to 5	1 = not familiar at all; 2 = , slightly familiar; 3 = Moderately familiar; 4 = very familiar; 5 = extremely familiar with the concept.		Likert-type
9	No explicit definition provided.	Familiarity anchors provided by the participants in both online study and focus groups.	N/A		Synthetic meat term adopted in the study	N/A	N/A		N/A
10	No explicit definition provided, but connected to “ <i>previously heard about eating CM</i> ”.	Have you heard about being able to eat insects/cultured meat? From Verbeke et al. (2015) (where the scale is meant to assess awareness)	2		Cultured meat burger	1 to 3	1 = No, I’ve never heard about eating cultured meat; 2 = Yes, I’ve heard about eating cultured meat, but I don’t know exactly what it means; 3 = Yes, I’ve heard about eating cultured meat, and I know what it means.		Likert-type
11	No explicit definition provided, but from the question formulation it is meant to be connected to both “ <i>previously heard about</i> ” and “ <i>perceived knowledge</i> ”	1) Have you heard of IVM? 2) Do you know what in vitro meat is?	1 each		In vitro meat	1) 1 to 3; 2) 1 to 5	1) 1 = Yes; 2 = No; 3 = unsure; 2) Other 1 = Definitely Yes, 2 = Probably Yes, 3 = I am unsure, 4 = Probably not, 5 = Definitely not.		
12	No explicit definition provided. Connected to previous information.	Have you ever heard of artificial meat?	1		Artificial meat	1 to 2	1 = Yes; 2 = No		Closed-ended single choice question scale
13	No explicit definition provided, but from the question formulation it is meant to be connected to “ <i>previously heard about</i> ”.	Have you ever heard of artificial meat?	1		Have you heard about artificial meat?	1 to 2	1 = Yes; 2 = No		Closed-ended single choice question scale
14	No explicit definition provided.	Are you familiar with the followings alternative protein foods?	3		Cultured meat foods	1 to 5	1 = Very familiar, 2 = Slightly familiar, 3 = Neutral, 4 = Slightly unfamiliar, 5 = Very unfamiliar.		Likert-type

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
15	No explicit definition provided, but connected to the concepts of mere-exposure effect, similarity/referential framing towards conventional meat.	N/A		N/A	Cultured meat term adopted in the review	N/A	N/A		N/A
16	No explicit definition provided but included in the "Pre-knowledge" paragraph. Mention to the "wording used in the Review by Bryant and Barnett (2018) .	"Participants were asked about their familiarity with CM", and if answered "YES", asked to provide a definition	1		In vitro meat (german translation)	1 to 3	1 = yes, 2 = no, 3 = I am not sure-		Other
17	No explicit definition provided, but distinguished and with different question of the one used to assess the "knowledge".	Please indicate your opinion regarding the consumption of the following foods ... Text of the question regarding familiarity - not provided.	8 (red meat, white meat, fish, legumes, tofu, seitan, insects, lab-grown meat)		Lab-grown meat	1 to 7	1 = Never found to 7 = I found frequently		Likert-type
18	As lab grown meat (LGM) is not yet available in the market, "familiarity reflects an individual's exposure to information about LGM, rather than their personal experience with LGM products". Consumers were unable to draw on personal experiences when forming their attitudes and behavioral intentions. The relationship between familiarity and willingness to consume LGM may shift once LGM becomes available in the broader market.	Indicate how familiar they were with each of seven different terms used to describe 'lab-grown meat' in the literature and wider media.	7		Lab-grown meat	1 to 3	1 = Have not heard of it; 2 = Have heard of it but know very little or nothing about it; 3 Know enough about it that I could explain to a friend.		Likert-type
19	Prior familiarity. No explicit definition provided	Were you, before this survey, familiar with - insert name -, possibly known to you as 'cultured meat'?	5		Participants were assigned to one the 5 different naming conditions: 1. pure meat, 2. clean meat, 3. Slaughter-free meat, 4. animal-free meat and 5. cultured meat	1 to 3	1 = No, 2 = Yes, no understanding, 3 = Yes, understanding.		Likert-type
20	No explicit definition provided, but connected to "awareness" and reported that "Familiarity is created when there is media exposure to In Vitro Meat technology" (p.8).	1) Are you familiar with meat analogues such as plant-based protein, insect protein, in-vitro meat (IVM), vegan fish and fishless seafood?; 2) Are you familiar with technologies such as cellular agriculture/In-vitro meat (IVM) technology and tissue engineering?	2		In vitro meat	1 to 5	1 = Not at all familiar, 5 = extremely familiar.		Likert-type
21	"Familiarity refers to the previous exposure and acquaintance with a novel food" (Alba & Hutchinson, 1987). Some studies attempted to manipulate familiarity by providing information on the products. Connected with mere exposure effect throughout the review.	N/A		N/A	Cultivated meat term adopted in the review	N/A	N/A		N/A
22	Considered as a synonym of prior information and knowledge. "Already obtained previous	Have you ever heard of cultured meat?	1		cultured meat	Not specified	Not specified (mentioned throughout the article: know the subject - don't know the subject)		N/A

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	<i>information of knowledge about the theme".</i>								
23	No explicit definition provided. Product familiarity and knowledge terms used interchangeably.	Not explicitly reported, but mentioning " <i>when asked about their familiarity with cultured meat ...</i> "	1		cultured meat	1 to 3	1 = heard about cultured meat and know what the term means; 2 = heard about cultured meat but don't know what the term means; 3 = never heard about cultured meat before	Likert-type	
24	No explicit definition provided	Indicate their familiarity with each of the seven types of hamburgers containing different types of protein foods	7		cultured meat burger	1 to 6	1 = Not at all familiar (do not know what this ingredient is); 6 = very familiar (eat this burger often, make it often).	Likert-type	
25	Familiarity with the meat sector and familiarity with the "artificial meat" topic. No explicit definition provided, but connected to the concepts of prior knowledge, information and awareness.	Have you ever heard of artificial meat before?	1		artificial meat	1 to 2	1 = yes, I have heard about it; 2 = no, I have not heard about it	Closed-ended single choice question scale	
26	No explicit definition provided.	Prior to this study, to what extent were you familiar with cultured meat?	1		cultured meat	1 to 3	1 = unfamiliar, 2 = a little bit familiar, 3 = familiar.	Likert-type	
27	No explicit definition provided, but connected with previous information about the product.	Not explicitly reported.	1		cultured meat	1 to 3	1 = I have never heard of cultured meat; 2 = I have heard about cultured meat know what it is; 3 = I have heard about cultured meat, but I don't know what it is.	Likert-type	
28	No explicit definition provided. Called " <i>Meat-substitute familiarity</i> ". Familiarity is distinguished from prior awareness (self-reported awareness of cultivated meat). Prior awareness considered as " <i>previously heard about CM</i> ".	How often they eat beef, pork, lamb, poultry, seafood, dairy and eggs, and/or meat substitutes (e.g., tofu, plant-based alternatives). Results used in connection with CM acceptance rates.	1		Meat alternatives for familiarity. "Cultivated meat" for prior awareness	1 to 5	Meat alternatives familiarity:1 = Rarely or never; 2 = Monthly; 3 = Weekly; 4 = Multiple times each week; 5 = Daily. Prior awareness: measured as previously heard about the product.	Other	
29	No explicit definition provided.	Which of the following most closely represents your prior exposure to clean meat before this study?	1		clean meat	1 to 3	1 = It was completely new to me; 2 = I've heard of it before; 3 = I felt well informed	Likert-type	
30	Considered as a subdimension of knowledge. Clearly differentiated by awareness, comprehension and knowledge itself. " <i>Consumer's knowledge about CM goes beyond mere awareness and includes a deeper understanding of the product - interactions about awareness, comprehension, and familiarity as predictors of perception</i> ".	N/A		N/A	Cultured meat	N/A	N/A		N/A
31	No explicit definition provided, but connected to initial knowledge, reported as a prerequisite/first step of the innovation decision-making process.	Have you ever heard of artificial meat?	1		artificial meat	1 to 2	1 = yes; 2 = no	Closed-ended single choice question scale	
32	No explicit definition provided, but used interchangeably with awareness.	Have you ever heard of cultured meat?	1		cultured meat	1 to 3	1 = I have never heard about it; 2 = I have heard about it; 3 = I know about it	Likert-type	
33	" <i>Since lab-meat burgers are not yet available in the market, we cannot analyze how familiar people are with them</i> ". Familiarity assessed on veggie-burgers and	Not available in the text - but presumably connected with previous consumption	2		Veggie-burger and meat-like burger. No CM	1 to 2	1 = I have eaten a veggie-burger; 2 = not sure what a veggie burger tastes like.	Closed-ended single choice question scale	

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Studies overview									
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	meat-like burgers. No explicit definition provided, but considered as “ <i>previously consumed</i> ”.								
34	Also called prior knowledge in the article - connected to the concept of prior experience with the product. While, meat-substitute familiarity assessed by means of previous consumption.	Have you ever heard of cultivated meat?		1	Cultivated meat	1 to 3	1 = No, I have not heard of “cultivated meat”; 2 = Unsure; 3 = Yes, I have heard of “cultivated meat”.		Likert-type
35	No explicit definition provided.	N/A		N/A	Cultivated meat term adopted in the review	N/A	N/A		N/A
36	In Study B: Familiarity connected with previous exposure - “ <i>Familiarity is established through exposure, with technical expertise playing a secondary role (Rioux et al., 2018). In the context of alternative proteins, familiarity has the potential to diminish fear and enhance hedonic evaluation, thereby augmenting acceptance (Schoutetenet al., 2016; Megido et al., 2016)</i> ”.	Have you ever heard of cell-based foods?		1	Cell-based foods	1 to 2	1 = yes; 2 = no.		Closed-ended single choice question scale
37	Resemblance and similarity to conventional meat products.	N/A		N/A	cultured meat term adopted in the article	N/A	N/A		N/A
38	Connected to lack of knowledge/prior knowledge and awareness. Used interchangeably with knowledge and awareness.	N/A		N/A	cultured meat term adopted in the article	N/A	N/A		N/A
39	No explicit definition provided	Two questions included. 1) Have you heard the term “clean meat” before? (It has sometimes been referred to as “cultured meat” or “in-vitro meat” as well)? 2) Prior to this study, to what extent were you familiar with clean meat (including under another name, such as cultured meat or in-vitro meat)?		1	Clean meat	1 to 3 and 1 to 5	1 = Yes, 3 = Unsure. 1 = Not at all familiar, 5 = very familiar		Likert-type
40	No explicit definition provided. Dissertation from Bryant et al. (2019) “ <i>higher familiarity with the products (although in the case of cultured meat, not direct experience) predicted higher acceptance</i> ”. Getting used and adapt to the product: “ <i>Familiarity tends to be significant in accepting novel foods, meaning that once cultured meat products are available and consumers adapt to them, acceptance may increase</i> ”.	No direct question on familiarity - if not 1 item included in Question 12 “If synthetic meat, fish or dairy was ... than conventional meat, fish or dairy” - more familiar		1	Synthetic meat, fish, or dairy	1 to 5	1 = Much less positive attitude 2 = Somewhat less positive attitude 3 = Unchanged attitude 4 = Somewhat more positive attitude 5 = Much more positive attitude		Likert-type
41	Familiarity with the concept of cultured meat. No explicit definition of familiarity provided.	How familiar are you with the concept of cultured meat?		3	Cultured meat	1 to 5	1 = Not familiar at all, 2 = Slightly familiar, 3 = Moderately familiar, 4 = Very familiar, 5 = Extremely familiar.		Likert-type
42	No explicit definition provided, but connected with food neophobia.	When purchasing food for yourself and your household, which factors do you consider		1	Food purchasing in general - cultured	7 options	Relevant answer for familiarity to be included: “food eaten before”. If ticked, familiarity was included.		Other

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43	<i>"Exposure to a food product is the basis of familiarity, with technical knowledge ranking only as a secondary factor (Rioux et al., 2018)."</i> Familiarity encompasses several dimensions: familiarity with the product itself, the meal in which it is included, the social setting (such as a restaurant), and the dish or meal context. These dimensions of familiarity are assessed and considered distinct from product knowledge.	to be particularly important? (not specifically on cultivated meat).	1) Pre-consumption: How familiar are you with cultivated meat? 2) Post-consumption: Which of the following reasons will make you more likely to eat cultivated chicken if it becomes available in more restaurants? You may select more than one option; 3) Which of the following reasons will make you less likely to eat cultivated chicken if it becomes available in more restaurants? You may select more than one option.	1 each	meat term adopted in the article cultivated meat (general)	1) Pre consumption: 1 at all; 2 = Not so familiar; 3 = to 5; 2) post-consumption 8 = Very familiar. Post-consumption options - check all that apply.	Pre consumption: 1 = Not familiar at all; 2 = Not so familiar; 3 = Neutral; 4 = Somewhat familiar; 5 = Very familiar. Post-consumption [for both]: When it's/it's not part of a familiar dish or meal	Likert-type	
44	No explicit definition provided. However, it was connected to naturalness, and liking. <i>"People would perceive newer, less familiar proteins as less natural compared with more conventional, familiar proteins"</i> . Considered different by understanding - item <i>"I understand how this works"</i> . Nevertheless, familiarity and understanding were included in the same score for the regression model. Therefore, in the questionnaire there were different items but in data analysis, these were aggregated.	Statement: "this is familiar"		6 different burgers evaluated (1 cultured)	cultured beef burger	1 to 100	0 = Strongly Disagree, 100 = Strongly Agree	Likert-type	
45	No explicit definition provided. Question about familiarity with the innovation sector and question about familiarity with cultured meat - <i>"did you hear about cultured meat?"</i> Connected with previous knowledge.	About innovation sector: Do you consider yourself familiar with the innovation sector? About cultured meat: Did you hear about cultured meat [followed by If yes, How did you hear about it?		1	innovation sector or cultured meat	1 to 3	1 = yes, 2 = no, 3 = no opinion	Closed-ended single choice question scale	
46	No explicit definition provided. Question about <i>"having previously heard about the product"</i> . In the discussion named it also as awareness. Distinguished from <i>"knowledge about the correct definition of cultured meat"</i> .	Did you hear about cultured meat		1	cultured meat	1 to 3	1 = no; 2 = not sure; 3 = yes	Closed-ended single choice question scale	
47	Considered as awareness about cultivated meat.	I am aware of cultivated meat (sometimes called: in vitro meat, lab-grownmeat, and/or clean meat)		1	cultivated meat	1 to 7	1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree	Likert-type	
48	No explicit definition provided, but the items have been retrieved by the Food Choice Questionnaire (original: Steptoe et al., 1995), (updates developed by Fotopoulos et al. (2009)	'It is important to me that the [one of the five protein-based categories] is		33 (3 regarding familiarity)	cultured meat. 3 items regarding familiarity: 1) is familiar; 2) is like the food I ate when I was a child; 3) is what I usually eat.	1 to 7	1 = not important at all; 7 = very important	Likert-type	

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
49	No explicit definition provided. Familiarity with the concept and connected to the amount/type of information provided or available to the individual. In discussion, familiarity is aligned with the concept of previous knowledge of cultured proteins.	2 questions: 1) Have you ever heard of cultured/synthetic meat, fish or dairy before? 2) How would the following aspects impact your attitudes to synthetic/cultured meat, fish or dairy as compared to conventional meat, fish or dairy?		1) 1; 2) 24	1) Together: cultured/synthetic meat, fish or dairy; 2) If synthetic meat, fish or dairy was ... than conventional meat, fish or dairy (more familiar)	1) 1 to 4; 2) 1 to 5	1) 1 = I never heard about it. 2 = I heard about it, but I have no clear idea about what it is. 3 = I heard about it, and I have some idea about what it is. 4 = I heard about it, and I have a clear idea about what it is. 2) 1 = Much less positive attitude; 2 = Somewhat less positive attitude; 3 = Unchanged attitude; 4 = Somewhat more positive attitude; 5 = Much more positive attitude		Likert-type
50	Public awareness and knowledge discussed in a unique section. Familiarity considered with awareness in Tables 2 and in the paragraph. Distinguished between knowledge and awareness. "Awareness (and familiarity) is often the first stage to acceptance of a novel technology (Agarwal & Prasad, 1998; Rogers, 2003). Awareness does not necessarily lead to an attitude towards novel technology but rather induces curiosity and propensity (Brennan, Canning, & McDowell, 2020). The next step is acquiring knowledge, which intends to learn more about the innovation process and its advantages (Rogers, 2003)".	N/A		N/A	cultured meat term adopted in the review	N/A	N/A		N/A
51	No explicit definition provided, but referred to 'prior familiarity with cultivated meat'	Prior to participating in this study, how familiar were you with the concept of [plant-based or cultivated] meat?		2	cultivated meat	1 to 5	1 = Not at all familiar, 2 = Somewhat familiar, 3 = Moderately familiar, 4 = Very familiar, 5 = Extremely familiar		Likert-type
52	No explicit definition provided. Used as a background variable.	Prior to this study, to what extent were you familiar with cultured meat" (Background measure)		1	Cultured meat (dutch: kweekvlees)	1 to 3	1 = unfamiliar, 2 = a little bit familiar, 3 = familiar.		Likert-type
53	No explicit definition provided. Familiarity with the concept of cultured meat. In the discussion section it was connected with awareness and providing information.	Have you ever heard of a new category of meat produced in a laboratory or other controlled conditions without animals (other names are in vitro meat, artificial meat, cellular meat, cruelty-free meat, clean meat, and cultured meat)?		1	in vitro meat, artificial meat, cellular meat, cruelty-free meat, clean meat, and cultured meat	1 to 4	1 = Yes, I have heard, and I understand the way it is produced; 2 = Yes, I have heard, but I do not understand the way it is produced; 3 = No, I have not heard; 4 = I cannot recall		Likert-type
54	No explicit definition provided. "Food familiarity was operationalized by using two foods: regular ground meat (familiar food), and cultured ground meat (novel food)".	How familiar are you with the food?		2	cultured meat	1 to 5	1 = not familiar, 5 = very familiar. Citing Pliner & Hobden, (1992). https://doi.org/10.1016/0195-6663(92)90014-W		Likert-type
55	No explicit definition provided, but used to segment the participants between familiar and non-familiar with cultured meat.	Have you ever heard about cultured meat before?		1	cultured meat	1 to 3	1 = No, 2 = Yes, but I do not know what it is about, 3 = Yes, and I know its main characteristics.		Likert-type
56	No explicit definition provided, but connected to previous information and heard about the product - as deductible from: "[...] consumers' knowledge of CM is low, with a high number of	N/A		N/A	cultured meat	N/A	N/A		N/A

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
	<i>consumers who have never heard about it or are not familiar with it. However, the most recent studies seem to show a tendency of a reduction of the number of citizens that have never heard about CM, at least in some countries. This might be explained by the most frequent appearance of information in the press media"</i>								
57	No explicit definition provided, but connected to prior knowledge of the cultivated meat concept. "To handle a possible unfamiliarity about the object under study, a stimulation as an introduction text was provided. This little exposition was necessary since 57 % of the respondents said they did not have prior knowledge about cultivated meat."	Have you ever heard about cultivated meat?		1	cultivated meat	1 to 2	1 = yes, 2 = no		N/A
58	No explicit definition provided, but referred to 'prior familiarity with cell-culture technology'	Prior to participating in this study, how familiar were you with this new way of producing meat?		1	Familiarity with this 'new way of producing meat'	1 to 5	1 = Not at all familiar, 2 = Somewhat familiar, 3 = Moderately familiar, 4 = Very familiar, 5 = Extremely familiar		Likert-type
59	No explicit definition provided, but the concept is connected to prior exposure, familiarity with the idea, and knowledge-seeking behaviors.	How familiar are you with cultured meat (also known as clean, cell-based, or lab-grown)?		1	Cultured meat	1 to 5	1 = Not at all familiar (I have never heard of the term), 2 = A tiny bit familiar(I have heard the term, but don't know anything about it, 3 = I am mildly familiar (I know a little about what it is), 4 = I am reasonably familiar (I have some exposure to the concepts, technology and progress), 5 = I am very familiar (I regularly read new articles and keep updated with new developments).		Likert-type
60	No explicit definition provided but connected to the article by Wilks and Phillips (2019).	How familiar are you with ... (name of the product)		1 (across 4 different group conditions)	4 Different group conditions: animal free meat, cultured meat, clean meat, and lab grown meat.	1 to 3	1 = Never heard of IVM, 2 = Heard of IVM, 3 = Already knew what IVM is		Likert-type
61	No explicit definition provided. Considered as connected to the food neophobia scale scores. FNS not significant = familiarity not significant	Food Neophobia Scale (FNS)		FNS items	cultured meat	1 to 7	1 = Do not agree at all; 7 = Fully agree (FNS)		Likert-type
62	No explicit definition provided, but distinction between awareness (previously heard about) and knowledge. High correlation between awareness and knowledge.	Awareness = have you ever heard of [different names for group conditions]. Knowledge = participants reported their prior knowledge of CM		1 (across 3 different group conditions)	3 group conditions: cultured meat, artificial meat, or cell-based meat	1 to 3	Awareness (and familiarity) 1 = yes, 2 = no, 3 = I am not sure. Knowledge: 1 (definitely no) to 5 (definitely yes).		Closed-ended single choice question scale
63	No explicit definition provided but connected to a knowledge test of cultured meat and plant-based meats.	Please judge whether the following statements are correct or not by choosing from "True", "False" or "I don't know".		2	Cultured meat, a type of alternative meat product, is produced by extracting stem cells from animals.	1 to 3	1 = True, 2 = False, 3 = I don't know.		Closed-ended single choice question scale
Studies design and framing									
N.	Study design	Type of product evaluated			Framing of the product		Before or after the familiarity question	Framing type	

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
1	Mixed-method	Cultivated meat burger			NO		N/A		N/A
2	Online survey	Cultivated meat (general)			NO		BEFORE		Other
3	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
4	N/A	N/A			N/A		N/A		N/A
5	N/A	N/A			N/A		N/A		N/A
6	Online survey	Cultivated meat (general)			YES		BEFORE		Written Text
7	Online experiment	Cultivated meat (general)			YES		BEFORE		Written Text
8	Online experiment	Cultivated sea-foods			YES		Other		Other
9	Mixed-method	Cultivated meat (general)			YES		BEFORE		Videos
10	Paper-based survey	Cultivated meat burger			YES		BEFORE		Image and written text
11	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
12	Online survey	Cultivated meat (general)			YES		BEFORE		Image and written text
13	Online survey	Cultivated meat (general)			YES		BEFORE		Image and written text
14	Online survey	Cultivated meat (general)			YES		BEFORE		Written Text
15	N/A	N/A			N/A		N/A		N/A
16	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
17	Mixed-method	Cultivated meat product			YES		BEFORE		Written Text
18	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
19	Online experiment	Cultivated meat (general)			YES		BEFORE		Image and written text
20	Online survey	Cultivated meat (general)			YES		BEFORE		Written Text
21	N/A	N/A			N/A		N/A		N/A
22	Face-to-face survey	Cultivated meat (general)			YES		AFTER		Image and written text
23	Online survey	Cultivated meat (general)			NO		N/A		N/A
24	Online survey	Cultivated meat burger			NO		N/A		N/A
25	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
26	Online experiment	Cultivated meat (general)			YES		AFTER		Written Text
27	Online survey	Cultivated meat (general)			YES		AFTER		Image and written text
28	Online experiment	Cultivated meat (general)			YES		AFTER		Image and written text
29	Face-to-face survey	Cultivated meat (general)			YES		AFTER		Written Text
30	N/A	Cultivated meat (general)			N/A		N/A		N/A
31	Online survey	Cultivated meat (general)			YES		BEFORE		Image and written text
32	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
33	Online survey	Cultivated meat burger			YES		AFTER		Written Text
34	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
35	N/A	Cultivated meat (general)			N/A		N/A		N/A
36	Online survey	Cultivated foods (general)			YES		AFTER		Image and written text
37	N/A	N/A			N/A		N/A		N/A
38	N/A	Cultivated meat (general)			N/A		N/A		N/A
39	Online experiment	Cultivated meat (general)			YES		AFTER		Written Text
40	Online survey	Cultivated foods (general)			YES		BEFORE		Written Text
41	Online survey	Cultivated meat (general)			YES		BEFORE		Written Text
42	Online survey	Cultivated meat (general)			NO		N/A		N/A
43	Mixed-method	Cultivated meat (general)			YES		AFTER		Real Products or Samples
44	Online experiment	Cultivated meat burger			YES		BEFORE		Written Text
45	Qualitative - interviews	Cultivated meat (general)			YES		BEFORE		Written Text
46	Online experiment	Cultivated meat (general)			YES		AFTER		Written Text
47	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
48	Online survey	Cultivated meat (general)			NO		N/A		N/A
49	Online survey	Others cultivated			YES		BEFORE		Written Text
50	N/A	N/A			N/A		N/A		N/A
51	Online experiment	Cultivated meat (general)			YES		BEFORE		Image and written text
52	Online experiment	Cultivated meat (general)			YES		BEFORE		Written Text
53	Online survey	Cultivated meat (general)			YES		AFTER		Image and written text
54	Online experiment	Cultivated meat (general)			YES		AFTER		Written Text
55	Online survey	Cultivated meat (general)			YES				
56	N/A	Cultivated meat (general)			N/A		N/A		N/A
57	Qualitative - free word association task	Cultivated meat (general)			YES		AFTER		Written Text
58	Online survey	Cultivated meat (general)			YES		Before (brief technology description) and after (expanded technology description)		Image and written text
59	Online survey	Cultivated meat (general)			YES		AFTER		Written Text
60	Online experiment	Cultivated meat (general)			YES		AFTER		Written Text
61	Online survey	Cultivated meat (general)			YES		BEFORE		Written Text
62	Online experiment	Cultivated meat (general)			YES		AFTER		Written Text
63	Online survey	Cultivated meat (general)			YES		AFTER		Image and written text

Studies participants**N. Representativeness**

1 No (convenience sample) General population

2 No Students

Participants details

N = 27 for the semi-structured interviews; Mean age: 48 years (SD = 13.5); Majority female; Only English speakers. N = 20 for the pile sorting survey.

N = 393; 89.4 % female.

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
3	Yes	General population							
4	N/A	N/A							
5	N/A	N/A							
6	Yes	General population							
7	No	General population							
8	Yes	General population							
9	No	General population							
10	No	Students							
11	Yes	General population							
12	Yes	General population							
13	No	General population							
14	No	General population							
15	N/A	N/A							
16	No	General population							
17	No	General population							
18	No	General population							
19	No	Other							
20	No	General population							
21	N/A	N/A							
22	No	General population							
23	N/A	General population							
24	No	General population							
25	No	General population							
26	No (convenience sample)	Students							
27	No	General population							
28	Yes	General population							
29	No (convenience sample)	Students							
30	N/A	N/A							
31	No	General population							
32	No	General population							
33	Yes	General population							
34	Yes	General population							
35	N/A	N/A							
36	No	Other							
37	N/A	N/A							
38	N/A	N/A							
39	Yes	General population							
40	Yes	General population							
41	No	General population							
42	Yes	General population							
43	No	Other							
44	No	General population							
45	No	General population							
46	No	General population							
47	No	General population							
48	Yes	General population							
49	Yes	General population							
50	N/A	N/A							
51	Yes	General population							
52	No	Students							
53	No	General population							
54	No	General population							
55	No	General population							
56	N/A	N/A							
57	No	General population							
58	Yes	General population							
59	No	General population							
60	No	General population							
61	No	General population							
62	No	General population							

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
63	No	General population			Total N = 2006; Japan: n = 887 (50.1 % female); China: n = 1119 (54.8 % female)				
Evidence on familiarity								Notes	
N.	Role of familiarity								
1	Other		Overall conclusion The cultivated meat burger scored lowest on familiarity (1.80 ± 1.01). There is no consensus on classifying cultivated meat and other novel foods, and familiarity results were not discussed.					Survey methodology: semi-structured interviews including free listing), followed by a remote online pile sorting survey and a rating task for each food item. Familiarity results were not discussed.	
2	Facilitating		The most enthusiastic supporters of in vitro meat were those who frequently consumed fish and seafood. Their favorable views were shaped by their experience with alternative proteins, emotional ties to similar products, and a propensity for sensation-seeking.					Method: familiarity operationalized as frequency of eating food items (no cultivated meat in particular), was used to segment the respondents. Framing: students could search on the Internet with their smartphone before answering the questions	
3	Facilitating		Familiarity and acceptance of clean meat were significantly higher in India and China compared to the USA. Lower food neophobia and greater familiarity predicted increased acceptance of both plant-based and clean meat in all countries. This supports the notion that growing familiarity with new food technologies tends to boost willingness to consume them, suggesting that acceptance is likely to rise over time as consumers become more acquainted with these products.					Participants: representative of each country in terms of age and gender, but not fully representative of the country. The samples were representative of the populations who are most likely to have access to plant-based and clean meat in the near future.	
4	Facilitating		Familiarity is a more significant driver for the acceptance of insects and algae compared to other novel proteins. Although Hoek et al. (2011) is cited to support the relevance of familiarity with cultured meat, it actually focuses on plant-based foods, and the first public tasting of cultured meat occurred in 2013.						
5	Facilitating		With a limited number of studies and medium evidence, familiarity shows promise in increasing acceptance of novel alternative proteins. It appears more influential for innovative products like cultured meat than for less innovative ones. Currently, familiarity may reinforce traditional meat-eating behaviors.						
6	Neutral		Familiarity with cultured meat (CM) did not affect willingness to consume a CM burger. Basic awareness of CM had no impact, but deeper knowledge of its production and benefits might. Further research, like Bryant et al. (2019) , is suggested.					Framing on cultivated meat in general provided before the question of familiarity (written text); framing on cultivated meat burger (image) provided after the section including the question on familiarity. Population: Gender quotas representatives, with higher education and quotas of flexitarians and veg*ns.	
7	Facilitating		Participants exposed to the consumption frame perceived cultivated meat as more natural, flavorful, and familiar. This led to more positive attitudes and an increased willingness to try and purchase cultivated meat.					Between-subjects design with three conditions.	
8	Facilitating		Participants showed moderate familiarity with shrimp, salmon, and tuna. However, 61 % were not familiar with cell-based seafood production. No significant differences in familiarity were found between common names for cell-based seafood. "Cell-based" performed better than "cell-cultured" compared to traditional seafood products with which consumers are already familiar.					Method: 3 × 10 between-subject methodology. Framing: 1) images provided before the first question on familiarity with the product (in general). 2) Written text after the first question on familiarity and before the second question on familiarity (familiarity with the idea of producing the depicted cultivated seafood).	
9	Other		Anchoring SYNM to familiar objects or technologies did not necessarily enhance its understanding. Anchoring failed to reduce unfamiliarity, particularly when the references themselves were contentious. Analogies to previous contentious biotechnologies kept SYNM in a state of unfamiliarity, associating it with risk, strangeness, and issues of naturalness.					Survey methodology: Online deliberation study and separate but related focus group where participants anchored CM to familiar objects/elements.	
10	Neutral		Familiarity had no significant effect on the willingness to consume cultivated meat					Familiarity operationalized as in From Verbeke et al. (2015) , where the scale is meant to assess awareness and not familiarity.	
11	Other		Role of Familiarity not discussed in the discussion/conclusion sections.						
12	Other		The discussion on familiarity with cultured meat is limited. It notes that potential consumers of "cell-based meat" are typically young, highly educated, somewhat familiar with the novel food, meat-eaters, and inclined to reduce their consumption.					The discussion on results about familiarity with cultured meat is limited	
13	Neutral		Mixed results: Unfamiliar consumers are open to trying artificial meat at the same or lower price than conventional meat but are hesitant to eat it regularly. Informed consumers show mixed reactions—some reject it due to neophobia, while others accept it at a lower price. Over half were familiar with artificial meat, revealing issues with the term "Artificial meat" in Chinese.					Data visualization: Mosaic plot of the distribution of responses about willingness to pay (WTP) according to age and familiarity.	
14	Facilitating		26 % were familiar with cultured meat, more than insects but less than plant-based alternatives. Males and those more familiar with protein alternatives were more willing to consume all three types of alternative proteins regularly.						
15	Other		The effect of familiarity on cultured meat has not been tested yet; however, the mere exposure effect has been reported. Efforts to define cultured meat in terms of its similarities and differences to conventional meat						

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Studies overview									
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
16	Facilitating								
17	Facilitating								
18	Facilitating								
19	Facilitating								
20	Facilitating								
21	Facilitating								
22	Facilitating								
23	Facilitating								
24	Facilitating								
25	Facilitating								
26	Neutral								
27	Facilitating								
28	Facilitating								
29	Other								
30	Other								
31	Other								
32	Other								
33	Facilitating								
34	Facilitating								

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Studies overview							
N. Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year DOI
35 Facilitating		Participants familiar with the topic were more willing to try cultivated meat, while those unfamiliar with it showed significantly lower willingness. This aligns with previous research indicating that unfamiliarity with novel technologies, such as genetically modified organisms, leads to reduced trust, increased uncertainty, and concerns about potential long-term effects.					
36 Facilitating		Acceptance of cell-based food is linked to familiarity. Professionals familiar with cell-based food showed greater acceptance compared to those who were not. This supports existing research that highlights familiarity as a key factor in food acceptance. Familiarity reduces fear, enhances sensory evaluation, and boosts confidence in novel foods, leading to higher acceptance, especially among those with more knowledge and experience in the field.					Participants: kitchen professionals. Methodology: research based on groups of familiarity (Familiar, Unfamiliar)
37 Other		The author debates the mimesis approach in cultivated meat development, suggesting that cultivated meat offers a chance for novel forms beyond mere imitation of familiar ones. They argue that only a strong attachment to existing forms would limit cultured meat to imitation. The author concludes that perfectly mimetic processes might be less technically successful than those that leverage natural cellular repair processes and shape the resulting muscle strands into new, unfamiliar forms.					Methodology: ethnographic research of five years in the movement of cultured meat.
38 Facilitating		Individuals with prior knowledge show the strongest drive toward acceptability, while lower awareness is linked to food neophobia. As familiarity with cell-based meat increases, it may reduce norm-violating moral disgust and the associated negative responses.					
39 Other		25 % of participants had already heard about clean meat before. After reading the framing, 64.1 % of respondents answered to be 'not at all familiar' with it.					Familiarity assessment appears to be used as a background variable to measure the initial levels of participants and to align them on the same definition of clean meat. Familiarity results not discussed
40 Facilitating		Results on familiarity were inferred from other questions. For example, respondents in Finland, who likely had higher familiarity with the technology, showed more extreme assessments. Generally, greater familiarity was associated with more positive attitudes reported by participants.					Methodology: no direct question on familiarity. Only 1 item about the perceived importance of familiarity compared to the conventional product/s. representative with respect to the distribution of genders, education, age, and income.
41 Facilitating		WTB ratings for cultured meat are negatively influenced by being from Finland, older age, and higher food neophobia, while familiarity has a positive effect. The findings suggest that reducing meat attachment and food neophobia, and increasing familiarity and knowledge of food sustainability, are crucial for decreasing meat consumption.					
42 Neutral		Familiarity had no significant effect, contrasting with findings from other studies where it was a key predictor of intent to purchase cultured meat. This result indicates that food neophobia may be less important for willingness to try cultured meat in Norway compared to other countries.					Methodology: general question about food familiarity as a means of previous consumption - not specifically on CM
43 Neutral		Participants' willingness to eat cultivated chicken again or recommend it was not significantly influenced by whether it was part of a familiar dish. Familiarity with cultivated meat did not differ significantly between non-Asians and Asians. Post-consumption acceptance of cultivated chicken served in a familiar dish was notably higher than pre-consumption acceptance. However, incorporating cultivated chicken into familiar meals did not significantly affect participants' likelihood of eating it again in a restaurant, with only a small percentage indicating increased likelihood based on this factor. Tastiness of cultivated chicken may be a more crucial factor than its integration into familiar dishes.					Methodology: on-site tasting of a cultivated chicken meal. Participants: diners at Huber's Butchery and Bistro in Singapore. Questionnaire provided online before and after the tasting.
44 Facilitating		Participants were less familiar with and understood cultured beef burgers compared to plant-based alternatives. This lack of familiarity might affect perceptions of naturalness, suggesting that people may view familiar technologies as more natural. Familiarity can broaden the understanding of naturalness beyond just being free from additives or extensive processing. Future research should explore how changes in familiarity influence perceptions of naturalness, without altering technology descriptions.					Hypothesized that construing proteins as more natural predicts lower risk perceptions, greater perceived benefit, and stronger support. That is, the association between naturalness and support is partly explained by the associations between naturalness and perceived risks and benefits. Hypothesized that familiarity and understanding of protein technologies predicts naturalness, beyond any direct association between familiarity, risk, benefit, and support.
45 Facilitating		People familiar with the specific innovation were more willing to try the product compared to those who were not, though the table only addressed familiarity with this particular innovation, not with innovation in general. Prior knowledge of cultured meat did not significantly influence respondents' overall attitudes toward it.					Methodology: familiarity with cultured meat and innovation sector formulated in 2 different ways.
46 Facilitating		Results indicate that familiarity, assumed to facilitate acceptance, was higher among those more receptive to cultured meat. Despite cultured meat not being available in the market, respondents generally showed relatively high familiarity, with more than half having heard of it. This awareness is slightly higher compared to previous studies, possibly due to increased media coverage. However, only a third of respondents knew the correct definition of cultured meat, highlighting the need for improved consumer education.					Identification of four consumers' segments.
47 Facilitating		Awareness and knowledge of cultured meat are linked to higher consumer acceptance. This study confirmed that those aware of cultured meat rated its potential and attributes more favorably than those who were not. Thus, enhancing consumer awareness and familiarity with cultured meat is a key strategy to boost interest and engagement in A-NZ (Aotearoa New Zealand).					
48 Other		Not reported as significant for cultured meat in the results, and not extensively discussed.					Methodology: self-reported consumption of cultured meat was not (continued on next page)

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Studies overview							
N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection
							Publication year
							included in the survey, as cultured meat is not yet available on the market. Asked for the other type of products included in the study.
49		Facilitating	Prior knowledge of cultured proteins improved initial impressions but did not significantly impact intentions to consume them, possibly due to the low confidence in this knowledge. Social norms and familiarity with cultured proteins also emerged as important psychological factors. Positive first impressions can drive intentions and dietary changes, even if familiarity and knowledge about cultured proteins are limited, with prior knowledge and beliefs about their broader impacts influencing participants' intentions.				
50	Facilitating		First attempt towards the distinction between awareness (considered synonym of familiarity) and knowledge. In addition, knowledge is divided in subjective knowledge (what consumers perceive they know) and objective knowledge (what consumers truly know) on the purchasing behaviour. <i>"Hitherto, consumer studies do not lend adequate support for the effect of additional information on acceptance of cultured meat; rather, prior subjective knowledge seems to play a more significant role."</i>				
51	Facilitating		Familiarity with cultivated meat was fairly low among the South African population. Despite the low familiarity levels, it showed a significant positive relationship with purchase intention of CM. Adoption levels are likely to rise in the future as alternative meat products gain more recognition and availability, given that regression analysis identified prior familiarity as the strongest predictor of purchase likelihood for both plant-based and cultivated meat				
52	Facilitating		Studies 1-2-3 found that self-perceived familiarity with cultured meat was significantly associated with more positive explicit attitudes, but not with implicit attitudes. Overall, the experiments did not consistently support the hypothesis that providing similarity information would lead to cultured meat being categorized as either meat or a meat substitute.				
53	Facilitating		Most respondents were familiar with the concept and production of cultured meat, while a smaller portion had limited knowledge or had never heard of it. The study found that cultured meat is more likely to be accepted by those who are familiar with it, younger adults, females, meat eaters, individuals open to new experiences, and those aware of the environmental impacts of animal farming.				
54	Facilitating		Participants were more familiar with regular ground beef than with cultured meat. Consumers consider food familiarity, price, and supermarket credibility when making purchase decisions. While supermarket type alone did not directly influence purchase intention, supermarket credibility positively affected it, mediated by familiarity and price. However, credibility's impact on purchase intention was not affected by food familiarity when price was not considered.				
55	Facilitating		Participants unfamiliar with cultured meat, especially females and non-meat consumers, showed the greatest changes in perception after receiving additional safety information. Sustainability information had the most significant impact on those not familiar with cultured meat and individuals over 44 years old. Familiarity with cultured meat was key in understanding how different groups' perceptions were influenced by positive information.				
56	Facilitating						
57	Other		57 % of the respondents said they did not have prior knowledge about cultivated meat. Not extensively discussed.				
58	Facilitating		The majority of consumers in both the UK and the US are not at all familiar with cultivated meat currently (54–59 %). Early adopters' group is more familiar than the general population, although the rate remains low. Early adopters are open to and supportive of technology, even when they are unfamiliar with it, to a greater degree than the overall population. Finally, younger generations were more familiar than older ones.				
59	Facilitating		Significant impact of familiarity on positive attitudes to cultured meat.				
60	Neutral		Participants in 'clean meat' condition were significantly less familiar with IVM compared to those in the 'lab grown meat' and 'cultured meat' conditions. Since familiarity was self-reported, it's possible that the names 'lab grown meat' and 'cultured meat' only appeared more familiar rather than indicating actual greater familiarity. Despite expectations that higher familiarity would lead to greater acceptance, those in the 'lab grown meat' and 'cultured meat' conditions showed lower acceptance. Therefore, the difference in familiarity is likely due to name perception rather than actual knowledge, leading to its exclusion as a covariate in further analyses.				
61	Neutral		The regression analysis revealed that food neophobia did not account for the low acceptance of cultured meat, whereas a preference for naturalness did. For cultured meat, low perceived naturalness, rather than a lack of familiarity, appears to be the more significant issue. This finding supports previous research indicating that low perceptions of naturalness mediate reduced willingness to consume cultured meat.				
62	Neutral		Significant differences were found in awareness and knowledge of cultured meat across different naming conditions. While many participants had heard of "artificial meat," fewer had prior knowledge about it. The name "artificial meat" was more familiar to Chinese consumers compared to "cultured meat" and "cell-based meat," yet it negatively impacted consumer attitudes and intentions more than the other names. These results suggest that choosing names for novel food products should account for emotional impact and technology associations, as familiarity alone is not enough. The study found that although many participants had heard of "artificial meat," most had limited understanding of what it entailed.				
63	Facilitating		The knowledge tests confirmed that consumers are generally more familiar with plant-based meat than with cultured meat. Japanese respondents with high food neophobia preferred conventional meat over cultured meat, reflecting their lack of familiarity with the latter. However, young Japanese consumers showed a				

Methodology: "A test for multicollinearity between the independent variables revealed a high correlation between awareness and knowledge. To avoid this problem, we included only knowledge in the regression model".

Population: the sample was younger and more well- educated than the general population in China.

Methodology: knowledge test (to assess the familiarity) was on cultured meat in general. In the experiment: the

(continued on next page)

(continued)

Studies overview

N.	Title	Study type	Authors	Journal	Corresponding author affiliation	Country where the study was conducted	Period of data collection	Publication year	DOI
		preference for cultured meat over conventional meat. Given that young consumers in both countries currently have limited knowledge of alternative meats, targeted marketing messages could significantly shape their preferences.						information provided was about a burger.	

Data availability

All data relevant to this scoping review are available in Appendices A-E and can be accessed at: <https://osf.io/46jgn/>.

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