



**“Exploring Consumer Perceptions and  
Acceptance of Lab-Grown Meat in  
Relation to Environmental Health  
Factors”**

**ENH531- Environmental Health Project (2024-25)**

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## **1.0 Abstract**

In recent years, lab-grown meat has emerged as a viable and sustainable alternative to traditional meat, offering potential environmental and animal welfare benefits. However, the successful integration and acceptance of lab-grown meat relies heavily on how consumers perceive the product. This research utilised a qualitative approach to explore consumer perceptions and acceptance towards lab-grown meat, focusing on perceived benefits and barriers related to food safety, environmental sustainability and animal ethics. Three focus groups ( $N=18$ ) were conducted, and their discussions were analysed manually using thematic analysis. The analysis revealed five key themes: understanding and awareness, food safety and public health, environmental impacts, animal welfare, and comparison to plant-based and familiar foods. Participants expressed concerns about components used during the production process, nutritional deficiencies, long-term health effects, and effectiveness of future regulation. While many recognised the product's potential environmental and animal welfare benefits, such as reduced land use and avoidance of animal slaughter, some expressed doubts whether the product would fulfil its proposed sustainability claims. Comparisons were drawn between lab-grown meat and plant-based meat alternatives; some viewed plant-based alternatives as a trusted and familiar product, others remained unconvinced that such alternatives would replicate the sensory qualities traditional meat offers. Overall, the findings demonstrate that consumer attitudes toward lab-grown meat are framed by a combination of knowledge gaps, perceived risks, moral values and comparison to trusted alternatives. This qualitative research uncovers a deeper insight into consumer perceptions and supports future development by understanding and addressing key issues to promote the acceptance of a sustainable novel food.

**Key words:** Lab-grown meat; Consumer perception; Consumer acceptance; Food safety; Environmental sustainability; Animal welfare

## **2.0 Research Topic**

“Exploring Consumer Perceptions and Acceptance of Lab-Grown Meat in Relation to Environmental Health Factors”

## **2.1 Research Rationale**

Lab-grown meat (LGM) (also known as cultured or cultivated meat) is an emerging and innovative novel food intended to address current challenges of ‘environmental deterioration and animal suffering’ tied to traditional agricultural practices (Nobre, 2022). Although this new food technology offers a potential shift in the global food system, it is crucial to ensure that consumer views and concerns remain a priority to promote acceptance whilst creating sustainable solutions. Existing studies on consumer’s perception of LGM has relied heavily on quantitative methods, often from a marketing perspective, focusing on consumer purchasing intentions without exploring deeper concerns related to public health (Silva & Pereira, 2022; Schwandt, 2019; Kubacak et al., 2022). This study offers a qualitative focus to understand consumer perceptions, ensuring they are appropriately addressed to achieve environmental and ethical goals without compromising on consumer health and trust. The study’s findings can offer evidence-based insights for shaping institutional planning and support LGM development by allowing consumers to make informed choices.

## **2.2 Research Aim**

To explore consumer perceptions and acceptance of lab-grown meat with a focus on food safety, environmental sustainability and animal welfare considerations

## **2.3 Research Objectives**

1. To investigate consumer views on the food safety, environmental sustainability, and ethical impacts associated with lab-grown meat.
2. To understand how consumer perceptions influence acceptance or rejection of lab-grown meat as an alternative to traditional meat.

### **3.0 Introduction**

As the world's population continues to grow, the global demand for meat rises with the Food and Agriculture Organisation projecting a 73% increase of meat demand by 2050 (FAO, 2011). The global food system contributes 35% of anthropogenic greenhouse gas emissions, with animal-based products accounting for 57% of the emissions (Lin-Hi et al., 2023). The increasing global demand for meat has raised concerns regarding its environmental footprint and ethical issues over animal welfare (Verbeke et al., 2015) with a more sustainable approach required for meat production. The emergence of alternative proteins such as LGM, have become a solution to address these challenges, evolving as an alternative for traditional meat in current diets. Bryant and Barnett (2018) highlight the importance of understanding consumer attitudes towards LGM, given the history of previous consumer resistance to similar food technologies. With consumer acceptance subject to being the 'biggest barrier' LGM may face, the product cannot truly be a sustainable alternative if it's not incorporated into global diets (Bryant and Barnett, 2018).

### **4.0 Literature Review**

#### **4.1 Lab-Grown Meat**

LGM is considered a novel food due to its lack of consumption in the UK before 15<sup>th</sup> May 1997 (FSA, 2024). The product is created by cultivating bovine muscle stem cells obtained from a living animal. The cells grow in a bioreactor, using nutrient-rich serums to stimulate their development and result in an animal-like product (Mancini & Antonioli, 2019). LGM has been identified as an alternative to traditional meat while mitigating environmental and public health risks associated with current agricultural practices (Bryant & Barnett, 2020).

This emerging technology is viewed as a sustainable solution for 'consumers who want to keep eating meat' (Padilha et al., 2022). Port (2012) states that in-vitro production processes can 'reduce energy consumption and land usage by 99%' alongside 90% reduction in water usage (Padilha et al., 2022).

## **4.2 Consumer Attitudes Towards Novel Food Technologies**

Pakseresht et al. (2022) states how consumer attitudes play a crucial role in accepting novel food technologies. While such products enable innovation, they are not always readily accepted by the public (Siegrist, 2008). Consumers often view new food technologies with caution. This is due to the essential nature of food in daily life, with attitudes shaped beyond scientific understanding (Lucht, 2015). Research by Siegrist and Hartmann (2020) highlights that due to heuristics, consumer's general attitude towards food technologies will ultimately influence their perception and acceptance of LGM. Similar technologies such as GMOs that have faced 'widespread rejection' increases concerns on future acceptance around LGM (Siegrist and Hartmann, 2020). This is further supported by Verbeke et al. (2015) stating that perceptions relating to the naturalness of food technology will be a key determinant in acceptance or rejection of the product. Consumer reliance on heuristics with misinformed risks, further contributes to the negative perceptions around perceived unnaturalness and is often regarded as a risk to public health and safety (Siegrist et al., 2018).

Although many recognise its 'exciting potential' (Tomiya et al., 2020), others are concerned novel technologies overshadow 'immediately available alternatives' such as plant-based meats. Padilha et al. (2022) further highlights that plant-based meats are viewed more positively across all attributes when compared to LGM.

## **4.3 Food Safety and Public Health**

Consumer acceptance of LGM is significantly influenced by perceptions around the product's safety and public health implications. As the product is cultivated from animal stem cells in a sterile and controlled environment, the production process of LGM could potentially be safer than traditional farming, reducing the risk of E.coli or Campylobacter (Eufic, 2023). Despite this, consumers are often sceptical about unknown safety risks associated with the production process (Bryant and Barnett, 2020). Following a consumer survey conducted by the Food Standards Agency (FSA) on alternative protein sources, 30% of consumers were 'unwilling to try lab grown meat because they don't think it's safe to eat' with 27% potentially willing with assurance to product safety (FSA, 2022). Furthermore, studies highlight that consumers view LGM as 'significantly less nutritious'

to traditional meat with the view that an artificial process may diminish the product's nutritional quality (FSANZ, 2023). Additionally, consumers have voiced 'trust-related issues' over future regulation (Verbeke et al., 2015). Following the identification of 53 potential hazards throughout the production process, including heavy metals, by-product residues and allergen issues (FAO&WHO, 2023), many consumers interpret such findings as high risk with currently 'no standardised testing approach' implemented to assure the safety of LGM (Zandonadi et al. 2025).

#### **4.4 Environmental Impact**

LGM has the potential to address a range of environmental issues posed by extensive agricultural practices in society today (Ho et al., 2023). Life-cycle assessment studies have indicated that the production of LGM can reduce greenhouse gas (GHG) emissions by 96%, with '99% lower land use, and 82–96% lower water use' (Mattos and Tuomisto, 2011). Without the need to slaughter animals, LGM production should reduce current levels of air, soil and water pollution derived from practices linked to current livestock farming (Bryant and Barnett, 2020). Despite this, consumer's perception of the environmental promises is varied. Dunpot et al. (2022) states that individuals with 'green consumption values' have been considered a driver for acceptance of LGM, indicating that those with strong environmental concerns perceive LGM as relief from intensive agricultural practices. Despite surveys showing that 80% of the UK population have expressed concern around climate change (Salas, 2024) the recent FSA survey presents a nuanced picture with only 12% of participants willing to try LGM if they 'know it's better for the environment' (FSA, 2022). This discrepancy suggests that perceived environmental benefits do not automatically result in acceptance of LGM with additional factors shaping consumer choices. Nevertheless, consumers have perceived LGM as a promising solution for global food security (Verbeke et al., 2015; Weele & Driessen, 2019).

Other consumers have challenged whether the resources and energy required to produce LGM may undermine the environmental benefits. Several research papers (Lynch and Pierrehumbert, 2019; Tuomisto and Mattos, 2011; Gursel et al., 2022) have raised concerns regarding high energy requirements during the bioreactor process for optimal cell growth. Verbeke et al., (2015) also expresses consumer doubts about the proposed



benefits with many questioning ‘the amount of energy needed...on an industrial scale’ and further concerns around ‘inevitable industrialisation’.

#### **4.5 Animal Welfare and Ethical Considerations**

The strong moral improvements that LGM can offer are a key driver for acceptance, eliminating ‘the need to raise and slaughter animals’ (Anomaly et al., 2024). LGM is suggested to remove ‘the unpleasant ethical after-taste associated with conventional meat’ (Dilworth and McGregor, 2015). According to several studies, many appreciate that LGM will reduce animal suffering and improve welfare (Mancini and Antonioli, 2019; Verbeke et al., 2015; Bryant and Dillard, 2019). However, this view is not widely accepted, particularly amongst individuals who have strong ethical concerns regarding livestock welfare. Wilks and Phillips (2019) noted that those who hold strong animal welfare values, often vegetarians and vegans, remain reluctant to try the product. Due to the reliance on foetal bovine serum, obtained from the slaughtering of a pregnant cow, individuals seeking cruelty-free foods contradict slaughter-free claims with LGM production still somewhat tied to traditional agricultural practices (Dilworth and McGregor, 2015). From this, Bryant and Sanctorem (2021) found that these individuals favour plant-based meats, with variety and availability satisfying their needs on a dietary and ethical level. This is further supported by Chriki and Hocquette (2020) who believe that continued organoleptic improvements with plant-based meats may increase consumer appeal and reduce the acceptance of LGM development. Consequently, while LGM can reduce animal suffering, ethically motivated individuals ‘exhibit a stronger preference for plant-based’ which offers LGM’s proposed benefits without the use of animal-derived products (Slade, 2018).

#### **4.6 Research Gap**

Previous research in consumer perceptions and acceptance towards LGM has heavily relied on quantitative data collection through surveys and questionnaires (Dupont et al., 2022, Chang et al, 2024). Current studies capture a general overview of how consumers perceive LGM with an indication of acceptance or rejection. However, such research lacks a deeper understanding of why consumers feel confident or concerned about LGM’s key attributes, including food safety, sustainability, and animal welfare. To bridge the gap, this

research will explore consumer perception beyond quantitative metrics by conducting focus groups to allow for in-depth exploration as to why consumers hold such perceptions.

Furthermore, this study is particularly relevant following the FSA's recent Sandbox Programme focused on assessing the safety of 'cell-cultivated products' as an alternative protein (FSA, 2024). Although LGM is not yet available in the UK market for consumption, the product has been approved for pet food in the UK (BBC, 2025). As LGM becomes a probable food option in the future, this study offers a deeper insight into potential consumer adoption.

## **5.0 Methodology**

### **5.1 Qualitative Data Approach**

A qualitative research design was chosen to gain a 'detailed description of participants' feelings, opinions, and experiences' towards LGM (Rahman, 2017). This method is valuable when exploring new novel food technologies, where a range of views and opinions exist which may not be fully explored and understood through quantitative methods. Previous research within this topic is mainly quantitative (Mancini, 2019; Wilks et al, 2019), providing a broad understanding of consumers views on LGM but fails to capture underlying factors that shape consumer perceptions.

### **5.2 Use of Primary Research through Focus Groups**

The study utilised primary research with the use of focus groups to address this current gap. Kabir (2016) supports primary data collection, considering it 'reliable, authentic and objective'. Primary research was considered suitable given the emerging nature of LGM with public perceptions and acceptance not fully established therefore capturing direct and relevant insights (Pyo et al., 2023).

### **5.3 Selection Procedure**

Purposive sampling was used to ensure a diverse range of perspectives were provided on the perception and acceptance of LGM. Participants were selected to represent diverse demographics, allowing for meaningful contributions on the topic. Aligning with

Morgan's (1997) recommendations for focus group dynamics, the sample consisted of eighteen participants ( $N= 18$ ), divided into three focus groups of six allowing for open yet manageable discussions (Engel & Schutt, 2023).

#### **5.4 Conducting the Focus Group**

The data was collected by conducting online focus groups using Microsoft Teams. Archibald et al. (2019) highlights the benefits of using online visual platforms when gathering qualitative data as non-verbal cues capture genuine emotion, adding depth to the data collected. Each session lasted 30-40 minutes, providing each participant the time and opportunity to contribute their opinion and allowing for meaningful discussions. All sessions were audio-recorded with participants' prior consent, enabling written transcripts to review key findings and insights that may have been missed during notetaking.

All three focus groups followed a uniform structure by initially assessing the participants' knowledge and awareness of LGM. This was followed by a short informative video explaining how it's produced, and its intended benefits. Lewis and Ritchie (2003) promote the use of preparatory materials allowing all participants to have a baseline understanding of the topic and stimulate more meaningful discussions. Following the video, participants were encouraged to discuss their views on LGM, with a focus on food safety, impact on public health, environmental sustainability and ethical consideration. The structure was guided by open-ended questions with follow-up enquiries to explore participants' perspectives for further insight.

#### **5.5 Data Analysis**

The focus group transcripts were analysed using thematic analysis – a method for identifying and interpreting key themes or patterns within qualitative data (Braun & Clarke, 2017). Each transcript was manually reviewed to identify significant phrases with a repeated pattern, which were grouped into broader themes for contextual understanding (Nowell et al., 2017).

#### **5.6 Ethical Consideration**

All ethical considerations were taken when designing this study. All participants provided informed consent, including agreement to record the discussion prior to the focus group with all data anonymised. No potential harm to the participants or researcher was identified through avoidance of sensitive topics and the option to skip questions. The study ensured no vulnerable participants participated in the group discussion with all individuals 18+ years old.

### **5.7 Piloting**

The focus group was piloted on a small sub-sample of the population to assess clarity and flow of discussion. A minor adjustment was made to encourage deeper responses by incorporating targeted follow-up questions for elaboration.

## **6.0 Results**

The focus group included 18 participants (11 females, 7 males), aged between 22 and 63 years. The sample represented a diverse range of dietary preferences, including meat eaters, flexitarians and vegetarians. Five central key themes were identified through manual thematic analysis with the emergence of sub-themes through discussions. As summarised in Table 1, the themes reflect a mix of support and scepticism.

**Table 1. Summary of Main Findings**

Theme	Sub-Themes	Participants (n)	Mentions	Illustrative Quotes
Knowledge and Awareness	Limited understanding of LGM	n= 8	8 times	"I have never heard of it before" (P9)
	Knowledge informed by media coverage	n= 6	6 times	"I seen BBC has released a news article" (P1)
Food Safety and Public Health	Perceived unnaturalness	n=7	8 times	"It seems quite unnatural...it's not real meat" (P2)
	Concerns about long-term health effects	n=10	16 times	"I feel the biggest concern around this product would be the long-term effects." (P3)
	Regulatory distrust	n=10	16 times	"I have concerns around if it's going to be regulated properly." (P5)
	Reduced risk of contamination (zoonotic diseases, pathogens etc.)	n=5	7 times	"It [LGM] could reduce foodborne illnesses" (P16)
Environmental Impact	Recognition to efficient land and water usage	n=6	10 times	"It doesn't take as much water and land" (P1)
	Concerns about high energy requirements	n=3	4 times	"It's [LGM] still going to require a lot of energy" (P6)
	Preference to alternative sustainable practices	n=4	6 times	"I would rather contribute in other ways like recycling" (P15)
Animal Welfare & Ethics	Support of slaughter-free concept	n= 16	20 times	"It's great to hear animals don't need to be killed" (P13)
	Conflict with vegetarian/vegan values	n=2	6 times	"It doesn't change my perspective I still see it as an animal product" (p16)
Comparison to Plant-Based Alternatives	Preference for familiar products	n=6	13 times	"I'd rather choose plant-based meats" (P7)

## **6.1 Knowledge and Awareness**

Across all focus groups, participants expressed low levels of knowledge and awareness about LGM with many ( $n= 10$ ) stating they had never heard of LGM prior to attending the focus group. The lack of knowledge often led to participants immediately questioning its qualities, perceiving it as a **"processed food" (P15)** with one participant assuming **"it's not from an animal" (P10)**. Although unfamiliar, several participants ( $n=8$ ) had a vague idea of the commodity through recent media coverage, particularly in relation to its recent introduction into animal feed markets in the UK. However, knowledge was often surface-level and framed by social media or recalling news articles. Perceptions of unfamiliarity were often articulated with a tone of uncertainty and apprehension:

***"I've heard of it before, but I didn't really know that it was going to be coming into the market for human consumption" (P1)***

***“I’ve heard bits and pieces about it, but I haven’t heard too much information. I’m not sure about how it’s made” (P8)***

***“I hadn’t heard of it before... but I don’t really like the sound of it.” (P14)***

Overall, low levels of knowledge and awareness was a prominent theme with participants constrained by limited information; however, it was noted that those unfamiliar with the product often perceived it as artificial and unnatural, expressing concerns across other themes.

## **6.2 Food Safety, Public Health and Regulation**

Concerns regarding the food safety risks, including long-term health effects, and regulatory concerns were a prominent theme across all focus groups. Many participants ( $n=10$ ) expressed concern over the unknown long-term health risks associated with consuming LGM, given its relatively recent and ongoing development. There was widespread apprehension about the possibility of ***“new risks... and new allergic reactions” (P8)*** arising from the combination of growth mediums, synthetic materials and biotechnology used throughout the production process. Participants voiced these concerns in various ways:

***“What are these nutrients and minerals.... have these been tested in terms of if this going to affect our health both in the short term and the long term?” (P5)***

***“I feel the biggest concern around this product would be the long-term effects.” (P3)***

Participant concerns were linked to doubts about new food products entering the food chain with insufficient testing, with participants expressing fear whether LGM would undergo stringent checks to ensure public safety. This apprehension resulted in several participants ( $n=7$ ) perceiving the product as ***“unnatural” (P2)*** with one participant having a sense of unease reporting- ***“the fact it’s called lab seems very unnatural” (P16)***. Associations with the product’s name and process involved made many participants question its purity and quality.

Despite high levels of perceived risk, a minority of participants ( $n=5$ ) identified potential benefits, noting that the controlled environment and sterile lab conditions **“may reduce foodborne illnesses” (P10)** and eliminate risks around **“zoonotic disease” (P17)**. Furthermore, one participant perceived potential benefits on how the product could be tailored to meet **“a high standard of nutritional content” (P3)**. Participants who perceived potential advantages expressed slight levels of acceptance among the new novel food; however, still cautious by underscoring the importance that **“transparency is a priority” (P7)** and ensuring product safety through **“long-term studies” (P5)**.

Regulatory control emerged as a critical issue. Several participants ( $n=10$ ) were seeking reassurance for appropriate regulatory frameworks before entering the market. One participant expressed fear that LGM will be **“controlled by big companies who will be making profit” (P12)** with financial motives taking priority over public health and safety. Such concerns were articulated by several comments including:

**“It would need to be strictly regulated with the right people” (P17)**

**“I have concerns around if it's going to be regulated properly.” (P5)**

As shown in Table 1, food safety and public health were a key theme throughout the focus groups with the topic referenced multiple times throughout discussions.

### **6.3 Environmental Impact**

Discussions regarding the potential environmental benefits that LGM claims to offer were a mixture of optimism and scepticism. Several participants ( $n=6$ ) recognised the environmental benefits as **“it has the potential to reduce a lot of the land use and excessive resources” (P10)** and alleviate **“food security issues in countries that lack physical access to proteins” (P3)**. Conversely, one participant expressed strong views feeling that this issue doesn't apply to Northern Ireland (NI) as local farmer's **‘environmental burden’ (P9)** is significantly less to intensive factory farms in other countries. Furthermore, the participant stated that LGM will contribute to the environmental impact with additional **‘food miles’** believing NI lacks the facilities to locally produce the product.

This was followed with some participants questioning how sustainable the process will be in practice:

***“It would require serious amounts of energy with consistent supply of electricity for keeping up with temperatures during the production process” (P12)***

Other discussions throughout the focus groups felt that industry will only be viewed as truly sustainable if applying cleaner sources through ***“renewable energy” (P6)***. Nevertheless, participants could perceive some environmental benefits with cattle farming being ***“a major source of deforestation” (P1)*** with many accepting the possibility of a sustainable food product in the future if produced efficiently. Those who questioned its perceived benefits suggested in contributing to other sustainable practices by ***“recycling... and trying to cut down on the use of fossil fuels” (P15)***. One participant mentioned increased funding for local farmers such as incentives to promote ***‘regenerative agriculture’ (P12)***.

Overall, environmental considerations were a reoccurring theme as displayed in Table 1, with general positive views; however, many sought clarifications that production is truly sustainable. All participants demonstrated a collective understanding of current issues within the environment and how measures need to be applied to mitigate such impacts through LGM or other alternative practices.

#### **6.4 Animal Welfare and Ethical Considerations**

Throughout all focus groups, discussions regarding the benefits of LGM by improving animal welfare had been one of the few areas where participants broadly agreed. Most participants ( $n=16$ ) recognised that LGM ***“would reduce slaughtering of animals” (P14)*** therefore viewing this product as a moral and ethical advantage to traditional meat, with one participant stating that people can ***“eat meat without feeling bad that animals had to be killed” (P12)***.

Some participants voiced that LGM has the potential to serve as a new source of food for those who abstained from traditional meat due to welfare reasons, viewing it as an ***“opportunity” (P10)*** for many. Conversely, those who tended to have strong ethical



concerns doubted that the product was completely cruelty-free as ***“you're still injecting animals to get their stem cells” (P1)***. Although they stated it didn't align with their values, they strongly agreed it was a promising step forward to improve animal welfare.

### **6.5 Comparisons to Plant-Based and Familiar Foods**

One third ( $n=6$ ) of participants frequently compared LGM to plant-based meat alternatives, viewing such alternatives as a natural and safer option when aiming to reduce meat consumption. Participants suggested that:

***“We should be promoting plant-based meats more if we were looking to steer away from agricultural practices for sustainable reasons”. (P16).***

***“Plant-based meat alternatives are more natural way to reduce meat consumption but also to help the environment and is overall a healthier option for our bodies.” (P8)***

***“Plant based products have been around for so long you know I trust them” (P1)***

However, participants who favoured plant-based meats were typically accustomed to them and incorporated within their current diet, therefore the familiarity had contributed to the preference of such alternatives with LGM being seen as ***“unnecessary” (P16)***. Conversely, some disagreed, valuing the organoleptic qualities of meat such as ***“texture or flavour” (P15)*** with a continued interest to consume meat regardless of plant-based options.

Overall, the findings reveal a range of key themes throughout focus group discussions, highlighting the complex nature of consumer perceptions and acceptance of LGM. While certain participants perceived environmental benefits with the promise to reduce animal suffering, others remain hesitant due to uncertainties of new novel food technologies with a lack of long-term studies and regulatory gaps posing a risk to public safety.

## **7.0 Discussion**

The discussion interprets the study's findings which explored consumer perceptions and acceptance of LGM with a focus on perceived opportunities and challenges to food safety, environmental sustainability and ethical considerations.

## **7.1 Knowledge and Awareness**

In the study, most participants expressed limited knowledge and awareness of LGM, with those mildly familiar through media coverage related to animal feed. The lack of sufficient information appeared to cause heightened concern with a range of negative perceptions of LGM. This aspect is supported by Byrant and Barnett (2022) who found that limited consumer knowledge correlated with negative attitudes; however, once provided with scientific and in-depth information, consumers acknowledged its potential benefits with increased willingness to accept. Although the product remains in initial stages of development to review its safety (FSA, 2025), providing scientific and evident-based information can allow consumers to make informed choices, helping to build public trust and facilitate acceptance for future development of the product, a concept support by Mancini & Antonioli (2020).

## **7.2 Food Safety and Public Health and Regulation**

Participant's apprehension on food safety concerns prominently shaped their acceptance on LGM. Consistent with insights from the FSA (2023), even those willing to try LGM expect safety as a fundamental requirement before accepting the product. Discussions on overall food safety raised specific concerns to allergen and nutritional uncertainties with potential long-term health effects. Such reflections align with existing literature (FSANZ, 2023; FAO&WHO, 2023; Zandonadi et al., 2025) expressing consumer anxieties around product composition therefore suggesting that critical transparency with the production process and ingredients will be essential to increase public confidence. Public scepticism on perceived unnaturalness was viewed as a barrier to acceptance which has been widely observed (Siegrist et al., 2018 & Verbeke et al., 2015) indicating that unfamiliarity of new food technologies often fosters negative perceptions of LGM. The findings; however, countered research by FSANZ (2023) with some suggesting the product's potential to have a nutritional advantage over traditional meat. Such findings contradict FSANZ's study that found consumers considering the product as 'less healthy or/and less nutritious'. Such divergence in views may arise from methodological differences; with quantitative surveys conducted by FSANZ seeking general attitudes, this

qualitative study enabled participants to explain their views therefore offering comprehensive insights. The study expresses an opportunity for industry to focus on the nutritional advancements (e.g, higher levels of iron or B12) the product could offer to potentially increase acceptance. The study's findings on regulatory concerns echoed past research (Verbeke et al, 2015) which emphasised consumers demand for 'regulation and proper labelling' to promote acceptance. Insights from this study underscore the need for open and transparent engagement both from regulators and producers to ease apprehension around perceived risk and regulatory concerns. Failure to address the public's concerns may result in widespread rejection and limiting its potential benefits as an innovative food for environmental sustainability and animal welfare. As departments such as FSA begin to assess the product, robust regulatory frameworks must be implemented to build public trust and increase acceptance to become a sustainable solution.

### **7.3 Environmental Impact**

The focus group discussions echoed findings from Ho et al. (2023) with participants acknowledging the environmental advantages of LGM; however, positive perceptions did not guarantee acceptance of the product. Consistent with findings from the FSA (2023) although consumers understood global environmental challenges, many were still unwilling to consume LGM, favouring alternative practices such as recycling to achieve environmental goals. This suggests that many will choose existing and familiar habits therefore reducing the appeal to adopt LGM as a sustainable solution. Furthermore, participants in the study reflected similar scepticism to Verbeke et al. (2015) regarding the product's environmental claims and credibility to its perceived sustainability. Concerns around the potential energy demands during the production of LGM has been echoed throughout many studies (Lynch and Pierrehumbert, 2019; Tuomisto and Mattos, 2011; Grusel et al., 2022). This suggests that without proven environmental benefits, LGM may struggle to gain widespread acceptance and trust. Participants suggested the utilisation of 'renewable energy' sources to create a fully sustainable process, indicating growing acceptance if this approach was taken, a perspective mentioned by other participants in past literature (Verbeke et al, 2015; Weele& Driessen, 2019).

#### **7.4 Animal Welfare and Ethical Considerations**

Participants positively reflected that LGM eliminates the need for animal slaughter viewing it as a more “humane” option for meat consumption. This aligns with a range of studies including Mancini and Antonioli (2019) who found animal welfare attributes a ‘pivotal factor for consumer choice’ with participants viewing this attribute as an advantage to traditional meat. Furthermore, Bryant & Barnett (2018) noted improved animal welfare as a ‘common benefit’ of LGM that many participants perceived positively. The findings suggest that LGM may be more acceptable to those currently consuming traditional meat and therefore serving as a pragmatic solution without changing current dietary habits. However, despite this recognition, the focus group found some participants, particularly those ethically motivated, question such claims of being completely slaughter free. Such findings align with a study conducted by Dilworth and McGregor (2014) who found that many consumers agree the product will reduce animal suffering but objects the belief that it will reduce the number of animals living. This suggests that the product may not meet requirements for those with stronger ethical principles and consequently will be less inclined to accept and adopt the product into their diet. The results suggest that although LGM’s animal welfare advantages are a compelling attribute, ethical acceptance is hindered by doubts around the products authenticity, questioning if it is a true alternative to meat. The findings, in alignment with previous literature (Bryant & Barnett, 2018), suggest that ethically motivated consumers will persist in consuming plant-based alternatives as a preferred choice, highlighting the complexity of consumer acceptance on LGM.

#### **7.5 Comparison with Plant-Based and Familiar Foods**

Despite not being anticipated as a major theme in the literature review, the emergence of plant-based meat comparisons was a regular topic of discussion throughout the study. Participants described plant-based meats as a reliable and trustworthy product that already fulfils the environmental and ethical objectives LGM propose to achieve. Current findings align with Padilha et al. (2022) who found plant-based meats more favourable in all attributes when compared to LGM. Such comparisons imply that the development of LGM cannot be justified due to the existence of plant-based alternatives with LGM

essentially replicating existing options therefore questioning its relevance. Conversely, given Verbeke et al. (2015) predictions for an increase in global meat demand, widespread acceptance to a plant-based diet may prove challenging- reflected by perceptions that such alternatives fall short of the sensory qualities they believe only meat can offer. Furthermore, Padilha et al. (2022) reports that consumers, particularly meat eaters, perceived plant-based alternatives 'less enjoyable' due to the lacking 'palatability'. Such findings indicate possible demand for LGM as it provides similar qualities to traditional meat. Conversely, Chriki and Hocquette (2020) believes such perceptions could be changed with recent improvements to plant-based meat's 'sensory traits' and therefore could meet organoleptic standards traditional meat offers.

## **8.0 Research Limitations**

A subset of limitations should be addressed within this qualitative study. Primarily, the cohort of 18 participants across three focus groups limits the range of perspectives expressed. Furthermore, purposive sampling was chosen by the researcher for participant selection resulting in discussions restricted to one geographical location, subject to selection bias and limiting diversity of broader societal opinions. Importantly, regional and cultural differences may result in varied attitudes and acceptance levels with LGM, therefore opinions expressed within this study may not resonate with other groups.

Qualitative studies, including focus groups, allow participants to express opinions through in-depth discussions; however, such confrontation may inhibit some participants from expressing their true views, particularly if it is not a popular one. As the study's results convey widespread doubt, particularly concerning product safety, individuals may have been reluctant in expressing possible benefits with the risk of adverse reactions from those criticising the product. Consistent with other qualitative research, the findings are interpretive and should be considered an exploratory insight into consumer perception and acceptance of LGM.

## **9.0 Conclusion**

This study employed a qualitative approach with an aim to explore how consumers perceive and accept LGM, focusing on food safety, environmental and animal welfare considerations. Following analysis of focus group discussions, the findings reveal five key themes that reflect the complex nature of consumer views on this novel food. The results show that while participants perceived potential environmental and ethical benefits, concerns regarding the food safety of LGM with perceived unnaturalness and regulatory distrust often outweighed the product's proposed potential. Participant responses highlighted the importance of product transparency with verification that the product will deliver its sustainability claims. Through in-depth discussions, the findings successfully provided a valuable insight into how consumer perceptions are shaped and adding meaning to previous quantitative studies.

### **9.1 Recommendations**

The research highlights that providing transparent and accessible information for consumers regarding production processes, nutritional content and allergen information will be crucial for establishing consumer trust. A holistic approach must be taken to not only assure product safety through robust testing, but ensuring the product aligns with consumer expectations regarding its naturalness, product composition, and institutional trust. Early engagement through open communication regarding certified product sourcing, production processes, and clear labelling can increase consumer confidence. Furthermore, addressing participant expectations on environmental sustainability will be important to gain consumer support as a sustainable alternative, recommending the use of renewable energy during the production process. With significant recognition to animal welfare improvements, consumers highlight this attribute as a major advantage to traditional meat; however, transparency must remain with future regulators and industry regarding the product's components, ensuring those with firm ethical commitments can clearly assess if LGM aligns with their values.

## **10.0 Future Research**

Future research should build upon current findings from this study by involving a broader cohort with a range of ages, socio-economic groups and cultural backgrounds to gain findings that are representative of the wider population. Furthermore, data collection through a mixed method approach (qualitative and quantitative) can allow the researcher to assess the prevalence of key themes found across broader society. Additionally, evaluating the effects of interventions such as information sharing and practical experiences through taste testing would stimulate real-world scenarios and provide an accurate reflection on consumer views and acceptance levels of the product. As a rapidly evolving product with increasing familiarity, longitudinal studies can observe potential shifts in consumer perceptions and acceptance with continued product development over time.

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## **13.0 Appendices**

### **13.1 Appendix A- Invitation Email to Attend Focus Group**

Morning Natasha,

I hope you're well!

I'm inviting you to take part in a focus group for my research around 'Exploring Consumer Perception and Acceptance of Lab-Grown Meat'. I'm really interested in hearing your thoughts with this product, especially your views on its food safety, environmental, and ethical impacts. Whether your perceptions are positive, negative, or neutral, your honest perspective is valuable and will help provide a well-rounded understanding of how people feel about these important issues.

The focus group will take place via Teams on 20<sup>th</sup> March at 6:00p.m

To ensure I capture everyone's views accurately, I would like to record the session for transcription purposes. Please be assured that all recordings and transcripts will be kept strictly confidential and anonymised-your name and any identifying details will not appear in any reports or publications.

If you're happy to join, could you please reply to let me know:

- That you're okay with the session being recorded for research purposes
- Your current diet type (e.g., omnivore, vegetarian, vegan, flexitarian, etc.)
- Optionally, your age or age range (this just helps us understand the diversity of our group, but it's completely up to you)

I will send the Microsoft Teams link for the session to you in due course.

If you have any questions or concerns, or just want to know more before deciding, feel free to ask-I'm happy to chat!

Thank you so much for considering this. Your perspective would be really valuable, and I'd love to have you involved.

Kind Regards  
Naoise McLaughlin

## 13.2 Appendix B – Transcript of Focus Group 1

Participant Number	Age (Optional)	Dietary preference
P1	56	Vegetarian
P2	48	Meat Eater
P3	24	Meat Eater
P4	52	Meat Eater
P5	34	Meat Eater
P6	22	Meat Eater

**General introduction and greetings:** Evening everyone. How are we all today? Very good, good thank you. Hiya. Everybody. Yes, we will just give the other guys one minute to get online, get everything sorted and then we can start the session. I will give a short introduction. Even though most of you guys already know me but I just want to give a brief explanation as to why we're all here today. Perfect. OK. So, welcome everybody. And I know that you all got my meeting invite for today's discussion in the focus group, but I will just give a quick overview as to who I am and why I am holding this discussion today. So everyone join my name is Naoise McLaughlin and I am currently an environmental health student at Ulster University and I am conducting research on exploring consumer perceptions of lab grown meat as I am interested in the environmental health side it will really be based around food safety and health, environmental impacts, public health and animal welfare but any other views are more than welcome with this topics if wish to be discussed and I value you all for being here today to just have an open discussion. To share your views and opinions on this product so we'll just have a nice open discussion and there will be a video as well too. Everyone, all discussions are welcome, positive,

negative, neutral and just a few ground rules, so I would prefer just if one person speaks at a time. You know there's no right or wrong answer and everyone's opinions should be respected. And thank you everyone for allowing me to record this meeting. So this session will last approximately 30 minutes to one hour just depending on how you get on how the discussion conversation goes forward. I just want to grasp a quick understanding of what you already know and we'll then watch a short video and finally we will talk and have open discussion about your thoughts and feelings towards lab grown meat. No problem. That's OK with everybody. Yes, yes, nature. That's perfect. Yes, looking forward to it. Perfect. OK, let's.

**Moderator:** So just to OK everyone, so just to get obviously understanding on the general knowledge of this product and I just want to ask you all, have you ever heard of lab grown meat before? And I mean, if you have, what's your initial thoughts? Anyone is welcome to jump in.

**P1:** yes, I have heard of it before because of it is now in animal products icing on Dragons Den. So I've heard of it before, but I didn't really know that it was going to be coming into the market for human consumption.

**P4:** Yes, same as yourself, P1. I have heard that before and. To figure on the news, and I'm saying that they are doing some work around it now. I seen BBC has released a news article from the Food Standards Agency around it.

**P3:** No, I actually haven't. I think from the name lab grown meat, I can assume what it's going to look like or what it entails. But I haven't actually heard of it before, so I don't know much about it.

**Moderator:** No problem. Thank you very much. Anybody else?

**P2:** Yes. Actually I have heard of that before and I haven't seen it or I haven't tried it. Well, I know sort of know what it is because I work in a butchers and we actually had conversation. Once it was on the. Market for animal. Food or feed? Sorry. Uhm. We have chatted about it and because obviously there's potential that if it's on sale for animals, there probably is a chance that will be coming in for people on markets in the future.

**Moderator:** Thank you so much, everyone. P5 or P6 have any of you heard of the term lab grown meat or anything about it?

**P5:** No Naoise I haven't heard of it before today.

**P6:** I'm the same as P5 this is the first time I have heard of it before.

**Moderator:** Not to worry both so basically we are going to listen to our video and it's just to give an overall baseline understanding as to what lab grown meat is. And how it's



produced. And so I put the video up here on the screen and I will let you watch it and then we can come back and have discussion.

**[Video on overview of lab-grown meat].** [Bing Videos](#)

**Moderator:** OK, everybody. So obviously you seen UM that video on the future. Of Lab Grown meat is just an introduction of what it is, the harvesting of the cells and the future prospects of it. So from that we all now have a baseline understanding as to. What it is, and so we'll just go into a few questions. You know, everyone is, as I said, open to their own opinion so let's just start. So from that video, what is your views now on the product? What's your feelings whenever you hear the term lab grown meat and you see in the video of how it's made? And so anyone?

**P1:** Yeah, I think that. The lab will make a very innovative product in the sense that. It can help you know the environment in the future, as the video said there, it doesn't take as much water and land use as agricultural practices and to be honest with you, I actually am a vegetarian so I am and I mean it sort of is a mixture actually. Of because of the environmental benefits that may provide but as well as that because of the sort of ethical side and I feel sometimes it can be quite inhumane and the suffering of animals for keeping us happy in our diet and I stopped eating meat about 12 years ago and I have never looked back. For me, I do think that. It does eliminate animal suffering to a certain extent, but as the video said there, you know you're still injecting animals to get their stem cells out to obviously accumulate and make the product. So I definitely think it's a it's a better aspect of UM, providing meat for the public than traditional meat. And by selling quite concerned as to whether it is fully eliminating the animal suffering altogether, I know it doesn't entail slaughtering as such, and I don't feel like this product aligns with my values so I wouldn't be trying it regardless.

**Moderator:** Thank you very much, P1, yes, I value your opinion and would this type of meat align with your vegetarian diet in your opinion or would you still be happy enough to continue with other alternatives?

**P1:** I personally. I would still be happy enough to eliminate all meat in my diet. I would be very plant based, UM products and alternatives. And UM, you know, they're made from natural ingredients, unlike lab grown meat. I personally think it seems quite artificial. UM. I like the fact that the plant based alternatives don't require the animals and for me that's still that's still an ethical issue and obviously plant based products have be around for so long you know I trust them I would have quite skeptical views around. You know the regulation of it and you know how the how they're going to be brought into the market in a safe manner.

**P2:** I am a meat eater and I'm actually quite a big meat eater. A lot of my diet will consist of red meat and chicken and stuff. And I think that. I think I would still be more swayed to



consume traditional meat and the thought of it being processed in a lab is actually quite eerie to me and probably obviously I haven't tasted it or seen what it looks like as such, but for me it seems quite unnatural. You know it's not real meat. And, I obviously do care about the environment. It probably sounds bad, but I don't know if I would be able to swap out my normal meat for a product grown in a lab. From my perspective, it is going to be quite biased, because it puts our jobs in jeopardy and threatening our industry, but I do think, UM, if I'm being honest that people buying meat from us trust where it comes from, you know, do, are they going to trust something that is made in a lab?

**Moderator:** Thank you very much for your opinion. I mean, does anybody else have anything to point of P2, you know will be able to trust it?

**P5:** I personally think that. eating something that has been grown in a lab and some will say that it's safer than traditional meat because it's in a controlled environment but do we know the nutrients that are being put in? And I think it said in the video about. And nutrients and minerals you know, to support the growth of the product. But I mean, what really what are these nutrients and minerals, you know, have these been tested in in terms of is this going to affect our health and both in the short term and the long term? And I think I have concerns around if it's going to be regulated properly.

**Moderator:** And do you think that you are trusted more? If it was approved by the FSA and , if the regulation were in place with strict measures you know with the likes of labelling being very open and transparent you be more open to trying it?

**P5:** I mean I can see the benefits in terms of environmental side and as I say. Like we have to lower carbon footprint than the normal agricultural practices, but I just something just doesn't sit right with me. And in terms of the health risks and you know how do we not know that the products helping to grow the meat aren't carcinogenic and how will it affect those who maybe like are more immune suppressed?

**P5:** I know where you're coming from 100%. But I do think that we need to look at the. Positive side as. Well, too, you know, there could be an opportunity here for such a product to actually benefit our health. You know, it could be, I know what it's a word to use, but like engineered. And to being healthier, like a lot of our meat products now, like from McDonald's and KFC are all processed now anyways with stuff added for longer shelf life and to make it taste nicer already in our diet. So I think that if it's going to be produced in a lab, you know and in in a controlled environment and stuff is going to be potentially adding purpose. You know we could ask for labs to reduce this in you know extra like minerals and nutrients. Since this, I think it is still real need to a certain extent you it still won't contain the proteins and fats that we need anyway which I think a lot of plant-based alternatives don't. And I think that there is a potential here that since we could get something that could meet our nutrient requirements and tailor to meet a high standard of nutritional content.

**Moderator:** Thank you very much that that's a really good point of view. Does anyone have anything back to for P3?

**P4:** I agree. With P3 to a certain extent, and but I do think we're sort of going down a rabbit hole of. You know, lab grown meat. I personally think, we haven't really studied it and. You know, it's very new in the market like new. We are taking a big risk with it. I feel like if People begin to rely too much on lab grown meat we are really ignore the benefits of like our fresh. And Whole Foods. That we have been consuming for years. And. The video had said about, you know. Like growing. Factors and different chemicals that can be used. To produce it, but. We don't know what it's going to be safe to eat, you know in terms of like our long term health. And so that's just my opinion.

**Moderator:** Thank you very much for that. Does anybody else have UM. Any other thoughts? Has anyone else spoke yet? P6, do you have any opinions on what P3 or P4 were chatting about?

**P6:** I do see both points of view, so I am also studying and also environmental health. And actually looking more into the sort of environmental side of it. I just sort of think that. They are trying to adopt it with aiming to reduce greenhouse gases and obviously traditional meat production is a major source of UM methane emissions. And that it would help with climate change. But I'm just sort of skeptical as to like. Obviously in the controlled environment, there's going to be a lot of energy consumption to actually produce UM he product so it's still going to require a lot of energy. How environmental friendly is it going to be? I mean, are businesses going to ensure that they're using renewable energy like solar, solar panels and wind farms to produce this energy, or are they still going to be using fossil fuels? Because if that is the case, then it's still going to have an impact on the environment.

**Moderator:** that's a very good point, P6. Thank you very much. Does anyone have any other opinions or UM? Yeah.

**P1:** Can I speak? Yes, go ahead. . UM. Yes. P6, I know what you mean UM. But at the same time, farming in itself takes up a lot of land and water. So. It will be a huge positive impact for the environment and the planet if you know it's going to be produced in a lab that requires less water and land in that sense, and obviously cattle farming is a major source of deforestation.

**Moderator:** Thank you both for your opinion, would anyone like to give their opinion in terms of acceptance, UM, what would make you more or less willing to try and lab grown meat? Any responses would be great. Yes, go on ahead there, P2.

**P2:** Personally for me, I lack the trust in it. I feel like even the name lab grown meat sounds very unnatural and unsafe. It doesn't feel like real food to me, and I don't like the idea of trying something that's been grown. And love, it seems it feels quite weird, yeah.

**P6:** See like if it was proven to be safe I probably would feel a lot more comfortable trying. It. If it's gone through rigorous testing and probably would be able to give it a go. Yes, thank you.

**Moderator:** And would you be willing to go as far as swapping it out of your diet completely as a substitute or just trying it?

**P6:** I probably would just try it, but I don't think I would be swapping it out of my diet just because I'm not sure of the long term. UM. Health impacts with it. would be quite concerned about that as well. I am a big meat eater, I think that, you know, looking at the food safety side, we did see a lot of traditional meat in the past that resulted in foodborne illnesses and UM, like you've seen the BSE crisis. UM, which is why actually I think FSA had started, you know, to control those issues. I feel like if it's going to be produced in a lab in a controlled environment, it could eliminate a lot of foodborne pathogens that can be found in traditional meat. But then again. You know you need to look. You need to look at. The. The scale as a whole and looking into what has been added into the products. Like what will be injected into given to animals for growth, so and this could reduce, you know, antibiotic resistance because no antibiotics would be required as such, because you're really you're really using like nutrients and minerals for the growth of the stem cells on top of the fact that it reduces the need to cut down on land is a positive in itself. You know.

**P1:** The reasons why I turned vegetarian, as I said earlier is because of the environmental and animal welfare aspects , you know, with benefits of plant-based alternatives and plant based meats. UM. I've done a lot of research into it and its benefits, and it does produce far less emissions than normal agricultural practices, and it does reduce your carbon footprint. And I'm assuming that will be going both for, you know, traditional meat and lab grown products as well too. And I think that. Like how we farm requires a lot of water, whereas like plant-based foods need far less. But that's just my personal opinion.

**P6:** Yes, P1, I was just saying there does plant based meat products, not still require land and water use UM, you know, they still need your packaging and like your transport emissions as well too, I feel like if we want to like, focus on the environment, maybe focusing more on Whole Foods rather than like meat substitutes and obviously they have a lot of additives and stuff added in them too. So just another viewpoint. I think that a lot of plant-based meats can cause deforestation as well too?

**P1:** Yeah. I do think though it would be overall more sustainable for UM, you know in the video it said about a growing population. I think that traditional meat and lab grown meat

can, you know, still contribute to a lot of climate change and deforestation. So, I think that compared to raising animals on land and using water as well as you know on top of disease as well that it carries. I think that it can put less pressure on the ecosystems and creating a more sustainable environment.

**Moderator:** Thank you very much, P1. Does anyone else have any other opinions on terms of their acceptance or rejection of the product. Yes, P5.

**P5:** So I am a stay-at-home Mum and looking into the health and safety of my children I would try to give my kids like natural, whole Foods. For me, lab grown meat just sounds very like processed and unnatural and like I would try to avoid processed foods like I would try to look for more organic and whole products. Obviously, fear not known of what the long term health effects are but then that's probably just my lack of trust. You know, I'd be doubting that it's real meat and that its safe

**Moderator:** P5, thank you very much for that insight. So obviously that would be a very big concern about the product in terms of your children and their safety. Would anyone like to contribute to P5 view?

**P4:** Yes, I have children of my own and I can completely say where you're coming from. My wife would ensure that, you know, they're getting the best food that they can. I mean we do watch what their putting in their mouths and you know, within their diet. But if you do look at it from that perspective of like.

**P6:** But looking into the children's future. Would you consider as well too then the environmental because we want children to grow up and. A world where. You know, climate change isn't a problem or at least not as bad as it is now with current concerns. If lab grown meat has the potential. To offer you know a sustainable solution. To climate change and deforestation, reserving water and land use, would the future of lab grown meat would it be a product worth considering. Personally, if I know myself that there is good scientific evidence that it is safe to consume. There's no long-term health effects, which I'm not sure how they would be able to do that because it hasn't been around and. for many years but if they are able to provide that information. I think it would actually there could be potential. But at the same time, obviously there's other factors like the price of as well too. I think a lot of families who are struggling, with the cost of living crisis that the environment wouldn't be their main concern. And so if it's going to be expensive as the video mentions it to be quite expensive now you know, I don't see it being that popular.

**Moderator:** If we just come back on what you said about how it could eliminate the risks of preventing issues like BSE with traditional livestock farming. Would that make you more likely to accept or does that sound more appealing to you? Or do you feel there would still be concerns about adding it to your diet?

**P6:** I think that BSE was due to contaminated meat and bone meal so because it doesn't rely on animal feed, you know or the live animals itself, the root of contamination is removed. Well, that's my view on it anyway. But I mean, I could be wrong.

**Moderator:** Does anyone else have a view on that? You know, agree or disagree or with P6 opinion and yes, go ahead, P2

**P2:** I am just thinking, though, we don't know what type of issues could emerge from the lab-grown meat, you know because we don't fully understand it and its production could introduce new risks and counter argue that eliminating the old ones, but you know. At least these risks that we already know how to control them to a certain extent as much as we can but introducing this new product into a lab could pose new emerging was that we never knew of, you know.

**Moderator:** Very much for your opinion, P2. So your say, because of a lack of long-term studies on this new product, you know you don't really know what sort of new risks it could bring to the table?

**P2:** Yes, that's exactly right.

**Moderator:** OK. Perfect. So, guys, that's nearly us up now. So just to conclude with the focus group, obviously we've all gave an opinion and listened to others views. With everything we've discussed today in terms of the environmental impact, public health and food safety and a lot about animal welfare and ethical concerns as well. It's clear that there's a lot of mixed feelings in the room and you know a lot of you can see it as a sustainable alternative. Um but obviously there's issues around the unknown risks with it. So, just for a final question to end the discussion on your final opinion on lab grown meat and based of listening to other's views has their opinion influenced you or has your view or mindset changed than what you came in with so we'll actually just go around the, the, the. Meeting and go to each person wirh just a quick ending statement. So P2 would you like to go ahead first

**P2:** Yeah. Listen, I value everyone's opinion here today, obviously. I probably, as I said earlier, being a butcher, I have real worries and obviously about. The future generation and pushing local farmers and butchers out of the industry once big companies take control of lab grown meat. If it does ever come to that, but personally I have worries about the long term health risks and the. Food safety, I think it's a new way of producing food and we don't know enough about it, and obviously traditional meat does have its risks, but we do ensure to keep up with food safety standards as much as we can. And I think it just. Maybe because it has been here for such a long time and been regulated really well and people know how to handle. It and I. Think that lab grown meat has a lot of unknowns and you don't know if companies are going to be. Transparent with what they're actually putting into. It at least we know where the cows came from with traceability. You

could be reducing risks as you. Said earlier P6 with diseases, but you don't know what risks could come along with what's going on in the labs so. For me personally, I would never consume it nor promote it and yeah. That's just my opinion, but. Thank you very much.

**Moderator:** You very much, P2 for your opinion. Who's next there? P5 you go ahead.

**P5:** Yeah, the conversation here today was actually really, really good. It did open my eyes about stuff and I obviously haven't heard of lab grown meat before. I don't know too much detail about it, but with the name that's in it. You do have your, UM, your concerns and I understand why the product is being developed obviously. There's severe issues with environment. And as well to with food safety and animal welfare. I do think, as I said. As a parent, I have my kids interest at heart in the future as well as my own, and I care about what I put into my kids bodies. I try to give them, as I said whole foods as much as possible. You know, we don't know enough about it. As P2 said, I would worry that companies would rush into. The market for money reasons rather than worried about the public health. And then again in saying that I'm not. Completely against it. I think that if there's long-term studies done on it. And it is genuinely safer, healthier and better for the environment. Maybe it Does have a place to try, but I don't think I would swap out traditional meat. I would rather turn to more plant-based alternatives. Because I know what's in them. It just feels too new for me, and I'm just. Not ready if sure if I would be ready to try. It. Thank you.

**Moderator:** Perfect, P5 Thank you very much for your view. P3 do you want to go next just for your final statement and opinion?

**P3:** Yeah. I don't know. Maybe it's just like my age, but I feel like it does have a lot of potential. I definitely am open to trying it. And obviously, if it's proven to be safe and genuinely better than what we already have. As I said earlier, the thing that interests me is the fact that it could actually improve the meat and nutrients. Mean healthier if and you know you will. We need to add that sort. Of stuff in it could be a big step forward for like food security issues in countries that lack physical access to proteins with public health as well too. It can provide people with nutrients that they might be Able to get and as P1 was talking about her being vegetarian. Maybe trying lab grown meat could be a way of meeting those nutritional requirements that you don't get in your plant-based alternatives. And of course, there's the concerns with current agricultural practices as well too. But I do totally understand why people are concerned and skeptical about it, we don't know the long term effects of it. And. Thinking about plant-based alternatives like they do have their environmental downsides as well so for me I mean, yeah, I'm definitely on the fence It could be an option, but we need to ensure that it's properly regulated and you know that it delivers the potential that they are proposing. So yeah, I'm open.

**Moderator:** Thank you. Perfect P3 that was great, thank. You very much for your opinion. Who wants to go ahead next? P1 you're just next. They're in the chat, yes.

**P1:** Yeah. Listen, I've been vegetarian for years because of the environmental and ethical sort of aspects of meat production and I've always chosen plant based alternatives? It aligns with my values. It is a huge step in the right direction because it avoids that intensive agricultural practice and using fewer resources but. At the same time, something just. Doesn't sit right with me. I feel like Because it's still coming from an animal, even if it is only a few cells. Ethically, is it different in my View I'm not sure like do we need it if plant alternatives already exist. I think it's well too. I need to see both like more the impact in the long run before I could say that I really support it but it is an interesting idea. And listen, I look forward to seeing what the future holds of it. UM, but for the minute I think I will personally stick to my current diet.

**Moderator:** P6 you are next there. Would you like to give you a final opinion?

**P6:** Yeah. I think obviously, as I said, I'm an environmental health student we're aware of the damage that agriculture does in the environment and I think that there needs to be better ways around creating a more sustainable environment and solution for food security. Especially with them the. Sorry, that's my train of thought with the population growing I can understand why lab grown meat has become an alternative, especially for a lot of people who don't want to cut meat out of their diet. Completely. But if I had to. Choose. I would still turn to plant based alternatives first. You know, like your fruit and veg and your grains. It's just very new and you don't know the long term health effects. Maybe in the future, if it's proven to. Sustainable and know that it is now. I probably I might be. Open to it. But as P1 said, I would. To stick to the current diet and go to a more plant based alternatives. It's more trustworthy, but. If that will meet those decide to take off. They would need to ensure that the that if they are. Stating it is more environmentally friendly in terms of the energy used and the requirements that they need to be implementing renewable energies to combat that.

**Moderator:** Thanks P6 for your final view. P4, you go ahead.

**P4:** Yeah, I think it's something quite weird and. I don't mean that in a bad way. I've eaten meat my whole life. I don't feel a reason to stop. I understand that farming has its problems and you know it probably would be better with the environment. I can see where people are interested. For me, I just don't trust it and made in a lab. We don't know if it's safe. You know who's really, really benefiting from it? It's going to be an alternative for ethical reasons. P1 is a vegetarian and she still wouldn't really consume it because to a certain extent it is still taken. UM, you know, part of an animal is still used to actually produce. Uhm, I'm happy enough sticking to what I know as people want to eat it. It's fair enough. It's just personally not for me. And I think there could be better ways around it.

**Moderator:** That's us all wrapped up? I really appreciate everyone shown up today and sharing your views and your thoughts. It's a really interesting discussion with a lot of different perspectives and that is what I was expecting with my focus group. UM, listen, whether you're open to it or you're, you'd rather stick to plant-based alternatives. You know, it's great to see different opinions and a lot of factors to consider from food safety and environmental and personal issues as well too. So thank you again for taking time to be part of it. And I'll be grateful for your views. And everyone had an opportunity to speak with the great and. Yes, it's been very interesting. I hope for yourselves as well. Too. So thank you very much and listen, if you have any questions. Don't be afraid to give me an e-mail. Thank you. Bye. Bye.

### **13.3 Appendix C- Transcript of Focus Group 2**



Participant Number	Age (Optional)	Dietary Preference
P7	25	Meat Eater
P8	33	Flexitarian
P9	63	Meat Eater
P10	36	Flexitarian
P11	22	Meat Eater
P12	28	Meater Eater

**Moderator:** Hi everybody. Hi. Hi. Are we all? I'm good. Thank you. How are you? Yes, I'm good. The weather's not looking too good anyway. I know it's miserable like there it is very bad. Isn't it? I know you are all happy enough for me to record. Yeah. Thank you. I'll just give everybody a quick minute to get online. Hi, ok everybody. I think that is all of us on. So yes, I know I will just give a short introduction even though. I had sent out the meeting invite with what today is going to entail and just sort of what the what the discussion is going to be around. Don't worry if you are not aware of the term lab grown meat. Because I will give a short video introduction here soon. So we're all at baseline sort of knowledge of what it is and then we could just start a very open discussion. Just to go through a few ground rules saying. So obviously all discussions are welcome, positive, negative, neutral. I would prefer if one person could speak at a time. But you're more than welcome to give your opinion back to the other person. Just let them finish. As I said, there's no right or wrong answer. Everyone's opinions should be respected.

**Moderator:** So my name is Naoise McLaughlin and I'm currently an environmental health student. At ulster university. And I'm currently. Conducting research on exploring consumer perceptions of lab grown meat and I am interested in the environmental Health side of it. So it will really be based around the environmental, food safety and health impacts UM and the ethical consideration too. UM, but any other views are more than welcome to be. Discussed today if you wish. I value you all for being here. And it's going to be an open discussion. Share your views. And opinions of. That will meet. So just have a nice discussion and I will play the video. And then we can talk more.

Is everybody okay with that and then we can get started. Yes, that's grand. Yes, that's perfect. OK, grants. We'll get started then. We will just go around the call and I'm going to ask, has anyone here today heard about the term lab grown meat and if you have, what is your initial thoughts around the product? Yeah, we can start with you,

**P8:** Yes, I've heard bits and pieces about it, but I haven't heard too much information. I'm not sure really about how it's made and the sort of process that goes along with it. But I have, UM, I have heard of the product before,

**Moderator:** Ok thank you. Anybody else, P7?

**P7:** Funny enough I had heard about it on the news it was something to do with the meat being put in feed for animals but that's about it for me.

**P10:** Well, obviously I work in the Food Standards Agency, but I don't work in the. Science evidence and research department where they're currently dealing with the food and trying to regulate the product, but. I did hear within other teams that at the minute they are doing. They've launched a sandbox program so that is where they are doing safety assessments on the product. Obviously, to ensure that it's safe before they even consider to look at putting it on the market. But as I said, I'm not in that team, so I don't know too much detail about it, but yes, I would. I would know a bit about the product.

**Moderator:** P9 or P12, do you know or have you heard the term lab grown meat before? Know anything about it? Yes, go ahead there, P9.

**P9:** No, I have never heard of it before. Right up until. You had sent the meeting invite and I actually had done my bit of research just to look into it before the meeting just to get an overview of what it was about. But before. Before that, no, I never heard of it.

**Moderator:** And P12?

**P12:** I've never had Much interaction with it, but I'm assuming by the term lab grown that that is how that the product is produced. But other than that, no, not really.

**Moderator:** OK, perfect everybody. Well, listen, I am going to put up a short video here. So we all have a bit of baseline knowledge just about the product and why it is being developed and Introduced into the market in different countries and the process about how. It is produced. So I'll just play this video and then we can have a discussion of. That. Thank you.

**[Video on overview of lab-grown meat].** [Bing Videos](#)

**Moderator:** OK guys, so obviously I'm after watching that video. It's sort of gave us a bit more knowledge in terms of the process and of lab grown meat. How it's grown in the environment and obviously it gave some statements in terms of the reasoning behind why they're trying to bring this into the. Industry obviously it has proposed benefits for animals not needing to be slaughtered. And they aim for it to be a more sustainable alternative. so now that we all have a bit more of a better understanding and with the product, I just want to ask your views on the product and the first thoughts that come to your mind now after seeing the video.

**P9:** There is not a chance that this could ever replace traditional farming and I am a farmer myself. And I've been. Raising animals for generations. I just don't think that you will be able to trust our product like this. We don't know what will be going on behind the scenes. What they will be putting into those cells to produce meat. Also, just add by saying that. the product the meat aims to help the environment and be a more sustainable solution,

but I do think that all agricultural practices do not contribute hugely to the environment. I mean, we are local farmers. And lab grown meat would still have to be manufactured in a different country as I don't think Northern Ireland wouldn't have the ability to create this meat so it'll be transported halfway across the world for us to have on our plates whereas the local farmers aim to reduce food miles.

**Moderator:** Thank you very much P9, does anyone have anything they want to add to P9, response? Yes P12 go ahead

**P12:** I completely agree with P9, that video clearly shows that the process put into producing lab grown meat like the beef burgers in the video would require serious amounts of energy with consistent supply of electricity for keeping up with temperatures during the production process and that's going to be fueled by oil or gas as well there will be great amounts of water for cooling, I agree with P9 that farms can get looked down upon but you will need to be building large manufacturing plants to make the product that will take up a lot of green space, maybe even a specialised factory, will that create a new type of pollution on its own and industrial waste that we have never come across before creating new risks? At least we do know what is released during agricultural practices with methane and other greenhouse gases but we know what we're putting out into the environment to produce meat for the population. I know it's not really an environmental health aspect that you're focusing in on but I also think traditional farming does have a cultural aspect to it supporting local communities especially with those taking care of animals for years I mean if the government falls funds to invest in such a new product, why can they not give incentives to farmers to create a more sustainable and eco friendly practices so instead of pushing the farmers out of the industry, um, why can we not just try and make the growing livestock greener? Um, I've seen there recently something about, you know, regenerative agriculture. So like restoring the health of the soil and stuff um there's obviously funding going into processing lab- grown meat why can we not put this into our local farmers community.

**Moderator:** Thank you very much P12. Um, does anyone have anything um in terms of leading on from what P12 has said or do you have a different stance on the product after looking at the video yes P10 you go ahead.

**P10:** To be honest, I could definitely see where P9 and P12 are coming from in terms of damaging rural communities and going into an area which is very high risk with not much background information um I mean it is going to be known as a novel food which a lot of people can be quite sceptical of um but I definitely do think that there is more to it than just looking at the environmental side of traditional farming practices I think it's actually quite an exciting opportunity. Um, I think that a lot of people's initial worries with the product is more the safety and the health risks associated with the unknown product because it is so new in the industry. But obviously with the program going on at the minute

with the Food Standards Agency, they will do rigorous testing to ensure it will meet high standards of safety. And I do see both your point of view in terms of the environmental side, but I do think that it has the potential to reduce a lot of the land use and the excessive resources that's used with traditional farming. And you know, I think a lot of big thing here we're going to is the animal welfare side, it's another major win with no need to slaughter animals and I think there's opportunity for a lot of consumers who are vegetarian and vegan due to the slaughtering practice now have the opportunity to enjoy meat as it is and as some people will look at it a cruelty free product.

**Moderator:** Thanks, P10 for your honest review, yes P8

**P8:** My biggest concern would really be into what actually is going into the product to make it grow into, you know, a chicken nugget or a fillet steak. Um. I think that the product is so new. We don't even know what is being put into those cells to allow it to develop like the type of chemicals or additives. And I think the video had said something about favorable conditions, but what does that actually entail? I personally try to eat less meat when I can and try to go for more plant-based foods and I think traditional meat as well too. Um, sometimes can't be trusted. I think that a lot of animals have been pumped with antibiotics and hormones. And we don't really know what that can do to our body as well too. Um. I think as well the, the sort of unnaturalness of the product, um, the texture and the taste will be different to traditional meat. So personally for me, I think plant based meat alternatives are more natural way to reduce meat consumption but also to help the environment and is overall a healthier option for our bodies. But P10, as you said, the Food standards agency is going to putting in place measures to ensure the safety of the product if it ever does go onto the market. I personally don't think it will do well.

**Moderator:** Thank you very much P8, P7 or P11, do either of you have any concerns with the food safety of the production process or view it in a more positive light?

**P7:** I think personally, if there was good regulations in place I would definitely be more open to trying it um I, I think when we hear the term lab grown meat, we associate it to be quite a gruesome process. I think we look at meat as a very natural, clean, traditional way of consuming food. Um, but if you do think about it, in today's society, most of our food today isn't actually truly natural anymore. We have a lot of ultra processed foods, um, foods that have a lot of hormones, um, pesticides, different types of additives now added in. That I feel if lab grown meat had stringent safety procedures in place. And was approved by the appropriate authorities and regulated well. That there could be a potential for it to become quite an innovative product for future generations in terms of food security, as that video had said, that our population just keeps rising, and there is. The fear regarding producing food to feed the future population.

**Moderator:** Thank you very much P7 for putting across that point, it's very interesting one. Um, so you did say that you feel like a lot of our products in today's society is quite

ultra processed so in terms of if lab grown meat was to come into the food chain in Northern Ireland for the future, um, what type of measures would make you feel a lot more confident in trying the product?

**P7:** I think personally if it is to um, overrun traditional meat in the market and you know, to be put in place as a sustainable solution that has the same taste, texture, nutritional quality as well too, which is a very big thing. And I think transparency is a priority. I would want the companies to have really detailed labeling in terms of what's actually going into the product. So, um, I think this is it there's something about growth mediums and different types of Additives, the types of Amino acids and even then if there was any potential allergens as well too, because obviously allergens are quite high on the priority list at the minute in relation to food safety. So I think that there would need to be, um, really good strict regulations around that. And really personally for myself, I think at the minute I wouldn't consume it. I think it would there would need to be research on long term safety before letting it enter the food chain and into the public's diets.

**Moderator:** Thank you very much, P7. Does anybody have um. And opinion based off what P7 said or um, does anyone want to explain a little bit further as to the potential of accepting this product into the food chain in the future and the level of confidence that will come along if any or what's your feelings? Yes P11.

**P11:** For me personally, I would be a bit of a health freak and I would be in the gym a lot so I like to like track what I eat and meat for me especially chicken would be a very high quality protein product with a lot of nutrients and healthy fats as well too. If I was to swap poultry to lab grown meat and it is artificially produced, I just don't know if it's going to have the same benefits in terms of like um, providing me with the protein and essential nutrients that I feel I need as a young girl and obviously there's a lot around the unknown, with the ingredients. But I would probably prefer to try add more fresher foods into my diet.

**Moderator:** Thank you P11. So you're saying that you would quicker introduce more fresh foods like your fruit and vegetables into your diet if you had to swap poultry rather than turning to lab grown meat exactly.

**P11:** Yeah I just think that you can trust Whole Foods more. They're more natural and you're aware of what is in them. For me, I think like lab grown seems very unnatural and even the texture and like the taste that like the juiciness that comes from traditional meat. I don't know how lab grown meat is going to be able to replicate that type of taste and feeling. Um. Even the smell as well too. I feel like a lot of people consume meat and steak and chicken goujons because of the nice properties that that comes along with that product. And swapping out for an artificial product, um doesn't feel natural.

**Moderator:** Yes go ahead P10.

**P10:** I can completely see where P11 is coming from and I definitely think that is going to be a really big barrier to overcome if it is going to have an opportunity in the market to become a very sustainable product. Um. I personally would need to try it first to see, you know, if there is a difference. Um, you know, you don't know the after taste of it and how well it is going to be developed to the extent that it will meet the properties of traditional meat. Another big thing, it probably isn't really an environmental health factor, but I think that the price is going to be a big impact in terms of the clientele that will be purchasing the product. The video did say that it is quite expensive at the minute, I think. \$11.00 it said, um, so it's going to be more high end product and if they can't make it accessible to lower income families, who will go for the cheaper option and go for the more traditional meat that's packaged on the shelves. I do think we also should look at it as in terms of a sustainable protein source for food shortages in the future or as well to maybe in like developing countries where farming isn't viable and it was at a right price. It could benefit those who are really restricted in their diet and you know if they already adding in vitamins and minerals like your zinc and iron then they could modify the product for better nutrition for those who need it, which can be quite helpful.

**P8:** I can see what your getting at but what if all these different components are going to be added into the product? Um. I'm concerned about the long-term health effects and like new risks that could be coming with mixing all these different components together, what if it causes new allergic reactions or they could be detrimental to health in the future. I sort of do agree with P7 there could be a possibility of new allergic reactions, um or different types of bacteria that could grow during the manufacturing process in the laboratory. If it isn't controlled but then again, I think this all really goes down to the fact that it's a very new product that we don't know much about. Umm, for me personally, I would not try it. And and would be happy enough to continue on with consuming normal meat.

**Moderator:** Thanks P8 for your valid point, does anyone else agree with P8 with the possibility of new risks with possible bacteria or would any think it would be a safer food option?

**P10:** I think it would actually reduce food borne illnesses, um, because a lot of contamination does usually come from normal agricultural practices and even like with the poor handling of the product in. The slaughterhouse is um and obviously the BSE, the mad cow disease that came from traditional meat as well too, and livestock farming. Um, obviously then that wouldn't apply to lab grown meat. I think it would be actually quite clean and sterile conditions, um, compared to a farm but then again, you wouldn't be quite sure with the growth process or what that would entail. So, I just think personally you would need to have really good regulations in place to make sure that it would be safe to consume.

**Moderator:** Thanks, P10, and what about the fact that, um, there does not need to be any slaughter involved with animals with anyone being more willing to maybe try just with the more ethical side or would you be more concerned with the safety of the product?

**Moderator:** Go ahead P12.

**P12:** Listen, I am a big meat eater and I couldn't deny it, you know, but I definitely do care about animal welfare. I think that the process is definitely a really good way of reducing slaughter and allowing people to eat meat without feeling bad that animals had to be killed but I do think there is a balance that needs to be found. I think that a lot of farms can be quite well managed and a lot of farmers do genuinely care out their animals. I'm sure P9 does himself and you know that they do uphold a really good life before slaughter and as well as in that video would say that it does inject. In the animal, which seems to be a harmless procedure, but you cannot guarantee that. I think that I would personally try to invest better in better farming practices instead of turning to making a new product. I think we can achieve better animal welfare in a different manner like by promoting better welfare standards and even better enforcement in farms um you know, like making sure that they have room to graze, um. And you know, maybe support like free range products and like grass fed animals and even look you know, the slaughter techniques as well too, making sure that they are humane, umm, you know, impose big enforcement fines on those who have who give inhumane treatment and poor practices you know give them really harsh penalties to those with inhumane treatment and poor practices, you know, give them really harsh penalties and this could deter other farmers from doing similar practices and I do think too, it really is quality over quantity. You know, instead of eating large amounts of factory farm meat, ultra processed foods may be like better sourced and as P9 said, from local farmers, which will also then reduce on the environmental burden. All food miles and. So yeah, that's just my personal opinion. I feel like there's better ways to go about it than introducing this new product onto the market and as everyone said above that we are unsure about so yeah.

**Moderator:** Do you have anything you want to add to that P9 in terms of animal welfare?

**P9:** I completely agree with P12 I think that. The government really should look into animal welfare and the environment. Then this should be supporting farmers financially instead of, you know, um, pushing this lab grown meat onto the market. I don't know if anybody has actually asked for it if it's a big demand, I assume not because of the risks involved. For me personally, we ensure all our animals are looked after, their handle with the best care and respect and. And obviously then we give it to like the local butchers which is a good and well sourced product that people should be investing than something coming from a lab.

**Moderator:** Thanks, P9 for that it's great to see your point of view as well too with someone from that background and deals with the welfare of the animals.

**P10:** I feel like P9 you are the minority though of smaller scale farmers. Like I don't doubt that you take good care of your animals. I feel like a lot of people these days don't buy from well sourced products so you know what's from these big like industrial operations, you know? Animals could be packed into like, small spaces a lot, like pumped in with like so many different antibiotics and, you know, can be slaughtered in ways with people don't really consider the animal's welfare. And so, like, you don't really know if you're buying from an ethical farm or what kind of like idea that the animal had in its previous life. Um, so it's hard for the average person to fully trust the meat that they are eating, which I think is why obviously a lot of people do turn to become a vegetarian or a vegan. They don't go near that type of industry like factory farms which is why I do feel like this can be a more sustainable product as well as I said earlier for more food security reasons as well too, but as UM It's more animal friendly.

**Moderator:** Thanks P10, nice to hear your view on the animal welfare side. Everyone thank you so much for the time is near up now the focus group that's really um, that's nearly all done. Um, I just want to thank you again. With everything that we have discussed today in terms of the food safety and public health concerns as well as environmental impact and then a little bit about the animal welfare as well too. But before we do find finalise the focus group and obviously there is a lot of mixed opinions today in the room, which is nice to see as well too. Everyone was able to hear each other's opinions and they were able to voice their own. Um. So just a final question to end the discussion really on hearing other people's views and those with a different mindset as well as the video that we looked at for how it's produced and its potential benefits. I'm just going to go around the meeting room and we'll just go to each person just for a quick ending statement on their overall views after hearing everything today. So, who is first there? Let me see P8 you go ahead first.

**P8:** Thank you very much and to be honest, obviously I did hear the odd bit and piece about it really just off the news and I do see why people are possibly interested in the product I personally wouldn't added into my diet. I actually think I'd quicker go fully vegetarian. I was looking to try and move that direction for me anyway so it overly won't be a huge loss but if it ever did get to the point where lab grown meat was the main way of consuming meat I would quicker just go off plan based alternatives and I think that there needs to be a huge amount of work done and before even considering it in the market. I personally don't really trust it. But that is just my opinion. But I can't see the possibility of the benefits in terms of it in a more sustainable product for the environment and obviously it is more ethically friendly way to produce, let's say meat to that extent. But dor me, I would not be adding that to my diet.

**Moderator:** Thank you so much. P10 your next on the screen



**P10:** I definitely do feel like a lot more work that needs to be done with it with um obviously the programme going on at the minute that's being conducted by the FSA and a lot of issues to public try again public trust. Um, obviously there's still a lot of unknowns with long term health impacts and even how it's going to be produced on a larger scale, but I do see its potential and I don't know if that's me being biased trying to look for more innovative and sustainable products working within the FSA. I feel like if it was properly regulated it could be a nutritious product um you know there's so much development that could be made with it that you know ensuring that it is safe but it could also be better for the environment and so I definitely get is something worth exploring, but I can see other points of view as well too in terms of the potential risks and because not much work has been done on it here as well to obviously like it's going to be the same taste and texture. Um, a lot of people I've heard say, you know, it's, it's in a very unnatural product, you know, with nearly feels wrong to consume it but i guess that is for the future to answer on and just to see where it goes you know following the safety assessments.

**Moderator:** Perfect P10 thank you so much, P9 would you like to give your final opinion?

**P9:** As I said, I manage my farm well Um, I feel like a lot of people look at the agricultural process as you know, the biggest environmental problem, but there's so many more issues out there. You don't even know the resource demand for the laboratories for the equipment that's going to be needed and if it's really going to be as green as they make it out to be and I we should be investing more into a better farming method and getting funded with that. I personally wouldn't consume it myself. Because of the unknown health effects, um. At least I know where my meat comes from and how it was produced. I would love to know how it affects your health in the long-term which I personally think is very bad for young ones in this generation and young ones who are still developing.

**Moderator:** Thank you very much P9, P7 would you like to go next.

**P7:** Um, I wouldn't say I am completely closed off trying the product. I definitely would not fully swap it out of my diet for real meat. I'd rather choose plant-based meats, um, people, obviously so many including ones in the group have serious concerns around the safety side of the product. But to be honest, as I said earlier, there are so many issues with a lot of the meat that we eat in today's society. I mean a lot of this process and so many other food products, not just make alone have additives and a lot of modifications made to it. So I feel like for lab grown meat to thrive in the market sustainable alternative it would need to be really regulated it would need to taste exactly like real meat if it is going to be alternative and I do actually think another big factor would be the price of it but the cost of living crisis. I don't think it will you know saying how much of the money is going to be funded into creating a sustainable alternative and you know it may be an option for those with food security problems only if it's priced fairly, if not I don't think people will bother with it.

**Moderator:** Perfect P7 thank you, and P12?

**P12:** I think that, um, the reason for lab grown meat is obviously a good way to improve animal welfare. Um, I will not argue that it is a good thing in terms of reducing the slaughter of animals but at the end of the day I think it will end up being controlled by big companies who will be making profit of it while local farmers will lose out. They do claim on the video that's going to be better for the environment but if you do look at energy costs of any big companies producing such products and the process of making it is it really going to be much better probably not and there probably will be hidden costs that people won't be speaking about and so personally for me I am against it umm I don't want to try it I probably will never try it and I'd rather stick to the normal way to come in from an animal thank you.

**Moderator:** Thanks for your final opinion, P12 and then P11?

**P11:** Well I personally want to know exactly what I'm putting into my body. For me, nutrition is a big thing in life, and I don't know if the product would be giving me the same protein and nutrients as normal meat would um. I think it's a bit of a weird process. I would prefer to stick to natural foods and this just sounds like the complete opposite end of the scale. Obviously, there is a big need to change and in terms of how we produce food with growing population and then with the environmental side as well too, but we should be looking into maybe more natural alternatives and looking at whole foods sources or creating more options for plant-based foods. And as I said, I don't think lab grown meat is the direction to go for that. Um, but that is just my opinion.

**Moderator:** Thank you P11. Guys, that is us done, just to before we finally finish up, I just want to say thank you so, so much for everyone who's contributed today and taking the time out to conduct this focus group. I wouldn't be able to conduct this research and get your views without your help and for you to take this time out. So thank you again. um as he said this will all be anonymous and so names will not be mentioned and if you do have any further queries following this focus group, do not be afraid to get in touch with me. You all have my e-mail and I will be happy to answer any questions that any of you do have. So that is perfect. Is there anything else from you guys before I stop this recording? No, thank you very much. I was a really interesting topic of conversation and I look forward to seeing what the future holds in terms of our food. Thank you very much. Thank you, that was great. Thank you. Thank you very much. No problem at all guys. But I'll just finish this recording and I will let you get on with your day. All the best. Bye. Thank you. Bye. Bye.

### **13.4 Appendix D- Transcript for Focus Group 3**

Participant Number	Age (Optional)	Dietary Preference
P13	57	Meat Eater
P14	22	Meat Eater
P15	28	Meat Eater
P16	45	Vegetarian
P17	34	Meat Eater
P18	26	Flexitarian

**Moderator:** Good evening, everybody. Hi. Hello. I'll just give people a minute, hop online and then we can get straight into it. Perfect. Hello, how are you? I'm good, thank you. How are you? Very good, very good. Just grabbed a coffee before we started it. Very good. OK. I think that everybody is online now and I will just give a short introduction and I know that everyone knows what this focus group is going to entail of today and what the discussion is going to be around from the meeting invite. So thank you very much and all opinions are open and welcome and don't worry too much if you haven't heard of the term lab grown meat before um because I will be providing a short video just so we all have a level of understanding of what the process is and why they have decided to start to introduce lab grown into some different countries and. And really, I just want to get your personal opinion on how you perceive it and how you feel about it. And would you, if you would try it, if you would swap traditional meat. So just a few ground rules and before starting their discussion. Obviously all opinions are welcome and positive, negative and neutral and I would prefer if one person could speak at a time. However, if you do have an opinion based off what somebody else is saying, that is completely fine. That they finish their office on day and you'll have a chance to speak. And as I said in the e-mail thank for me to record this. So thank you very much. But as I said, it's all in the information will be anonymised, so names and stuff will not be provided within my research. Is everybody happy enough so I can just start the introduction? Yes, that is great. Thank you very much. Yeah, that's perfect. Fine with me. Thank you. OK, guys. So as you know, my name is Naoise McLaughlin and I'm currently an environmental health student at Ulster University, um, and basically I am conducting research on exploring consumer perceptions of lab grown meat. But I'm really interested in your opinions with regards to how you feel about the product and the environmental and food safety and the health impacts and a bit of ethical consideration too in regards to the animal welfare but any other views are welcome and if you wish to discuss them today in regards to your opinions, I really value you all for being here and just want to hear your honest opinions. It's going to be very open discussion, so I will play a short video in a minute, but just to get started, I just want to go around the call and I just want to ask, has anyone here heard of the term lab grown meat before? And don't worry if you haven't or if you have and what's your personal opinion and. On your initial thoughts of the product. We will start with you P13.

**P13:** No, the first time I actually came across it was whenever you had sent the meeting invite across. Um, I had just searched it up on the internet I see there is a lot of talk about it on the news at the minute. I think there was a post as well too actually in Belfast Telegraph relating to food innovation but other than that no I haven't so I can't really give an opinion on my first impressions. I'm assuming it's not from an animal maybe like an animal alternative food I am not sure.

**Moderator:** Ok P13 thank you very much and then P14, have you heard of it before?

**P14:** No same as P13 I hadn't heard of it before until you invited me to this discussion, but I don't really like the sound of it.

**Moderator:** No worries P14, thank you. P15?

**P15:** No same as the others I didn't hear about it before. Well, obviously it's like a processed food maybe um I'm assuming it doesn't come from an actual animal. But actually very interesting to hear how this discussion is going to go to day because, um. obviously I don't know much about it.

**Moderator:** Yes looking forward to the discussion myself thank you. Who's next there, P16 have you heard of it before, don't worry if you haven't it's a very new area of work

**P16:** No, I actually haven't heard much about it, but someone working in healthcare I would be quite sceptical um, obviously with its long-term impacts um. I don't want to start too early, but obviously we see so many issues with really processed foods and how it affects the public health, especially those at a young age. A lot of children we see coming in are very overweight with their current diet, so I'm not sure. Would this just be another type of product like that or another version I don't know, but looking forward to the conversation.

**Moderator:** Thank you P16 we will get all into that and how people feel about it. P17, what about you from your environmental health background?

**P17:** Yes, the topic was going around um, I obviously heard a few discussions about it and how it's in animal feed products. Now people have mixed opinions of that and for starters. So I think the FSA is already looking into it and checking the safety side of it. So it probably will be something that we will see in the future. Um, a lot like another other novel foods that have been regulated, but there is still a lot of unknowns and its one of our biggest concerns and ensuring that measures are in place, to ensure that the public is consuming safe products but yes that is all I have to say on the topic for a starter.

**Moderator:** Thank you very much P17, I am sure from a regulation point of view it will be interesting to see what the future holds with the product and then finally P18?

**P18:** No, I haven't heard of it before but obviously if it is to be a product of the future, you would need to make sure that it's safe and actually going to be beneficial to people's diets, um. If they are looking to switch it from normal meat but obviously as a primary school teacher as P16 was saying. We do see more and more children coming into school with a lot of processed foods and so we do be quite cautious with what the children are eating throughout the day. So it would be interesting to say that. If it's going to be targeted at the younger generation too and if it's going to have any positive or negative impact on them.

**Moderator:** Yes thank you P18. OK guys. So thank you very much for your opinion some strong views there already but before going deeper into the discussion we will just watch this quick video here. I'm going to play it for you all um, so we all just have sort of better understanding and then we can take it from there. Is that all right, everybody? Yes, that's perfect. Yes. Yeah. Thank you.

**[Video on overview of lab-grown meat].** [Bing Videos](#)

**Moderator:** Okay everyone, so now after that quick overview of how lab grown meat is made, and the reasons behind the production of the product. So, what are your thoughts on this technology, on the product? Do you have any concerns, or do you think it could be a step in the right direction for our future diets? And you know, maybe would you be considering trying the product or, um, after seeing that video or would you be more hesitant to give it a go, so we'll just go around the group if any of you Want to Give your opinion?

**P18:** For me personally, I'm always thinking about what I'm eating. I feel the biggest concern around this product would be the long term effects. Um, I'm not sure if they've been studied as she said, it's quite an innovative product that's, um, sort of newly introduced into the food system. So I feel like there would be no long-term studies done to see the effect of the development and it's effects over time. As a teacher and also a mother, I feel that parents do struggle in today's society with trust in a lot of ultra processed foods and if you were going to introduce this product into school meals, it would require a lot of transparency and safety with those who are going to be regulating it. Um, I mean, I can see the environmental aspect of it too and that you had that on water usage and land as well too, which is great to see, especially with climate changes world but I feel like a lot of research would need to be done to prove it's security.

**Moderator:** Thank you P18, does anyone else agree with P18 or have a different opinion.

**P15:** For me, I'm not too worried about the food safety. I think that, um, our food today is already very processed. Um, for me the main issue would be if it actually tastes like the real meat. Even plant-based meats don't come close to the texture or the flavour that meat provides. And as well as that, traditional meat is such a good source of protein and I don't think that lab meat would be able to replicate the experience and the benefits that

come with real meat. I personally wouldn't switch it out of my diet no matter how safe it was or how environmentally friendly they claim it's going to be. I can see where the idea has come from and its potential, but I think for people like myself who's used to eating normal traditional meat, that it would be a big challenge in swapping it out of people's diets.

**Moderator:** P13 what's your personal views on it?

**P13:** I have always been someone who has valued where my food comes from. I grew up on a farm so I know firsthand um. how to raise and care for animals. I do feel like lab grown meat, even the name just seems quite artificial. It's definitely missing something important. Maybe it will work for younger generations who are open to trying new foods and new innovative ideas. I see the potential for future generations and but I do personally believe that that traditional make does have a lot of nutritional benefits and I don't think that lab grown meat could replace normal meat in my diet it's just not how we grew up.

**Moderator:** Thanks for your opinion P13, I can understand how your cultural background and upbringing on a farm does mean a lot to you and how this shaped your perspective. Does anyone want to add on to what P13 was talking about?

**P14:** I can definitely see where P13 is coming from and I can see the benefits of lab grown meat, especially if you think about countries that would be struggling with food security problems. It definitely would be a game changer in that aspect but I can see where she's coming from because I live on a farm as well and my family would be farmers and rearing animals for food and they do not just see it as a business, but it is a way of life too. And I just know my dad would never accept the product. He would see something would be threatening his work and everything he's put into throwing the farm for generations. I think meat has tradition and cultural ties to it and but as a younger person, I can see the benefits of the innovative side of the product but for me I wouldn't try it yeah, it just is a part of who we are.

**Moderator:** Does anyone have anything to add to that. Yes P16.

**P16:** I respect both P14 and P13 opinion and for those who grew up on farms and can see the connection of raising animals for food, I just personally don't agree with it. I am a vegetarian myself and not just the issue about the animal welfare side, I do appreciate that the new product would reduce slaughtering of animals, which is really great to hear. But I do think another concern is that I just feel even traditional meat is not good for the body, um, in comparison to our meat that we would have had 15 years ago in today's world, animals are being injected with hormones and steroids so they can grow faster and bigger too for profit which has serious consequences for everyone's health, increasing blood pressure and we all see those contributing to obesity as well as long term effects over that. And I don't know what is going to be actually popped into the lab grown meat.

I know that. They wanted it to be injecting carbohydrates and proteins but if that is just the start of the process, we don't know what will be injected into that product too in the future. I'm not sure if we will ever know. We don't know what's in the meat that we eat today. For me, I don't think I show you because I think it's better for the body as well as the environment on the animal welfare side of it. And I would say that a lot of people who turned vegetarian just in on the ethical side of it and make this as a possible alternative to traditional meat but for me it doesn't change my perspective I still see it as an animal product and I wouldn't want to be putting it into my body.

**Moderator:** Thank you, P16. So obviously from what you're saying is that you're concerned more about the health risks associated with products both traditional and possibly lab grown meat depending on what is going to be put into it.

**P16:** Yeah big time.

**Moderator:** Do you think that if the lab grown meat would be developed in a way that's a healthier alternative would you consider?

**P16:** No, I think that even if lab grown meat doesn't contain the hormones and chemicals that are put into farmed meat, I would still have concerns about the process. And the fact it's called lab seems very unnatural. I believe that our bodies would be better off just consuming natural foods coming from plants, I think lab grown meat is unnecessary personally we need to be away from meat consumption altogether instead of trying to replicate something just so people can feel a certain way. I think there needs to be a balance to make sure that people do know what they are consuming but obviously I can see the benefits to the environmental side too.

**Moderator:** Go ahead P17.

**P17:** I think from an environmental health perspective, there would definitely be a lot of concerns, yes, it would reduce the need for agricultural farming and then it would reduce the environmental footprint and which is obviously a key issue at the minute in society. I think we would need um a more detailed sort of assessment for the public's trust when introducing new foods. I think it's the same with any new over food that's coming into. The food chain. Funny enough I was actually speaking to a colleague but a lot of our work would be looking into, you know, foodborne illnesses and this could be an opportunity to reduce foodborne illness in meat products because obviously it would be clean sterile conditions. But in saying that. We haven't really seen the impact on their public health and I don't think it's fully understood either. And we don't know yet what sort of growth factors and in the video it talks about like the culture media that would be used in the process. So I don't know how that's going to affect us in the future. I think as well too, that it would need to be strictly regulated with the right people and with such new food technologies and advances that come with that so consumers are not exposed to any

risks that and might come along with the new technology. However, from the other side, it would reduce the associated health risks like the zoonotic diseases. But I do think that if sometime in the future does come into the market that there will be proper testing and monitoring done.

**P15:** For me, I don't see the point in lab Grown meat. Um, there's no way that I would eat it. I think you wouldn't be able to compare the food to real meat. I think personally is just another way for big companies to make money out of it. Um, I think it's quite disgusting to think of the idea of something being grown in a lab and as the others. And before, like what type of chemicals would there be putting in to beef it up? Um, I am off for the environment, but I would rather contribute in other ways like recycling and Trying to cut down on the use of fossil fuels rather than swapping something out of my diet. You literally cannot beat the taste and texture of, you know, real meat. And I know that might be. A very different opinion to those who um, like P16 on a vegetarian diet, which is completely, um, respectable as well too, but I mean even thinking about if it could benefit like third world countries, like how is it going to be an affordable product if the burger is 11 I think it's at 11 dollars in America now, so I think it's a very expensive product. Um, could be maybe something like for the more wealthy side, but for myself I would be relying more on the real meat. I think one of the key issues is cost, and I know it's probably not an environmental sort of site, but if it is going to be expensive to purchase, how is your average Joe blogs going to afford it as well? Like the cost of living crisis, people are struggling to buy groceries and if it isn't going to be significantly cheaper families aren't going to buy it they're going to go to the butchers or go and buy off the shelf you know beef burgers that have actually been slaughtered so to say that it is going to be a more like environmentally friendly and better for the environment food, it really won't be if people aren't going to be able to afford it in the first place and people will go back to purchasing made from traditional farming.

**P13:** Can I just add on to what P15 was saying there, I think that if you are looking into the real factory farms, then yes, the lab grown meat could be a way of producing to help environmental side but looking at a local farm scale, which is often the case in Northern Ireland, you know the food doesn't travel like long distances and so like you wouldn't be contributing to the environment in that way because it is very local produce? Well, I think it's a healthier option as well too. I think that the local produce is a fresh source of meat, like I know myself growing up on the farm, you know, we wouldn't have been, um, given many antibiotics or you know, like hormones and chemicals in the cows. They would have just lived their life and then when the time was ready. And you know. They were taken to get slaughtered. Like in regard to the ethical side, our animals all had a really good quality of life for years and. You know it wasn't um. The concept of a factory farm of, you associate with high profits, like my dad's done it for a living because he did love animals and you know, it's very contradictory to say because they did end up, you know, being



slaughtered for meat but if you're going to produce a product because of the animal welfare side, why do you not just invest in more in sustainable means of farming instead of replacing the meat entirely. Like even that girl that was speaking on the video had said you know it's meant to be painless and doesn't hurt the animal to enter the injection of getting the stem cells, but sure you're still piercing the animal, you know, you're still affecting it. So I don't know, maybe I could be going too deep into it, but that's just my point of view.

**Moderator:** Thank you P13 for your opinion. So guys, just another question in terms of the acceptance or the willingness to try and would you be willing to try the product or is there any factors that would maybe influence your willingness to even consider it? We'll just go around the call, P16 do you think any factors could make you willing to trying lab grown meat?

**P16:** No definitely not for me because I do think plant-based diets are better for your health but for those who do eat meat maybe if they could make the product lower in saturated fats and trans fatty acids it could become a product to reduce diabetes and cholesterol and cancers related to meat like colon cancer but I think that engineering could be very hard to do while still maintaining texture and taste that normal meat would bring for those eating. But honestly there is so many alternatives out there that can be just as nice as meat in general so many companies do plant based meat products like burgers and sausages that have the same flavour but doesn't come with the health risks but I feel we should be promoting plant-based meats more if were looking to steer away from agricultural practices for sustainable reasons.

**Moderator:** So for you P16 nothing would make you try lab grown meat with the fact that you avoid meat altogether and you think there should be more promotion into plant based because of its health benefits and environmental benefits as well?

**P16:** Yes exactly.

**Moderator:** Perfect thank you, does anyone have any other factors that could sway their acceptance or even rejection of lab grown meat? Yes go ahead P17

**P17:** From our food safety our public health point of view I do have to give it that the product could be safer product. Because it is going to be in a more controlled environment. One of the main causes for, you know, food poisoning cases is because of the environment that the food is being handled in. So, you know, the bacterial contamination is really because of maybe cross contamination with poor hygiene not washing your hands or and maybe using, you know, using the same utensils and equipment for raw and ready to eat foods. As well as this even the temperature control within the storage condition. In comparison to this, the lab grown meat is going to be in really good, controlled conditions. Reducing bacterial growth. Which would be positive for the public's

health. But I can't deny that there will be worries about the long term effects on human health. And the sort of nutritional profile that it is going to bring to, um, different individuals that could be looked at in a positive aspect that, you know, the product could be manipulated into being a nutritional benefit for people or some may look at it that the product is going to be risky. So it really is a balance, I think, of getting the product right and ensuring that the FSA regulated appropriately. I think that labelling will have to be very consistent and as well too, but um. If companies, you know, state that it's lab grown, I think a lot of people would have a negative perception of it. But if they sort of, you know, make terms like a sustainable alternative to meat, then it might sound more appealing to customers, but this would all need to be out within the regulations in terms of the standards and the labelling because um, lab grown meat.

**P18:** I completely agree with P18 in this aspect. I think that if they were to make the labelling and state, you know, environmentally friendly or Slaughter free that. It would increase people's acceptance But. If labelling was to say lab grown, it could definitely make the product seem very unnatural and create maybe a bit of disgust and making people more likely to eat normal meat. I'm not sure if anyone in the group um has halal dietary requirements. But if the meat is going to be labeled as halal, obviously it would need to meet certain requirements and be produced in a manner that is in line with their beliefs. So I think that labelling is especially important here and should be clear for those who only eat Halah meat before purchasing.

**Moderator:** Very good viewpoint P18 the product must take into account other ethical considerations. P15, you said you were a big meat eater and would not consider trying lab grown meat, would there be any motivators that could increase your willingness to try or are you completely against the idea?

**P15:** For me to try lab grown meat, it would need to be the exact same taste, the exact same nutritional benefits in terms of your proteins. You know, maybe if it was scientifically proven that it could lower your cholesterol. And still have the same texture and the same quality and. And proven that it was definitely healthier than real meat. I might consider it only out of curiosity. I think the concept itself is quite weird so I wouldn't swap it completely out of my diet. I would still stick with normal meat from animals. But you would really need to convince me that it is better in every aspect with health benefits even cheaper than to purchase normal meat and the same taste for me to even consider trying it, but I don't think I would swap it out of my diet.

**Moderator:** Yes. P15, I can acknowledge your view on that.

**P13:** I think in today's society that meat, especially on a local level, is very trustworthy and I just don't see a problem. I do understand the environmental aspect of it and the reason why it is being introduced but I feel like we've just eaten meat for years now and

it's just become. I think it's a big cultural thing as well too in Ireland. I personally don't see the point in switching to something that is very artificial.

**P17:** But P13, I am going to be honest, the reason why this has been introduced and it is trying to become a more regular thing probably for future population is because we have been eating meat for so long and you can see the detrimental effect that it has on the environment. It would reduce their greenhouse gas emissions and address all their environmental challenges, which is why I do see the reason for exploring an alternative. Because people do love meat and are not willing to swap it out of their diet. If you look at um plant-based alternatives coming in, you don't see overly a lot of vegetarians and if you do it's more because of the health benefits or animal welfare concerns. But I think that they have decided to create or try to create an alternative to traditional meat because people don't want to turn towards plant based substitutes. I think people see it as less appetising. So I think to still allow people to feel that way in eating meat only in a different way of producing it in a more sustainable manner.

**P13:** Yeah I can see where your coming from P17 I never thought about it that way. Obviously, people don't want to make big sacrifices and take real meat out of their diet. So I suppose it could help to address the environmental issues that surround that product wise. Still giving someone the option to have that taste and the satisfaction that comes with it.

**Moderator:** So guys, that is near the end of our discussion and that was really, really great. Some good insights and contributions made both towards the concerns you have about lab grown meat and obviously some who understand why it is currently being invested. It's been really valuable to hear everyone's perspectives on it and before we wrap up, I just want to give everybody a chance to share their final thoughts and opinions that they might have, maybe your views could have changed listening to other people's opinions and maybe considering something that you hadn't considered before. So we will just take a few minutes to summarise how everyone is feeling and any last thoughts that you might have. So, we will go around the call and let me see. P13, you are first.

**P13:** Thank you, it was definitely great to hear everybody's opinions today. And it, it did make me think, UM, as I said, I have grown up on a farm my entire life and we always respected the animals that we raised and for me the food is just a natural part of life and I think that if you know that the animals have been treated well and that they have a good life but listening to other people's perspectives today, you can see that it does have its positives. Obviously it's great to hear animals don't need to be killed, but I just think that traditional farming is trustworthy and I worry about what is going to be put into. Personally I don't see myself in consuming it in the future. But I can see why others might.

**Moderator:** Thank you very much, P13. We will just go to P14 then. What is your final opinion on lab grown meat after hearing everybody else's viewpoint?

**P14:** I have to agree with P13 perspective. Um, obviously growing up in my farm myself, we've always been respectful in the way that the food is being produced and I would be more concerned about the process of how the product is made. Obviously. It seems quite extreme to go from a stem cell that you probably can't even see in the dish to a fillet steak which I think is bizarre I think as a young person, hearing something like this possibly going into the food chain could be a slippery slope into more products being produced in this way, which really scares me. I don't think it would be good for our health and don't know how it's going to affect us in years down the line. Possibly moving away from something that is quite natural and not even just meat but other products as well too. Making food in a lab and I think it's moving away from real life, um. I think somebody had said it earlier that I would quicker promote investment into more sustainable agricultural practices. Maybe we can use in renewable energy and contributing in that way rather than changing the process of how our food is actually produced.

**Moderator:** Thank you. Thank you P14. P16, do you want to give your final view on this discussion today?

**P16:** I think in today's society a lot of our diet is around ultra processed foods and I don't think people realise the impact it actually has on your health. Because a lot of products seem to be promoted as a healthier option when really it is ultra processed and I see young patients coming in all the time and struggling with obesity and other conditions related to that. I know one of the guys had said earlier that it could reduce foodborne illnesses, I think it was P17, which is very true and it does reduce this risk of cross contamination, but then again you don't know any potential risks associated with the substances that they would be putting into the product to make them grow and how a concoction of those substances could contribute to new health related conditions. Personally I would promote anybody to try a plant-based diet. There's so many businesses and products out there now that you genuinely wouldn't know the difference between that and real meat. And obviously they still provide you with nutrients and obviously known for being more environmentally friendly and anyone who has concerns around animal welfare.

**Moderator:** Perfect P16 thank you. P15 do you want to give any final thoughts on the topic today?

**P15:** I think it is a weird concept I think that it's way for big companies to make money um farming for years has failed so many generations and I do understand arguments about animal welfare, but I think this resonates more with big intensive agricultural farms and practices rather than your local butchers, um. I agree with P14 in the sense that I think we should be improving farming practices rather than pushing a new product onto the market that has little evidence that it's going to be safe to consume. So, for me I will be

continuing with normal meat and if I have to stop if there was no option I would quicker turn to vegetables before consuming lab grown meat.

**Moderator:** No worries P15 thank you for your honest opinion. P17 what are your final thoughts following today's discussion?

**P17:** I can see the potential benefits of lab grown meat as I said earlier it could reduce food-borne illnesses but its going to be another regulatory burden that I don't think officers have the time for, so many local authorities are under extreme pressures with little capacity and resources so making sure the product is complying will be hard and because it is so new it's going to need regular oversight to make sure it is safe on the market even with the standards in labelling which will cause serious issues if not clearly labelled so I think the risks and benefits need to be weighed out with strict measures in place before it goes on the market and that's if it does.

**Moderator:** Thank you P17, it's great to hear the enforcement insight too and recognising the extra work that will bring to those teams. And then finally P18, do you have any final thoughts?

**P18:** I do worry for the future of the product if it goes into the market soon with little thought and research done behind it, I think our society today doesn't have a balanced diet especially young children so will this just be another processed food being put into our body. I think education should be on fresher foods something that will help our body but from listening to others views today I can see the aspect for its possible place in the market.

**Moderator:** Thank you very much P18. Guys that is us now all wrapped up, I want to say a massive thank you again to everyone who contributed. It's been a really great focus group and really great to hear all your views and opinions on the product. If you have any questions or concerns following this focus group do not be afraid to get in touch with me you all have my email address. I will end this recording if you are all happy enough. Yes that is great. Thank you again. Thanks, it was good discussion, thanks. Thank You. No worries, all.

## **13.5 Appendix E- Ethical Consent Form**

Faculty of Architecture Built Environment

# Research Governance Assessment Form

## SECTION 1: Please complete the following details in full:

**Undergraduate** ☒ **Taught Postgraduate** ☐

**STUDENT NAME** Naoise McLaughlin

**STUDENT NO-** B00842680

**COURSE TITLE-** BSc Hons Environmental Health

**MODULE-** ENH531

**DISSERTATION TITLE-** Exploring Consumer Perceptions and Acceptance of Lab-Grown Meat in Relation to Environmental Health Factors

**ASPECT INVOLVING HUMAN CONTACT:** N/A

**START DATE** September 2024

**COMPLETION DATE** May 2025

**SUPERVISOR** Dr Marie Vaganay Miller

Please consult the Universities Policy on Research involving human participants and answer the following question by selecting **YES** or **NO**.

Does your project involve human participants or subjects in any way? This includes interviews, focus groups and questionnaires or observation or research interventions of any kind.	<b>YES/NO</b>
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If you have answered **NO** to the question above then the research does not require Filter or Ethical Review and your project can proceed immediately. Please sign and date the declaration below. If you have answered **YES** to the question then you must proceed to section 2 of this application form.

**Declaration by the Student and Supervisor:** I have taken the Universities Policy on Research involving human participants into account and confirm that the assessment above is accurate and that the project does not require review by the Filter or Ethical Committee.

Section 1 of this form should be bound into the project, dissertation or thesis and a paper copy should be sent by internal mail to the Chair of the Filter Committee, Dr Cherie Driver, Belfast Campus.

Any significant change to your dissertation will require a further assessment and you should seek guidance on this from your supervisor.

**Please note that the consequence of embarking on research involving human subjects without having received filter committee approval is failure of the dissertation.**

## **SECTION 2:**

*Please select either **YES** or **NO** to each of the questions in PART 1 and PART 2 below: An answer of **YES** will imply ethical and/or risk issues in the research project.*

### **PART 1    ETHICAL ISSUES      If YES please give details in Section 3:**

Answering YES won't necessarily prevent your research from being undertaken but implies that you must discuss these aspects of your research with your supervisor and give this application careful consideration.

1. Does your research concern contact with persons aged less than 18 years?	<b>YES / NO</b>
2. Does your research involve patients/residents in nursing or residential care homes or are they currently a client in the health service? (Note an answer yes here will most likely imply that your research be reviewed by UREC)	<b>YES / NO</b>
3. Does your research involve participants who are very elderly?	<b>YES / NO</b>
4. Does your research concern any person with a learning disability of any form?	<b>YES / NO</b>
5. Does your research concern the use of psychometric tests?	<b>YES / NO</b>
6. Does your research concern the use of a test of ability or skill?	<b>YES / NO</b>
7. Does your research involve participants who are being detained for criminal, immigration or mental health purposes?	<b>YES / NO</b>
8. Does your research concern investigate topics that your participants might experience even minor fear, upset or distress? Will any probing personal questions be asked?	<b>YES / NO</b>
9. Does your research seek, collect and/or store sensitive personal or commercial information relating to your interviewees or the participants in your study?	<b>YES / NO</b>

10. Does your research collect data that means a participant can be identified in the research project? i.e. your work cannot guarantee confidentiality and anonymity to all participants	YES/NO
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**PART 2   RISK ISSUES   If YES please give details in Section 3:**

11. Does your research require one to one or group interviewing in private accommodation? e.g. private housing.	YES / NO
12. Does your research involve significant travel beyond that which you normally would undertake?	YES / NO
13. Does your research involve the unsupervised use of power or workshop tools and equipment?	YES / NO
14. Does your research involve visiting licensed premises or private clubs?	YES / NO
15. Does your research involve visiting a hospital or other medical centre?	YES / NO
16. Does your research involve contact with persons who have committed a criminal offence?	YES / NO
17. Does your research involve participants testing a designed prototype, or coming into contact with a food or other chemical substances?	YES / NO
18. Does your research involve you or your participants undertaking any physical activities?	YES / NO

Student Signature: N. McLaughlin	Date: 05/02//2025
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