Initial Consumer Perceptions of Cellular Agriculture Nomenclature:

A Qualitative Analysis of Word Associations

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Executive Summary

As part of a larger quantitative study examining cellular agriculture nomenclature, survey participants provided up to four words or phrases (thoughts, feelings, or images) that first came to mind when presented with a term (*clean*, *cultured*, *craft*, *cell-based*, or *slaughter-free* meat). Participants also provided a valence rating for each of their association words or phrases. Qualitative analysis revealed specific themes associated with each term. All five terms had associations with meat, although *clean*, *cultured*, and *craft* meat had the strongest meat associations. *Slaughter-free* meat had the most positive responses and was most frequently associated with ethics in general and ethics toward animals. *Clean* meat was most frequently associated with concepts of health, naturalness, animals, cleanliness, and taste. *Cultured* meat was associated with animals and health but also disgust and naturalness concerns. *Craft* meat was most frequently associated with taste and animals but also naturalness, familiarity, and cost concerns. *Cell-based* meat was associated with novelty and science but had the most negative responses and was most frequently associated with disgust, unnaturalness, and lack of familiarity.

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Objective

The purpose of this analysis was to obtain qualitative insights into consumers' initial reactions to nomenclature for meat produced through cellular agriculture. We assessed the content and valence of word associations with five different names.

Methods

This qualitative analysis was part of the larger quantitative experiment to test nomenclature outcomes (Szejda, 2018). We randomly assigned each participant to one of five name conditions: *clean meat*, *cultured meat*, *craft meat*, *cell-based meat*, or *slaughter-free meat*. After completing a practice name association task, participants viewed their assigned term and provided up to four words or phrases (thoughts, feelings, or images) that first came to mind. Next, participants provided a valence rating for each of their association words or phrases (1 = very negative, 5 = very positive). Participants completed the word association task and valence rating prior to reading a description of meat produced through cellular agriculture.

We analyzed a total of 1,338 open-ended responses (293 for *clean meat*, 236 for *cultured meat*, 262 for *craft meat*, 272 for *cell-based meat*, and 275 for *slaughter-free meat*). The first step was to develop themes. We did this in two ways. First, one researcher used an inductive approach and reviewed the data to determine several repeated patterns (themes) across the data set. Second, another researcher used a deductive approach and added themes commonly found in the literature on this topic.

The second step was to code the data set in accordance with the themes and to construct a codebook. Given the clarity of the unit of meaning in this analysis and the manageable number of responses, we examined the entire data set in the first round of coding. The principal investigator trained each of the other two coders individually before the team began selective coding.

Step three sought to increase the rate of reliability. The three coders (the study authors) discussed discrepancies and revised certain aspects of the codebook. We removed some codes in the initial rendition, clarified others, and added new codes to capture important distinctions. The final codebook (see Appendix 1) contained 22 codes with three example items each. Again, the focus in this phase was coding the responses at face value, although at this time we considered reference to the valence a way to understand more latent meanings. After the discussion, each of the three coders recoded the complete data set independently, focusing on areas where the codes had conflicted with one another.

In the final step, the coders engaged in negotiated agreement whereby any remaining differences in the assigned codes were discussed at length. This discussion yielded full consensus on all codes.

Key Findings

Below we summarize the key findings for each of the five terms.

Clean meat

By far the most prevalent theme associated with *clean meat* was meat-related, with health, naturalness, animals, cleanliness, safety, and taste sharing the next tier of association.
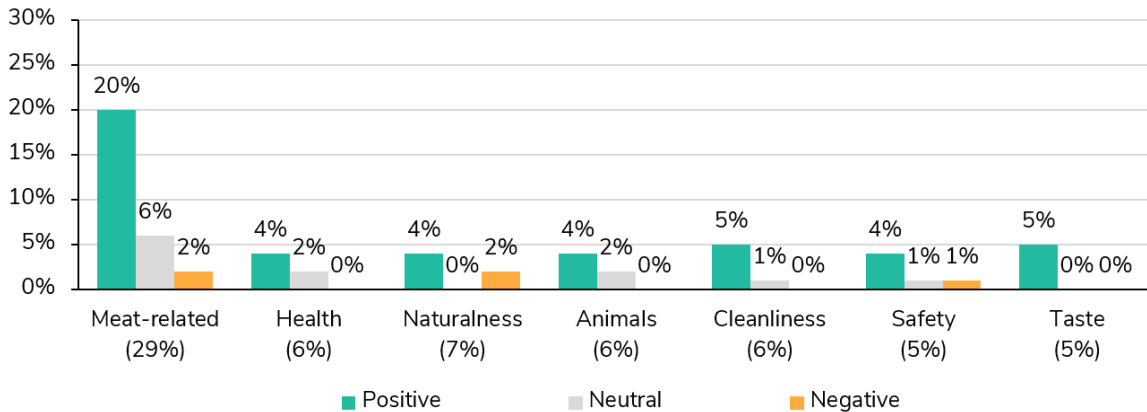

Figure 1. Themes associated with *clean meat*.

Cultured meat

The most common theme associated with *cultured meat* was again meat-related, with animals noted as a distant second and health, disgust, and naturalness concerns sharing the third tier of association.
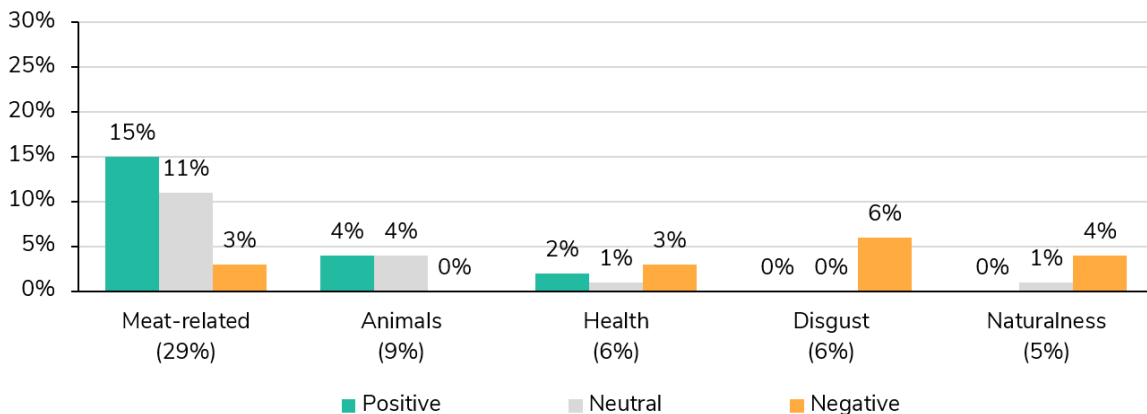

Figure 2. Themes associated with *cultured meat*.

Craft meat

The most prevalent theme associated with *craft meat* was also meat-related. The term had positive associations with taste and animals but had some naturalness, cost, and familiarity concerns.
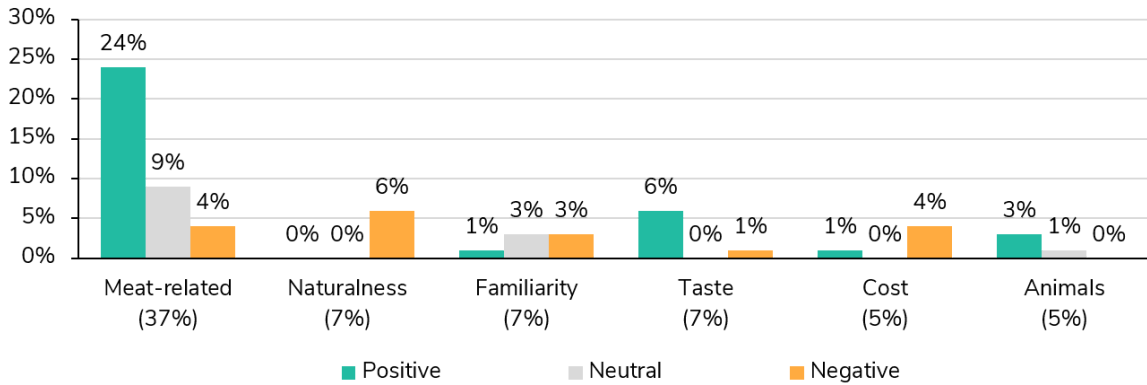

Figure 3. Themes associated with *craft meat*.

Cell-based meat

The widest variety of themes was associated with *cell-based meat*. The term was associated with novelty and science but had the most negative responses and was most frequently associated with naturalness and familiarity concerns and disgust.
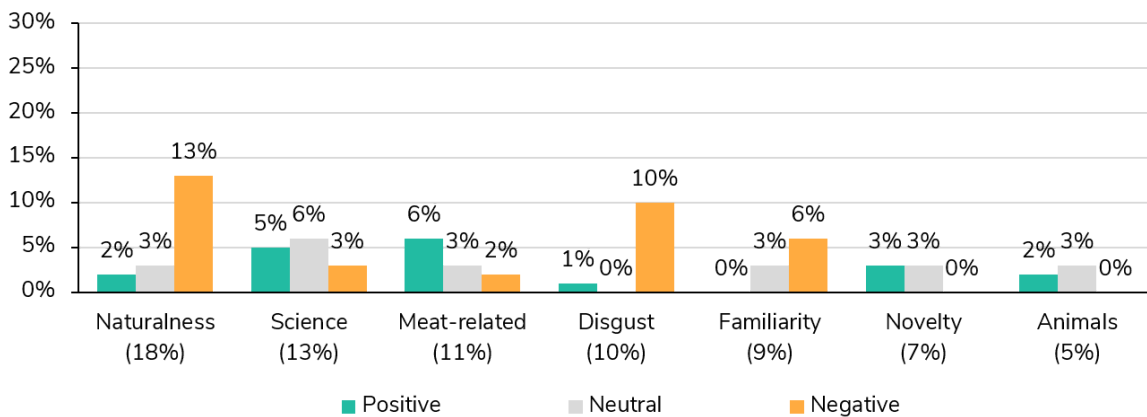

Figure 4. Themes associated with *cell-based meat*.

Slaughter-free meat

Slaughter-free meat was the only terminology to have ethics (both in terms of animals and in general) as the most common theme. Animals, naturalness, and meat-related generally shared the second tier of association.
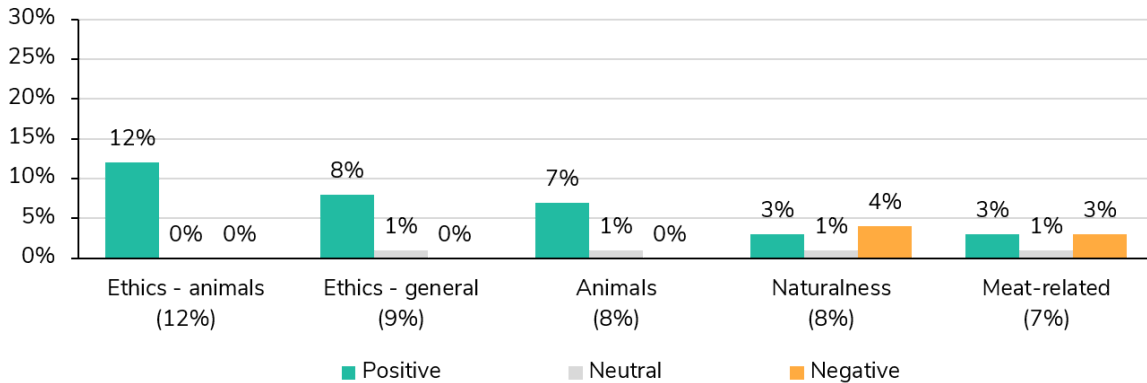

Figure 5. Themes associated with *slaughter-free meat*.

Conclusions

Our analysis revealed varying consumer perceptions and associations with each of the five terms. The findings suggest that each term presents various challenges and opportunities in terms of its connotations. Unsurprisingly, all five terms were consistently associated with the theme meat-related, as the word *meat* was part of the phrasing. However, *clean*, *cultured*, and *craft* meat had the strongest association with meat-related. *Clean meat* was associated with a wide variety of positive themes, including health, naturalness, animals, cleanliness, and taste. *Craft meat* was most frequently associated with taste and animals but also naturalness, familiarity, and cost concerns. *Cultured meat* was associated with animals and health but also disgust and naturalness concerns. *Cell-based meat* was associated with novelty and science but had the most negative responses and was most frequently associated with naturalness and familiarity concerns and disgust. In general, *slaughter-free meat* had the most positive responses and was most frequently associated with ethics in general and ethics toward animals.

While many factors must be considered in selecting a name for this new food innovation, these qualitative findings offer insight into one important criterion: consumer acceptance. Consumer acceptance is critical to the adoption of a new food technology, as positive consumer perceptions lead to positive attitudes and contribute to desirable behavior.

Appendix 1—Codebook

Theme	Meaning	Example 1	Example 2	Example 3
Cost	Addresses expectations of cost	expensive	costly	high price
Ethics - general	Addresses general ethical aspects	ethics	moral	wrong
Ethics - environment	Addresses concept as ethical in terms of the environment	sustainable	environmental impact	environmentally friendly
Ethics - animals	Addresses concept as ethical in terms of animals	humane	no pain	cruelty-free
Disgust	Addresses general reaction of disgust	gross	yucky	eww
Taste	Addresses taste expectations	tasty	delicious	tasteless
Texture	Addresses textural expectations	squishy	rubbery	dry
Satiety	Addresses satiety expectations	full stomach	satiate	hungry
Quality	Addresses quality perceptions	quality	artisan	gourmet
Familiarity	Addresses familiarity with product or concept	what is it?	need to learn more about it	unknown to me
Novelty	Addresses the newness of the innovation	futuristic	innovation	progress
Safety	Addresses perspectives on safety	safe	disease-free	dangerous
Health	Addresses perspectives on health	healthy	unhealthy	nutritional
Naturalness	Addresses perspectives on naturalness	unnatural	processed	fake
Science	Addresses connection to science	lab	clone	test tube
Animals	Addresses whole animals [Supersedes the meat theme]	animals	cow	lamb
Meat-related	Addresses the process, product, preparation, or serving of meat and includes more general eating and food concepts	butcher	knife	beef
Cleanliness	Addresses cleanliness	clean	cleanliness	washed
Identity	Addresses connection to a specific identify	PETA	vegan	hippy
Nonsensical/ Uncodable	Addresses words that do not make sense	Playdoh	Dragon Ball Z	bleach
Other	Addresses concepts that do not fit under existing themes	poor	annoying	interesting

About the Authors

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Since receiving a PhD in communication studies from the University of Texas-Austin, Courtney has devoted her academic career to research in the field of communication with a focus on audience and contextual analysis and effective persuasive techniques by animal advocacy organizations. As a visiting professor at Willamette University in Salem, Oregon, for the past 16 years, Courtney has included in her research agenda approaches to audience analysis, message framing techniques, and communication campaign strategies. She currently teaches courses on campaign planning and grant writing at Portland State University.

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Keri's research advances the plant-based and cultivated meat market sectors by generating effective messaging that helps consumers make sustainable, healthy, and just food choices. She is also a visiting scholar with the School of Social and Behavioral Sciences at Arizona State University (ASU). Keri earned her PhD in communication from ASU's Hugh Downs School of Human Communication and completed postdoctoral work in science communication with ASU's School for the Future of Innovation in Society.

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Tessa earned her MS in health and strategic communication at Chapman University in Southern California. Experienced in the animal welfare and plant-based sectors, she previously volunteered as consumer research fellow with GFI. Tessa is excited to be using her social science research skills to support GFI's research on effective consumer messaging to promote plant-based and cultivated meat.

Suggested Citation

Acknowledgements

About GFI

The Good Food Institute is a global nonprofit building a sustainable, healthy, and just food system. With expertise across the scientific, regulatory, industry, and investment landscape, we are accelerating the transition of the world's food system to alternative proteins, using the power of food innovation and markets.

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