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Publicly tasting cultivated meat and socially constructing perceived value politics and identity

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Cultivated meat (CM), derived from animal cells without traditional animal agriculture, offers potential to address vulnerabilities and reduce negative impacts of meat production. However, CM faces consumer skepticism, regulatory hurdles, and bans in some U.S. and European states. Key gaps in understanding include acceptance, sensory evaluation, and political alignment with existing research relying primarily on hypothetical, experiment-based evaluations. This study is the first to observe consumer acceptance in a public tasting of CM. We conducted an ethnographic analysis combining semi-structured interviews, field observations, and secondary data from media and social media including additional interviews. Using Grounded Theory, we identified themes—American identity, verisimilitude, and the role of government—that inform pathways for CM acceptance. Results reveal the importance of aligning CM with ethical priorities while meeting sensory and transparency expectations to build consumer trust. Widespread adoption may require further innovation, evidence-based communication, and consumer inclusion for CM to be seen as a valuable alternative to conventional meat.

"We Don't Ban Foods in America. It's Not Who We Are."
-event participant

Cultivated meat (CM), also known as cell-cultivated, or cultured meat, is an alternative to animal-sourced foods (ASFs) produced by culturing animal cells in a controlled environment (often within a food-grade bioreactor like those used to process dairy)[1]. Development of CM has been described and explored for over 100 years in various scientific fields, with a technological origin in tissue engineering used in stem-cell therapy and skin graft transplantation[2]. The rationale for CM, according to scientific and industry leaders, is to create a sustainable alternative or complement to conventional livestock farming that addresses the rising demand for protein foods while also offering solutions for food security[3,4], national food sovereignty, and minimizes negative externalities of animal agriculture on the environment, human health, and animal welfare[5–8]. In 2023, the U.S. approved the sale of CM for the first time[2]. For a brief time, two companies, UPSIDE Foods and GOOD Meat, Inc. provided CM to two unconnected fine dining restaurants that each sold CM to U.S. consumers on high priced tasting menus in which CM was a small component; each restaurant served less than an estimated 100 servings before discontinuing these options[9–11]. Aside from these limited opportunities, the U.S. public has no routine way to acquire or taste these novel foods.

Despite federal approval of these initial products, some U.S. states have moved to ban CM or otherwise pass legislation to mandate censorship and restrictive naming requirements on food labels[12,13]. In May 2024, Florida and then Alabama passed bans taking effect in July and October, 2024 respectively[12,13]; the Tennessee House proposed a bill which was introduced in the Senate, deferred for a later session, and is now inactive[14]; and the Arizona House passed a bill, which later failed in the Senate[15]. Historically, the Food and Drug Administration (FDA) has taken a permissive approach to food approvals, and while federal food ingredient bans do occur, they typically occur after approval after strong evidence of harm is demonstrated[16]. Recently, ingredients such as partially-hydrogenated oils (trans fats), certain food colorings[17,18], and some high-profile food safety incidents[19–21] have called into question both the process of approval and removal. State-level food bans are more rare, and despite criticisms and trade complications, proponents of state-level bans argue that they influence FDA re-evaluation[22,23]. This, along with popular discourse deliberating the safety of food additives, genetically modified organisms (GMOs)[24,25], and a lack of scientific consensus around the risks and definitions of processed foods have fueled consumer wariness[26–29] and become a point of political tension. UPSIDE Foods, the first company to receive market approval to sell CM in the United States, hosted the world's first, free and open to the public tasting of CM in Miami, Florida, on June 27, 2024—announced two weeks

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before, and hosted just four days before the first U.S. state-level ban on CM would take effect in Florida[30]. The event was framed as a way to allow consumers to taste and examine CM for themselves while also soliciting activism and advocacy for the "Freedom of Food"[30]. The historic event provided a unique opportunity to conduct a natural history ethnographic event study, enabling analysis of real-world consumer perceptions of an actual CM product without researcher-imposed experiments, controlled settings, targeted recruitment, or facilitation. At an event, interviews can elicit faithful and spontaneous inquiry into attendees' underlying beliefs, sensory experience, political perspectives, and impressions of the company, industry and event could be explored among individuals with a range of prior experience and beliefs who voluntarily chose to attend without external incentive.

In this fraught political context, relatively little is understood about public desire for and acceptance of CM. At the time of the event, four U.S. states – Alabama, Arizona, Florida, and Tennessee –had fielded bills banning CM; by November 2024, another four states, Michigan, New York, Pennsylvania, and Illinois introduced similar bills. Consumer acceptance of CM has been explored in multiple studies, including hypothetical choice modeling, sensory evaluation, and attitudinal surveys. Prior research has identified key factors influencing acceptance, including perceived naturalness, food safety concerns, and ethical considerations[31–33]. Other studies have explored consumer attitudes towards naming and framing of CM compared to other foods designed as alternatives to animal foods[34]. These studies identify important constructs underlying presumed acceptance of this novel food that can be probed when encountering CM in tasting opportunities. This study builds on the existing research by examining how consumers engage with CM at a tasting event, allowing for the observation of unstructured, socially influenced acceptance processes[35]. Given that CM is not available for purchase, consumers have no reliable access to CM and few individuals outside of relevant industry and research circles have tried it[27,34–40]. As a result, much published research on CM acceptance attempts to predict acceptance based on thought experiments[41,42] and the rare studies on sensory evaluations are in the context of experiments. These sensory studies include isolated evaluation of smell[43], or manipulating taste ratings in response to information treatments[44], or recruiting interested participants to compare CM to familiar foods at a local butcher shop[45]. While these offer insights about possible consumer acceptance, they do not capture the reflexive processes of acceptance and adoption likely to manifest within open-choice and socially complex settings, such as when wider availability and distribution of CM occurs. There are no known studies that have studied individuals freely seeking out CM in order to understand their background, baseline opinions, and political alignment alongside sensory evaluations, nor any examining the complex social environment of a public event. Immersive ethnography can offer rich insights situated in a complex social environment, observing consumer experiences within family and other social dynamics as they naturally unfold, and witnessing how consumers co-create social meaning for CM without manipulation or incentives to attend and try the food[46].

Media coverage about food technology has stoked consumer wariness and preferences for familiar, traditional, and "natural" foods[47]. Perception of food technology has a complex history in the modern foodscape[48,49], and naturalness is often perceived as safer and wholesome, laden with nostalgic or even romantic ideals about culture and nature[47,50–53]. Frequently, introduction of novel food processing and agricultural technology is met with consumer aversion, in large part due to innate preferences for naturalness[54,55]. Advances in food technology offer a range of societal benefits and harms, but resistance is usually untethered to demonstrated evidence[54,55]. Importantly, acceptance and rejection patterns for food technology are heavily shaped by cultural and social factors as well as media messaging which echoes popular fluctuations in public trust of science and food safety regulation[46,48,49,56–60]. This suggests that consumer perception of naturalness and novel food technology may be largely symbolic and that resistance may be primarily due to cultural beliefs and the identity threats that novel technologies may signal to both consumers and producers[61–63]. Indeed, farmers and farms themselves are often described as stewards of nature, and thus as symbols of naturalness and health, indicating that a departure from these traditions may itself provoke existential anxiety[63,64].

No prior ethnographies of public encounters with CM exist, but some have investigated other once-novel, now prevalent and politically charged food technologies including GMOs[65,66] and the paradoxical acceptance and aversion to concentrated animal feeding operations (CAFOs), also known as factory farms[67–71]. Event-based ethnography offers a unique opportunity to simultaneously investigate social norms, anxieties, power dynamics, political culture, expended effort, sensory dynamics and the reflexive interactions between these dynamics both voluntarily and spontaneously[72,73]. Event studies allow for an ethnography of a certain group of people at a specific time and place where researchers can observe the natural unfolding of events. Anthropologist Penny van Esterik describes the ethnography of taste events as a crucial complement to lab-based sensory research because it is more sensitive to the social and cultural dynamics that influence true and complex tastes and the socialization of food habits[74]. Ethnography of food has a long history, predominantly exploring the cultural significance of social food practices in communities, often tied to specific regions[46]. Much literature describes immersive field research for food preparation, consumption, political activism, and social/religious rituals[75–79], but less work examines public tasting events beyond juried events with premium entry fees[80–82]. Nonetheless, food tasting events have long been used to advocate for ethical food and agriculture practices like the environmentalist "locavore" movement, "Slow Food" movement, and the vegan movement; each co-locating food within personal and political spheres[7,62,63,71–74]. For these sociopolitical movements, taste events are powerful tools to galvanize and concentrate support, demonstrate the sensory value of ethical foods, spread messaging, imprint favorable impressions, and allow attendees to bond over shared visions of food futures[46,65,66,83–86].

Our objective is to conduct an ethnographic analysis of the reception of this novel technology among members of the general public who voluntarily chose to attend a tasting event of CM. We aimed to document the ways that companies, cultures, and communities encounter, interact with, adapt to, reject, and grapple with acceptance of CM including how stakeholders may solicit political action in support of or against it[66,73,87,88]. As modern food solutions are developed to help address growing resource demands, analyzing social environments in which novel foods are tried can help identify successful means of democratizing suitable solutions[87], enabling society to co-create better food systems and food cultures of the future[46,88].

Results

Pre-event media analysis—from the company

The company used social media platforms including Instagram and Linked In to promote the event, known as the "Freedom of Food Pop-Up" with a red, heart-shaped logo bearing that name superimposed over an American flag which was often surrounded by Florida's famous palm trees. (Fig. 1) The campaign emphasized the urgency, highlighting that it was the "first and last chance" and/or "the ONLY chance" for Floridians to taste CM before the Florida state ban on July 1, 2024. Posts were strategically timed, with the event location only revealed the day before– prior to that, would-be attendees needed to contact the company to attend. The messaging invoked activism in support of protecting the American values of "freedom" and a sense of historical importance by urging people to "make history" by attending[30].

Posts had user comments which tended to show strong interest, with many eager to attend or requesting that a similar event come to their city. Many comments also expressed political frustration, with some criticizing the ban as "sad," or voicing opposition to the politician who introduced the ban: "Ron DeSantis and the Florida Republicans are Un-American anti-capitalists." Comments sometimes led to larger discussions about free market principles, government roles, and American identity, with one user stating, "Passing policies based on political ideals leads to what's best for the political class, not for Americans. Only the free market can do that."

Fig. 1 | Freedom of food pop-up logo. Used by UPSIDE Foods and several media outlets to promote the event. (Used with permission from UPSIDE Foods).

Interestingly, the company website lacked prominent information about the event. To find information, users needed to search directly through an external search engine. By contrast, information about the Florida and Alabama state bans, and a call to sign a petition against them, were featured prominently on the company webpage. Searching directly, the event page also featured information about the bans, with an image of a family gathered around a dinner table with a homemade meal. This was juxtaposed with a call to action:

> "Florida and Alabama criminalized cultivated meat. These laws do not protect consumers. It is 'food policing' to protect entrenched interests, defying free market principles and limiting consumer autonomy for a product the food safety experts at USDA and FDA have deemed safe. Fight back: SIGN THE PETITION." (Supplementary Fig. 2)

Similarly to other announcements about the event, the page emphasized the urgency and exclusivity of the event as the "first- and last- chance to taste cultivated meat in Florida" before the ban, and as first-come, first-served, with limited quantities, encouraging early arrival. The bottom of the page included disclaimers about limited supply, liability, photography consent, and event rules, which included a requirement to sign the petition against the bans. This framing combined urgency with a sense of civic duty, tying the tasting experience directly to broader political and social issues of food freedom.

The company promotion of the "Freedom of Food Pop-Up" emphasized the following themes (Table 1):

Overall, the company positioned itself as a champion of consumer rights and freedom, and the food as a symbol of those rights in need of protection. The event was situated within the broader political context and sought to solicit and galvanize support and maybe recruit the first wave of CM early adopters.

Pre-event media analysis—from the media

Media coverage before the event largely matched the messaging in the company's press release[30], but emphasized the event as both a culinary experience (like a product launch or tasting) and also a gathering to rally activism to challenge the regulatory barriers created by Florida politicians. The media promotion occurred in outlets that largely focus on the food industry, or on alternative proteins like cultivated and plant-based foods (PBFs) specifically, and similarly focused on themes of urgency, freedom of choice, and the promises of CM[30,89–91] (Supplementary Fig. 1). The event was described as a historic, one-night-only opportunity to taste CM before the Florida ban and positioned the company as a pioneer, with clearance from the FDA and the United States Department of Agriculture (USDA). Statements like the "right to choose what meat to eat," framed the event as a celebration of food freedom and a protest, while the ban was depicted as a setback for innovation and consumer autonomy by multiple stakeholders. Articles included perspectives from local celebrity Chef and business-owner Mika Leon to emphasize the culinary value of CM as well as from the science and technology real estate firm Brick and Timber Collective (also the host of the event) to emphasize the economic importance of CM[23,89,90]. These perspectives added credibility and appeal to the event, while reinforcing the high political and economic stakes involved.

Themes were similar to those in company messages, although the emphasis was more focused on Miami local framing and the hedonic experiences to come with frequent references to Chef Mika Leon, mixologist Gio Gutierrez, and descriptions of the cultivated "chicken filet in a Cuban-style,"[90] alongside enticing images of CM foods. Articles used stronger language in opposition to the ban, referring to it as an "authoritarian policy by Governor DeSantis"[91]. Articles also included the contrasting language from DeSantis, describing the ban as "fighting back against the global elite" which allowed the media to dramatically frame the event within the broader narrative of the American culture wars[91], and to proposed or pending bans in other states, highlighting the growing political battle over CM.

Ethnography

The event had a high-end appearance and an exclusive atmosphere marked by a vibrant yet tense energy. Outside, a protest van with a large LED screen criticizing "lab-grown" meat blocked the view to the entrance (Supplementary Fig. 3a, b), imposing a confrontational tone before attendees reached the more festive party atmosphere on the rooftop. To get inside, attendees lined up along a red-velvet rope, moved past several large security guards, and were checked in at a desk by an UPSIDE Foods employee with a guest list creating an air of exclusivity even though the event was open to the public. Signs describing event rules and the requirement to sign the petition were posted throughout (Supplementary Fig. 4). On the rooftop, the mood shifted as people entered a more polished, upscale, party environment. The party started sun-filled, on a rooftop in Miami with an expansive view of an artsy neighborhood and was decorated with tropical plants throughout. Additional decorations used the brand's colors (white and red), giving it the feel of a luxury food product launch with a prominent, central cooking station, a decadent buffet, two open bars, and colorful lighting over a dance floor. There was also a party photobooth set up with props intended to capture live reactions of "first bites".

Even before it was served, the focus of the crowd was on the cultivated chicken. However, it would not make an appearance until about 1.5 h into the event, something that stoked quite a bit of anticipation and tension among guests. After grazing on the buffet and drinks (Supplementary Fig. 5), guests vocally expressed confusion and frustration about waiting for the main attraction. Then, Dr. Uma Valeti, the CEO and Co-founder of UPSIDE Foods, delivered a long and passionate speech about the innovation and challenges of CM, and primed the audience to expect the food to "taste just like chicken, because it is chicken". After his speech, Chef Mika Leon described her appreciation for the food and company and began preparing the dishes. She also offered many sensorial primes, such as instructing the audience to listen for the sound of the sizzle and to smell the cooking. Attendees demonstrated eagerness to observe these sensorial qualities, and to see how the food looked while cooking. Once cooking commenced, many charged forward and pulled out phones or professional cameras to document the experience, often remarking aloud about wanting to taste the product. One by one, samples were assembled and attendees tasted the food while carefully observing the reactions of others around them.

Table 1 | Company pre-event messaging analysis

Theme	Sub-Theme	Description
Identity and freedom	American identity	American symbols like the flag were used in promotions, with the flag modified into the "Freedom of Food Pop-Up" logo bearing company statements like "come make history" linked the event to values like patriotism.
	Freedom of choice	Framed as a fight for consumer freedom, suggesting the ban limited personal choice. Statements like "It's about giving people freedom of choice" emphasized a vision for a "better food future."
Opposition to government intervention	Critique of government	Company messaging criticized the ban as "clucked up," accusing politicians of hypocrisy and selective "food policing."
	Free market advocacy	Promoted as a free market issue, arguing that the ban represented government overreach and protection of entrenched interests, limiting consumer autonomy.
Time urgency and exclusivity	Scarcity and urgency	Presented as a "first- and last-chance" event with limited supply and "first-come, first-served" access, creating urgency.
	Exclusivity	Framed as a unique, historical event with limited quantities and undisclosed location to increase exclusivity.
Health and safety concerns	Health and safety	Company messaging highlighted product safety and regulatory approvals (USDA, FDA). However, comments such as "Frankenstein meat" from users on LinkedIn showed continued skepticism, especially among potential attendees, similar to skepticism expressed by Florida lawmakers.
Political positioning	Political statements	Posts and comments criticized Ron DeSantis and related political ideologies, challenging the "protectionist" framing used by ban supporters.
	Civic engagement	Included calls to action, such as signing a petition against the ban and attending as a form of protest.
Community and social appeal	Social interaction	The event was promoted as a social occasion, described as a "happy hour" and encouraging group attendance. Comments reflected a focus on community and shared experience.
	Local engagement	Promotions referenced Miami, local neighborhoods like Wynwood, and hashtags like #bestfoodMiami to appeal to local pride and identity.
Marketing and brand positioning	Brand identity	The UPSIDE logo with a heart replaced the stars on the flag, symbolizing the brand as an American innovator standing against restrictions to freedom.
	Appeal to hedonics	Designed as socially desirable with a high-profile chef and the tagline "tasting is believing," to create appeal through sensory experience and exclusivity.

The crowd was diverse, with attendees of all ages, including small children with their families, young and old couples, and adults into their 60 s. The majority of the crowd appeared affluent, seemed to understand how to comport in such a luxurious party environment, and many wore designer, albeit casual, clothing. Most attendees appeared to be white and/or Latine—however, people from other racial and ethnic backgrounds were present. There was a slightly higher proportion of men, roughly two thirds of the crowd, and the crowd appeared to have a healthier weight status than a standard cross section of 100 Americans. The media presence was palpable, including many professional photographers with cameras on tripods. The media and other industry stakeholders outnumbered attendees.

Next to the cooking station was a large screen showing an overhead view of the CM cooking – this spectacle was part of the main attraction. On the screen, attendees could see bubbling juices swirling around the heavily seasoned meat. The samples themselves were small, amorphous cutlets and that developed randomly distributed red and browning rivulets as they cooked, indicative of a composite texture. The cooking station had two frying pans surrounded by seasonings in jars, with one labeled *Tajin*, a popular seasoning that is highly aromatic and likely added to the color in both the oil and on the cutlet. Many in the crowd asked the chef technical questions about cooking CM, and she discussed the similarity of cooking it to conventional chicken, indicating one difference: CM cooks faster.

Samples were served on small, compostable, square party plates. The menu described the dish as a tostada, layered up from the bottom starting with a small, fried, round cut tortilla, topped with guacamole, spices, CM chicken, chipotle aioli, and beet sprouts (Supplementary Fig. 6). According to discussions with the company and one media outlet reporting, 75 samples would be made[90], and according to communications with the company, not all samples were consumed by the end. Watching onlookers, some faces displayed skepticism or hesitation when going to take their first bite, while others ate it quickly and without much consideration. People seemed to want to linger after trying; however, the samples were distributed between 8:15 and 8:45 pm on a Thursday evening, and the event ended just after 9 pm.

Interviews

The tasting event brought together a diverse group of attendees. Nineteen respondents agreed to be interviewed; respondent characteristics are summarized in Table 2. While some had prior exposure or positive support for CM, most came to the event curious, and some even skeptical. Attendees indicated that they were motivated to attend because of political, ethical, or environmental concerns. However, despite interest in the promise(s) of CM, some expressed optimism for the future of CM and others had clear skepticism about the product and its feasibility. The event offered multiple opportunities for attendees to model and observe the tasting experiences of others. As a result, interviews often offered both personal perspectives, as well as explicit awareness and discussion of others' opinions. Rates of responses to questions on these matters are summarized in Table 3.

A predominant theme in the interviews was the belief in the importance of American freedom and consumer choice. Many respondents voiced strong opposition for government bans and advocated for the right for individuals to choose what they eat:

> "The ban is about politics and about protecting certain industries, but it's a conflict for me because they put the science second. I support innovation and I'm usually a big DeSantis supporter. But I don't support him on this. I would vote against the ban."

Many respondents, particularly those who were currently vegan or vegetarian (collectively, "veg*n"; $n = 6$) or previously veg*n ($n = 3$), expressed great enthusiasm and curiosity about CM—but some had strong and unexpected reactions to the "realness" of the sensory qualities they experienced:

> "The aftertaste was of real chicken, it was *too* real. I had forgotten about that taste. It isn't something you get in plant-based chicken and knocked me off guard. It wasn't a chemical taste; it was REAL CHICKEN."

Table 2 | Interview respondent characteristics

	Interviewed	Tasting
N	19	15
Age (mean, SD)	39.7 (± 13.5)	40.5 (± 13.4)
Race/Ethnicity		
Black/African-American	1	1
Hispanic/Latine	7	6
Asian	0	0
White	13	10
Middle Eastern/Jewish	2	2
Gender		
Man	11	9
Woman	8	6
Diet type		
Vegan	5	5
Vegetarian	1	1
Flexitarian	1	0
None (omnivore)	12	9
Former vegan or vegetarian (veg*n)*	3	2
Political affiliation		
Democrat/liberal/"left leaning"	7	5
Republican/conservative/ "right leaning"	1	1
Libertarian	4	4
Independent/ undecided/PNR	7	5
Educational attainment		
Some college	1	1
Bachelor's degree	6	3
Master's degree	7	6
Law degree	4	4
Unknown	1	1
Prior knowledge of cultivated meat		
No prior knowledge of cultivated meat	3	2
Prior interaction with cultivated meat industry	3	2
Previously eaten cultivated meat	2	2
Opinion of cultivated meat on arrival		
Positive	11	10
Neutral	6	3
Negative	2	2
Distance traveled to attend		
Local (<1 h drive)	14	11
Regional (>1 h drive)	2	1
Visitor (Traveled by plane)	3	3

Race/Ethnicity: 4 respondents indicated being of mixed race 1) one respondent self-identified as Midde Eastern and Hispanic, 2) self-identified as Black and White, 3) self-identified as being of Middle eastern Jewish descent and White, and 4) self-identified as Hispanic and White. Diet Type: Former vegan/vegetarian category is non-exclusive, 1) one respondent self-identified as flexitarian and a former vegan, and 2 others self-identified as not currently following a special diet while being a former vegan or vegetarian (veg*n).

Table 3 | Details from interviews

How they heard about the event	*n*(%)
Friend/family	6 (32)
Professional	6 (32)
Vegan online group	4 (21)
Media/social media	3 (16)
Who they came with	
Alone	7 (37)
Friend	3 (16)
As a couple	4 (21)
Parent-adult child	5 (26)
Intend to try	
Yes	19 (100)
No	0
Interviewed after tasting	
Yes	15 (79)
No	4 (21)
Enjoyed tasting	
Yes	11 (58)
No	2 (11)
Mixed	2 (11)
Unknown	3 (20)
Tasters requesting sensory or product improvements	
Yes	11 (73)
No	4 (27)
Willing to consume	
Only try again	5 (26)
Consume/purchase regularly	6 (32)
Only on special occasions	1 (5)
No	3 (16)
Unknown	4 (21)
Ban	
Knew about it	13 (68)
Signed petition	5 (26)
Would sign/take action to oppose	19 (100)
Would vote against it	19 (100)

Many expressed disappointment about the lack of information provided at the event and wished to learn more about production methods and to see concrete, evidence-based demonstrations of ethical claims relevant to health (safety, but most especially nutrition), the environment, and often for animal welfare:

> "The whole activity lacks credibility. Who can tell you that that chicken wasn't bought at Walmart this morning? They didn't present anything. They didn't show you anything of the process. We don't know anything. We just have to believe that they did it in a lab. How do they [make] these meats? How do you get from a cell to a piece of meat? With regular meat they show you how they feed them, how they kill them, how they prepare them, the show more than just bringing you a piece of chicken that you don't know where it came from. "

Attendees described the event itself as an important way to increase awareness and acceptance of CM, offering the crowd the ability to discover how well supported CM is by others. Curiously, many had come to the event believing CM was unknown, with only niche interest, "We were expecting everybody here to be vegan. So, the fact that there are a lot of people who aren't just vegan or vegetarian feels cool to see." Most attendees indicated an expectation of small crowds of highly similar people and were excited to find such a large and diverse crowd. "I didn't think anyone else was interested in cultivated meat in Miami."

The event was not uniformly effective in alleviating concerns or skepticism about CM, especially about whether the product was mature enough for the market. For some it inspired moderate hope:

> "I'm not saying people will stop eating real meat or anything but everything [is] consumed with criteria…I'm confident now after coming here and seeing all the support that it's a very valid way to eat meat in the future."

However, others would need substantial continued product development:

> "This was like product day 1. I wanna see where we are on day 10, or day 100. You haven't lost me yet; I'll try it again around day 10, or after. I want to see a little bit more growth…I'll buy it when its a much more developed product."

Taste evaluations were mixed; some praised the flavor and texture as comparable to conventional meat, while others described the texture as "rubbery" or in other ways differing from expectations that would authenticate it as "true chicken":

> "It had a little bit of rubbery texture. A little bit like a fish fillet. Like when you bite fish and when it comes apart like that. You can actually feel the little pieces like coming apart. Except this didn't come apart."

The most common comparator was plant-based meat alternatives. For many respondents, the CM chicken was considered similar in taste or texture to PBFs, "Its tastes good, as good as any plant-based food but not particularly different." Only a few endorsed it as a superior alternative, "the biggest difference between this and plant-based is the texture for me, because this actually has the texture of meat;" but, three described it as worse in flavor and texture to available alternatives, "I would say some of the plant-based foods that I've tried tasted more like chicken, honestly." Vegans, in particular, expressed a unique kind of ambivalence in sensorial evaluations of CM, and were often reluctant to compare it to "real meat" since it had been "so long" since they had last consumed it, some over five years and some over ten. Vegans tended to compare CM to plant-based alternatives, simultaneously enjoying it and experiencing an uncanniness about its "realness." This uncanniness was described as an "aftertaste" that was so real as to be disturbing or having a texture that was "so much like chicken that it was overwhelming."

The level and type of seasoning, and the highly composed nature of the dish were very frequently discussed. "The seasoning was so strong it was hard to taste the chicken itself." This conveyed a prevalent uncertainty about the "true taste" of the food, with many describing that they made a concerted effort to remove seasoning and layers of the tostada in order to taste the CM directly, "I tried it with like all the sauce on it and that tastes really good. And then I tried it again to try the meat by itself…I would want to try it with different styles of cooking." Despite varied sensorial responses and evaluations of product maturity, all but one respondent had a positive view of the future potential for the product-- but all but one who tasted the food believed it needed substantial further sensorial improvement for maturity:

> "It needs some honest improvement, like in general with the product…Plant-based foods have tasted more like chicken and stuff, honestly…but I think this would get better. Back then, five or more years ago, there weren't that many mock meats that tasted good; nowadays, I've had chicken nuggets that tastes just like where you can't tell the difference."

Some found CM indistinguishable from conventional meat, while others found it similar or inferior to plant-based alternatives. Acceptance was fairly divided; although most endorsed willingness to try again, few were ready to endorse consuming regularly, pending future product development. Texture played a crucial role in acceptance of the product. More positive and negative evaluations tended to track alongside texture evaluations, with positive evaluations being about identifying a grain or a bite, "Seeing it sliced, it sliced just like conventional chicken, having the same kind of muscle fiber and structure as conventional chicken. It looked delicious"; and negative evaluations described it as "rubbery" or like "minced meat" specifically identifying a lack of that fiber or grain, "The fibers of the chicken breast weren't there; it felt a bit more like minced meat put together into a nugget. A little bit rubbery, tougher, rougher, muscle cut up chicken than regular white meat piece."

Many respondents expressed a strong desire to try the CM in other formats, or to be able to cook it for themselves:

> "I would cook it at a higher temperature to get the skin crispy. They should have shown two or three different ways to cook this chicken… and they should give some samples that people can take home with you to try."

The skill of a celebrity chef cooking the food was highly salient for respondents and led to caution or hesitation when answering whether what they tried would influence future food decisions, "this was definitely cooked by someone who knew what they were doing". Interviewee reactions to the professionally designed dish and requests to be able to try it in other and more familiar forms such "as a sandwich or a regular meal" added to the feedback that the food under-performed, or was more like a nugget than the expected chicken breast.

Many respondents rejected the Florida government decision to ban CM, "I feel like the ban is an interesting choice for a state that allegedly supports smaller government". This position was consistent regardless of political affiliation and was often framed in terms of free-market principles, consumer rights, and American values:

> "Banning cultivated meat sets a really terrible precedent in this country… Completely based on scare tactics and political nonsense. We don't ban foods in America. That's not who we are, that's just not what we do. This isn't Four Loko. There's no science behind the ban. It's nonsense."

This divergence from traditional party positions, particularly for those identifying as Democratic/Liberal, who typically do not oppose government intervention, suggests that CM might create new political fault lines defying traditional party stances. This was also evident among the several respondents who blurred their own political self-identification, "I am towards a Democrat. A liberal. Actually, more like a Libertarian" and "I think Republicans are stupid. I'm like the complete opposite. A Liberal. Well actually libertarian may be closer to my thinking."

Attendees expressed a range of beliefs about CM, such as benefits to society, "People have done research, published papers that show that it is more sustainable at scale". Others arrived with strong beliefs—right and wrong-- about methods of creation:

> "It's obviously grown and produced without hormones, without antibiotics in a humane way, using less water, using less land, using less energy. It offers so much promise…"

Some mistaken beliefs about the product created striking and sudden reversals from acceptance to rejection when the truth became known:

> "I wish I'd known they use animal ingredients. If I had known I wouldn't have tried it. I wouldn't have eaten it. I would have spent my time advocating that the company change their process. We feel duped. I couldn't give informed consent to try the food. What if this was made using factory farmed animal inputs? Is it GMO? If they would mislead us about this, what else are they misleading us about? Doing things the right way is so important, transparency is everything. Going forward I will only support EAT JUST."

Attendees, including non-veg*ns, came with strong negative impressions of animal-sourced meat as well, "there was even rope in corned beef back in the day…regular chicken meat has become very different from what it was. If we're gonna compare chicken with lab chicken, I would say maybe the lab chicken is even healthier."

In many cases, prior knowledge, accurate or otherwise, described moral superiority beliefs for CM compared to ASFs, and in some cases a belief in superiority or equivalence to PBFs. Respondents indicated that CM was a better alternative to ASFs for animal welfare and food processing, "do you know what they put in sausages? You know what they put in, in the chicken nuggets? You know, the nails go there and the beaks and the whole thing" or otherwise favored CM compared to PBFs:

> "I don't support plant-based meat substitutes. I think if you wanna eat plants and vegetables, I'd rather have like a real vegetable, the real plant or plant-based foods done with vegetables. What goes into plant-based meat substitutes, it's more processed more chemicals, you don't know what you're eating…but this is real meat. It's just that instead of being grown in an animal, it's grown in a vessel, but chemically and genetically, it's real meat."

Ethical considerations like animal welfare were significant for many, "I support anything that would reduce the need to slaughter animals" and, "Well, you know, they are still using animal cells, but the amount of animal suffering is diminished to next to very little, you know…You have to take your wins where you can." Nearly all described a desire for this to alleviate environmental impacts, including concepts of food system resilience:

> "We can't take the entire Western Hemisphere, North and South America, to raise cattle and other livestock…We can't wait 26 years and till we're desperate and facing a crisis and solve it then. I think it's probably a good idea to work on problems when you still have choices."

However, this was nearly always accompanied by a demand for greater proof and transparency:

> "Right now, I believe that these are not GMOs, and that for environmental health, animal welfare, societal benefit, and naturalness that cultivated meat is better than chicken, but there is not enough definitive information about the health benefits, and I am looking for more objective information that scientifically demonstrates that."

Many attendees mentioned some knowledge of "reports", "studies", or "science" indicating safety, such as federal approval, and early evidence of reduced environmental impact. However, many expressed a keen awareness that these did not translate to healthfulness and expressed a great need for demonstrated downstream effects for personal and planetary health, "obviously long-term studies are needed". As a result, some respondents who arrived eager to embrace CM left skeptical due to this lack of disclosure.

Consumer Willingness ranged and changed during the course of the event. Attendees mostly started out highly willing to try the food. According to most, it was the reason they came, "I'm trying it while I can". Some endorsed a willingness to pay more, "sometimes you have to pay for better quality" and, "I think if it raises the price of the meat by whatever sense, that's okay because then you have the validity that it went through a lab." While others characterized it as "for a special occasion…not something I would eat everyday", or that they would buy it "if it were as accessible and affordable as chicken in the marketplace."

There was an observed divergent pattern in market segmentation between those who see CM as a superior/premium product and those who need more convincing of superiority/suitability through product innovation and disclosure. Perceived value[92,93] seemed to be described among enthusiastic tasters who described CM as "fresh and high in quality" or able to create an abundance of high-quality food options that are normally rare or resource intensive, like "Wagyu", or otherwise able to be "optimized" for specific nutritional or athletic goals like supporting better muscle hypertrophy than conventional meat. Others indicated waiting for price parity and ethical alignment such as removal of animal inputs, described above.

Most indicated that they would be willing to recommend CM to others, especially as a replacement for ASFs. These respondents often came across as cautious optimists, expressing conditional willingness to try again, pending substantive product re-formulation for sensory qualities, and largely believed this was possible. For these tasters, they may consider CM in the current form suitable for some, but not most, "It's a good vegan alternative for the vegans that are looking for that…Yeah, that's it, it's okay."

Three respondents ultimately rejected the cultivated chicken. One rejected it due to poor sensorial experience:

> "it looked more like a muscle, but the texture was just rubber. Not chicken, not a nugget, just rubber. A piece of rubber. I mean, for me complete failure. will not eat it again will not buy it."

Two others began as conditional adopters (willing to consume on special occasions) ultimately rejected the product despite enjoying the taste when they learned about the use of bovine serum and expressed concern that the event had been marketed to vegans, but the use of animal-based serum was not disclosed.

Six respondents indicated some prior exposure to the CM industry. These were primarily lawyers; another worked in PBF marketing; another had previously written about the passing of the Florida ban; and one was a former employee of an investment firm that was an early investor in CM. Many also indicated that personal and professional contacts had invited them to attend. Interestingly, many of the vegans at the event reported that the event was directly promoted within local, online, vegan groups (e.g. Miami Vegan Facebook group), suggesting that event promoters may consider vegans a key target for these products. Others indicated that they were fans of the celebrity chef or active in the Miami food scene, broadly.

Attendees were also asked about their impressions of the event and the company. Overall, respondents viewed the event as effective in increasing acceptance and trust. Particularly that the event enabled a setting in which supporters could validate their beliefs and witness broader social acceptance:

> "I really do think it's important that consumers have the opportunity to try this. I think if they did a lot of them who are squeamish about the idea of cultivated meat would probably change their mind."

Others described that being able to see the crowd communicated hope for the future viability of CM products and the industry, "I'm confident now after coming here and seeing all the support that it's a very valid way to do I eat meats in the future."

Many were impressed by the event ambiance, noting the high energy, diverse turnout, and curated presentation of food. Respondents described the engaging atmosphere, the "gorgeous space" and festive environment. However, for some this was seen as smoke-and-mirrors, "I've been eating Manchego Cheese and drinking Heineken beer, so nothing new." Nonetheless, many commented that the event provided a space for social interaction and the normalization of CM, allowing attendees to "confirm that others also appreciate the brand and the food."

Many described the company as an innovative leader in the field. Others expressed concern about the lack of information and felt that the

Table 4 | Emerging themes

Americanness	Role of government
	Freedom, freedom of choice, consumer freedom
	American identity
Social awareness	Beliefs about what others think
	Beliefs about what others will or won't do
	Social dynamics in taste experiences
Need for education or development	Fear or distrust of science, food industry, or government
	Need for further information (e.g. evidence on health, sustainability, inputs)
	Need for further product innovation to address consumer needs
Time urgency	Time pressure to try (last or only chance)
	Long waiting period at the event
Verisimilitude	Interrogating proximity and distinction from "the real"
	How real is real for cultivated meat, enough to be 'normal' or 'regular'
	Vegans and vegetarians (veg*ns) processing eating "real" meat

company needed to do more to earn their trust. Some trust components overlap with concepts of perceived value and product quality and safety, including a desire for details about product provenance and pharmaceutical standards discussed above.

Emerging themes

Five major themes emerged from interviews, summarized in Table 4 and described in more detail below. Themes emerged through consideration of multiple participant responses and often axially joined deductive codes. By comparing and integrating responses across different contexts, these themes and sub-themes contribute to a deeper understanding of participant perspectives and suggest possible theoretical determinants of a synthesized theory of influences on the consumer acceptance of CM.

Regarding the theme of "Americanness," Respondents referenced their perceived conflict between American identity and government intervention in the context of the CM ban. Respondents endorsed valuing freedom, "I'm against any ban that bans people from trying to work or make their business, especially when it comes to good food." Respondents also had high support for business innovation, and market-driven progress, and concerns about corruption, government overreach, and protectionism of some interests over others:

> "I think it's an affront to the notion that our country has a common economic market and that states can't enact bans on out of state products just to protect in-state agricultural interests. I think it's an affront to the notion of supremacy of federal law over state laws that conflict with it. And I think it's just an outrageous interference with individual liberty."

Respondent reactions to the ban were rooted in broader beliefs about what it means to be American, and the integrity of the free market system, "Small businesses, family groups…deserves any chance to let their business prosper in any state, especially in America" and "this is free country [sic] and [the ban] is just weird to me". The ban was thus interpreted not just as a policy issue but as a symbolic battleground for competing visions of America's future.

The freedom to start a business and have a fair shot on the marketplace was joined by concepts of consumer freedom of choice and specific ideas about the role of government, "The ban pisses me off. Companies, especially small companies working for good, should have the ability to freely market their foods". Nearly all expressed the belief that policies should not restrict consumer choice without strong scientific justification, and to do otherwise was 'not American':

> "Bans should be because of more direct harms…if it's something that's dangerous to your health…like if it's something that's going to harm you, then yeah, there should be a ban, or law against it or whatever. But I haven't seen any reason for that for this."

The ban was frequently characterized as government overreach, "There's no science behind the reason for a ban. It's nonsense…This is an authoritarian government telling people what they can put in their bodies and feed their families". Respondents did however maintain that consumer freedoms need to be in place so consumers can decide in both directions, "There're a lot of people that don't want to try it, but that doesn't mean that it should be banned".

This theme goes beyond political positions on support for novel foods or how they should be approved and begins to suggest that actions like the Florida ban add to a growing distrust in government intervention and how patchwork legislation undermines trust in government at multiple levels[56–58,94]. These participants distinguished regulatory oversight, which they support, from outright bans, which they oppose. Their desired regulation is framed around consumer protection, rather than stifling innovation and relates to a pervasive concern about the political motives for the ban having commercial interests, rather than public safety, in mind. Respondents reported wanting reliable government oversight so they can trust in the safety of foods—for them, this was often conveyed with descriptions of robust long-term health and environmental surveillance above and beyond that which is currently required for foods on the market:

> "Cultivated meats should definitely have the same kinds of testing that pharmaceuticals have, because it's very related in a way, all lab produced. If not pharmaceutical, then something more regulated by the FDA".

Participants also indicated a high degree of "Social Awareness." The social dynamics of the tasting event and the broader cultural acceptance of CM were noted by nearly all interviewed. Respondents often detailed beliefs about what others might think or do when encountering CM. This suggests that the success of CM will depend not only on sensory qualities, and government oversight, but also by how it is situated and diffused within social and cultural contexts. The event enabled many to see the wider appeal of CM, but also elicited statements that others "would never switch" away from eating conventional meat, or that they know "a lot of people don't want to try it." However, some indicated a belief that if people were given the right information, such as "learning the truth about factory farms, they would run away from those foods and would welcome [CM] with open arms". Others mused that the public needs more chances to encounter CM before the media makes their mind up for them, referencing "events like this" that enable the public to try it as key, because "all that trepidation, all that fear goes away when you realize that it tastes great" and "I think it's important that consumers have the opportunity to try this. I think if they did a lot of them who are squeamish about the idea of cultivated meat would probably change their mind".

The next theme was a "Need for Education and Development." A common assumption among respondents was that there is a lack of public awareness of CM, "I'm really happy to see they're hosting events like this to get it out into the public so people can know what it is and make more informed decisions about it." This was evident in the previously described expectation that the event would be small or not well-attended but was joined by comments like, "I don't know what the public perception of this stuff is compared to plant-based food" and, "I didn't even know that this kind of food existed. Genetically made food."

Responses suggested that mainstreaming through social modeling may be particularly influential at this stage in the development of these novel

foods. Attendees could be seen scanning the room to assess reactions of other attendees, eagerly sharing their feedback with one another, and conferring with other attendees. Dyads in particular were common at the event (e.g. couples and adult parent-child groups) and these units displayed unique social processing. Out of four dyads interviewed, the most negative feedback about CM came from 3 dyads, one couple and two parent-child pairs, with the remaining couple dyad being more neutral. Among dyads, opinions tended to merge, with more subtle than overt differences in opinion, which were often partially or entirely incorporating views of the partner who spoke first, "My mom was saying that it felt a little bit like a fish fillet. Like when you bite fish and when it comes apart like that. You can actually feel the little pieces like coming apart. Except this didn't come apart," and "that goes to my Dad's point about it being rubbery…I kind of hate to agree with him, but it was a little bit rubbery, that skin".

Aside from the co-constructed social interpretations of dyads, there were other kinds of social dynamics visible, including those attempting to imagine the self-efficacy needed to adopt these foods by watching and asking the chef questions about cooking the CM, "I was watching the chef and making sure it cooked the same way. She said that it cooks pretty much the same" and "It looked good, watching it cook was really interesting."

Across multiple interviews, participants expressed a belief that the public was misinformed, "there's still a lot of misinformation and miseducation about what cultivated meat is," a parallel to their own desire for more information about how CM is made, "I wish they had shown a lot of research and science behind it" and "I don't know what are their process [sic] to actually cultivate this meat, but I imagine it's way less than regular meat."

Attendees noted the absence of information at the event, and this exacerbated a level of uncertainty in the ability to trust CM:

> "Trust is important, and very delicate and they only have 1 shot to do it the right way and that means they need to do it the best that they can…like show me that you have nothing to hide."

Enthusiasm and disappointment for taste and texture were central to many evaluations, but even among enthusiastic responses, nearly all said the product required improvement. This included understanding that "the technology needs support in order to advance" with many calls to remove remaining animal inputs, or otherwise for personal and environmental reasons:

> "I wouldn't personally use them if they use FBS [animal-based growth media] or gelatin. I'd still want them to keep going and move forward because it still decreases animal suffering. The more money they get…the more development, the less you have to rely on these kind of animal derived components. So, it's really only a matter of time and money before you eliminate them completely…a few companies don't use them at all. They have found ways around it."

As described above, the lack of structure that would present whole cuts rather than composite foods (i.e. breast versus nugget) or other textural anomalies were often discussed as a component where additional innovation was needed. While some considered this within a hopeful framing, such as eventually being able to offer Wagyu, others also discussed overrepresentation of some types of products like burgers or white chicken meat:

> "When you eat chicken you have different parts of the chicken, like white meats or dark meats, like thighs and everything. I think down the road, they'll be able to develop specific types of cuts, some that resemble breast, like the one we had today and maybe someday resemble a thigh or other."

Responses indicated interest and optimism, but may also suggest that some consumer needs aren't being met with current offerings, underscoring the importance of routine public engagement to achieve acceptance of CM[95–97].

Echoing the promotional messaging, many indicated that they felt a sense of "Time Urgency" to come to the event and try the food, saying that this was "their last chance" or that they had "waited a long time" to try it. This might suggest that some attendees may not have otherwise made the effort to come if not for the urgency of the impending ban, even though they otherwise endorsed a desire to try. The event itself also provoked urgency by building anticipation waiting to serve the CM late into the event. This anticipation resulted in frustration, excitement, and filling up on other foods which all might impact reported acceptance, including possibly reducing positive sensory evaluations[98,99].

The theme of "Verisimilitude" refers to whether something has the appearance of being real or true; at this tasting event, a common occurrence was to evaluate whether or not they were eating 'real' meat, a close imitation, or some new thing that while reminiscent of meat, was itself novel without an original[100,101]. Participants didn't just come to try CM, they came with expectations that CM chicken would be identical to conventional, with messages from the press that it could "help meet the world's growing demand for meat"[91]; from the CEO's speech at the event, "that is the most *chicken* chicken [sic] I have ever tasted," that "tasting is believing,"; and the chef herself saying that "it sizzles and it cooks like chicken, and it tastes like chicken because it is chicken…which is the most exciting part to me as a chef" before handing out samples. Attendees were well-primed to evaluate not just the social atmosphere and personal enjoyment of eating CM, but specifically for verisimilitude. For some, the product met the desired level of realness– indistinguishability-- for others it had the opposite effect. This internal verisimilitude evaluation was evident in language structures used to convey comparisons between CM and conventional chicken, which were both referred to by many names all of which were indicators of difference and distinction for CM and realness or authenticity compared to conventional chicken (see additional presentation of semantic thematic analysis below, and in Table 7). Statements that, "this was just like real chicken" and "it actually looks, smells, and tastes kind of like real meat" show milder distance in evaluation, but these were often joined by specific critiques when sensorial differences in texture or appearance observed, "The texture was more like plant-based". Many put forth their criteria for determining 'realness', such as grain and muscle fiber or appearance, "It looks different uncooked. But once it is cooked it looks the same", and function, "When cooking saucey dishes, like Chicken Marsala, I bet this would absorb the sauces and flavors better."

Verisimilitude considerations for CM tended to head in a metaphysical direction, especially among veg*ns who grappled with the internal significance of consuming "real meat" again, "I realized on my way here that I was on the way to actually eat real meat. I haven't eaten meat in over 10 years. It was a strange realization". These respondents often displayed active emotional processing alongside intellectual processing, "It's been a little over 5 years since I last had a chicken. It was interesting, a little kind of overwhelming, in a sense, you know, mainly because of the texture. But it tastes good" and, similarly, "It was too real; it was very real chicken. I think I am happier with the Daring chicken [a soy-based chicken alternative] I regularly eat."

Overall, in many ways priming attendees for verisimilitude evaluations may have resulted in more critical appraisals, even among consumers who otherwise enjoyed eating CM.

The CEO's speech at the event

Approximately 1.5 h into the event, the CEO, Dr. Uma Valeti, gave a speech. The speech emphasized key themes that were similar but more detailed than messages in the promotion and media before the event. The speech highlighted that CM offers people a way to preserve food traditions and freedom, letting the world still be able to eat "the foods we love," and protects the development of a robust food system able to reliably feed the world, now optimized for ethical and societal benefit:

Table 5 | Attendee characteristics and reactions to tasting in the press and social media

N	17
Age, years (mean, SD)	37.4 (13)
Sex (%F)	29%
Race/Ethnicity	
Black	2
White	9
Hispanic	6
Other/mixed race	1

> "We are here to talk about how this…is really good for Floridians, Americans, and also for the global stage. We cannot take what comes to the table for granted, we also cannot take the geopolitical crises that have threatened our food supply, the climate crises that are threatening our food supply as well as the multiple public health challenges including pandemics or COVID that are threatening our food supply as well as the supply chain disruptions that happen globally anytime there is an event. Therefore, diversification of how we bring food to the table, the foods we love, is just table stakes and having options on the table is what being an American is all about-- being a citizen, we want to be able to preserve the freedom of food."

The ability for innovation to enable consumers to continue to eat foods of preference with newly improved ethical profiles found strong support among attendees, garnering strong applause. Safeguarding innovation and scientific progress were central to the speech, which positioned CM as an obvious and preferred alternative to factory farming, and the associated negative externalities including antibiotic resistance and climate change, but not as a replacement of animal agriculture, but rather as a complement to it. This was referred to by Dr. Valeti as his "Big Tent" vision for CM, a sentiment that was well-received by attendees and even directly referenced in some interviews, "I feel like the public perception is that this is gonna come out and people are just gonna switch to it and leave the animal agriculture behind…but that's kind of ridiculous". This set up key points of collaboration and economic opportunity, with the CEO describing that UPSIDE Foods works with local farmers to create a just farm transition[102], "we are proud to work alongside farmers in Florida and bring in a new generation of farmers here, and bring in economic opportunities." The speech also included a strong social acceptance message, with the CEO describing how much people have loved the food in past tastings repeating the phrase "tasting is believing" multiple times and included a specific description of what he termed, "the chicken nod", a smile-and-nod gesture with a full mouth that, according to Dr. Valeti, demonstrates that people both hedonically appreciate the food and experience it as being, in fact, real chicken. Dr. Valeti encouraged the crowd to look for, and perhaps to show off, their chicken nod.

Media analysis and triangulation

A comparison of the CEO's speech with themes identified in respondent interviews revealed numerous elements that closely mirrored the speech. The desire for better alternatives to ASFs and a strong commitment to the advancement of scientific innovation were highly similar. The emphasis on cultural preservation and the freedom to choose what foods to consume (like the above emerging theme of Americanness) resonated deeply with many attendees, whether self-identifying as Democrat, Republican, Libertarian, Independent, multiple, or other. Interviews also echoed the CEO's call for resistance to restrictive regulation, framing CM as both a breakthrough and a solution to global challenges:

> "I really liked the CEO speech that he just gave, and he brought up a lot of good points that just having diversity especially when catastrophes can actually affect animal agriculture, right? We should have another way. It's to actually feed people. and even things like that just makes so much sense. There's no reason to really ban this stuff."

Analysis of additional material posted after the event from the media, attendees' social media, and the company corroborated observations by researchers on-site, and expressed similar types and range of opinions to those in respondent interviews. The media largely conveyed support for UPSIDE Foods and the concept of CM, portraying the Miami event as a showcase of innovation and food freedom that would be stifled by Florida's ban. Articles quoted company executives, attendees, and culinary experts praising the taste and potential benefits, emphasizing consumer choice, sustainability, and technological progress. The coverage was generally critical of Governor DeSantis' decision to ban CM, with several outlets highlighting the contradiction between this and Florida's historic emphasis on personal liberty. The media also portrayed the ban as favoring "Big Ag", hindering progress, closely aligning with Upside Foods' perspective[103].

The *Florida Phoenix* introduced DeSantis' position on the ban as protecting consumers from unproven technology, "take your fake, lab-grown meat elsewhere," and the CM industry position, including UPSIDE Foods and GOOD Meat, Inc., that the law violates business and consumer rights and that CM is seeking to reduce food industry environmental impacts in good faith. The event itself, was portrayed as a patriotic and defiant act, promoting the position that, "people should have the right to choose what they eat" and downplaying the Florida governor's assertion that CM is a threat to traditional agriculture, and Florida farmers in particular[103].

Across various outlets, including *Food Processing*[104] and *Green Queen*[105], the portrayal of the event emphasized the novelty and significance of the tasting event itself, and that respondents indicated surprise at how similar the cultivated chicken was to conventional. Chef Mika Leon's preparation of the CM tostadas was repeatedly praised, allowing the event to be depicted as both a culinary and political gathering. The coverage underscored the broader implications, such as the ability for the ban to harm Florida's burgeoning tech ecosystem, described as "short-sighted and damaging," in the *Tech Times*[106], which also pointed out that CM indicates not only progress of scientific discovery but also offers solutions for pressing contemporary issues like the ethical, health, and environmental concerns of conventional animal agriculture. There was careful attention paid to other pending state-level bans, like the ban in Alabama that would take effect October 1, 2024, and earlier bans in countries like Italy. Overall, bans were portrayed by the media as a lost economic and scientific opportunity.

Interviews in the press (Table 5) painted a picture of curiosity, surprise, and approval of CM offered by UPSIDE Foods. Many guests, like a male attendee quoted in *Your Basin* were impressed by the product's similarity to conventional chicken, remarking, "if you tell me it's cultivated chicken or real chicken, I wouldn't tell the difference."[107] The novelty of tasting CM in an environment where it was about to be banned was meaningful to respondents, with many expressing disappointment that it wouldn't be accessible to them after the event. Several interviewed also expressed frustration, questioning why Florida, a state previously known to rail against government intervention, would restrict access to a federally approved commercial product. One attendee's statement, "I think we should be allowed to eat what we choose to eat," captured the opinion of many that the law was at odds with values. These interviews underscored the disconnect between the state's legislative actions and the desires of many residents who were eager to explore and embrace new food technologies. However, much like the researcher interviews, those interviewed in the press reported mixed sensory appraisal. For example, a female guest interview published in *Your Basin*[107] said that "the texture was a bit different," but that the flavor exceeded her expectations. Additional quotes reported in media interviews and in attendee's social media posts can be seen in Table 6.

Some attendees shared their experiences on social media during and after the event. One attendee posted videos of Chef Mika cooking, with the

Table 6 | Quotes and codes from publicly published interviews

Codes	Sub-codes	Quotes
Sensory evaluations	Overall	"That's f***ing fantastic! That's good meat. I like it." "It was really good! And I was so surprised!"
	Smell	"Smells like regular chicken" -CI1, "I know, right?!"
	Texture	"It gets stuck in your teeth in just the right way "I would say the texture itself is, like, a little bit different, but the taste was really, really good. Like, way better than I was expecting."
	Appearance	"It's like eating chicken breast, of course it is cooked nicely with spices."
	Verisimilitude	"It you tell me its cultivated chicken or real chicken I would not tell the difference." "There's no difference, I mean, there's no way you would ever know." "It tastes just like chicken." "It's really good."
Willingness to try		"Never tried it before, I'm like super curious" "I've been waiting to try it for like two and half years now."
Political views		"I think we should be allowed to eat what we want to eat. Florida is all about free market and liberties personal choice, so why can't we eat what we want to eat? I mean if it's bad for us, not that I believe it is because I think the science is proven, but even if it is why can't we eat it?"
Prior beliefs	Nomenclature	"Fake meat. It's not fake though. It's real meat, it's just cultivated"
	Ethics	"I imagine cultivated meat could be a more ethical alternative."
	Taste	"I already believe it tastes like chicken but I just want to see for myself."
	Health	"I mean if it's bad for us, not that I believe it is because I think the science is proven, but even if it is why can't we eat it?"
Non-verbal		Licking lips/fingers
		Moves food around mouth, inspecting
		Happy dance
		"The Chicken Nod"
		Head and hand gestures emphasizing acceptance
		Posing for the camera, smiling, enjoyment

chef describing the chicken's 'realness', noting it "tastes like chicken because it is chicken." Another video captured an attendee's reaction while tasting the chicken for the first time, showcasing a positive response with the individual calling it "f***ing fantastic" (Table 6), remarking on the realistic taste and texture. Images demonstrated that the event drew a diverse crowd, including people eagerly lining up in front, and later waiting to receive their samples. Comments accompanying these posts often criticized the political opposition to CM as 'restrictive' and 'uninformed'. Some content also portrayed tension about the protest van parked in front of the event with the LED billboard bearing statements questioning the safety and transparency of "lab-grown meat". Another attendee posted a photo of Governor DeSantis meeting with representatives of the cattle ranchers in a meat packing plant implying that those pictured were the private interests being supporting by the ban, further criticizing the action as misplaced support due to concerns about the health and environmental harms of animal agriculture. These posts demonstrate that the event not only showcased the product but also became a focal point for discussions on food innovation, consumer choice, and greater social and political implications of food production.

A semantic and thematic analysis of interview responses provided key insights into how attendees described their experience with CM tasting, revealing distinct patterns in language use and perception. Across multiple sources, attendees used different language to describe their CM tasting experience (Table 7). Interestingly, physical sensory words related to texture such as "rubbery", "greasy", "tender", "dry", "juicy" or that described CM as "minced" were the most common and had the greatest range. By contrast, words about cooking ("charred"), or aroma and flavor ("meaty" or "umami") were much less common, suggesting that texture was more salient for consumers trying CM at this event. Participants also had a tendency to consider CM in contrast to "real" or "regular" meat, indicating that even among consumers largely favorably disposed to CM, it may not yet be internally accepted as real meat. This is further demonstrated by the large number of respondents who referred to CM directly as "lab-grown" or "fake" versus the USDA approved terminology of "cultured" or "cultivated", or with common terms like "alternative" or the researcher introduced hypothetical identifier of "cegan" (a portmanteau of cultivated/cultured and vegan, vegetarian, and/or flexitarian). However, not a single respondent indicated any positive support for bans against these foods. Terms describing the ban ranged from "nonsense" to "crazy", and occasionally "authoritarian".

After the event, the company also used social media to document the event, emphasizing the novelty and significance of CM and the first ever, free-to-the public tasting. Videos and images showcased moments like the bustling crowd eagerly awaiting samples, and attendees expressing anticipation and satisfaction. For example, a young woman interviewed said, "I've been waiting to try it for like two and a half years now" and another enthusiastically declared "it tastes just like chicken!" Videos and images of attendees, Chef Mika Leon preparing dishes, close-ups of the sizzling CM, and the tostadas portrayed a lively scene and sensory appeal.

The event continued to be framed within the context of food freedom and the impending Florida ban. The company portrayed the event as a tasting and a stand against government infringement on rights. Dr. Valeti also posted a selfie in front of the protest van, including replies to the statements on the LED billboard clarifying that the CM chicken was 99% chicken cells – not laden with unknown chemicals as the sign implied – and highlighting some benefits of CM (Supplementary Fig. 7). Altogether, the UPSIDE Foods portrayal of the event extended the narrative that CM, and UPSIDE Foods in particular, are agents of societal benefit caught in the crossfire of the ongoing American culture wars.

Emerging theory

this analysis, a theory emerged that consumer acceptance of CM is heavily influenced by the interplay between realness, sensory attributes, and the sociopolitical context in which the product is made and experienced. Positive experiences are driven by alignment with

Table 7 | Terminology used by attendees interviewed by researchers and the media

		Interviewed	Secondary data
	Term	*n(%)*	*n(%)*
Nomenclature for CM	Cultivated or Cultured	4(21)	2(18%)
	Lab-Grown	6(32)	0
	Alternative	1(5)	0
	Not vegan but "cegan"	3(16)	n/a
	Fake meat		1(9%)
Nomenclature for conventional meat	Real	6(32)	2(18%)
	Normal	1(5)	1(9%)
	Conventional	1(5)	0
	Simply	3(16)	3(27%)
	Regular	4(21)	1(9%)
	Natural	1(5)	0
Describing the ban	Nonsense/Stupid/ Silly/Ridiculous	6(32)	
	'Culture Wars'	2(11)	
	Authoritarian	2(11)	
	Terrible/Crazy/Sad	5(26)	
Sensory words	Charred	1(5)	
	Juicy	2(11)	
	Rough	1(5)	
	Rubbery	4(21)	
	Greasy	1(5)	
	Meaty	1(5)	
	Tender	1(5)	
	Aromatic	4(21)	
	Dry	2(11)	
	Umami	1(5)	
	Grain/Fiber	2(11)	
	Minced/Little Pieces	3(16)	
	Gets stuck in the teeth		1(9%)
Self-describes as 'adventurous eater'		9(47%)	2(18%)

conventional meat in taste and especially texture, while negative experiences often stem from unmet expectations for texture or quality, and cognitive dissonance experienced by those with ambivalent or conflicting views on ASFs and how CM is produced. Moreover, the preparation and presentation of the samples were often reported to obscure what tasters believe to be the food's true qualities, affecting consumer confidence in a willingness to endorse future trial or adoption. As CM continues to develop, addressing these will be critical to move CM from novel curiosity to mainstream acceptance.

Three theoretical pathways were observed that may help inform a theory of CM acceptance: 1) Consumer Freedom Theory, 2) Ethical Consumption Theory, and 3) Innovation and Feedback Theory.

Consumer Freedom Theory emerged as it became evident that support for CM during this period of political conflict was heavily influenced by the degree to which consumers believe that access to CM represents personal freedom and choice infringed upon by needless government intervention. While this may not promote consumer choice directly, without this, consumers may not be able to have further trialability – a loss of freedom all respondents seemed to reject.

Ethical Consumption Theory emerged owing to the frequent observation that consumer willingness to try and to endorse willingness to later adopt was heavily influenced by the perceived alignment of CM with personal ethical values-- particularly environmental sustainability and animal welfare, which were of high importance to would-be early adopters of CM. While these components are classically not enough to drive large volumes of consumer behavior alone, the promise of CM centers around delivering superiority in these domains. As the industry works towards price and sensory parity, a failure to align with these values and to objectively demonstrate superiority could result in rejection.

Innovation and Feedback Theory emerged as participants outlined their expectations, needs, and how they envisioned disseminating adoption among their social networks. Enlisting early adopters and allowing them to socially congregate, such as in this public tasting event, was important for strengthening support for CM among attendees. These social opportunities can help identify product development targets that address unmet consumer demands and sensory improvement, and can also serve as a means of tapping into social networks, providing critical insights into social sources of acceptance inhibition and possible avenues for the dissemination of acceptance that is necessary to drive broader cultural acceptance and adoption.

Discussion

We gathered information from multiple sources to inform a multi-component ethnographic and sensory evaluation of the first ever, free, public tasting of cultivated meat (CM) in the United States. The UPSIDE Foods "Freedom of Food Pop-Up" held in Miami, Florida on June 27, 2024, created a positive experience for many in an attempt to foster goodwill and excitement about the future of CM. However, we found that despite the supportive environment, the event was less effective at addressing concerns of more skeptical attendees, and that even committed attendees expressed that sensory qualities and premium attributes of the food fell below expectations and preferences. While tasting encounters are beneficial, attendees were clear in expressing a need for greater transparency and proof of the ethical, nutritional, and environmental impacts of the product. Our findings also highlight how event messaging and media coverage influenced attendees' perceptions of CM's environmental and ethical claims, regardless of accuracy. While this research did not provide attendees with information or recruit attendees into a designed experiment, participants were exposed to information from multiple real-world sources and frequently and spontaneously echoed both company and media narratives on topics like sustainability, demonstrating how this messaging shapes consumer understanding even in the absence of independently verified data[41,108]. They also seemed cognizant that elaborate food presentations composed by celebrity chefs may not be enough of a direct trial experience to be convincing. While many recognized the potential benefits of CM, respondents indicated that hope and potential only go so far and they are looking for greater and specific proof of benefit to corroborate claims made by companies. Importantly, even respondents with a high degree of prior exposure to CM used inaccurate information to describe it, including beliefs that CM doesn't involve the addition of hormones or animal inputs. While some attendees arrived with little or no prior knowledge of CM, others had previous exposure to cultivated meat through public discourse or distant professional engagement, and those with prior knowledge of CM tended to display less skepticism and more enthusiasm. Nonetheless, one of the most remarkable findings in this study was support for CM and more generally, food innovation, among diverse attendees, and that Democrats, Libertarians, and Republicans all seemed united against government interference in small business innovations working towards societal betterment. More direct encounter experiences with greater emphasis on education are clearly needed to bridge gaps in understanding and acceptance of CM, and to address misconceptions. Our approach aligns with Social Representation Theory (SRT), which posits that new concepts are anchored within existing cultural, political, and ideological frames[109,110]. Rather than viewing CM as a neutral technological innovation, attendees framed it through consumer

freedom, food authenticity, and ethical consumption, reflecting how novel food technologies are shaped by broader societal narratives rather than assessed in isolation. In the public event setting, our findings capture real-world consumer reflexivity, offering an independent perspective distinct from industry-led, incentivized studies. Our findings aligned with prior research and systematic reviews that showed that perceived naturalness, safety concerns, and political identity shape consumer responses to CM food technology and that consumer attitudes are shaped by media narratives, cultural traditions, social contextualizing and experiential[31–33,111,112]. Results from this study contributes to ongoing conversations about cultivated meat perceptions across sociopolitical, sensory, and cultural domains and many of the lingering questions and priorities among motivated early adopters.

Since the introduction of canning in the early 19th century through to the advent of GMO)foods in the late 20th century, food technology and processing has been met with a mix of skepticism, avoidance, and fear[24,25,46,113,114]. Joining consumer resistance, farmers also resist replacing traditional farming with technological advancements, such as electric equipment in the industrial revolution, and more recently computerized systems and the scientific green revolution that modernize the way we produce food[46,115,116]. Often, traditionalist agricultural stakeholders oppose and perhaps fear new technology due to concerns that they may result in a loss of tradition and/or require costly new tools to stay competitive at the risk of losing their income, identity, and way of life[117–121]. The constant evolution of technology is a storied setting for political tension between farmers, innovators, and consumers, but these advances support necessary and significant increases in food security and sovereignty[122–125]. Thus, finding ways to support stakeholders through technological transitions is of urgent importance.

Like CM, GMOs were also referred to as "Frankenfoods", and feared for imagined health impacts despite a lack of evidence or even evidence to the contrary[52,54,55]. Origins of the cultural rejection of GMOs was driven by pervasive misconceptions about health risks, corporate distrust, and perceptions of unnaturalness, despite extensive scientific evidence supporting their safety and utility. Prior ethnographies of new food innovations, such as those in the wine industry, also faced initial resistance due to concerns of "authenticity" and "naturalness" and a loss of traditional winemaking[120]. As with the current clash of ideologies around CM, these demonstrate that public skepticism of food technology often faces initial resistance followed by increased acceptance with additional familiarity, which diffuses through social connects to achieve broader acceptance. This operates similarly to other observations of food technology informed by the Diffusion of Innovations Theory[126]. Our findings are congruent with this diffusion theory which posits that early adopters play a crucial role in influencing broader societal adoption of novel technologies. At this event, the more familiar brought their friends, family, and loved ones to become more familiar, and while not uniformly associated with positive reception, it was highly associated with a willingness to try the food. By participating in this tasting event and socially processing their experience, these attendees serve as opinion leaders who may facilitate further acceptance within their networks;" highlighting the importance firsthand tasting experiences to foster acceptance. Despite these experience opportunities, there remains a pervasive belief that familiar and/or natural foods are self-evidently healthful – a phenomenon often termed the naturalist fallacy[47,52,54,127]. The fear of the unnatural is a very important consideration for both the consumer acceptance and political opposition to CM, as it was for GMOs and modern innovations for traditional products like wine. Frequently, commonly available foods bear a resemblance to a historic version of familiar foods, despite having considerable alterations and genetic manipulation beneath the surface—where they are less likely to be salient to a lay audience or reinforced with images in the media[49,55]. However, as identified in attendee interviews, greater knowledge and disambiguation for mistaken beliefs of naturalness or an absence of technological and scientific intervention in other familiar foods, like animal-sourced meat, are often not discussed[55].

We saw the influence of message priming on participants as they extended concepts similar to media messaging and the CEO's speech. Use of the term "lab-grown" among attendees is an important indicator of this, as none of the company messages used this term, but it is frequently used in media messages, and is thought to aggravate the ontological tension between food naturalness and synthetic science. Studies indicate that food technology or processing has a tendency to invoke medical and scientific perceptual domains, and that when applied to foods may have the effect of provoking disgust, such as from a fear of contamination of the self or the planet[33,52,54,55,127,128]. While most medical innovation from penicillin to medical devices are met with acceptance, foods that veer into this terrain defy categorization and may find themselves in what could be an "uncanny valley" for food[129,130]. As with other manifestations of the uncanny valley, humans tend to reject things that are close to, but slightly off from expectations, but this can be manipulated by certain kinds of knowing and priming. For food, we may be particularly sensitive to any such alterations because food is such a common element in daily life, with sensory experiences and central beliefs formed at a young age with frequent encounter opportunities for farms, gardens, food selection, and preparation. By contrast, medicine requires deference to the authority of medical professionals, both to develop and administer. As modern food technology blurs ontological boundaries between food and medicine, we may need to develop new systems of communication that alleviate misunderstandings and avoid perpetuating aversions through incendiary media imagery of heuristic falsehoods, like petri-dishes full of beef[49,55,131].

CM may occupy a liminal state between food and medicine in the cultural understanding; however, proximity to the lab in the cultural consciousness need not be problematic. Some respondents indicated positive sentiments around the degree of safety and assurance that a lab origin would offer, especially pharmaceutical-level safety standards – a concept that could prove beneficial if leaned into by industry. Based on our findings, the CM industry, researchers, and other advocates for alternative proteins should prioritize providing clear information about the benefits, drawbacks, and production methods. Optimistic or idyllic portrayals that seek to spare negative public reactions carry real risks of negative consumer responses when the truth is revealed—a dramatic reaction that we saw firsthand. Further, consumers have become wary of language that presents the promises of new foods without proof, and practices like "greenwashing" and "health halos" are increasingly salient for consumers and negatively influence the adoption of genuinely beneficial products[132–138].

Another pervasive finding was that tasters do not consider the product mature and are unlikely to adopt it in the current form. Future tastings may benefit from a different approach to expectation management. For example, priming attendees to believe that what they will be tasting is "real meat" may have solicited high levels of scrutiny, leading people to evaluate the product with a maximizing mindset. By contrast, framing the tasting as an improvement compared to extant options may solicit more positive evaluations consistent with the satisficing mindset, leading to greater optimism about the success of future developments[139,140]. While the general public largely reports a desire to reduce ASF consumption, data demonstrate that consumers are largely unwilling to fully commit to eliminating conventional meat, largely owing to a lack of hedonic satisfaction[141,142]. In agreement, ongoing innovation in texture and alignment with ethical priorities were dually integral to attendees at the event. In other words, consumers are not willing to sacrifice their food pleasure to address their ethical priorities. In order to adopt something new, consumers need more than to be told that "tasting is believing" they need to be *experientially* convinced of the product's superiority in both domains. As with many new technologies, release before maturity alongside inflated expectations often leads to a damaging period stuck in what is termed "the trough of disillusionment" all while research and development continues. These releases may help meet investor milestones, but often make later adoption, or even repeated trial an uphill battle[143,144].

Overall, the event was seen as effective in increasing consumer support and acceptance of CM, with various components helping to shape and confirm consumer attitudes. To date, the vast majority of CM tasting events have been for insiders, stakeholders, or policymakers[145]. In the highly

publicized and politically fraught climate surrounding CM, this approach misses an opportunity to get candid feedback about product maturity, and approaches that could foster engagement, and build trust and acceptance among diverse consumer groups. This event allowed consumers to directly engage with the product, alleviating some skepticism through firsthand experience while allowing like-minded individuals to form relationships between each other and the company. Attendees had mixed sensory evaluations, strong preferences, different priorities (e.g. culinary vs. animal welfare), and most emphasized the need for more and varied tasting opportunities. However, unlike passive exposure from media messages, the event offered alternative possibilities for social processing and accountability, creating a situation where individuals are more likely to consider multiple viewpoints, synthesize and introject complex understandings[80,146], and socially process the significance of this disruptive, novel technology – an especially important opportunity as the scientific is increasingly embroiled in the political[147]. However, consumer-company relationships were in flux throughout the event, which suggests that greater reciprocal engagement between the company and attendees in future events may be important, and that more community engagement may be beneficial. Companies nimble enough to regard feedback as an indicator of consumer needs and incorporate it can foster more opportunities for the normalization of CM in order to co-create cultural value for CM. Meeting consumer needs and fostering collaborative stakeholder engagement may help safeguard advancement of the industry.

CM appeals to individuals for different reasons, and thus market segmentation with tailored messaging may be the best approach to communicate information about complex novel foods. Attendees at the event are a cross-section of would-be early-adopters, and thus their characteristics could help inform about consumer segments for outreach. Many attendees at the event had prior awareness of CM or a pre-established favorable disposition towards food innovation. We observed distinct groups, including those who expected high-value from premium products, like structured cuts of meat, compared to existing alternative protein foods which tend to be minced. The large contingent of ethical consumers was the most insistent on objective evidence to prove that CM was aligned with their values, which clearly overlapped with a desire for this industry to be reviewed with more rigorous oversight-- not just for safety, but also for downstream effects on human and planetary health. The next most enthusiastic group did display some price-sensitivity but could still be early adopters; however, as of this trial, they are not willing to pay more for this product. We did also witness a dramatic negative transformation among some staunchly positive supporters. Some respondents who were first in line to get into the event had a radical shift when learning information about how the product is made through word-of-mouth rather than directly from the company. Transparency regarding production methods and basing claims on validated evidence is thus an important reputational risk consideration for CM.

Individual identity, including dietary habits and ethical stances are known to shape consumer behavior, especially for food choice[61,148]. Early adopters are an important component of innovation adoption especially given their role in the diffusion of innovations that allow slower potential-adopters to observe modeled positive exposure through trusted social networks before themselves adopting the new technology[126,143,149]. Greater awareness is thus a key priority because those with prior knowledge were the ones willing to exert the effort to seek out the trial experience, and they are most likely to widen the sphere of interest. Thus, providing more resources to potential early adopters can help them to enlist future supporters from amongst their networks[149]. Current and former veg*ns showed notable interest, likely due to the role that ethics already plays in their food choices and identity[148,150], but some indicated that CM may not be compatible with veg*n lifestyles. This resulted in a mixture of acceptance and endorsement for oneself or referral to others. Respondents also indicated that acceptance of CM is polarizing within veg*n circles; however, most endorsed the idea that avoiding calling CM "vegan" and instead using a term like the researcher-introduced "cegan" to describe CM or a diet that limits conventional ASFs and instead includes CM might be preferred. These consumers also specifically wanted to see evidence of health benefits that compared CM to ASFs, and proved that they were free from antibiotics and other forms of bioaccumulation[6,151,152]. In addition to attendees with ethical diet identities, those with a background in politics, law, or food marketing were also highly represented, and often viewed CM as a symbol of progress, individuality, and a belief in personal freedom.

Freedom and consumer choice are key aspects of the American self-concept[153]. Government intervention that prevents such freedom comes to becomes characterized as potentially corrupt and motivated by commercial interests. Currently, American food regulations do not prevent "unhealthy" foods from being sold, and the prevalence and intake of notably unhealthy products is well documented[154,155]. Until recently, Florida, and Governor DeSantis in particular, has had a long history of opposing government intervention in business[156] and specifically arguing against government intervention to promote dietary health[157]. Many participants were cognizant of this sudden policy shift in Florida, and specifically sensitive to a loss in the right to choose what they eat, whether healthy or not, "I mean if it's bad for us, not that I believe it is because I think the science is proven, but even if it is why can't we eat it?"[107] Nonetheless, there is a rising trend to moralize healthy eating and to utilize paternalistic, state-level intervention to police consumer choices[158–161], but these policies are rarely accompanied by evidence or substantive support for research that would be able to determine such hazards. As such, hopeful claims from industry and protectionist claims from political detractors volley across a court of public opinion. Meanwhile, attendees expressed a strong desire for a pluralistic approach that allowed for benevolent paternalism, but only if there was indeed evidence of harm with a strong scientific basis.

Attendees expressed a clear desire for greater regulatory standards and oversight for these foods, above and beyond other marketed food products. This opinion was in service of both their own preferences, and was framed as a way that they might be able to enlist others into accepting CM. Based on the recently modernized FDA Human Foods Program[162], this opinion seems to be consistent between attendees and the federal government. One might imagine that these novel foods could serve as a testing ground and a food industry role model for new high standard in health and nutrition—especially as many hope to see the creation of a more healthful food system[162–164].

Interestingly, many respondents simultaneously self-identified as Democrat, Liberal, and Libertarian. Self-identified Democrats, Liberals, Libertarians, and Republicans aligned on the belief that these technologies and foods should be allowed to progress and that government interference was overreach. This non-partisan opposition to CM bans is an unusual convergence. Libertarians typically prioritize freedom from government control, and it is usually Republicans that agree with this stance, advocating for small government and free markets[94,165,166]. By contrast, Democrats and Liberals often support government intervention to protect the common good, traditionally focusing on civil rights and social justice. CM thus brings these perspectives together – the ban violates engrained values of freedom for Libertarians, free markets for Republicans, and signifies moving away from progress for societal benefit for Democrats and Liberals. In 2024 American politics, alignment between these political factions is rare, and may be symptomatic of the growing skepticism in government benevolence, and the tendency to see selective intervention as an abuse of power rather than consumer protection[94,167]. These unforeseen political alliances are just one example of how support for this novel food technology may cut across party lines in unexpected ways[167,168]. CM could thus operate as a tangible symbol to foster a fluid political identity on the common ground of core values like a commitment to individual freedom in an increasingly issue-driven modern political landscape.

CM is situated within a broader historical context of food technology. The political conflict and resistance to CM parallels the skepticism that greeted GMOs. Like GMOs, CM faces opposition grounded in perceptions of "unnaturalness," fears often magnified by media messaging and cultural anxieties about food safety. This aversion may be particularly potent for CM

because food, unlike medicine, is an everyday sensory experience, tied to personal and cultural identity. To overcome these barriers, CM companies must prioritize transparent communication that dispels misconceptions and educates consumers about the production process, while avoiding marketing strategies that could provoke a backlash when setting unrealistic expectations. A balanced approach that integrates clear, evidence-based information with engaging, positive experiences will be crucial for fostering trust and long-term consumer acceptance. However, because one's taste for food develops not as a purely physical or private process but rather as a complex social one "actively constructed through [a] synchronization of approaches" engaged in by agriculturalists, food manufacturers, cooks, individuals, households, cultures and more[169], events have the ability to bring not only taste buds but many interpersonal dynamics to the table interactively. Creating and proposing solutions for pressing issues such as feeding the world sustainably is noble, however accomplishing acceptance means understanding how taste operates socially and conceptually, as much as hedonically[46].

One of the great strengths of this paper is that it is the first analysis of a public food tasting of CM and the only study to examine consumer willingness to seek out CM within a state banning CM. While we interviewed a large portion of the attendees and triangulated to cover a sample nearly as large, our study is the first of what we hope will be many more public ethnographies and taster interview studies of cultivated meat. No general public tastings have been previously described in the literature, and while it describes a small volunteer sample, the number of respondents included is typical of such qualitative field work and was triangulated and highly in accord with publicly available press interviews. Unlike some other Grounded Theory work, which samples on multiple occasions to achieve saturation, event ethnographies only analyze information relevant to a single event[73]. Another strength of our study was our ability to mobilize in a very short time to attend and conduct research at an event with less than two weeks' notice. This short time, however, did not allow for more complex pre-post analysis components or further approvals for researcher-initiated follow-up contact with respondents which limits our understanding of respondent post-event processed impressions. Our approach was also greatly enhanced by a tandem approach not only to coding but also to the field ethnography itself allowing for more in-depth interviewing and greater perspective of a dynamic event. Event ethnography is a promising way to gain deep insights into consumer perceptions, however this represents one time and place and voluntary participants and is not intended to indicate a comprehensive or generalizable perspective of consumer beliefs of CM. While attendees were all ages and appeared to be ethnically and racially diverse, there were more men present than women, and proportionately more veg*ns relative to the general U.S. or Miami populations. Additionally, while event ethnography offers genuine insights, self-selection shaped the participant pool. Most attended to try the product, and although some protest was observed, the sample primarily represents motivated early adopters rather than a morediverse cross-section of all current general public opinion on cultivated meat. Future studies of similar events or that include deliberate random sampling may be able to build from our findings to explore public opinion, including among those who may hold conflicting opinions about CM. We did not gather names or images of interviewed persons in order to preserve privacy, and as such we are unable to determine to what extent persons and/or their specific opinions expressed in media interviews overlap with researcher interviews.

The public tasting of cultivated meat (CM) hosted by UPSIDE Foods on June 27, 2024, in Miami, Florida provided a valuable opportunity to evaluate consumer reactions, highlighting both positive reception and areas of concern. While many attendees were excited about the potential benefits of CM, the sensory experience and quality of the product did not always satisfy expectations. The event demonstrated that while such tastings can foster goodwill and excitement, they are insufficient to address deeper concerns, particularly among skeptical or ethically focused consumers. Transparency, particularly around the product's processes and ethical, nutritional, and environmental impacts, were a recurring theme among attendees, many of whom expressed the need for more direct proof of these claims. The event revealed that sensory evaluations alone are not enough to drive acceptance – consumers need both intellectual and physical alignment with their needs for CM for it to be perceived as a comparable or superior alternative to conventional animal-sourced meat.

This study highlights the importance of aligning CM with diverse ethical priorities, such as animal welfare, environmental sustainability, and health. Our analysis examines how consumer perspectives were constructed, reinforced, or challenged in a dynamic social setting, extending beyond sensory evaluation to encompass cultural, ethical, and political frames of reference that shape consumer willingness to engage with new food technologies. Consumer willingness to accept CM is influenced not only by its sensory appeal but also by how well it aligns with these ethical considerations. Attendees were clear that CM must prove itself as more than just an alternative protein; it must emerge as a superior product that addresses the complex values of its target market. Political ideologies also play a role, as respondents from across the political spectrum were united against government interference in food innovation. This non-partisan alignment suggests that CM could transcend traditional political divides, particularly in relation to personal freedom and market innovation. However, for CM to do this, it must prove itself a benevolent social agent and a responsible steward by meeting high standards of transparency and ethical rigor demanded by consumers.

The ethnographic insights gathered in this study underscore the importance of public tasting events, but also reveal that single events are not enough to ensure widespread adoption. Ongoing innovation, transparency, and consumer engagement are necessary to build trust and demonstrate the tangible benefits of CM. Including consumers in the process of communication and product development may be the most effective way to foster acceptance and align CM with societal values. As the industry continues to evolve, its ability to balance optimism with realistic, evidence-based messaging will be key to overcoming skepticism and achieving broader market success. Success for CM, or any ASF alternative food will require ongoing education, transparency, and product improvement to achieve broader acceptance and adoption leading to market success and hopefully, a reduction in the human, animal, and environmental costs of producing our food.

Methods

All procedures involving human participants were conducted in accordance with the Declaration of Helsinki and with the ethical standards of the Tufts University Social Behavioral Educational Review Board (Tufts SBER IRB). This study (IRB Protocol STUDY00005165) was approved by the Tufts SBER IRB in June 2024. Informed consent was obtained from all participants prior to participation, documented through voice recording and/or verbal affirmation, as approved by the IRB. We conducted a multi-component ethnographic field study at the "Freedom of Food" pop-up event in Miami, Florida, on June 27, 2024, organized by UPSIDE Foods. Approximately 100 people attended the event, where members of our research team observed interactions, behaviors, and consumer reactions in a naturalistic setting.

Media and public information shared by the company, attendees, and commenters about the event was gathered before and after. During the event, two researchers took structured ethnographic field notes (Supplementary Table 1) on the overall scene[170], in addition to conducting in-depth, semi-structured interviews with attendees. Information used to promote the event available to the public before the event was used to inform the semi-structured interview script (Supplementary Table 2) and information published before and after the event was also analyzed to triangulate facts about the event (e.g. location and time) and the political context in which the event occurred (e.g. opinions of local lawmakers versus the company).

Data collection

Participants were recruited on a voluntary basis, without pre-enrollment or incentives. Data collection included semi-structured interviews with 19

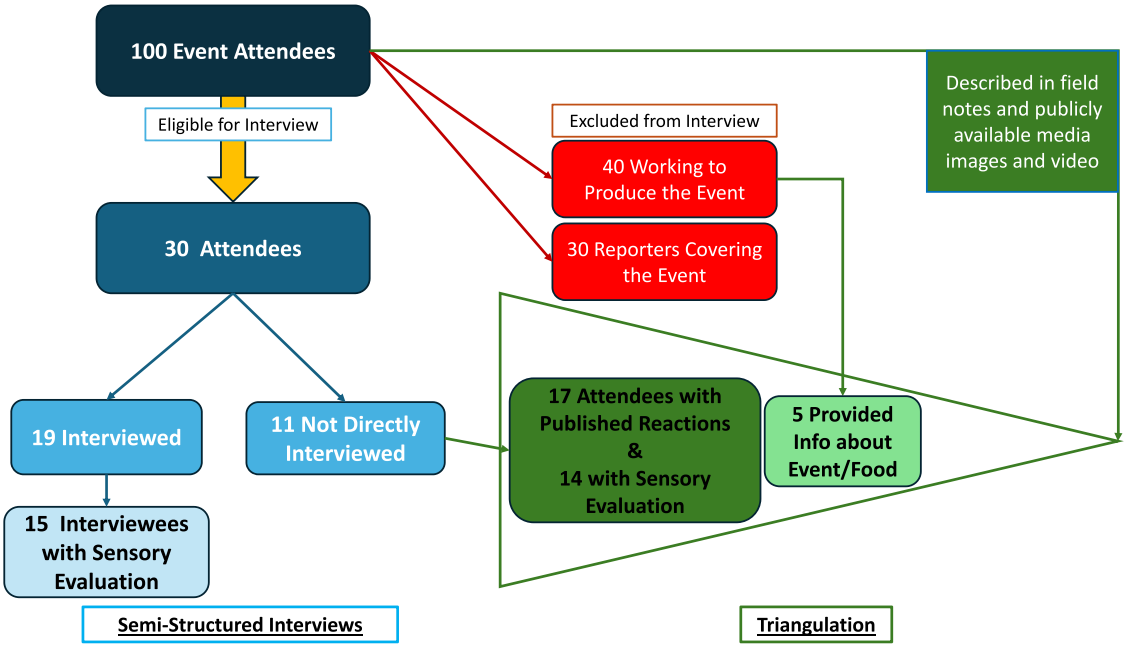

Fig. 2 | Flow chart for participant inclusion in interviews and the data collection and triangulation scheme.

attendees, supplemented by field observations and secondary data analysis (e.g., media narratives and social media discourse). Interview questions explored perceptions of CM's sensory qualities, ethical considerations, and political framing, allowing themes to emerge inductively.

Publicly available material about the event, from before and through three weeks after the event, from mainstream media (e.g. Associated Press) and social media accounts of the food company (UPSIDE Foods) and the general public (including attendees), respectively, were gathered. Supplementary Fig. 1 details the number and type of each source of information used in these analyses.

Pre-event media and company messaging promoting the event[30,89,90] and prior literature on tasting events and political tasting event ethnographies[46,73,81,82] informed the semi-structured interview script (Supplementary Table 2) and corresponding deductive codes[171]. These sources also provided additional context on who and why attendees might have attended, how their opinions and beliefs may have been primed by the company, and what their reactions were when not responding to researchers.

Communication with the company before, during, and after the event included emails describing the organization of the event such as the planned number of food samples, as well as on-site conversations with key staff about attendance and stakeholders in attendance, or statements from the on-site speeches made by CEO Dr. Uma Valeti and the event's Chef Mika Leon. (Supplementary Fig. 1)

Our presence as researchers and the framing of the event itself could influence participant responses. To mitigate this, we used a reflexive approach, systematically noting potential biases in interpretation and triangulating findings across multiple data sources. Direct quotes from attendees in publicly published sources were treated as secondary interview data, which were coded and reviewed by two researchers using the same verification and agreement approach as for primary interviews (described below). This approach allowed for a more comprehensive understanding of attendees, scene, and sensory evaluation of CM by cross-verifying data from multiple sources and allowed for both a Grounded Theory approach to inductive analysis and a process-based abductive analysis using all available data to affirm and enhance the emerging theories about the event and acceptance of the CM food[172]. Screenshots of publicly published materials were gathered and converted into text, so they could be coded and reviewed by two researchers to achieve consensus, similarly to interview transcripts. Results from each phase were summarized separately, and then compared to inform the overall emerging theory.

Structured ethnographic field notes and images of the food and scene were taken to document observations about event participant demographics based on appearance or conversational disclosure; visual observation of the food served; the crowd, and their level of enjoyment and participation in activities; sensory evaluations; conversations among attendees, and between attendees and staff; and the overall atmosphere[170,173,174]. To ensure a high degree of accuracy for field observations, notes were taken by two researchers who each reviewed the other's notes for agreement, and this was then compared by a third researcher to assess agreement. No discrepancies between field notes were reported.

Interviews

Nineteen participants were interviewed by researchers to gather in-depth insights into acceptance and sensorial evaluation of CM. Given the number of people in attendance, and the estimated number of attendees from the general public ($n = 30$) our recruited interview sample represents an estimated 66% of public attendees. Participants affirmed consent verbally and were screened to ensure criteria for inclusion (Fig. 2). Each interview lasted approximately 10-15 minutes and followed a flexible guide (Supplementary Table 2) that allowed for the exploration of key themes while permitting participants to discuss topics they found relevant.

When consent to record was obtained ($n = 17$) interviews were audio recorded and transcribed using a phone-based recording application (Otter AI, California). Transcripts and audio were reviewed by two researchers to ensure accuracy and thoroughness. All other participants ($n = 2$) were interviewed with notes gathered by hand by the interviewer, including direct quotes. 18 interviews were conducted in English; one interview was conducted and recorded in Spanish and was hand transcribed by the interviewing researcher, with transcript and recording reviewed by a second Spanish-speaking researcher.

For inclusion in interviews, participants were required to be over 18 years of age, unaffiliated with the host company (UPSIDE Foods), not working to produce the event (such as catering staff or facilities management), or otherwise working as a member of the media on-assignment covering the event. Of the approximately 100 persons in attendance, approximately 40% were identified as employees of the host company or otherwise working to produce the event, 30% were identified as members of

Table 8 | Deductive codes and sub-codes

Sensorial evaluation	Sentiment
	Flavor/texture/smell/appearance etc.
	Functional qualities or descriptive comparators
	Discriminating tastes
Political positions	Florida/ state bans
	Political affiliation
	Petition/activism
Relevant prior opinions	Diet beliefs & diet types (e.g. health, self-ID, motivations)
	Beliefs about Cell Ag (e.g. environment, health, animal welfare, nomenclature)
	Beliefs about animal foods and agriculture
	Beliefs about plant-based food and agriculture
Ethical stances	Environmental prioritization
	Animal welfare prioritization
	Healthfulness of food prioritization
Consumer willingness	Try (today and in future, or other products)
	Eat/Purchase, including routinely
	Recommend to others or for specific purposes
	Substitution (food currently eaten or specific foods (e.g. Animal, plant-based)
Network	How they heard about the event (person, web platform, etc.)
	Prior relationship to the cell-cultivated meat industry
	Having professional insights that may inform opinion (e.g. cell biologist)
	Effort/Time expended to attend (e.g. Traveled to Miami specifically for the event)
Company and event evaluation	Sentiment or trust in company
	Sentiment and trust for other Cell Ag companies or the industry as a whole
	Sentiment and experience of the event, especially those influence perception

the media, and a remaining 30% were identified as public attendees with varying backgrounds based on interviews, visual presentation, disclosure, and communication with the company (Fig. 2).

Data analysis

Interviews were coded by two researchers, using both pre-established deductive codes informed by tasting and event ethnographical literature and media and company messaging published prior to the event[30,46,73,89–91] (Table 8), and then using inductive codes emerging from themes in interviews and secondary data. Using Grounded Theory[171], emerging themes were first identified within individual interviews as priority topics and then as themes when spanning across participants to describe overarching constructs which formed the basis for inductive codes and mutually agreed upon by two researchers. Emerging themes tended to be freely offered rather than prompted topics, including internal value structures or subjective evaluations and were often axially related themes linking categories and subcategories of deductive codes (axial) to form a more coherent framework[171]. For example, the emerging code "Need for Information" or "Need for Product Innovation" includes "Prior Beliefs about CM" and often "Sensory Evaluation." As another example, the emerging theme "Social Awareness" often includes "Prior Beliefs" as well as "Event Evaluations". Two researchers identified and conferred on deductive codes, emerging themes, and inductive codes and coded in a tandem practice. Conferencing was used to achieve consensus between the raters to ensure agreement. Initial disagreement in interpretation and coding of deductive codes was less than 5% and resolved in one conference. No disagreement for inductive codes was found.

To ensure the robustness and validity of observations, publicly available sources from both before, during, and after the event[106,175–177] including company-provided information and communications during (e.g. the CEO's speech), and after the event (e.g. social media posts) were used to triangulate findings and compare information with the results of the semi-structured interviews to thoroughly describe the scene, crowd, and context[171,172,177] (Fig. 2, Supplementary Fig. 1).

Semantic thematic analysis was used to examine the language and meaning conveyed in interviews and the public discourse[178,179]. This involved analyzing the use and frequency of specific words, phrases, and narratives to understand how CM is discussed and perceived. In particular, we looked for ways that CM and animal-sourced meat were described including sensorial words and nomenclature, as well as how the ban was characterized. Additionally, while conducting the thematic analysis, we noted the strength and complexity of responses to enable a richer understanding of opinions and evaluations by looking for words and phrases that communicated variations in emphasis or that used emotional messaging that may indicate more complex positive, neutral, or negative positions. For example, foods may have been described as, "It was good" or, "That is F***ng delicious" or, "it wasn't bad" which each convey a different level of enthusiasm and strength of evaluation.

Deductive, inductive, and abductive analyses were integrated to inform central theories to help explain consumer acceptance and sensorial evaluation of CM and the role of the tasting event in shaping those perceptions. Using Grounded Theory[171,177], theories emerge by iteratively reviewing interviews and secondary source materials. Theoretical pathways were identified to help describe topics of importance or common explanations and experiences based on the accounts of multiple sources. Reflexive memos were used to document emergent insights, refining categories until theoretical saturation was reached. Emerging theories were discussed and reviewed among the research team for face validity. Theories were agreed upon, citing representative statements as evidence.

Data availability

The qualitative data that support the findings of this study are available from Tufts University, but restrictions apply to the availability of these data, which include recordings of participants in their own words and thus must be protected to preserve privacy. The data and coding are, however, available from the authors upon reasonable request and with the permission of Tufts University Social Behavioral IRB.

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Author contributions

S.G. conceived of, proposed, and designed the study, with input from S.B.C.; S.G. and I.R. collected data and interviews; S.G. and H.B. conducted data analysis; S.G., H.B. and S.B.C. participated in the interpretation of data; S.G. drafted the manuscript; S.G. and S.B.C. substantively revised the manuscript; S.B.C. secured partial funding support for this work and supervised. All authors contributed to the writing of the manuscript and approved the final version.

Competing interests

The authors declare the following competing interests: Subsequent to gathering, analyzing, and drafting this manuscript, but prior to submission, S.G. accepted a role as a short-term, contracted, consulting Executive Director for the Association of Meat, Seafood, and Poultry Innovation, a non-profit organization related to the subject matter of this study. This organization had no role in the design, data collection, analysis, or interpretation of the study, had no prior access to material herein, nor participated in the decision to conduct this study or to publish the results. S.G. has no other competing interests. All other authors declare no competing interests.

Additional information

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