What do consumers in key Asian export markets think about cell ag?

This spotlight report on consumer awareness and attitudes towards cellular agriculture (cell ag) is part of a larger report from Food Frontier, *Alternative proteins and Asia: Insights for Australian and New Zealand Exporters*. Food Frontier sought to understand what the market opportunity in Asia is for Australian and New Zealand plant-based meat and cellular agriculture products, commissioning research partner Mintel Consulting to analyse 11 markets in Asia for market potential. Singapore, China, South Korea, Japan and Thailand were identified as the five top markets.

Australia and New Zealand are located on the doorstep to Asia, a continent that houses around 60% of the world's population. Scale-up of new food technologies will be essential to sustainably meet the growing protein demand in Asia, meaning Asia therefore presents the greatest opportunity for alternative protein businesses to make an impact through export growth.

The consumer data in the report is based on nationally representative surveys of 1000 consumers in each market, with 5000 in total. The survey asked questions about consumer demographics, behaviour and preferences; questions about awareness and acceptance of plant-based meats, and questions about awareness and acceptance of food produced using cellular agriculture. In this report, cellular agriculture is defined as an umbrella term that covers two food production technologies – cell cultivation, and precision and biomass fermentation.

Perceptions of Australian and New Zealand food and drink products

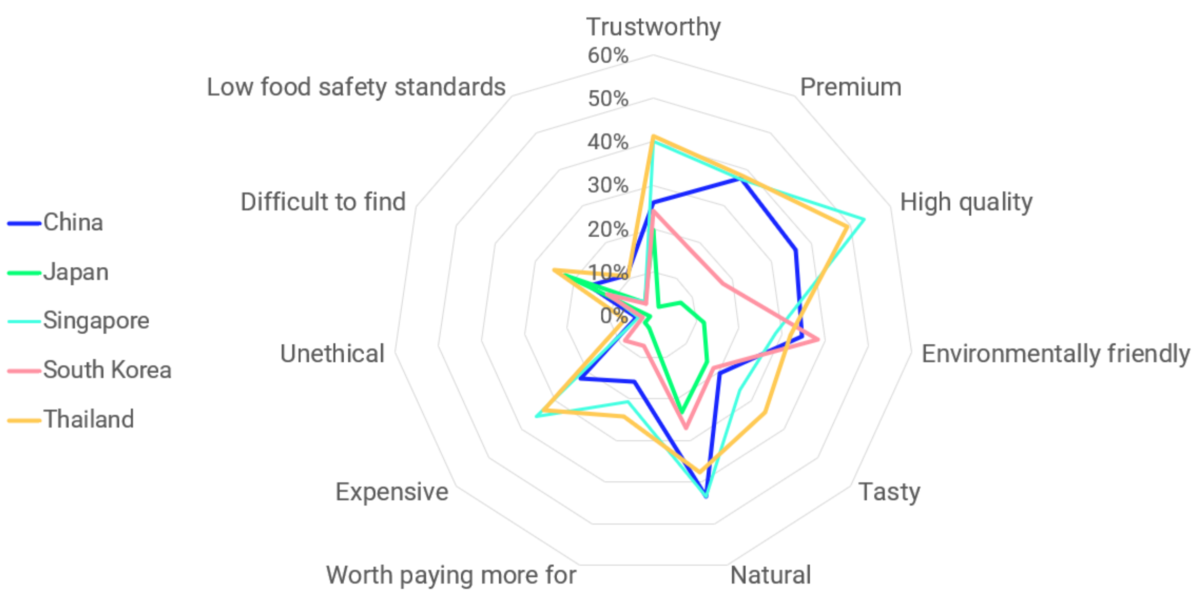
Australia and New Zealand are well positioned to supply Asia with nutritious, affordable and sustainable food into the future. The spider charts below track consumer perceptions from the five surveyed markets of imported food and drink from Australia and New Zealand, showing that both nation's foods are perceived as: trustworthy, premium, high quality, and natural. They are also perceived as expensive, but some consumers (Singapore and Thailand) believe this is still worth paying for.

Although the question analysed perceptions for current food and drink products exported to these markets, there is a significant opportunity to leverage the existing positive perceptions of all Australian and New Zealand provenance to new food and beverage sectors.

Perceptions of Australian food and drink products

Although Japan's perception of Australian products appears lower than the other five markets, Japanese consumers actually ranked Australian provenance more favourably than the other countries they were asked about (countries such as the UK, US China and South Korea), so this result is more likely the case of a less enthusiastic and more conservative consumer base, rather than a negative view of Australian provenance. New Zealand provenance was rated

Perceptions of New Zealand food and drink products



slightly more favourably than Australian provenance by Singaporean and Chinese consumers, particularly on quality and naturalness.

What are the levels of awareness and acceptance of cell ag products?

Consumers in each of the five markets were asked questions about cultivated meat and then questions about precision and biomass fermentation. After the consumers were given a definition they were asked if they would consider buying cultivated meat and products of precision and biomass when they become available (or in the case of Singapore - more available). Consumer acceptance of cultivated meat was measured by their likeliness to buy.

Despite having the highest levels of consumer awareness - due to it being the only market where both cultivated meat and precision fermentation dairy products are available for purchase - Singapore remains in the middle of the five markets on levels of acceptance for both technologies. China and Thailand appear as the most accepting markets for both, while South Korea and Japan have the lowest levels of awareness and acceptance.

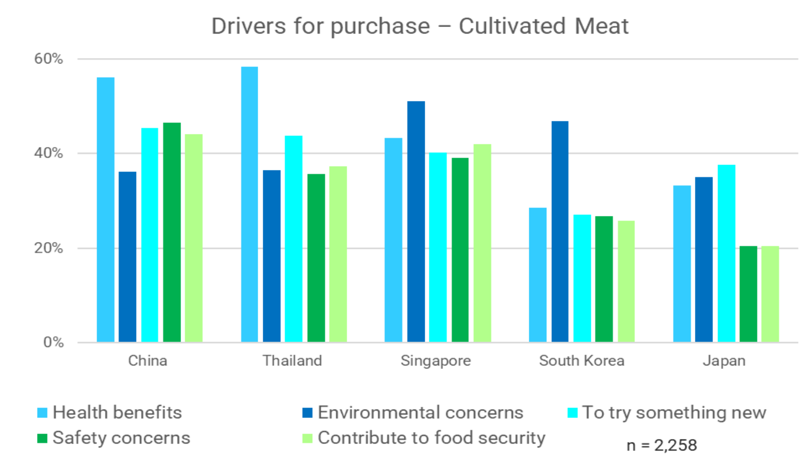
Country	Awareness of cultivated meat	Likely to purchase cultivated meat	Awareness of precision & biomass fermentation	Likely to purchase precision or biomass fermentation
China	39%	74%	48%	80%
Thailand	33%	69%	36%	73%
Singapore	53%	39%	28%	40%
South Korea	29%	32%	14%	37%
Japan	20%	12%	11%	13%

What is driving consumers to consider cell ag products?

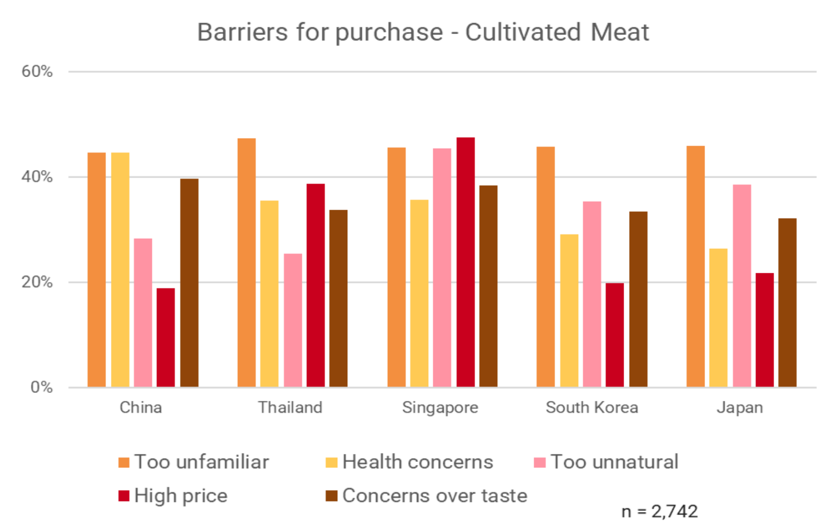
Cultivated meat

Consumers who said they were likely to purchase cultivated meat were asked what factors made them consider purchasing cultivated meat, while consumers who said they were unsure or unlikely to purchase cultivated meat were asked what factors they considered a barrier for this purchase - hence the different n number for each group.

Health benefits are the biggest driver in China and Thailand, in Singapore and South Korea, environmental concerns are the biggest driver. In Japan, consumers want to try something new.

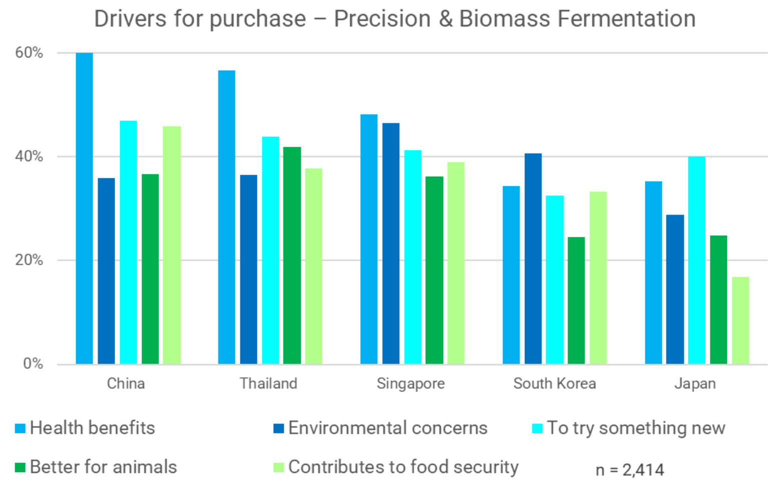


For the perceived barriers, unfamiliarity ranks the highest in each market, except for Singapore, where the high price is the biggest barrier. This is an important point, as Singapore is the only market with cultivated meat available for consumption, and its consumers are ranking high price at almost two times higher than the other markets - this indicates that striving to reduce costs will be key to winning consumers over.

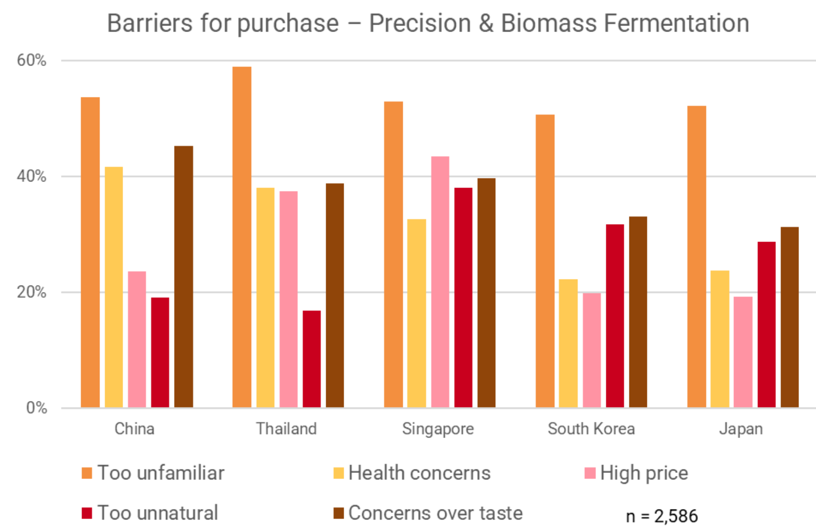


Precision and biomass fermentation

A similar trend is observed here, with health benefits ranking highest in China, Thailand and Singapore, environmental concerns in South Korea and Japan again keen to try something new. The big difference is a new top five driver - better for animals. This might be because precision and biomass fermentation products can be completely animal free and require no animal inputs.



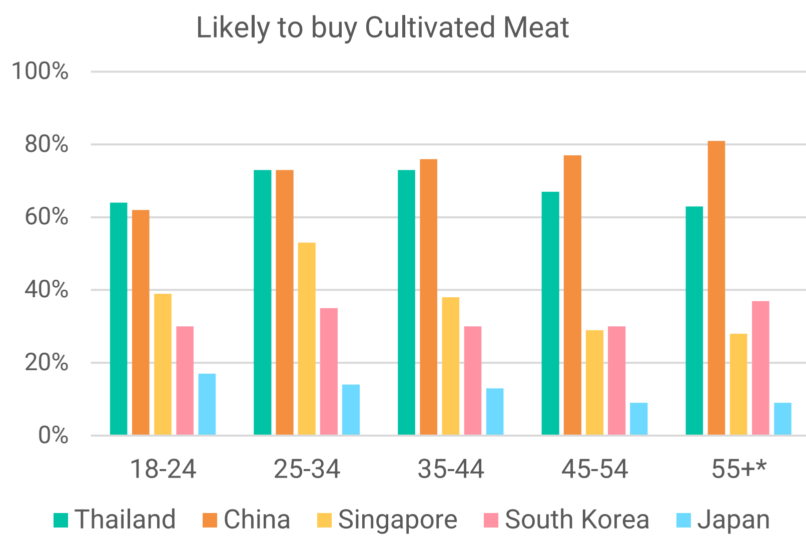
With the perceived barriers, unfamiliarity is the highest concern across all markets, however concerns about 'unnaturalness' are significantly lower for precision and biomass fermentation than they were for cultivated meat. This might be because traditional forms of fermentation are already used in culinary applications across all five markets.



Acceptance by demographic groups

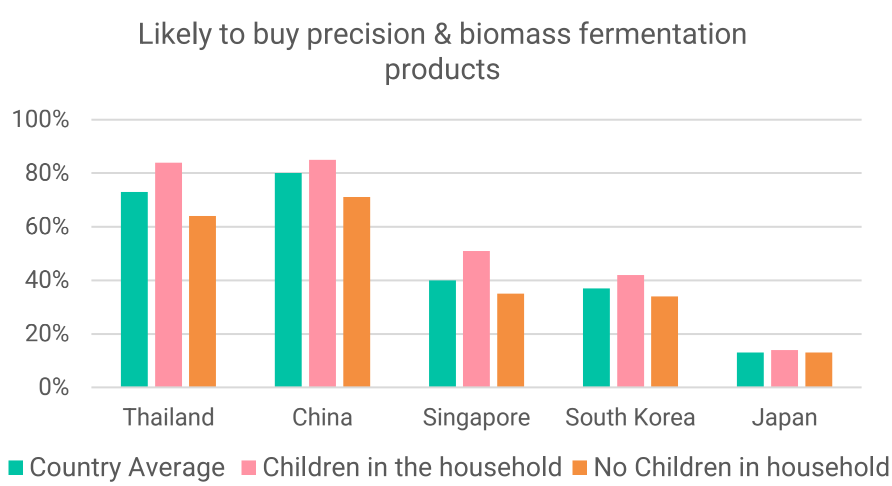
Age groups

Looking at acceptance of cultivated meat by age range did not demonstrate a clear trend across all markets. This data is also unreliable for direct comparisons, given the differing population numbers of each age group in each market.



Children in the household

In China, Thailand and Singapore, consumers who have children living in the household are significantly more likely to buy cell ag products than those who don't have children in the household. The difference is not significant in South Korea or Japan. This trend was observed for both cultivated meat and precision and biomass fermentation, with the fermentation graph displayed below.

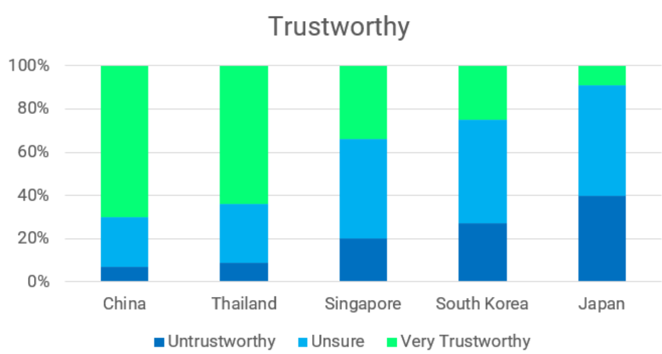


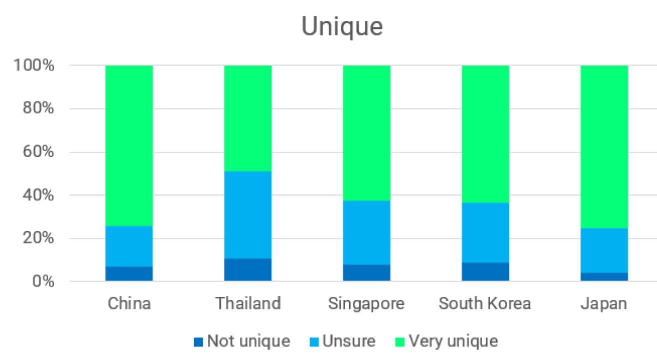
What are consumers' perceptions of cell ag?

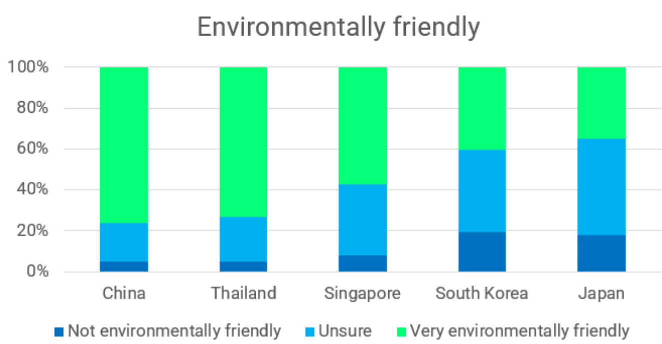
Consumers were asked about their perceptions of cultivated meat and precision and biomass fermentation on nine different factors, by nominating how much they agreed or disagreed that cultivated meat was: tasty, healthy, exciting, natural, trustworthy, premium, quality, unique and environmentally friendly. Four are shown for each technology below.

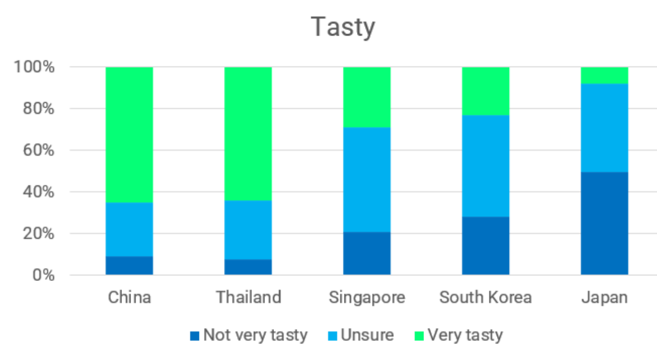
The perception scores for across all five markets mostly remained in the middle of the range - rather than overwhelmingly positive or negative perceptions. This suggests the majority of consumers, particularly in Singapore, South Korea and Japan don't know enough about the technology, and require more education about the benefits and attributes of cultivated meat.

Cultivated meat



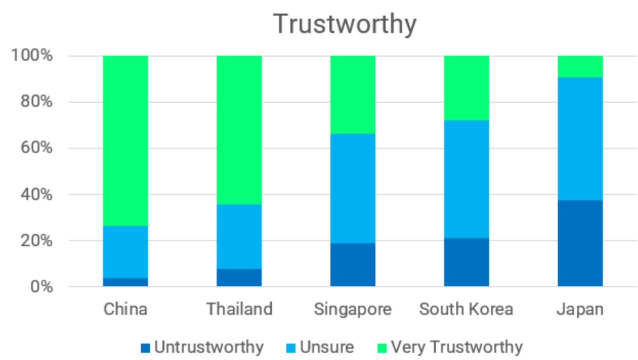


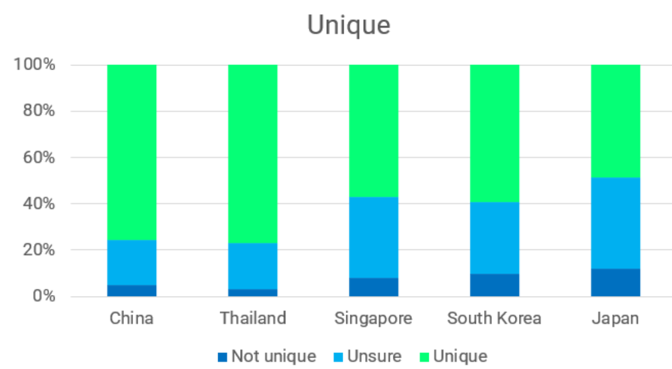


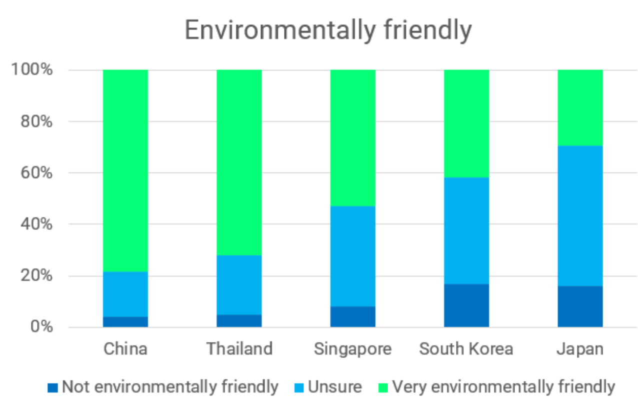


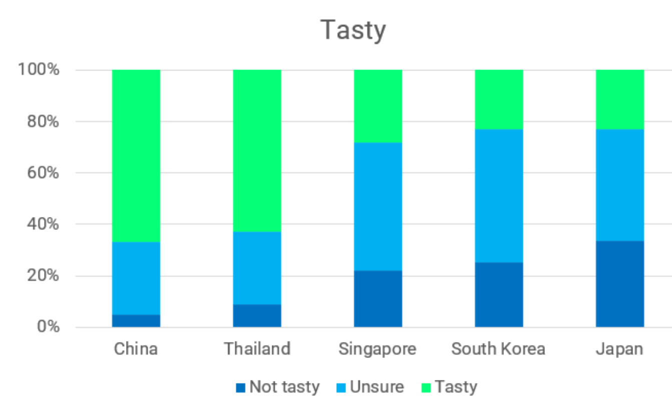
Precision and biomass fermentation

Interestingly, precision and biomass fermentation is perceived as slightly more trustworthy and tasty than cultivated meat across all markets, but less unique than cultivated meat - perhaps because of the aforementioned use of traditional forms of fermentation in regional cuisine.









What's in a name?

Cultivated meat nomenclature

The survey asked those consumers who said they were likely to purchase cultivated meat, what product name would most prompt them to buy a cultivated meat product. Here is what they said:

Name	China	Japan	Singapore	South Korea	Thailand	Average
Clean meat	32%	23%	24%	25%	30%	27%
Cultivated meat	28%	12%	25%	18%	22%	22%
Cell-cultured meat	26%	6%	18%	14%	25%	19%
None of these	4%	47%	18%	23%	8%	17%
Cultured meat	21%	10%	24%	21%	0%	15%
Cell-raised meat	26%	6%	10%	9%	18%	15%
Cell-based meat	18%	2%	20%	9%	19%	15%
Lab-grown meat	12%	3%	17%	5%	31%	15%
Man-made meat	23%	9%	9%	13%	14%	14%
Cellular meat	17%	3%	9%	8%	21%	13%
Synthetic meat	15%	11%	8%	7%	18%	12%
Propagated meat	13%	3%	7%	7%	16%	10%