

Cultured meat: Navigating the regulations in the EU, USA and China

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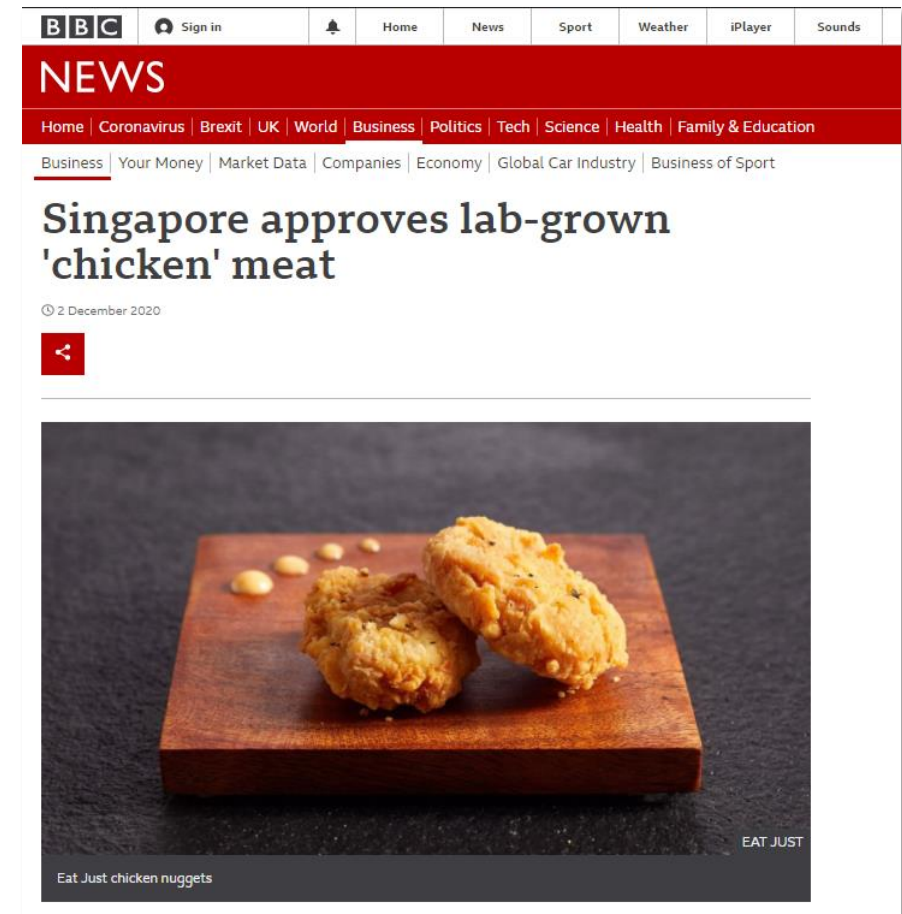
Agenda

- 1 What is cultured meat and consumer demand?
- 2 Where are we currently?
- 3 EU
- 4 US
- 5 China
- 6 Summary



What is cultured meat and the consumer demand

Cultured meat is a brand new industry and its growth will depend on investments from global players into start-up companies

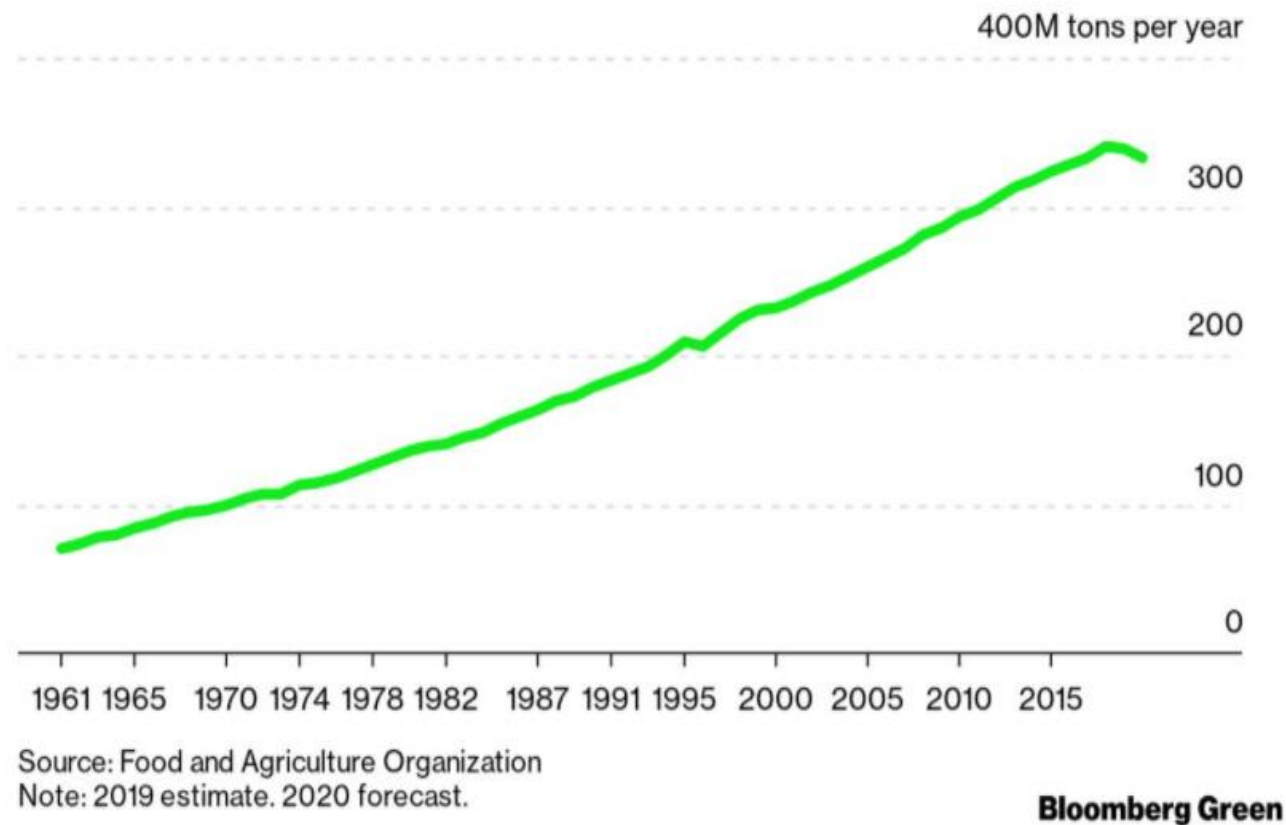


Source: BBC

Cultured meat is being developed for consumers who are seeking to reduce their environmental impact related to meat production and are animal welfare conscious

Meat, Peaked?

Global meat production



Consumer surveys show inconsistencies in acceptance depending on the question asked, their nationalities and familiarity with this new way of producing food

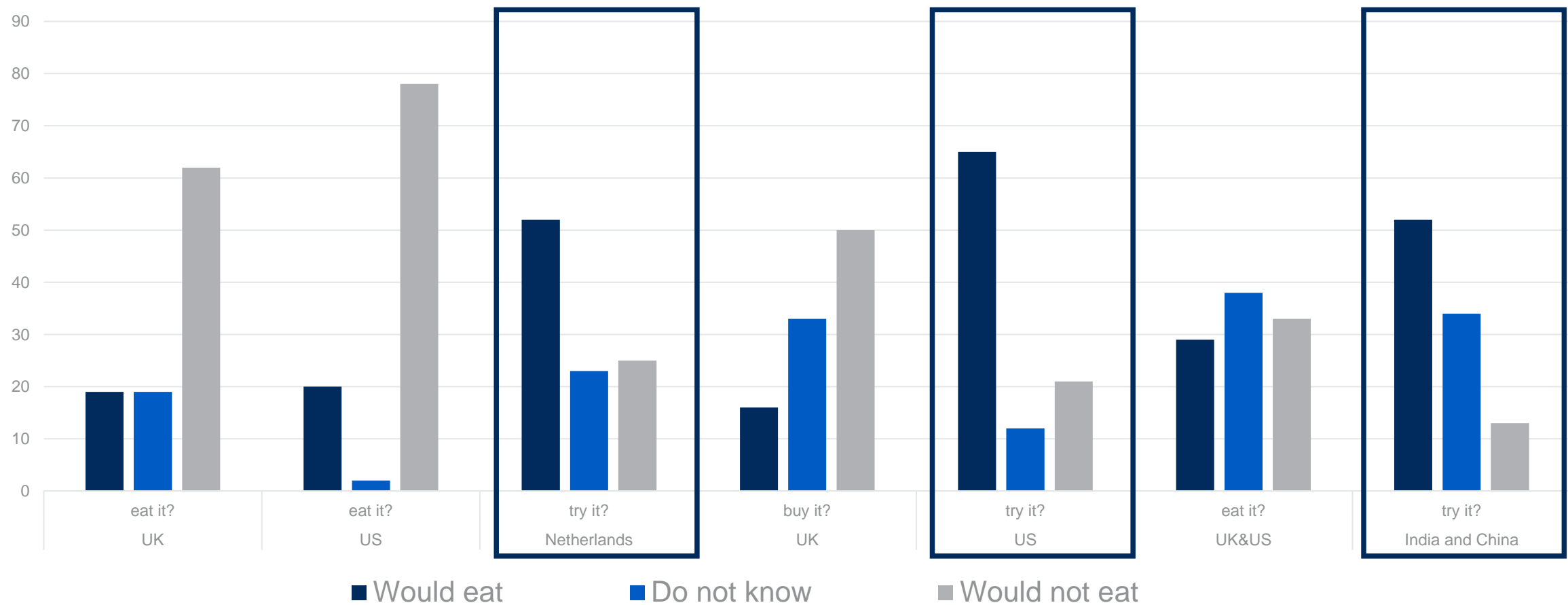
Survey source	Year	Sample size and demographics	Question	Would eat	Do not know	Would not eat
YouGov ¹⁶⁹	2013	1,729 adults (18+ years) in the UK	Imagine artificial meat was available commercially, do you think you would eat it?	19%	19%	62%
Pew Research ¹⁴⁷	2014	1,001 adults (18+ years) in the US	Would you...eat meat that was grown in a lab?	20%	2%	78%
Flycatcher ¹⁴⁵	2013	1,296 adults (18+ years) in the Netherlands	Suppose that cultured meat is available at the supermarket. Would you buy cultured meat in order to try it?	52%	23%	25%
The Grocer ¹⁴⁸	2017	2,082 adults (16+ years) in the UK	Would you ever buy 'cultured meat' grown in a laboratory?	16%	33%	50%
Wilks and Phillips ¹⁴⁶	2017	673 adults (18+ years) in the US	Would you be willing to try in vitro meat?	65%	12%	21%
Surveygoo ¹⁶²	2018	1,000 adults (18+ years) in the UK and US	Would you be willing to eat cultured meat?	29%	38%	33%
Bryant et al. ¹⁵²	2019	3,030 adults in the US (18+ years), India and China (18+ years)	How likely are you to try clean meat?	52%	34%	13%

Source: Post Mark J. & al. (2020). *Scientific, sustainability and regulatory challenges of cultured meat*. *Nature food*, Vol 1, pp.403-415

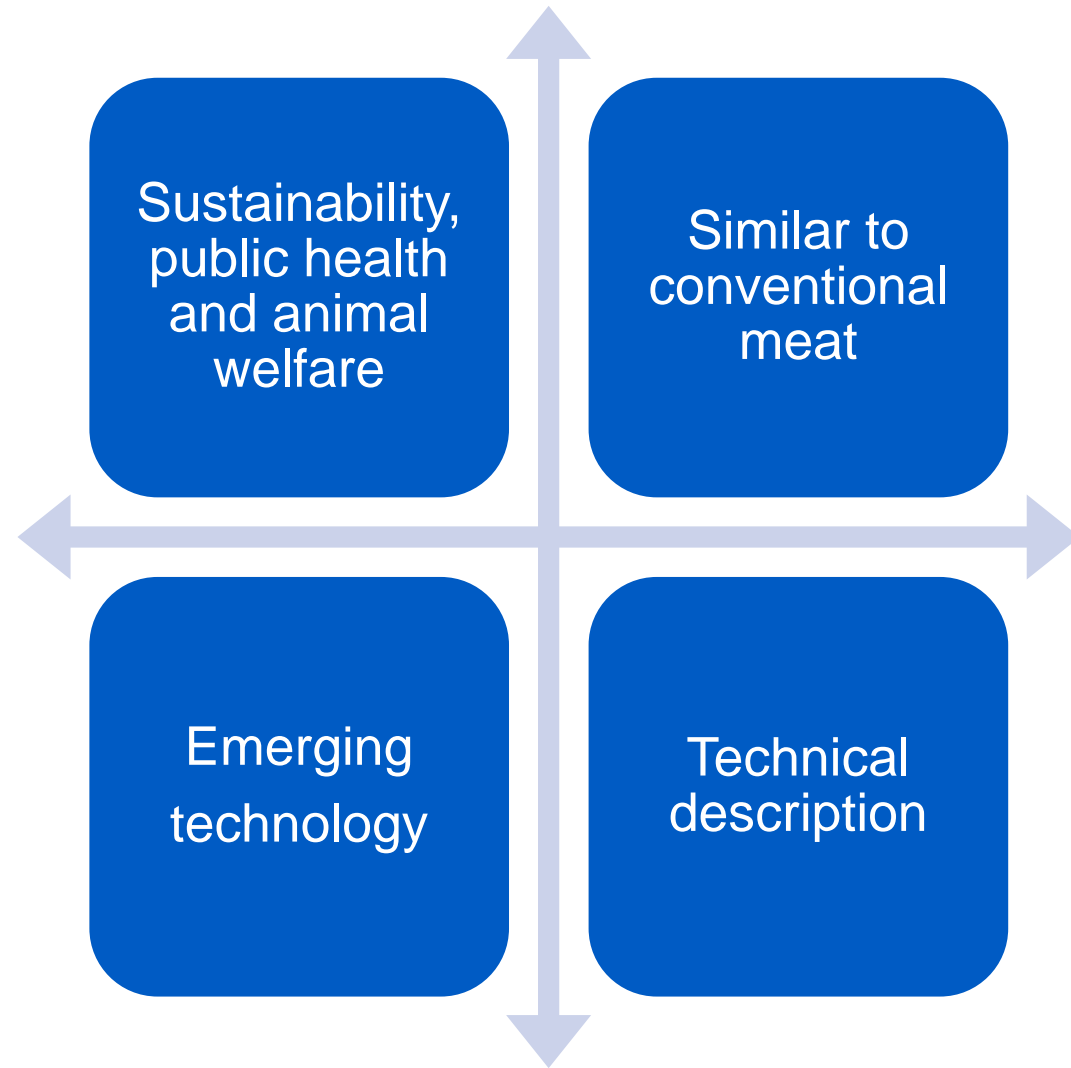
Consumer acceptance is based on the amount and type of information provided

Comparison of survey results carried out between 2013 and 2019 on cultured meat in the UK, the Netherlands, US, India and China

Most optimistic surveys



Consumer acceptance can be influenced in different ways

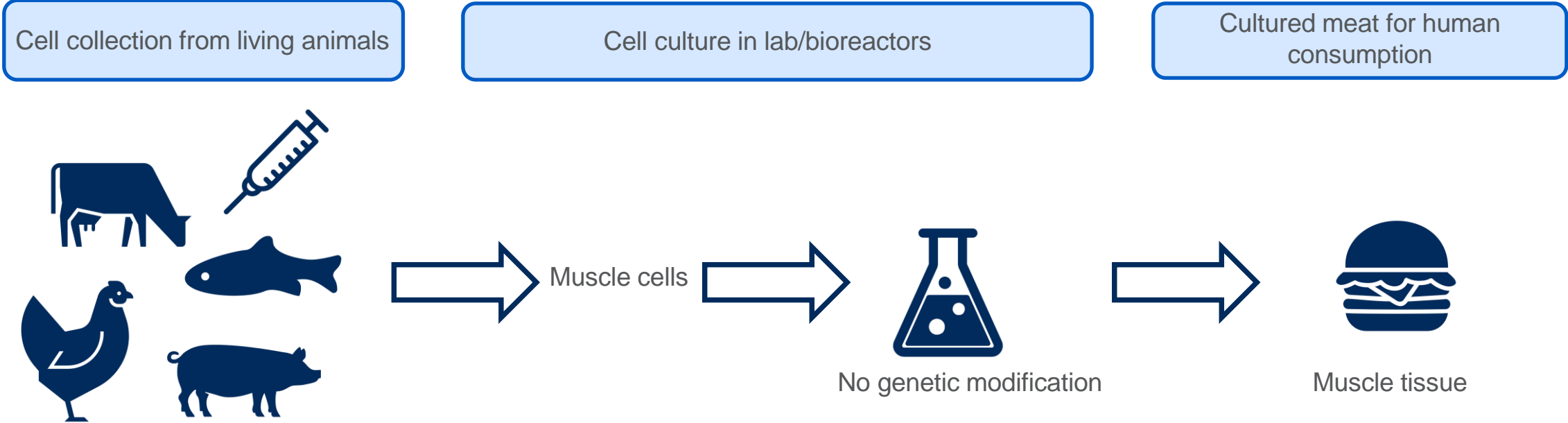


Source: Post Mark J. & al. (2020). Scientific, sustainability and regulatory challenges of cultured meat. *Nature food*, Vol 1, pp.403-415



Where are we currently with
cultured meat production?




Cultured meat is currently produced at lab scale and still needs to be further developed to move to industry scale and be affordable to the average consumers



CHALLENGES

Extraction method	<ul style="list-style-type: none">• Culture media (foetal calf serum)• Technologies used• Clean energy source• Scaling up to industry production• Cost efficiency	<ul style="list-style-type: none">• Organoleptic properties (taste, texture)• Labelling• Retail price
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Meat /meat products definitions are specific for each market and cultured meat cannot currently be described simply as ‘meat’ or ‘meat product’



			
Meat	“the edible parts of animals,.. including blood” of domestic and game animals	“any carcass, part thereof, meat or meat food product under one or more of the following circumstances.”	No definition for generic term ‘meat’. Definitions for various types of raw or processed meat and meat products.
Meat product	Processed products resulting from the processing of meat or from the further processing of such processed products,” such that “the product no longer has the characteristics of fresh meat.”	“product[s] capable of use as human food which is made wholly or in part from any meat or other portion of the carcass of any cattle, sheep, swine, or goats.” Excludes: products which contain meat or other portions of such carcasses only in a relatively small proportion or historically have not been considered by consumers as products of the meat food industry.”	Heat-treated or not are obtained from meat of poultry or livestock or edible by-products by curing, pickling, marinating, boiling, cooking, steaming, smoking, roasting, drying, frying, fermentation or other processes, with or without added ingredients.

Cultured meat is considered a new ingredient across the globe and must be submitted to a rigorous pre-safety assessment



Currently, lab grown meat is not approved for sale anywhere in the world, except Singapore



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Safety

Trichinella in Pork and Wild Game Meat

Safety of Alternative Protein

Ractopamine in Meat

Safety of Mooncakes

Salmonella and Eggs

Safety of alternative proteins

As an innovative city, Singapore hosts an ecosystem of companies and organisations which are experimenting with new ways to solve challenging problems faced by countries today. Innovative products such as alternative proteins can potentially meet food challenges as it can be produced with relatively small amounts of land and labour, and in a climate-resilient and sustainable manner.

This article provides information on alternative proteins and whether they are safe to eat, and how you can find out if your favourite burger patty from the local supermarket is indeed an alternative protein product.

Source: 2019 Singapore Food Agency ©

Diversity of pre-market approvals between markets



New ingredient

Novel foods

Food improvement agents



Substance for new food use

Food additive petition

GRAS
Notification or
Self-affirmation



New ingredients

Novel foods

Food additives

The background of the slide is a close-up, slightly blurred image of the European Union flag, showing the blue field with yellow stars.

European Union

The EU welcomes the development of cultured meat



European Commission

“a 2018 independent expert report identified the development of new meat alternatives as an important pathway to achieving the Commission’s Food 2030 Initiative, to deliver a climate-smart and sustainable food system for a healthy Europe.”

- Former EU Health Commissioner
Vytenis Andriukaitis, 2019

Source: © European Commission

EU novel food categories



Vitamins and minerals and other substances used in food supplements, fortified foods and foods for specific groups

From animal (including cloned animal)

New molecular structure

From cell culture or tissue culture derived from animals, plants, microorganisms, fungi or algae

From fungi/micro-organism/algae

Engineered nanomaterials

Produced with novel process

From material of mineral origin

From plants or their parts

Food used exclusively in food supplements within the EU before May 15, 1997, intended to be used in foods

Source: © European Union

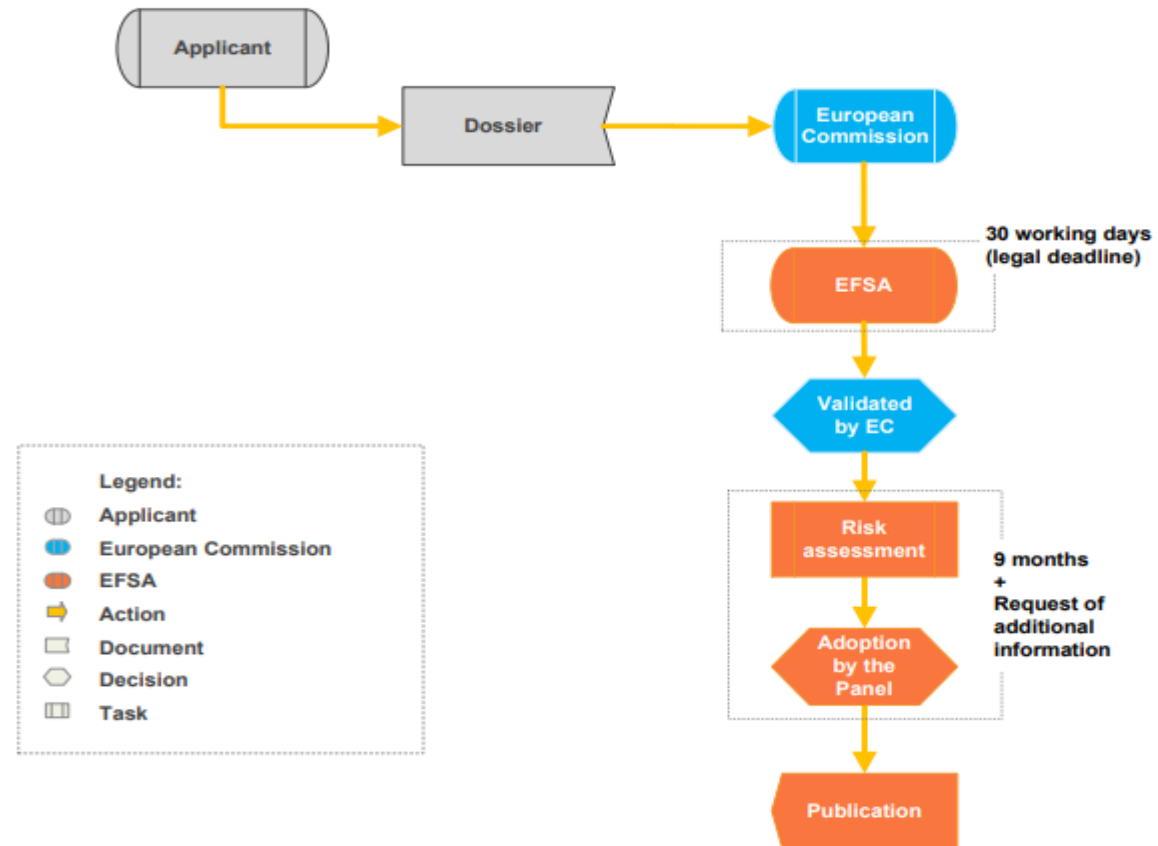
Regulatory considerations: EU



The use of novel foods in the EU is well-regulated

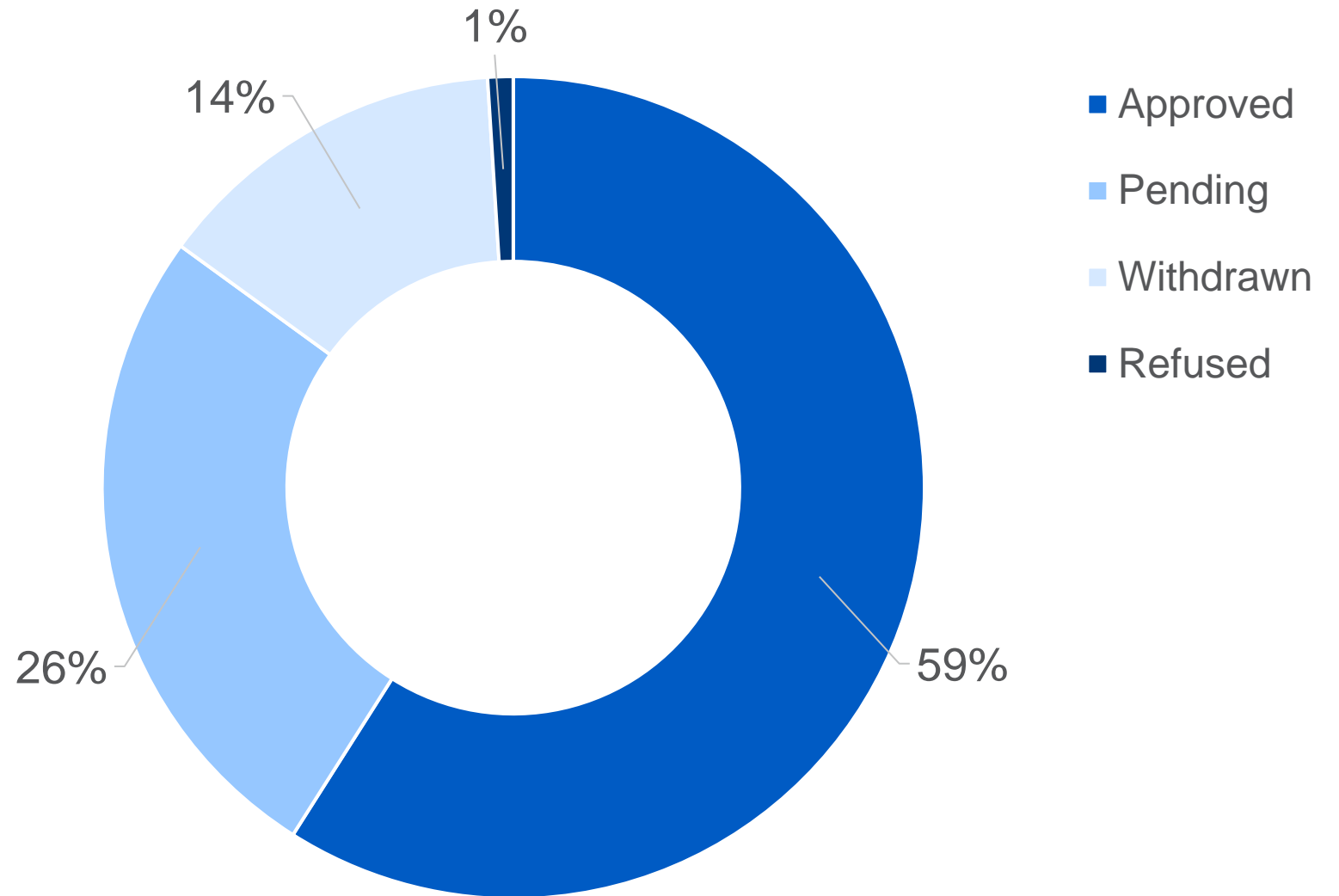
Novel food application procedure

Regulation EU 2015/2283



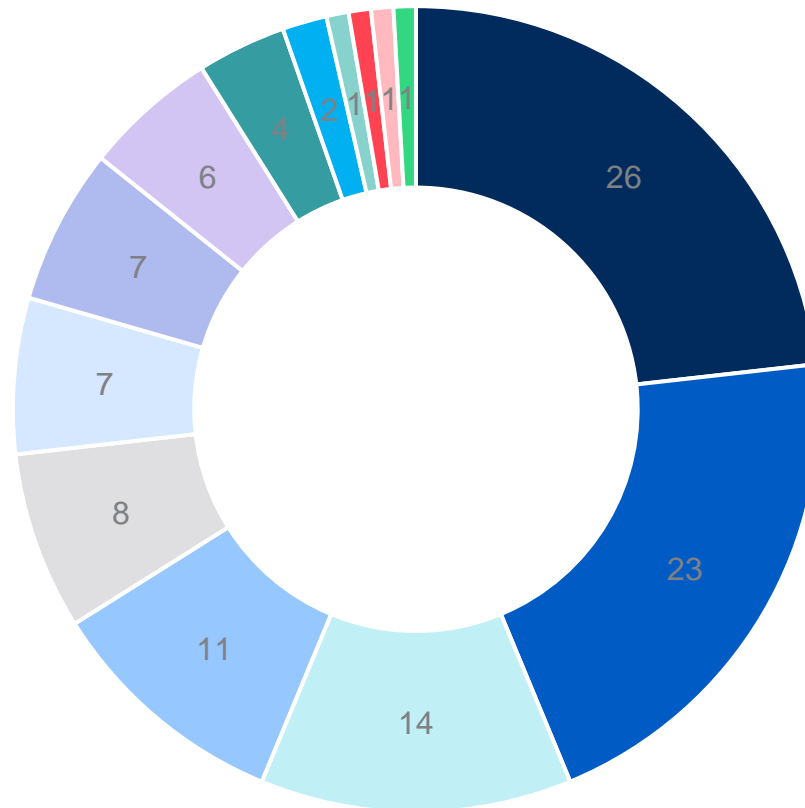
Source: © European Food Safety Authority – EFSA

There are high success rates for approvals



Application success of EU novel food dossiers 1997 – present (EC)
Source: European Union ©

And many of these novel foods deliver against consumer needs



- Oil & Lipids
- Botanical extract
- Saccharides (poly-, di-, mono-, tri-, tetra-)
- Exotics (noni, baobab, chia, haskap, sorghum, kippist)
- Protein/Peptides
- Additives as nutritional substance
- New process
- New vitamins/minerals
- Algae extract
- Carotenoids
- Enzyme preparation
- Exotics (noni, baobab, chia, haskap, sorghum)
- Micro-organism
- Plant sterols

The different types of novel foods approved in the EU since 1997

Source: European Union ©



USA

Regulatory considerations: USA



The marketing of cultured meat in the USA is jointly managed by the FDA and the USDA – FSIS*

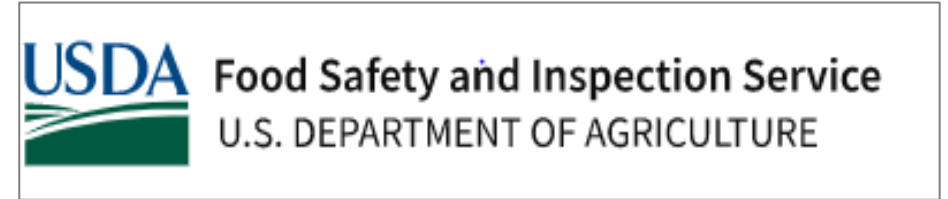


Food
Including seafood (except catfish)
excluding meat and poultry

Generally
recognised as
safe (GRAS)

Notification

Self-
affirmation



Meat and poultry
Catfish

*See 2019 agreement:
<https://www.fda.gov/food/domestic-interagency-agreements-food/formal-agreement-between-fda-and-usda-regarding-oversight-human-food-produced-using-animal-cell>

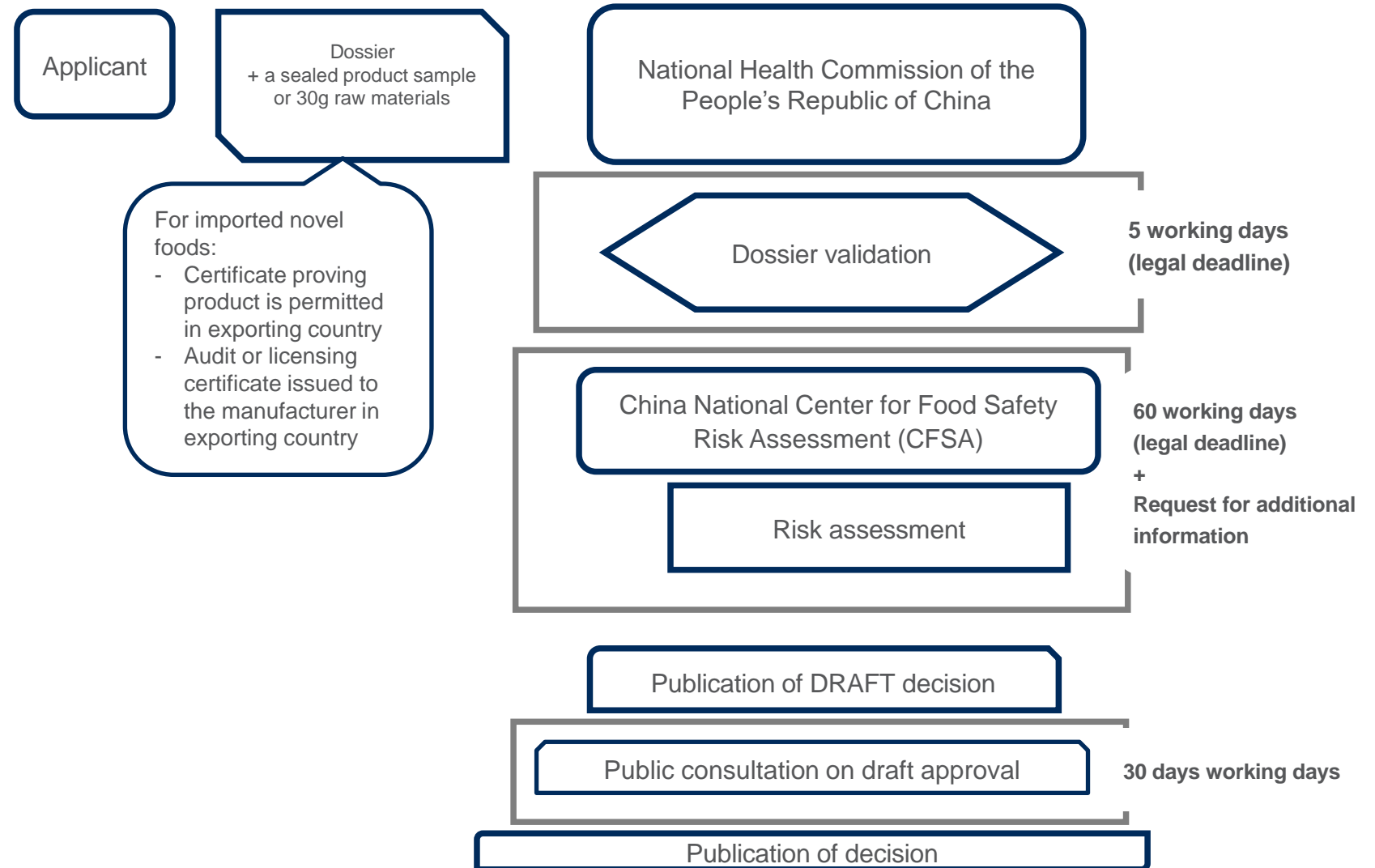
China



Regulatory considerations: China



Novel foods must be submitted to a pre-market approval process

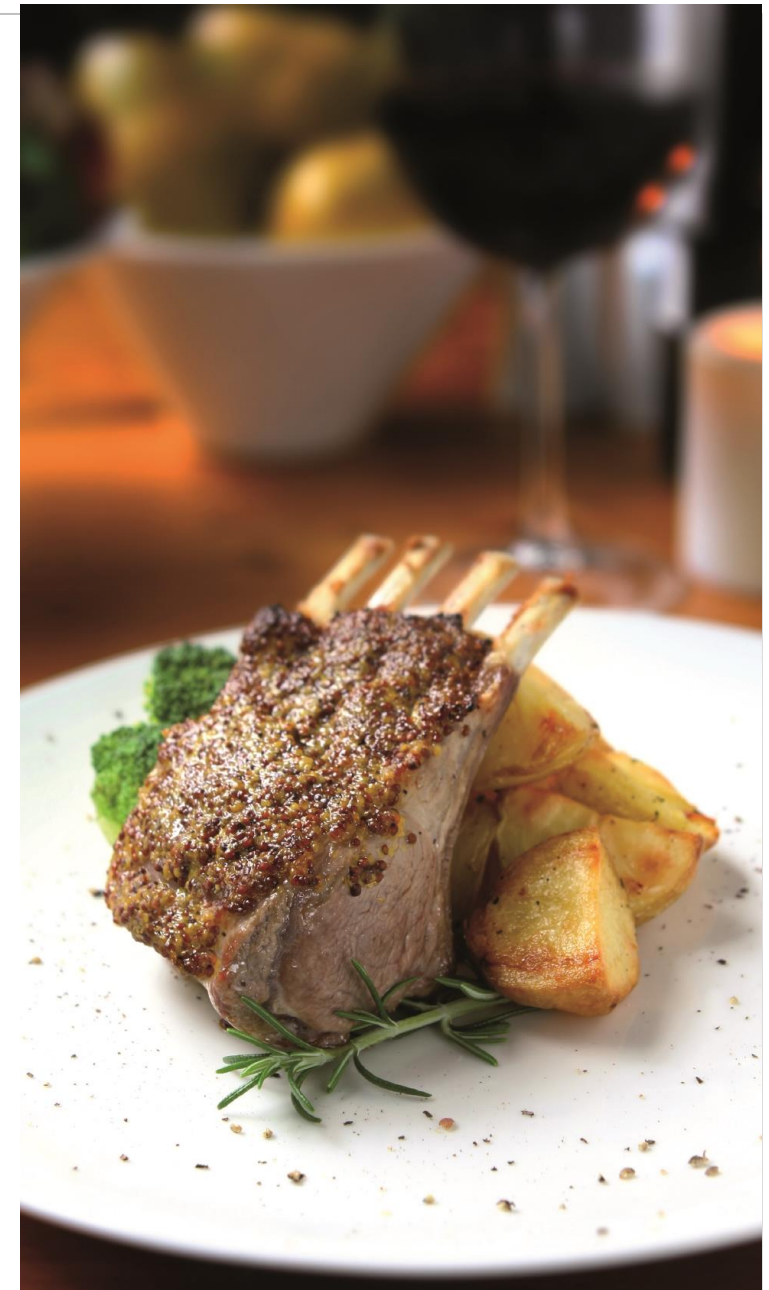


A close-up photograph of a blue ceramic bowl with white floral patterns, filled with several golden-brown, breaded chicken strips. The bowl sits on a dark grey surface. In the background, there are green onions, a small wooden bowl of mixed black and white peppercorns, and a blurred glass of oil. A white text box in the upper right corner contains the text 'In summary'.

In summary

Take away points

- The cultured meat industry is in its infancy
- Consumer drivers are the environment, sustainability, global public health and animal welfare
- More research needed into the technologies used and into taste and texture
- Separate regulatory pre-market assessment needed to access different markets



Cultured meat may be on your plate as soon as 2024...



Questions

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