



Singapore's novel food regulatory framework

Presented by: Seah Peik Ching, Singapore Food Agency

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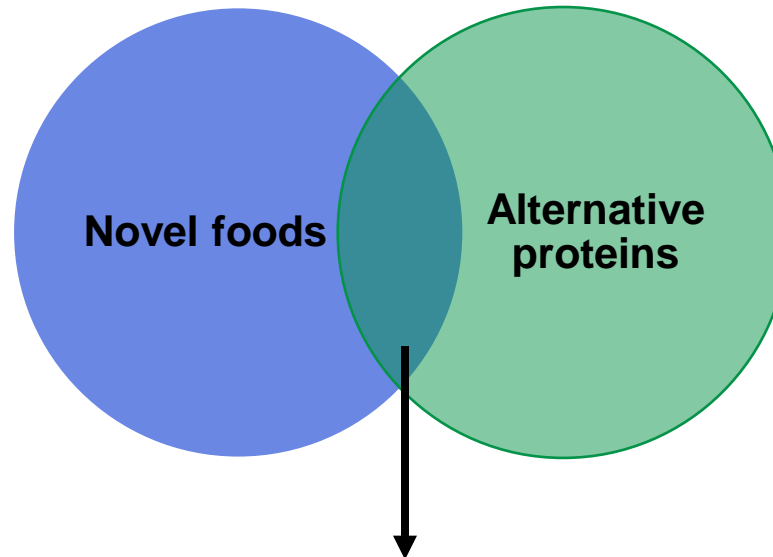
Date: 19 Aug 2025



Novel foods in Singapore

Novel foods

- Foods and food ingredients that **do not have history of use for human consumption**.
- History of use is taken to be a period of **20 years**.
- Also includes traditionally consumed food ingredients that are produced through **advances in biotechnology**.
- No internationally harmonized or accepted definition



Proteins from sources other than traditional livestock*

- **Plant-derived** proteins (e.g. processed products from wheat, pea, rice, soy, mung bean)
- **Mycoprotein**: Proteins derived from the dried cells of fungi (e.g. Quorn®)
- **Algae protein**: Derived from microalgae (e.g. spirulina)
- **Cell-based/cultured/cultivated meat**

Alternative protein	Are these novel food?	Examples
Cultivated meat	Yes	Cell-based beef, chicken, seafood
Proteins from biomass/precision fermentation	Depending on species and process	β-lactoglobulin produced by GM yeast
Algae	Depending on species	<i>Chlamydomonas reinhardtii</i> algae
Fungal or plant-based proteins	Depending on species	Proteins derived from plants without history of use as food

*Adapted from World Economic Forum's "Meat: the Future Series – Alternative Proteins" (2019)

New legislation related to novel food in the Food Safety and Security Act (FSSA)

- Singapore's parliament has passed the **Food Safety and Security Act (FSSA)** in Jan 2025, which consolidates and updates food-related legislation to strengthen Singapore's food safety and food supply resilience.
- A key provision in FSSA is the formalization of **SFA's** existing **pre-market approval** process for novel food and GM food.

Singapore Statutes Online

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Food Safety and Security Act 2025 x

Status: Current version as at 27 Apr 2025

Food Safety and Security Act 2025 ...

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Timeline Amendment Annotation

Actions

Meaning of "pre-market approval"

105. In this Part, "pre-market approval" means an approval granted under this Part for a novel food or a genetically modified food to be available for consumption as food by the general public, after the Agency makes an assessment of the public health and safety considerations having regard to —

- (a) the potential for adverse effects in humans;
- (b) the composition or structure of the novel food or genetically modified food;
- (c) the process by which the novel food or genetically modified food has been prepared;
- (d) the source from which the novel food or genetically modified food is derived;
- (e) the likely patterns and levels of consumption of the novel food or genetically modified food; and
- (f) any other relevant matters.

Key considerations in regulation of novel foods

- ✓ Food safety is the principal consideration of SFA
 - Reliance on food imports- Need for an anticipatory stance
 - Science-based risk assessment and risk management
- ✓ Regulatory pathways that protect consumers while facilitating innovations that can help food security
- ✓ Regulations must be supported by other strategies:

Build consumers' awareness

- Communicate factual and scientific information to consumers.

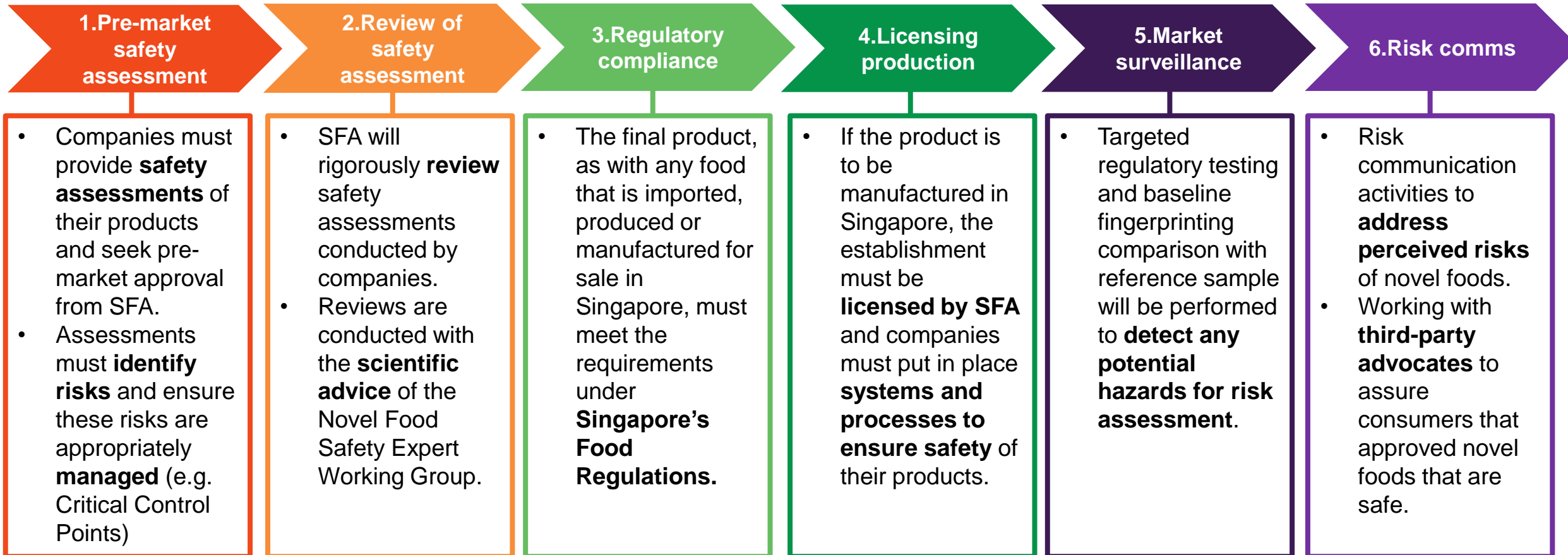


Leverage on partnership

- Encourage transparency from industry
- Support R&D by academia to collectively build food safety capabilities.
- Engage and share with overseas agencies and international organizations

Overview of SFA's regulatory framework for novel foods

- Aim of regulatory framework is to create a system to identify potential risks and ensure these risks are appropriately managed.
- Clear and scientifically validated safety assessment procedures help to support the food safety of food innovations.



1. Pre-market safety assessment of novel food by the company

- Companies must conduct and **submit a safety assessment for SFA's review**
- Assessments must **identify risks** and ensure these risks are appropriately **managed** (e.g. Critical Control Points)

Information on SFA's requirements for the safety assessment of novel food is available on the SFA website



Guidance document on Requirements for the Safety Assessment of Novel Foods

Examples of information companies should include in their pre-market assessment:

- Identity and characterization of the novel food
- Identities and chemical specifications of process inputs
- Manufacturing process
- Purity, allergenicity and toxicological data and intended uses of the novel food

Pre-market safety assessment

2. Review of safety assessment

Regulatory compliance

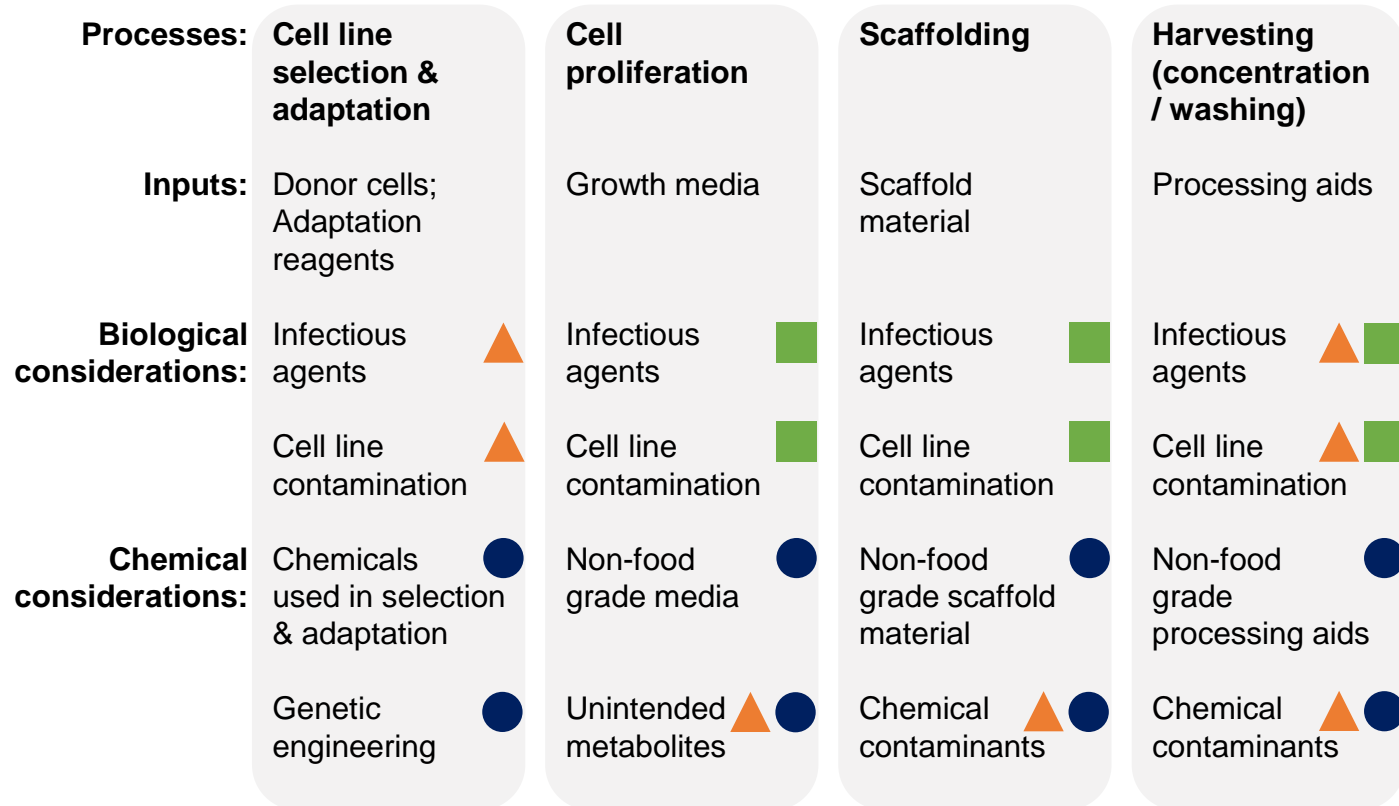
Licensing production

Market surveillance

Risk comms

2. Review of safety assessment by SFA (Risk assessment approach)

Generalized cultured meat manufacturing process



- Information submitted must be supported by scientific literature or studies
- Safety and health impact of the novel food when consumed as intended, including dietary exposure

Risk mitigation strategies for food safety considerations are denoted as:

▲ Testing and analysis ■ Aseptic processing ● Risk assessment

Establishment of novel food safety expert working group

- Established in March 2020 to ensure rigorous review of the safety assessments
- Diverse specialization fields to allow for holistic assessment of novel food's safety

Chair



Prof John Lim
Executive Director, Centre of Regulatory Excellence, Duke-NUS Medical School



Adj A/Prof Annie Ling
Health Promotion Board
Epidemiology



Adj A/Prof Jeffrey Cutter
Ministry of Health
Public Health



Prof Chan Chun Yong, Eric
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Asst Prof Ching Jianhong
Duke-NUS Medical School
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Nanyang Technological University
Food Science



A/Prof Yew Wen Shan
National University of Singapore
Precision fermentation, microbiology



A/Prof Linda Zhong Lidan
Nanyang Technological University
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A/Prof Tan Soo Yong
A*STAR
Biobanking, molecular pathology, cancer genomics



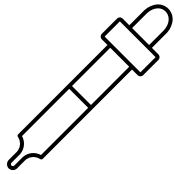
Adj Prof Sebastian Maurer-Stroh
A*STAR
Bioinformatics (allergenicity prediction)



Clinical A/Prof Chua Mei Chien
KK Women's and Children's Hospital
Pediatrics

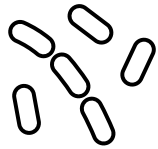
3. Regulatory compliance to ensure product safety

The final novel food product, as with any food that is imported, produced or manufactured for sale in Singapore, **must meet the requirements under Singapore's Food Regulations.**



Chemical requirements

- Use of food additives
- Maximum levels for contaminants



Microbiological requirements

- Standards for ready to eat food



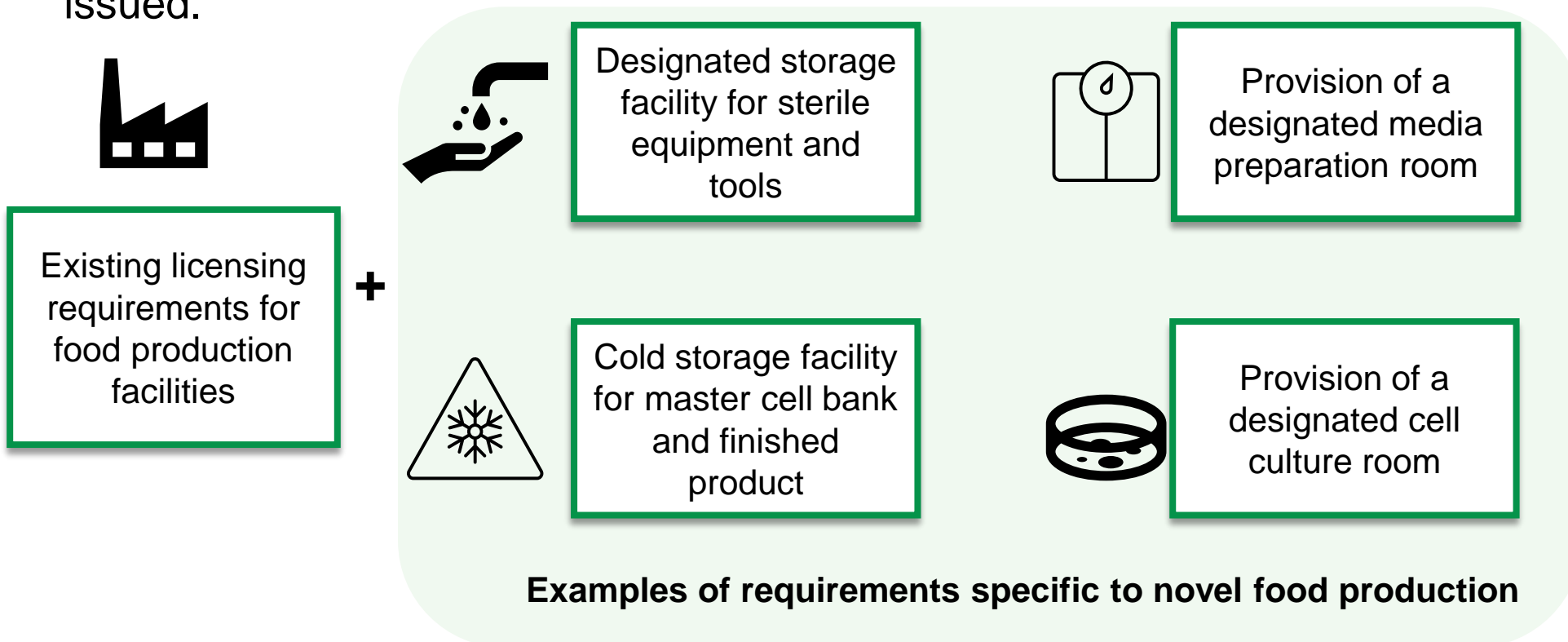
Labelling requirements

- General labelling requirements

CAP. 283, Rg 1	Food Regulations	[2005 Ed. p. 1
SALE OF FOOD ACT (CHAPTER 283, SECTION 56(1))		
FOOD REGULATIONS		
ARRANGEMENT OF REGULATIONS		
PART I PRELIMINARY		
Regulation		
1.	Citation	
2.	Definitions	
PART II ADMINISTRATION		
3.	Fees	
4.	Analyst's certificates for perishable foods	
PART III GENERAL PROVISIONS		
5.	General requirements for labelling	
6.	Exemptions from regulation 5	
7.	Containers to be labelled	
8.	Hampers to be labelled	
8A.	Nutrition information panel	
9.	Prohibition on false or misleading statements, etc., on labels	

4. Licensing of local production to ensure process safety

SFA requires a detailed breakdown of the novel food production process to ascertain that companies have put in place **systems and processes that ensure safety** of their products before a licence is issued.



- One licensed cell-based production facility to date
- Review of licensing requirements for novel food production facilities ongoing



5. Market surveillance to ensure compliance

- Testing of approved products on the market to ensure compliance with requirements under Singapore's Food Regulations.

SFA's approval is for the use of a specific cell-based meat or novel food as an ingredient in specific food products.

Should the company wish to extend the use of this ingredient in more of their food products, they must provide the additional requisite information for SFA's evaluation (e.g. changes in exposure as a result of the new products entering the market)

Should there be any new manufacturing processes that may change the original safety review by SFA, the company must also provide requisite information for SFA's evaluation.

Pre-market safety assessment

Review of safety assessment

Regulatory compliance

Licensing production

Market surveillance

6. Risk comms

6. Risk communication activities to address perceived risks of novel foods

Label the product packaging with qualifying terms

F&B outlet must communicate true nature of food

Food
for **Thought**

A digital publication by
the Singapore Food Agency



Food Safety

A growing culture of safe, sustainable meat

For Singapore's food game plan to be truly successful, a robust and scientifically-based regulatory framework is needed to address the latest developments in the rapidly evolving field of novel food including cultured meat.

By Singapore Food Agency

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Op-ed by Members of
SFA's Novel Food
Expert Working Group

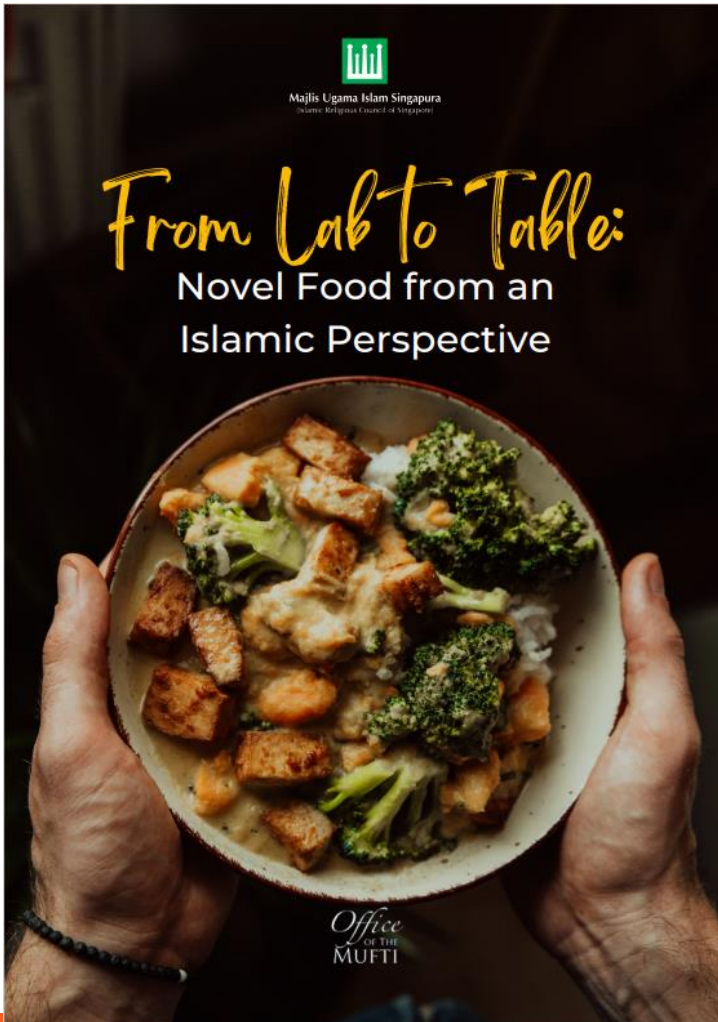
Press briefing for SFA's first approval of cell-cultivated food

Risk-at-a-glance article on novel foods published on SFA's website

Others- Third-party advocates, social media



Addressing Religious Concerns on Consumption of Cultivated Meat



- Fatwa* on alternative proteins was issued by Majlis Ugama Islam Singapura (MUIS) in 2024 with the following conclusion:
 - Consumption of cultivated meat is permissible if:
 - Cells are obtained from **animals that are halal for consumption**
 - **Final product only contains halal ingredients**
- Assurance to Islamic community from MUIS on the safety and permissibility of novel foods based on SFA's novel food regulatory framework

** Fatwa is a non-binding legal opinion or ruling on a point of Islamic law issued by qualified Islamic scholar in response to a question*

Challenges in regulation of novel foods

Given that novel foods is a nascent and rapidly evolving industry, regulatory agencies continue to face challenges even with a regulatory framework in place:



Keeping pace with innovation

Current case-by-case safety assessment approach may be outpaced in the dynamic novel foods ecosystem



Lack of internationally harmonized guidelines/standards on:

a) Risk assessment- Difficult to achieve due to differing stages of regulatory preparedness of countries

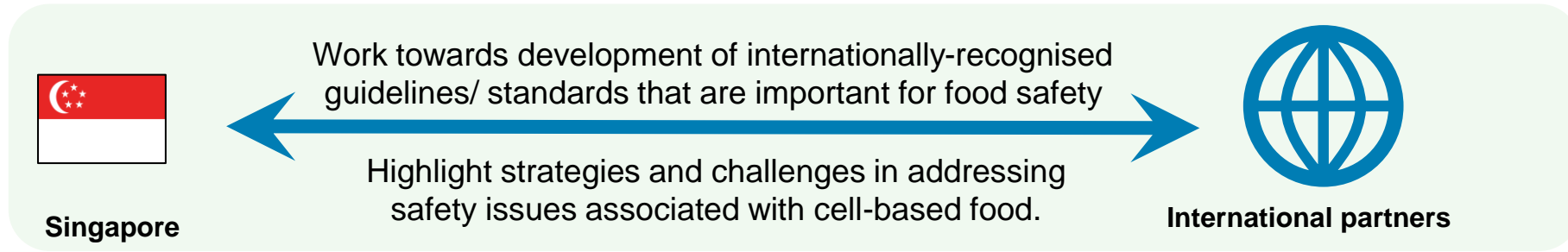
b) Regulation of novel food production facilities- New production methods could introduce new ways hazards could enter the food supply chain.



Risk communication

No harmonisation of terminologies for novel food products
Susceptibility of consumers to misinformation and strong biased opinions

International collaborations will help to minimize trade barriers and allow novel foods to contribute to a supply of safe food globally



SFA Roundtables for Novel Food Regulations (2019, 2021 – 2024, upcoming on 3 Nov 2025) - An annual discussion platform for regulators, industry & researchers



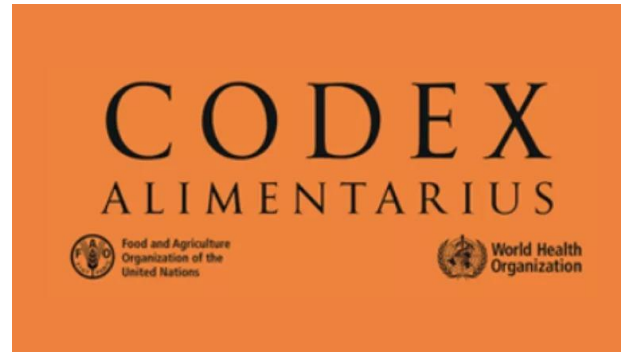
“New Food Sources and Production Systems” (NFPS) at Codex Alimentarius Codex 46
Emphasized the importance of addressing challenges from New Food Sources and Production Systems (NFPS) and the importance of Codex in ensuring both food safety and fair international trade practices



Charting the course towards safety assessment guidelines and resources for NFPS with international partners

- SFA co-hosted an international consultation on cell-based foods with FAO (1 – 4 Nov 2022)
- SFA contributed to FAO’s foresight report on NFPS (published 2024)

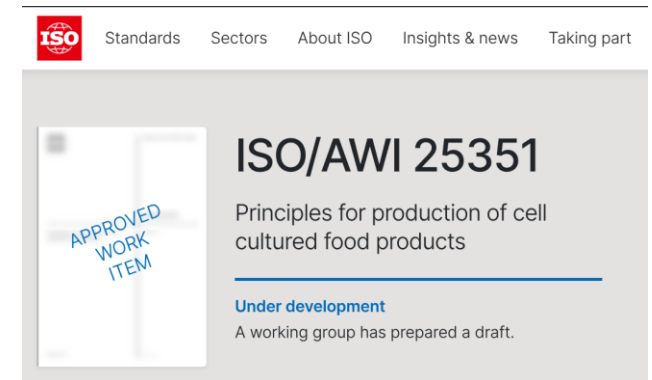
Current efforts in development of international standards for cell-based food



International

Codex Alimentarius Commission

- Submission of two proposals:
 - **Guidelines for assessment of cell culture media components** (Codex Committee on Food Additives)
 - **Code of hygienic practice for manufacturing of cell-based foods** (Codex Committee on Food Hygiene)



International Organisation for Standardisation (ISO)

- ISO has established a new working group (TC34/WG30) to work on “**Tissue Culture and Cellular Food Technology Products**”
- Singapore has developed a National Mirror Working Group to provide inputs

Local

Singapore Standards

- Pro-tem committee for novel foods is working to develop a **technical reference for novel food production**- Likely for smaller scale manufacturing
- Document is intended to cover **Good Hygienic Practice for production of novel foods**

Thank you

Singapore Food Agency

Queries: www.sfa.gov.sg/feedback

Website: <https://www.sfa.gov.sg>