



SINGAPORE FOOD STORY (SFS) R&D PROGRAMME 2.0
SECOND FUTURE FOODS MAIN GRANT ON NUTRITION AND
FUNCTIONALITY

CALL FOR PROPOSALS - INFOSHEET

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1. BACKGROUND

- 1.1. Singapore imports more than 90% of its food, making us vulnerable to food supply and safety risks, such as disease outbreaks, geopolitical disruptions, and climate change.
- 1.2. To secure a supply of safe food in Singapore, the Singapore Food Agency (SFA) has been working closely with the ecosystem to build the agri-food industry's capability and capacity to produce 30% of Singapore's nutritional needs locally and sustainably.
- 1.3. The Singapore Food Story (SFS) R&D Programme was initiated in 2019 to drive research in four domains of (i) AquaPolis (Aquaculture); (ii) Sustainable Urban Agriculture; (iii) Future Foods; and (iv) Food Safety.

2. OBJECTIVES OF THE SECOND FUTURE FOODS MAIN GRANT

- 2.1. This grant call serves to support R&D in areas with mid Technology Readiness Levels (TRL¹), and aims to encourage researchers, technology providers and potential adopters to co-develop innovative solutions to strengthen the nutrition and functionality (e.g., flavour, texture) of Future Foods, such as Plant-Based Protein (PB) and Microbial Protein (MP).
- 2.2. The future foods industry is a sector that has potential for growth and development. Innovative and potentially disruptive solutions will need to be developed to enable low-cost scaled-up manufacturing of future foods and to improve their palatability and boost consumer acceptance. Through this grant call, SFA is seeking solutions with the ability to increase the consumer acceptance of future foods by improving their flavour, texture and nutritional properties. Such solutions should take into consideration aspects such as commercial applicability, consumer preference, cost effectiveness, resource use efficiency, sustainability, and climate resilience.

3. SCOPE OF GRANT CALL

- 3.1. This grant call supports mid-TRL R&D which demonstrate strong innovation potential. Applicants shall address the following challenge statements (refer to Table 1) in their Research Proposals.
- 3.2. Applicants shall take into consideration food safety aspects in ALL submitted proposals. For proposals related to novel foods, refer to SFA's guidelines on submission of safety assessments for novel foods and novel food ingredients on SFA's Novel Food page: <https://www.sfa.gov.sg/food-information/novel-food>.

¹ Technology Readiness Level ("TRL") is a scheme to assess the maturity of technologies.

Table 1: Challenge Statements

Future Foods Theme	Challenge Statements / Desired Research Outcomes
<p>Strengthening Nutrition and Functionality of Alternative Protein Products</p>	<p>[Plant-Based/Microbial Protein] Improve flavour, texture and nutritional properties</p> <p>Develop processing methods to <u>improve the flavour (taste & aroma) and texture</u> of alternative proteins (AP) with <u>minimal processing steps and ingredients</u> and to ensure their <u>nutritional profile is similar or superior to conventional protein products</u>. These may include but are not limited to:</p> <ul style="list-style-type: none"> • Precision fermentation to produce specialty ingredients for improved flavour and nutritional content. • Methods to optimise food processing to improve protein content and/or protein bioavailability & digestibility (e.g., increase protein content of meat analogues from 14-20g/100g to >25g/100g, increase protein digestibility of meat analogues from 50-70% to >90% etc.). • Methods for simultaneous texturisation and flavour generation e.g., fermentation. • Fat encapsulation to enhance taste and melt profile e.g., oleogels, emulsion gels. • Optimise profile of volatile flavour compounds to generate desired flavours, mitigate off-flavours and achieve positive sensory evaluation test scores of food prototypes (e.g., mean score of >7 on the 9-point Hedonic Scale).

- 3.3. Research Proposals shall demonstrate strong potential for innovation, proof of concept and eventually, real-world application within and beyond Singapore. Applicants shall clearly articulate the levels of improvement and how the proposed research will contribute to achieving the specified desired outcomes. These improvements will need to be compared with the global best-in-class technologies or solutions that are already available in the market. The target TRL at the end of the project is expected to be higher than the entry TRL specified in the Research Proposal.
- 3.4. Research Proposals shall clearly articulate how the projects can value-add to research capabilities in the local context, which includes, but is **not limited to**, plans for scientific publications in international journals, intellectual property generation, collaboration with industries to advance research outcomes/solutions.
- 3.5. In addition to developing innovative processes as specified in the desired outcomes, projects shall demonstrate these processes by creating AP food prototypes. These prototypes must be safe for human consumption and must be evaluated for its flavour, texture (e.g., through sensory evaluation²) & nutrition (e.g., protein content, bioavailability and digestibility). Food prototypes and products generated from the project are strongly encouraged to meet Singapore's Health Promotion Board's (HPB) requirements for Nutrition Labelling and Claims for "Good Source of Protein" and the Healthier Choice Symbol for PB meat alternatives³.
- 3.6. Research Proposals must include consumer surveys or socio-behavioural science studies to better understand factors affecting consumer acceptability of AP foods, and incorporate findings into the research.
- 3.7. Research Proposals must include identified relevant industry partners, clearly indicating their roles, scope of work and contributions to the project if awarded. This could be through the provision of Letters of Support from industry partners during proposal submission followed by Research Collaboration Agreements (RCAs) after award. Contributions include cash, in-kind services, or a combination of the two towards the project. In-kind services can include labour, materials, and other services. Projects are strongly encouraged to include at least 1 collaborator from the culinary field to advise on improving the appeal of AP foods to consumers. Where applicable, industry partners are strongly encouraged to lead industry-relevant work packages (e.g., pilot trials).

² Projects involving novel foods must comply with SFA's requirements on sensory evaluation and tasting of unassessed novel foods within SFA's Requirements for the Safety Assessment of Novel Foods and Novel Food Ingredients (see Para 3.2).

³ Please refer to HPB's website on Nutrition Labelling and Claims (<https://hpb.gov.sg/healthy-living/food-beverage/nutrition-labelling-and-claims>) and on the Healthier Choice Symbol (<https://hpb.gov.sg/food-beverage/healthier-choice-symbol>)

- 3.8. To drive translation outcomes, Research Proposals shall include Key Performance Indicators⁴ such as Industry R&D Spending⁵ (IRS) and the number of technologies deployed, including licenses⁶. The IRS gearing ratio shall be at least 1(Grant Funding) : 0.3(Industry). Inclusion of cash contributions as part of the IRS is strongly recommended. The number of technologies deployed, including licenses, must be at least 1.
- 3.9. Cross-disciplinary/multi-disciplinary Proposals, are strongly encouraged. Applicants are also strongly encouraged to collaborate with foreign organisations and experts, especially in areas with potential for introduction of new research capabilities and transfer of technical expertise into Singapore.

4. ELIGIBILITY, FUNDING SUPPORT & OTHER IMPORTANT INFORMATION

- 4.1. Principal Investigators (PI) from all Singapore-based institutions of higher learning (IHLs), public sector agencies and private sector entities, are eligible to apply.
- 4.2. Singapore-based IHLs and public sector agencies will qualify for up to 100 percent of the approved qualifying direct costs⁷ of a project.
- 4.3. Funding for private sector entities for research projects would be conditional on collaboration with a public research performer.
- 4.4. Tiered funding support levels would apply (up to 30% for all non-Singaporean entities; 50% for Singaporean Large Local Enterprises; 70% for Singaporean Small and Medium sized Enterprises, start-ups, and not-for-profits).
- 4.5. Support for indirect costs⁸ of research may be provided, only for Singapore-based IHLs and public sector agencies. Funding support of up to 30 percent of the total qualifying approved direct costs (i.e., total direct costs less exceptional items) will be allowed. This is subject to the approval from SFA. Host Institutions will be responsible for administering and managing the support provided for the indirect costs of research.

⁴ Additional KPIs and Tracking Indicators (TIs) may be set at project level for tracking of outcomes.

⁵ This refers to the R&D investment that a company commits to spend in Singapore as a result of collaborations with a public research performer. The R&D investment can comprise cash and/or in-kind. The investment can fund (i) the R&D project performed at public sector entity(s); and/or (ii) the company's own research operations in Singapore related to the public-sector R&D collaboration. The investment by the company, whether in cash or in qualifying in-kind contributions should, where possible, be reflected in the agreements signed between the company and the relevant performer(s).

⁶ This measures the number of research findings or technologies developed that are deployed (e.g., through a license or at least at pilot scale) that will contribute to at least one of the following outcomes: i) Introduction of new product in the market, ii) Introduction of new service in the market, iii) Product or process improvement. This should be tracked by type of company (MNCs, LLEs, SMEs, start-ups and public sector/VWOs).

⁷ More information on the non-fundable direct costs of research can be found in [Appendix I](#).

⁸ Indirect costs in research are those costs that are incurred for common or joint objectives and therefore cannot be identified readily and specifically with a particular sponsored research project, but contribute to the ability of the Institutions to support such research projects (e.g. providing research space, research administration, utilities), and not through the actual performance of activities under the sponsored research projects.

- 4.6. All projected output and achievements of the proposed research are expected to be commensurate with the level of funding requested.
- 4.7. Research Proposals already funded by other agencies or are being considered for funding by other agencies will not be considered under the present call. PIs will need to declare other funding sources during the application.
- 4.8. The Lead PI must be based in Singapore⁹. All funding awarded must be used to carry out the research and innovation activities in Singapore unless approved in the grant.
- 4.9. Collaboration with foreign organisations and experts in the capacity of Co-Principal Investigator (Co-PI), or as Collaborator is allowed. However, contracting out the whole or substantial part of the research work is not permitted.
- 4.10. Collaborators are not permitted to receive, directly or indirectly, any part of the funding, whether in cash or in the form of assets acquired using the funding or otherwise. All assets acquired using the funding must be located in Singapore and maintained within the control of the grantees.
- 4.11. Urban Solutions and Sustainability (USS) domain agencies have compiled a metadata catalogue to improve data discoverability for researchers. It seeks to encourage early (i.e. pre-award) data-related discussions between Lead agencies and Investigators and will serve as a central reference for datasets available within agencies for request.
- 4.12. Interested Investigators from:
 - Public Institutions (i.e. AUs, polys, A*STAR Research Entities, and Temasek Life Sci Lab) may approach your respective Research Offices, who will assist to write in to request for the metadata catalogue.
 - Local Entities (that are not part of the list of public institutions) may write in to request for the metadata catalogue directly. If approved, an authorised signatory from the organisation must agree to a non-disclosure undertaking before the metadata catalogue is shared.
- 4.13. Agencies will assess the requests based on the grant call topic (e.g. if sharing of agencies' data is indeed useful given the nature of the topic) and may request for further substantiations. Please note that agencies reserve the right to approve/deny any requests for the metadata catalogue, and that any data subsequently requested from the Government and/or public agencies will require the signing of separate non-disclosure agreements (NDA).

5. APPLICATION

- 5.1. This call for proposals involves a single full proposal stage.

⁹ Lead PIs must have a minimum of 9 months employment with a Singapore-based organisation (Singapore-based institutions of higher learning (IHLs), public sector agencies, not-for profit research laboratories as well as companies and company-affiliated research laboratories/institutions), and fulfil at least 6 months of residency in Singapore over a period of 1 calendar year.

- 5.2. The Lead PI is required to submit an online application via the Integrated Grant Management System (IGMS). Separate submissions outside of IGMS will not be considered. Once PIs have submitted their documents online, their applications will be routed to the Director of Research (or equivalent) of their respective Host Institution for online endorsement.
- 5.3. Please refer to the manuals and training guides from the Integrated Grant Management System (IGMS) at <https://www.researchgrant.gov.sg/Pages/faqs.aspx> for all instructions and guidelines on the submission process.
- 5.4. It is mandatory for applications to be lodged in the IGMS system and endorsed by the Host Institution by **11 February 2025, 1200hrs, Singapore time (UTC +8:00)**. Late submissions or submissions without endorsement from the Host Institution will not be entertained.
- 5.5. Applications are complete only if all relevant documents are submitted. The Research Administrative Office from IHLs or equivalent outfits in companies are required to ensure information submitted by their researchers for the grant call are compiled according to the requirements set out. Incomplete submissions will be rejected.
- 5.6. The application documents required for the submission can be downloaded from the 'Research Proposal' section of the IGMS website. Completed documents should be uploaded in the IGMS website.
- 5.7. SFA is currently utilising Robotic Process Automation (RPA) to extract information from submitted Research Proposals. Please submit your proposal in MS Word format and do not alter the format within the proposal template. Please be advised that failure to adhere to the provided instructions may lead to the rejection of your proposal.
- 5.8. The following documents are required for the submission. It is advised to restrict the total attachment size to be less than 25MB. Please follow the naming convention and format for labelling of soft copy attachments:

Attachment	Naming Convention	Format
Research Proposal	RP_ <i>Project title</i>	MS Word
Annex A – Curriculum Vitae	CV_ <i>Project title</i>	PDF
Annex B – Detailed Project Budget	Budget_ <i>Project title</i>	MS Excel
Annex C – Detailed Methodology	Methodology_ <i>Project title</i>	PDF
Annex D – Letters of Support	LOS_ <i>Project title</i>	PDF
Annex E – Suggested Peer Reviewers	SPR_ <i>Project title</i>	PDF
One-Slide Summary (NABC model)	Summary_ <i>Project title</i>	PDF

- 5.9. Content for the research proposal (excluding up to 4 pages for Detailed Methodology in Annex C) must not exceed 10 pages and must be written in Arial font size 12-point with single line spacing. Refer to the research proposal template for more specific details.
- 5.10. In case of discrepancy between the information in the IGMS application form and the attachments uploaded, the information in the attachments shall be taken as final.
- 5.11. Applicants are to note that **where relevant privileged or confidential information is needed to help convey a better understanding of the project, such information should be disclosed and must be clearly marked in the proposal.**

6. SELECTION PROCESS AND AWARD

- 6.1. All endorsed proposal(s) eligible for funding will be subjected to a round of Peer Reviews, followed by evaluation by a Project Evaluation Panel. Where appropriate, proposals may also be sent to industry resource persons and relevant national agencies for additional review. All information needed for a proper and complete evaluation should therefore be included in the application.
- 6.2. Proposals will be evaluated based on the following broad criteria:
- a) Potential Contribution to Grant Objectives
 - i. *Relevance and amount of contribution of proposed research in addressing the challenge(s) posed.*
 - b) Scientific Excellence and Innovation Potential
 - i. *Quality and significance of proposed research, including the potential for breakthrough/innovation to advance knowledge and understanding within its own field or across different fields.*
 - c) Potential for Commercialisation, Application & Deployment in Singapore and Beyond
 - i. *Potential for application of research outcomes/solutions within and beyond Singapore.*
 - ii. *Feasibility for commercialisation of research outcomes/solutions*
 - d) Execution Strength and Technical Competency of Research Team
 - i. *Quality of plans for execution and delivery of the research programme and goals, including the appropriateness of the proposed milestones, deliverables and reasonableness of the budget.*
 - ii. *Quality, significance, and relevance of the recent research record of the PI and co-PIs and the strength of the applicant group, including likely synergy in delivering research and potential for international leadership.*
- 6.3. Selection of Peer Reviewers/Evaluators is at the sole and exclusive discretion of the Singapore Food Story R&D Programme Office, which shall not be liable for the release of information concerning proposals to third parties by individuals involved in the review process. The Singapore Food Story R&D Programme Office reserves the right to modify the review process.

- 6.4. Applicants shall agree that they shall not take legal action against the SFA, the Peer Reviewer, or any member of the Project Evaluation Panel in relation to their role in evaluating and deliberating the project proposal.
- 6.5. The SFA is under no obligation to award research grant in whole or in part to any proposal. SFA may require proposals to be revised or combined as it sees fit to enhance research outcomes, facilitate integration of research concepts and technologies, and optimise funding resources. **SFA's decision on project and funding support will be final** and shall be abided by the applicants.

7. CONTACT

- 7.1. For further enquiries, please contact the Singapore Food Story R&D Programme Office at SFA_RND@sfa.gov.sg.

APPENDIX 1 – NON-FUNDABLE DIRECT COSTS OF RESEARCH

Information on non-fundable direct costs of research is appended in the tables below.

Type of Expenses	Description
Salaries of Lead PIs / Investigators	Not allowable, to ensure no double-funding of salaries and related costs, as the salaries are already supported from other sources (e.g. faculty salaries are supported separately by the IHL as it is in support of the IHLs' core mission).
Salaries of teaching staff / Teaching substitutes	Not allowable, as this is already being supported from capitation grants.
Undergraduate tuition support	Not allowable, as this should be supported under the respective scholarship grants and bursary schemes.
Salaries of general administrative support staff	Not allowable, as this is an indirect cost*
Costs related to general administration and management	Not allowable, as this is an indirect cost*. This includes common office equipment, such as furniture and fittings, office software, photocopiers, scanners and office supplies.
Costs of office or laboratory space	Not allowable, as this is an indirect cost*. This includes renovation/outfitting costs, rent, depreciation of buildings and equipment, and related expenditures such as water, electricity, general waste disposal and building/facilities maintenance charges.
Personal productivity tools & communication expenses	Not allowable, unless the use of mobile phones and other form of smart devices were indicated in the methodology for the Research/I&E Project. All other costs under this expense type should be supported from Indirect Costs.
Entertainment	Not allowable, as this is an indirect cost*.
Refreshment	Not allowable, unless this is related to a hosted conference or workshop for the Research/I&E Project. All other costs under this expense type should be supported from Indirect Costs.
Audit fees (Internal and external audit) and Legal fees	Not allowable, as this is an indirect cost*.
Fines and Penalties	
Professional Membership Fees	
Staff retreat and team-building activities	
Patent Application	Not allowable, as this should be supported from overheads given to I&E Office (IEO). This includes patent application filing, maintenance and other related costs.

*Indirect Costs should be funded from the provided Indirect Costs or from other funding sources.