

Call for partners – Food & Ingredients

Project ideas to start in 2025

Join a Public-Private-Partnership consortium with Wageningen Food & Biobased Research

Each year, Wageningen Food and Biobased Research (WFBR) partners with Industry, research institutes, NGOs, and other stakeholders in Topsector Agri & Food consortium projects. In this document, the WFBR programmes in the food domain present their Public-Private-Partnership project ideas to start in 2025.

The ideas have been organised by programme:

- Nutrition for Optimal Health
- Sustainable Nutritious Foods
- Proteins for Life
- Food Loss and Waste Prevention

The project ideas are still in their early stages, which has the advantage that they can be adjusted to the research needs of partners who would like to join the consortium. If you would like more information or if you want to express your interest in joining any of the project consortia, please contact the relevant Programme Manager before the end of May 2024.

The submission deadline for the project proposals to the funding agency is 1 September 2024. The main general terms, conditions, and timeline for consortium projects can be found at the end of this document.

Wageningen Food and Biobased Research

Together with our clients and partners, WFBR creates economically viable and sustainable solutions to contribute to supplying a rapidly growing world population with healthy, delicious, sustainably produced food and high-quality materials, chemicals, and fuels made from biomass. As a contract research organization, WFBR conducts applied and pre-competitive research for NGOs, governments and industrial partners. This work is conducted within bilateral projects and scientific grants, as well as Public-Private-Partnerships such as Topsector Agri & Food consortia.

WFBR not only has Public-Private-Partnerships for Food & Ingredients, but also for Postharvest Quality, Vision + Robotics, Nature Based Materials, Safe and Circular Biobased products, Circular Water Technologies and Renewable Plastics. A full overview of all WFBR project ideas are available at www.wur.eu/call-for-partners.

Nutrition for Optimal Health

The programme "Nutrition for Optimal Health" is focused on improving nutrition in every life stage to promote optimal health and prevent nutrition related diseases for a healthy and sustainable society. Please find below the project ideas for 2025.

Programme manager: Marjolijn Bragt (marjolijn.bragt@wur.nl)



Project 1

SUSTAINABLE LIKING: Successful transitions towards sustainable and healthy food habits

To foster healthy people and a healthy planet, a transition is needed towards more sustainable consumer diets. Replacing animal protein with plant protein would contribute significantly to this transition, but this is a challenge as it impacts the familiar flavour and texture profiles consumers are accustomed to. How can consumers get used to these changes and also become more inclined to consistently re-purchase sustainable plant-based products in their transition to a plant-based diet? The project Sustainable Liking will focus on the interplay between sensory experiences, long-term liking and habit formation. By developing innovative, effective strategies, this project aims to facilitate consumers' transition towards healthy plant-forward diets.



Project 2

FERMENT4HEALTH - Mitigating low-grade inflammation by fermented foods and postbiotics

Postbiotics, present in fermented foods or as standalone ingredients, are relatively new players in managing gut and immune health. Incorporating fermented foods and postbiotics in the diet may offer a promising approach to support gut health and reducing low-grade inflammation to prevent chronic diseases, such as cardiovascular diseases and type 2 diabetes. In this project we would like to investigate the effect of fermented foods and postbiotics on low-grade inflammation, intestinal permeability, and immune modulation by performing human challenge tests, ex vivo immune and microbiome assays.



Project 3

TEXPLORATION - Steer texture preferences in children and parents to healthy and sustainable diets

The texture of foods is well known to play a significant role in acceptance or rejection of healthy and sustainable foods, especially in children. Food products with appealing textures that are consumed too fast are a risk factor for overconsumption and weight gain. To date, the transition to more plant-based protein sources affects our 'textural' diet with consequences for food acceptance.

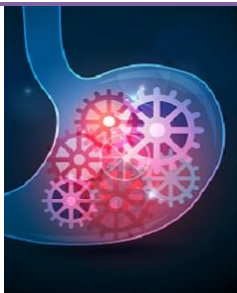
The first exposures to food textures start in infancy, and from there, eating behaviours are shaped and refined during childhood. By better understanding textural preference development, this project will identify strategies to successfully steer healthy and sustainable eating behaviours.



Project 4

FUEL - Fostering a Unique out-of-home Environment for Long-term healthy & sustainable choices for consumers

There is an urge to accelerate dietary changes for health and environmental- and for corporate social responsibility reasons. The food that is being offered and consumed has an important role to play in the solution to these challenges, and service staff members in out-of-home settings can be seen as important change agents. This project will empower the staff community with sustainable implementation of effective interventions, concrete staff engagement tools, and new insights in establishing a distinctive organisation profile to stimulate customers (clients) to make sustainable and healthy food choices.



Project 5

GASTRO INSIGHT – Food texture, gastric emptying and processes, and metabolic responses

Building on our recent findings showing that the texture of pea protein products can modulate gastric emptying and amino acid absorption rates, this project aims to deepen our understanding of the interplay between product texture, gastric processes, and metabolic responses. We aim to go beyond proteins and extend our investigations to carbohydrates and lipids. Examining the influence of diverse food textures on gastric processes and emptying rate and subsequent metabolic responses will deliver unique insights into food digestion and pave the way for tailored food products and nutrition strategies to improve health.



Project 6

PROMOTE - Protein-fibre interaction to promote gut and metabolic health

Dietary fibre and protein are important macronutrient determinants of food healthiness. However, not all fibre and protein are created equal and complex interactions between them occur in the gastrointestinal tract. Healthy whole food plant-based diets are high in (in)soluble fibre and fibre complexity, commonly feature a lower overall protein digestibility than animal-derived proteins, yet are positively associated with gut and metabolic health. This project will generate new insights in fibre-protein interactions during digestion and fermentation to enable future formulated foods to be healthier and more sustainable.



Project 7

GUTKEEPER - intestinal host defence and immune protection

The gut is of major importance for human health. In addition to absorbing all nutrients the body needs, it is an active site for the immune system to interact with external environment, defend against potential pathogens and maintain homeostasis. Does your product, ingredient and/or bioactive support the gut's active defence mechanisms against (pathogenic) bacteria and/or priming of the local innate immune response? Join this project to find out!



Project 8

From Lab to Home! Know how your products are actually consumed!

Join us in revolutionizing research on consumption patterns at home! We're seeking industry partners for groundbreaking investigations utilizing state-of-the-art sensor systems like smart dining trays and snack boxes. Together, we aim to explore the impact of innovative food structures and effective portion manipulation on eating behavior, fostering sustainable and healthy consumption habits and preventing food waste at the household level.



Project 9

Morphius - A healthy microbiome using polyphenols from plant-based side streams

Plant-based side streams are often underutilised, while being highly nutritious. They can be a valuable source of polyphenols that are reported to exhibit a wide range of metabolic health benefits, such as regulation of blood glucose, inflammation and blood pressure. This might be attributed to the bidirectional interaction of polyphenols with the gut microbiome. This project will provide opportunities and limitations of using polyphenol-rich side streams and the necessary in-depth research to understand polyphenol-gut microbiota interactions and their link with human health.



Project 10

CARBOHEALGY - Carbohydrates from algae, from biomass to health benefit

Micro and macroalgae (algae and seaweeds) as a source of nutritional and functional components are gaining interest as food of the future. Algae are sources of many interesting compounds with potential health benefits, especially poly- and oligosaccharides have unique features. Are you interested in optimizing your process towards functional ingredients in food applications and/or would you like to substantiate the health benefits of algae-derived carbohydrates? Join this project!



Project 11

FERMEGA: sustainable production of stable, bioavailable and bioactive Omega-3

Omega-3 fatty acids (FA) in human diets are mainly derived from fish (supplements) and from algae oil, but there is a need to shift to more sustainable sources. Precision fermentation using either heterotrophic microalgae or oleaginous yeast is a promising novel tool to produce sustainable omega-3 FA with all the positive aspects of omega-3 FA derived from fish and algae. Ensuring the bioavailability and bioactivity of the oils with this new process will be key, as this will determine eventual health benefits. Join this exciting project to explore the sustainable production of stable, bioavailable and bioactive Omega-3.

Sustainable Nutritious Foods

The WFBR programme on 'Sustainable Nutritious Foods' is focused on supplying the world's increasing population with sustainable, safe and nutritious food that meets global dietary needs with limited energy use. Please find below the project ideas for 2025.

Programme manager: Joost Blankestijn (joost.blankestijn@wur.nl)



Project 12

SMARTGRAINS - Functionality-driven Fermentations of Wholegrains for Wholesome Staple Foods with AI Integration

Shifting towards worldwide consumption of whole grain cereals and legumes from diversified crops is widely recognised as an essential element in achieving a sustainable and healthy diet. This project revolutionizes whole grain-based ingredients through the power of fermentation. Using high-throughput screening methods and AI, this project will provide fermentation strategies to improve the technological and sensory properties of whole grain ingredients. Their functionality will be validated in food applications while addressing accessibility and affordability for both the Global North and South markets.



Project 13

SHIELT: Shelf life for Plant-based Meat Alternatives

The emergence of new plant-based meat alternatives brings specific challenges to product quality and shelf life. This project aims to overcome these challenges by developing predictive tools. These tools will ensure the project partners in rapid selection of the optimal strategy for stabilizing new plant-based meat alternatives, considering factors such as product composition, processing methods, and packaging/storage conditions.



Project 14

SPARK: Pioneering the Future of Food Processing

The food industry is confronted with major challenges like sustainability, food quality and safety and operator dependency. Radical (digital) advancements in food manufacturing have the potential to overcome these challenges. Based on the specific demands of the partners, this project aims to develop and integrate advanced sensors, process control systems, and create a digital twin to improve efficiency, consistency and safety in food manufacturing. This project is a joint initiative with OnePlanet Research Center.



Project 15

tAIstify: Leveraging AI to create tasty, healthy & sustainable foods

Industry food (re)formulation efforts aim for healthier and more sustainable products. However, processing and use of alternative ingredients may affect flavour profiles, resulting in undesired flavour. At the same time, the pivotal determinant of consumer acceptance of processed foods remains their taste! Restoring flavour profiles demands investments in time and resources. tAIstify aims to integrate AI and develop predictive models to accelerate the formulation process, mitigate risks, and improve the success rate of product launches by retaining the desirable flavour profiles.



Project 16

PATHFINDER: Towards full biochemical understanding of flavour formation during fermentation

In the quest to refine the sensory appeal of plant-based foods, fermentation is leveraged as a transformative technique. Fermentation offers the dual benefits of enhancing desirable flavours while diminishing undesirable ones. This project aims to push beyond traditional boundaries by leveraging existing flavour databases, pinpointing gaps in flavour chemistry, and linking them to specific flavour precursors in plant-based materials and the metabolic pathways responsible for their bioconversion. This knowledge will revolutionize the fermentation of plant-based sources, enabling them to serve as flavour-enriched ingredients, a major step toward meeting the growing demand for delicious, sustainable, and nutrient-rich alternatives to animal-based products.



Project 17

REPLICATOR: Generating Reaction Flavours in Foods Upon Heating

Coffee and chocolate are globally cherished for their rich flavours, yet their production poses environmental and ethical challenges. Similarly, meat production contributes heavily to greenhouse gas emissions. Current alternatives often lack a satisfying taste profile. Replicator aims to address these issues by developing reaction flavours to enhance the sensory experience of these alternatives. Through innovative formulations, it offers clean-label, sustainable alternatives with authentic taste profiles.



Project 18

SNACKSENSE: Enhancing Healthy Snacking with Innovative Food Structures

Sensory factors heavily influence food choices. Combining sweetness or saltiness with fat is very appealing and has been shown to synergistically enhance food palatability, which makes these combinations prone to caloric overconsumption. To prevent this, textures that moderate eating rate should be incorporated in healthy food designs. The aim of the project is to design innovative food structures for healthier snacks that moderate consumption rate and prolong sensory enjoyment, offering satisfaction with fewer calories. The project ultimately aims to develop design rules to reduce calorie intake without compromising on consumers' acceptance and reward.

Proteins For Life

The WFBR programme 'Proteins for Life' is dedicated to contributing to a world with sufficient nutritious, delicious, sustainable proteins for the growing global population. Please find below the project ideas for 2025.

Programme manager: Stacy Pyett (stacy.pyett@wur.nl)



Project 19

RHEXMOD: Rheology and extrusion modelling for better process control and product quality

Extrusion is applied across a range of food and non-food industries and has, in recent years, contributed to improved muscle-like texture in, for example, chicken mimics. Despite its long history of use, the complex flow patterns and material rheology inside of an extruder are still poorly understood leading to limited control over product quality. It is difficult to measure material properties at the extreme shear forces and high temperatures present inside an extruder, but recent methodological advancements including specialised rheometers and in-line flow measurements present new opportunities.

This project brings together technology providers and users to address the common challenge of understanding the complex flow during extrusion and to link this to product characteristics. The intended application directions include high moisture extrusion for meat analogues, pet food, and (Mozzarella) cheese. Application to starch-based snacks, animal feed, or biobased packaging can be included based on partner interest.



Project 20

AltCheeseFun: Alternative cheese texture and functionality

The plant-based or alternative protein cheese segment is growing from a relatively niche position but limited in consumer appeal by the (lack of) product quality and concerns regarding the nutritional profile. Currently available products are mainly spreads, tend to be low in protein and lack beneficial macro- and micronutrients compared to their animal counterparts. The available semi-hard or hard cheese-like products lack functionalities like melting, stretchability, and sliceability which allow cheese to be used across a range of eating moments. The microstructural attributes of animal-derived cheese are well characterised but not yet mimicked in alternative products. This project delivers a strategy toolbox for alternatives to deliver texture and functional performance.



Project 21

HyBoB: Best-of-both hybrid meat solutions

Despite increased interest in and availability of alternatives, meat consumption is not yet declining sufficiently for The Netherlands to achieve the 50-50 plant-animal protein balance targeted for 2030. Commercial hybrid (plant-animal) meat products could be effective to reduce meat consumption and increase the proportion of plant-based ingredients. However, this market category has not yet achieved commercial success due to consumer hesitations in buying such products. This project aims at combining consumer insights and targeted technology to enable development of well accepted hybrid meat products.



Project 22

COMBINE: Combining ingredients for functional, cost-effective, sustainable, European blends

Manufacturers of plant-based food products currently rely primarily on highly refined isolates to create the desired texture and flavour profiles. Less refined ingredients are more cost-effective and have a lower footprint but cannot yet compete on functional performance and flavour, preventing food manufacturers from making a switch. This project aims to enable *partial* replacement of isolates with less refined flours and protein concentrates by combining with high functional specialty ingredients, mapping trade-offs and finding opportunities with blends.



Project 23

PROFFS: Precision fermentation process optimization for food safety

Process optimization approaches in precision fermentation, as an alternative production system for animal-derived proteins, usually focuses on achieving high titres to be economically viable. Currently, little is known about the safety and allergenicity of precision-fermented proteins and anecdotal reports about tolerance issues can be found online. While safety aspects and allergenicity of precision-fermented proteins are actively being studied and compared with animal-derived proteins, approaches to optimize precision fermentation production processes with a view to food safety are currently lacking.



Project 24

MIX-PRO: Mixing animal free milk proteins with plant proteins

Animal-free milk proteins derived from precision fermentation processes are still expensive to produce while plant-derived proteins do not provide the same functional, nutritional, or sensory quality as animal proteins. Hybrid products using animal-free milk proteins and plant proteins could offer the best of both worlds while still appealing to vegan consumers. This project delivers a toolbox for producing ingredients and products based on hybrid mixtures, with demonstrated functional quality in relevant model food systems such as yoghurts, protein-rich beverages and cheese.



Project 25

CUTIE: Cultivar selection for local protein ingredients

Locally-grown protein crops struggle to compete on cost and functional performance with imported options. Cultivar selection must be done as a joint supply-chain effort that balances yield, disease resistance, extractability, processability, and functional performance. The aim of this project is to bring together European supply chain partners to select pulse cultivars for performance in plant-based foods.



Project 26

TVPbop: Textured Vegetable Proteins from a broad range of protein sources

Texturised vegetable proteins (TVPs) produced using low-moisture extrusion (LME) are an important component of many plant-based products. Soy and wheat are currently the most common crops used to make TVPs, but some suppliers are broadening their offering to include TVPs from yellow pea. Ingredient and product manufacturers express a wish to better understand the LME process, thereby enabling ingredient flexibility and use of cost-competitive and sustainable ingredients.

High quality TVPs from a broad range of protein sources will enable partners to meet consumers demands for sensory quality, sustainable and local sourcing, and an affordable price.



Project 27

FunniPro: Functional ingredients from plant proteins

While plant proteins offer a sustainable alternative to animal ones, they often fall short in replicating the textural properties and functionalities of speciality ingredients like gelatine and eggs. Gelatine, derived from animal collagen, is valued for its gelling, foaming, emulsifying, and binding properties, which are difficult to match with plant-based alternatives. Eggs or egg ingredients, on the other hand, provide structure, leavening, binding, richness and colour to various food formats, making them a complex ingredient to replace. Despite the advancements in food technology, there remains a gap in the functional potential of plant ingredients. This project aims to bridge this gap and unlock the functional potential of plant ingredients.

Food Loss and Waste Prevention

This WFBR programme is working towards net zero supply chains in which food resources are used optimally without losses and waste. It supports the transition towards sustainable food systems in the Netherlands, in Europe, and globally. Please find below the project ideas for 2025.

Programme manager: Sanne Stroosnijder (sanne.stroosnijder@wur.nl)




Project 28

SPECTRA - Spectral imaging for non-invasive detection and prediction of microbiological quality

Microbial activity is a major cause of food loss as microorganisms cause spoilage or even pose a health threat when human pathogens are present. For food producers it is challenging to balance between maximizing shelf life and assuring product quality and safety during shelf life. Current detection and enumeration of microorganisms in food is dependent on elaborate and invasive methodologies.

SPECTRA will develop adapted and optimised spectral imaging as a fast, non-invasive method to determine levels of microbial contaminants, for different perishable food matrices such as meat, fish, or plant-based products.



Project 29
FOOD2FOOD - Maximizing product utilization through upcycling


Food waste results in economic loss and climate impacts. Total use of valuable food resources makes sense, but squeezing every drop from your side streams requires an integrated approach considering process technology, economic feasibility as well as sustainability.

FOOD2FOOD offers a 3-step approach to analyse, design and pilot your most promising side streams valorisation pathway. Partnering in the project will result in identification of high value valorisation routes, incl. costs and impacts, validation through lab scale experiments, application, and product design (incl. internship) upscaling and pilot scale production.




Project 30
ELEVATE: Embedding Loss and Waste Reduction in Business Standards

Many business standards tackling sustainability have been developed and are being implemented at food and ingredient companies. While most of these (ESG) standards cover environmental issues and even waste management, none specifically targeted Food Loss and Waste (FLW) reduction. ELEVATE aims to embed, validate and demonstrate FLW reduction into existing mainstream business standards, by providing essential tools to private businesses in close collaboration with scheme owners.



Project 31
NEW BALANCE - Developing sustainable and consumer appreciated alternatives for pesticides in fruit and vegetable chains

New legislations that reduce the use of pesticides combined with the effects of climate change will lead to excessive food loss & waste (FLW) in the food supply chain. To mitigate the negative trade-offs, NEW BALANCE aims to develop sustainable protective treatments and supply chain strategies for fruits and vegetables that are appreciated by consumers, companies, and policymakers. The project will test, validate and demonstrate alternative strategies, incl. biomarkers, temperature treatments, biobased coatings, and physical treatments (e.g. UV).



Project 32
TotallyCashew: creating value from cashew apple and shell residues

For every kernel of cashew produced 6 units of residue are produced in the African fields and at local cashew processing factory. Residues are now underutilised, while the nutritious by-products could be utilised as a sustainable meatless alternative, is rich in antioxidants and could be used for flavour extraction.

TotallyCashew will co-develop with private partner from NL, EU and Africa local processing technologies, ingredients functionality assessment and prototype for food applications (bakery, beverage, meat analogs) and non-consumable products (chemicals, materials) and/or energy sources (biofuel).



Project 33

FROTEQS – balancing Temperature, Energy, Quality and Safety in the FROzen food supply chain

Building on the growing momentum around reassessing current temperature management in frozen food supply chains, FROTEQS will test, validate and demonstrate constant and dynamic temperature tolerances in relation to food quality and safety. The project's outcomes can be used to reduce energy usage, while retaining product quality and safety, lowering operational costs, and reducing the environmental impacts of frozen foods.



Project 34

COMPLEMENTARY: Combining sustainable packaging design & natural preservatives to increase shelf life and reduce waste of food

EU- and national-regulations, and branch organisations have set challenging goals towards the use of circular and sustainable packaging's for the coming years. However, these often do not yet reach the same properties as conventional solutions, shortening shelf life and increasing the risk of food waste. COMPLEMENTARY will investigate additive and synergistic effects between sustainable packaging, product quality and food ingredients. The integral approach will ensure optimal shelf life while reducing food waste of perishable food as for example fresh- and processed food.



Project 35

Waste to Taste: Local upcycling with a mobile mini food factory

Upcycling local side streams presents significant challenges due to their typically small volumes, perishable nature, variable availability, and high transportation costs. From a circularity perspective, the creation of appealing food products from these side streams would be advantageous. This project facilitates the upcycling of local side streams by bringing the factory to the locations where these streams are generated, effectively addressing the associated challenges.

Public-Private-Partnerships in general

Subsidy conditions

- The above-described projects are being developed for application to the TKI subsidy, a Dutch governmental program sponsoring applied research. Each project requires at least one Dutch company partner, but additional partners from abroad are welcome to join.
- Granted projects receive 50% subsidy funding. The other 50% is contributed by industry partners, of which up to half (25% of total) may be in-kind.
- TKI projects typically have a running time between 2 and 4 years.

Expected contribution

- Total project budgets are typically between 0.8 and 2.0 M€.
- Participation costs per partner range from 20-50 k€ cash per year, with exceptions for small and medium enterprises (SME).
- Partners also contribute in-kind through participation in project meetings, contribution of materials, and/or performance of own experimental work.

2024 timelines

- 1 April 2024 the TKI call was published. The full call text is available online: <https://www.kia-landbouwwatervoedse.nl/beeld-hoofdpaginas/subsidies/pps/>
- Partners are kindly requested to express their interest in joining proposals prior to 1 June 2024, at which time a selection will be made of proposals with sufficient support to continue.
- The deadline for full proposal submissions is 1 September 2024. At this time partner commitment must be firm.
- Early November 2024, consortia are notified if they have received the subsidy grant. Upon notification, the contracting phase starts.
- Projects kick-off as soon as contracting is completed (deadline: 1 April 2025).

Contracting terms

- The IP terms for a PPS consortium are governed by European state aid regulation. Please note that, as specified on the TKI site, the consortium agreement template is deemed mandatory and IP terms will not be modified. Parties engaging with these subsidised projects are advised to check the terms well in advance. For your convenience, the main concepts are summarised below.
- Foreground developed in the project accrues to the inventing party, most frequently the executing knowledge institute(s).
- Industry partners co-financing the consortium receive the right to apply non-protected Foreground directly and the first right to license any resulting protected Foreground (IP) for their field of use.
- Projects receiving subsidy are obliged to publish part of the results. A project steering committee with one representative per partner governs publication of project results.

For more information on any of these initiatives,
please contact the relevant Programme Manager
or have a look at our website:

www.wur.eu/call-for-partners

For general questions,
please contact Business Development Support:

wibr.bd-support@wur.nl

We look forward to collaborating!