

TOWARDS A FOOD ALLERGY FREE WORLD



TNO innovation
for life

The international food industry appreciates the benefits of sharing its research load via collaborative programs with partners. TNO offers you the opportunity to participate in its strategic Shared Research Program (SRP) 'Towards a Food Allergy Free World'.

The goal of an SRP is to build advanced knowledge and technology platforms, in groundbreaking research areas, that offer broad application opportunities for the industry. It is financially supported by the government and the Topsector Agri&Food of the Netherlands*. The SRP *Food Allergy* will have a time span of 8-15 years and will be conducted with partici-

pation of industry, in close collaboration with knowledge partners. It is based on an open-innovation model where knowledge centers and industry cooperate to enable long-term strategic research. Participants share responsibility for the program.

HIGH IMPACT

As a major cause of concern for industry, governments and society as a whole, food allergy and immune health are high on the agenda of the Innovation Contract Agri&Food of the Netherlands. Impacting between 2 and 4% of the population, food allergy is one of the most widespread disorders in the western world, affecting the allergic individual and his family, friends and colleagues. The public health impact of food allergies is significant and the impact on quality of life can be

enormous, partly because allergic reactions can be lethal. Moreover, food allergens are one of the major causes of food incidents and product recalls, putting a major economic burden on society as a whole and food industry specifically. As new alternative (sustainable) protein sources and crops with improved characteristics, will appear in our diets, they bring the risk of new food allergies and cross-reactivity. Fundamental science and technology have reached the stage where sufficient starting points exist to develop proper, proactive risk-assessment, risk-management and intervention methods; fundamental precursors to creating a Food Allergy Free World by the year 2030.

* The Agri&Food Top Sector was established in 2010 by the Dutch Government to further strengthen the sector's important societal and economic role. It does this by promoting innovation together with government, companies and research institutions



SRP FOOD ALLERGY

The proposed program focuses on the challenges and needs identified in the Dutch Topsector Agri&Food's Innovation Contract, the European Technology Platform (ETP) Food for Life and the Food Safety Vision of the SAFE Consortium. The program will make a very strong contribution to achieving the EU's Horizon 2020 Research & Innovation Program goals.

ROAD MAP

Much of the knowledge and technology needed is already available or currently in development. The additional knowledge and technologies - required to achieve the program's goals - will be defined in a road map that will be developed in collaboration with partners in the program.

GOALS AND PROGRAM LINES

SRP goals:

- › Protection of the food-allergic consumer: Allergen & allergy-management tools available and applied in 4-6 years

- › Prevention of the development of new food allergies: Allergenicity assessment of (novel) food proteins available and applied in 6-8 years
- › Food-allergy therapies: Therapeutic strategies and products available and applied in 8-10 years
- › Prevention of the development of food allergies: Prophylactic strategies and products available and applied in 10-15 years

In order to achieve these goals, a range of technologies will be developed through 3 proposed Program Lines:

- 1. Allergen and allergy management - to protect food-allergic consumers**
Main goal is the development and global application of quantitative guidance for allergenic ingredient and precautionary allergen labeling by food companies. Thus offering safe food choices to allergic consumers.

This program line addresses the science of food consumption, the sensitivity of patients, and cross contamination in food production chains, in order to improve allergen-risk assessment and management and will enable science based action levels for precautionary labeling. Participation by, and dissemination to, different stakeholder groups will be important in increasing both health-professional and consumer trust in labeled and non-labeled food products. It will enable the food industry to reduce the risks and costs associated with unintended cross contamination and/or other allergen-related issues.

- 2. Allergenicity assessment of (novel) food proteins - to prevent the introduction of (new) strongly-allergenic foods**
To support the development of new crops with improved characteristics, new protein sources and new or modified protein (containing) products,

an improved allergen risk-assessment strategy is needed. This program line will enable the prediction of allergenicity of a protein (source) at an early stage in the innovation funnel and relate protein allergenicity to structure, processing effects, digestion and interactions with the immune system. These insights will enable industry to improve the efficiency of product development and reduce costs by early de-selection of potentially highly-allergenic ingredients or source materials.

3. Effect assessment and markers for diagnostic, prognostic and monitoring purposes - to maintain and optimize immune health of the immune diseased individual and the individual at risk for development of immune (atopic) disorders

In this program line, mechanisms and in- and extrinsic factors in immune health and disease, including microbial and gut health aspects, will be addressed. Biomarkers for diagnostic, prognostic, monitoring or safety purposes will be identified and methods for effect assessment of

modulation of the (developing) immune system will be developed. As knowledge from other diseases may contribute to the program goals, this program line will address food allergy and atopic diseases in general, as well as other disorders in which comparable mechanisms or symptoms occur. The research in this program line will support the development of therapeutic and prophylactic products by private companies and will enable the safety and risk-benefit assessment of products and interventions on immune function. Further, it will contribute to the diagnosis, prognosis, monitoring and safety assurance for the immune diseased individual and the individual at risk for development of immune (atopic) disorders. Immune mechanisms contribute to many, if not all, manifestations of toxicity. Furthermore, many substances possess direct immunotoxic properties. The results from this program line will also improve the safety assessment in these cases.



**THE SRP
FOOD
ALLERGY
STRENGTHENS
THE INNOVA-
TIVE POWER
OF INDUSTRY
AND
CONTRIBUTES
TO THE
PROTECTION
OF THE
CONSUMER**



FREQUENTLY ASKED QUESTIONS

WHAT IS AN SRP?

A TNO SRP is a non-profit program, based on the open innovation model, that aims to build knowledge in the research area and enables its participants to apply the knowledge in the company specific application area.

TNO orchestrates the program and allows new participants to enter, under agreed conditions. Participants will jointly influence the program content, which will be fine-tuned annually. The program will take a long-term perspective and strategy and, therefore, requires long-term (e.g. 3 year periods) commitment from the partners.

WHAT ARE THE BENEFITS FOR YOU AS A PARTNER?

SRPs offer the opportunity to participate in long-term strategic research that would not or could not be carried out by individual companies alone. Together with TNO and other industry partners, you will share skills, resources and risks. Participation in an SRP allows you to accelerate your R&D activities and bring innovations to market that have major economic and societal impact.

WHAT DO WE EXPECT FROM YOU?

From all participants TNO expects an active contribution to the program, in terms of discussions on the research content and guidance of the annual program. TNO requests a minimum of three years financial commitment from the industrial participants. Academic partners that join as a knowledge partner are anticipated to actively deliver added value to the scientific content of the program. Contract details will be discussed per participant.

HOW IS IT ORGANIZED?

The SRP Food Allergy will be divided into several Program Lines, each focused on specific application areas that cover specific research and technologies relevant to specific areas. It is possible to participate in one or multiple program lines. Within each program line it is anticipated that the participants actively engage to define the program plan, content and time-frame.

HOW MUCH DOES IT COST?

Each industrial participant pays an annual participation fee to TNO. The fee will mainly depend on the Program Line(s) in which is participated and will be formalized via individual contracts. Special arrangements are available for the participation by Knowledge Partners and SME's.

The participation fees are leveraged by TNO's knowledge-investment budgets which guarantees long-term commitment from the Dutch government and the Topsector Agri&Food. At any time, SRP's are open for new participants to join. Participants joining after a program line has begun will pay an entrance fee that permits access to results and IP obtained earlier in (the specific program line of) the SRP.

CAN PARTNERS USE ALL RESULTS?

It is the aim of the SRP to create generic knowledge on food allergy and thus enable its participants to accelerate their innovation. The Intellectual Property rights will remain with inventors, but all partners will have a non-exclusive, non-transferable right to use the acquired results and IP of the program line(s) in which they participate. It is clear that company specific information will remain confidential, which will be agreed in the SRP contract.

MORE INFORMATION

For further details on the SRP 'Towards a Food Allergy Free World' please contact Geert Houben.

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TNO HEALTHY LIVING

TNO initiates technological and societal innovation for healthy living and dynamic society.

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