

SAPHER project

A Fast Track to Innovation project funded by the European Commission



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NEWSLETTER #1



SAPHER PROJECT AT A GLANCE

Food allergies affect over 17M people in Europe and increasing at a 2 digit prevalence rate. With no cure, the only successful method to prevent allergic reactions is to strictly avoid all foods containing the allergen. Hence, to identify these, the consumers rely on an accurate product labelling. The labelling of allergen contents for the industry is however not trivial, it does not only depend on the composition of the product, but also on the possible cross-contamination with allergens from other products. The current lack of standardized food allergen control plans and cost-effective allergen testing tools, drives food manufacturers to adopt over cautious labelling strategies. As a result, 90% of products with "may contain" allergen labels do not contain any.

SaPher project will disrupt the food allergen assessment market thanks to the industrialization and commercial deployment of a full automatic SaPher nano-photonics biosensing allergen test platform. SaPher will simultaneously assess up to 6 different allergens in food matrices, reducing times and cost by over 70% in comparison with current golden standards.

To reach market, we will elaborate a standardized risk assessment method, develop the antibodies of interest not commercially available, industrialize and optimise our technology for mass production and demonstrate both technology and procedure with the meat, dairy and bakery industries as well as independent laboratories under operational conditions.

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SAPHER PROJECT OBJETIVE

Manuel Rodrigo. Lumensia S.L.

Obj1. Elaboration of Best Practice Guidelines as a reference document on procedures for assessing food allergen contamination.

Obj2. Industrialization and scale-up of the Photonics Integrated

Obj3. Setting-up SaPher cartridges product line and antibody production.

Obj4. Industrialisation of functionalization and immobilization procedures of antibodies on PIC surface, optimizing stability, chemical compatibility

Obj5. Industrialization of SaPher's microfluidics cartridge manufacturing, assembly and logistics processes.

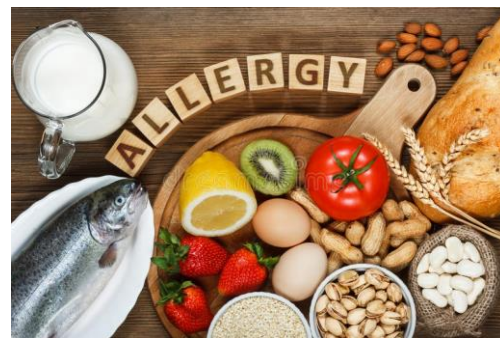
Obj6. Industrialization of SaPher's biosensing platform to enable the manufacturing upscaling.

Obj7. Validation and Demonstration of SaPher's method and procedures (Obj1) at different target food producing industries.

Obj8. External Certification of SaPher's equipment and method both according to IEC 61010-1:2010 / EN 613261:2013 (CE marking

Obj9. Adjust business plan dynamically through the continuous feedback of project achievements.

FIRST OBJETIVE: GUIDELINES



In Sapher project, the first objective is the elaboration of **Best Practice Guidelines** as a reference document on procedures for assessing food allergen contamination, applicable to the food producing industry, characterized by defining the sampling strategy (independently of the applied technique) in terms of periodicity, density and position in the production line. These Best Practices could be the first step towards a future Standardization. Detecting and quantifying hidden allergens in food products is thus essential to protect the food-allergic population, but this can only be accessible to the whole food industry if standardised control plans and affordable testing equipment is available to support a well-managed production process. It is, therefore, our first objective in the project to elaborate best practice guidelines as a reference procedure enabling the food producing companies (and their suppliers) to identify where and how many tests will be required to ensure proper labelling; and simultaneously the industrialization of our innovative rapid and low cost SaPher biosensing technology.



CARTRIDGE DEVELOPMENT

Sergio Peransí. Lumensia S.L.

SAPHER project started in July 2020 (M1). In that moment, Lumensia Sensors was almost ready with SAPHER C01 cartridge development. The final implementation at SAPHER platform has been finished in December 2020 (M6). Furthermore, Lumensia Sensors is ready with SAPHER C02 cartridge targets detection at laboratory level. Very soon it will be ready with the final implementation at SAPHER platform. At Figure 1 it can be seen the list of available detected targets from the complete SAPHER project list.

In a nutshell,

- ✓ Antibodies against selected allergens have been successfully immobilised on top of photonic ring resonator structures.
- ✓ Photonic detection assays have been successfully performed for SAPHER C01 and C02 cartridges (Figure 1).

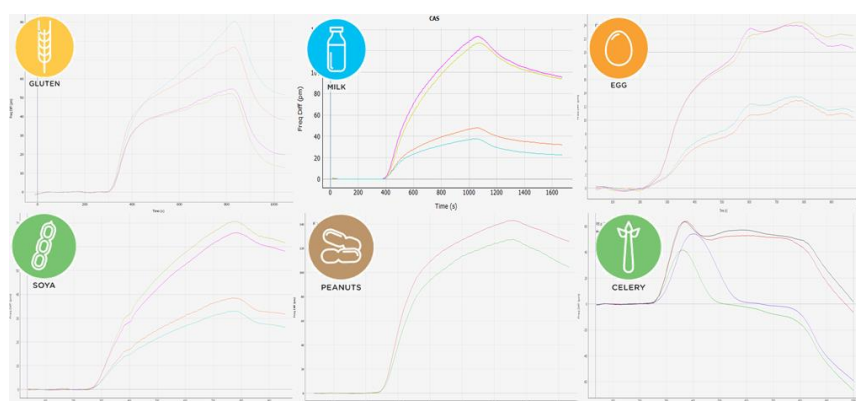


Figure 1. Photonic sensing results for SAPHER C01 and SAPHER C02 cartridges

- ✓ It has been successfully evaluated the capability to differentiate between absence and presence of allergen in different food matrices.
- ✓ Compatibility studies have been carried out to explore multiplexed combinations in each cartridge (
- ✓ Figure 2).

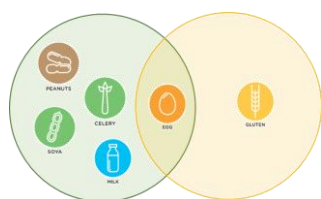


Figure 2. Compatible targets in terms of common fluidic channel sharing

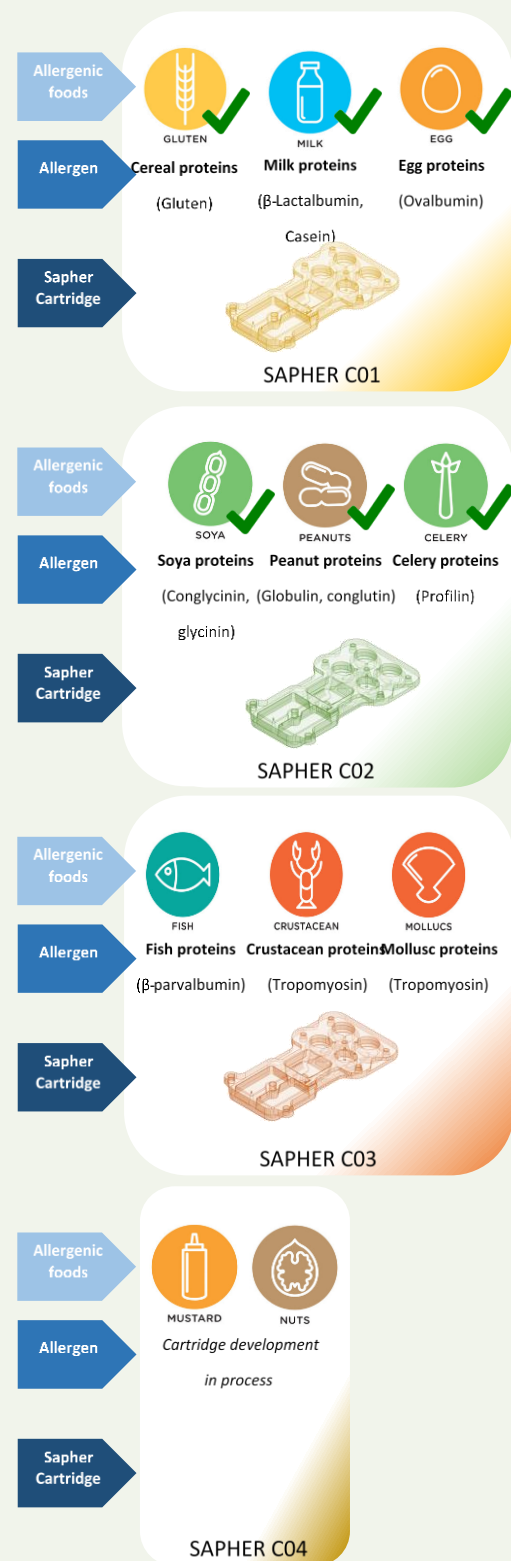


Figure 3. SAPHER project set of combined allergens separated by cartridges. An indication has been made for the available detected targets.

Nobel Laureates support Photonics European budget

Santiago Simón. Lumensia SL

Three of the world's most eminent scientists have criticised the European Commission's intention to reduce photonics funding over the next seven years, Photonics21 European Technological Platform informs. As a key enabling technology, photonics is essential for many high demanding industries' products. The loose of the leadership in many photonics fields will jeopardize European technological sovereignty and will lead to many high skilled jobs destruction.

See the full text at photonics21.org

About Photonics21



The European Technology Platform Photonics21 unites the majority of the leading photonics industries and relevant R&D stakeholders along the whole economic value chain throughout Europe. Today Photonics21 has more than 2500 members.

Photonics21 aims to establish Europe as a leader in the development and deployment of photonics technologies within the various applications fields such as ICT, lighting, industrial manufacturing, life science, safety as well as in education and training.

The ETP Photonics21 coordinates photonics research and innovation priorities and provides input to the European research framework programme Horizon 2020



SaPher project will disrupt the food allergen assessment market thanks to the development of an allergen assessment procedure supported by the industrialization and commercial deployment of our full automatic SaPher nano-photonics biosensing allergen test platform



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