

# Study and optimization of cold atmospheric plasma treatment for food safety and quality improvement

## (PLASMAFOOD)



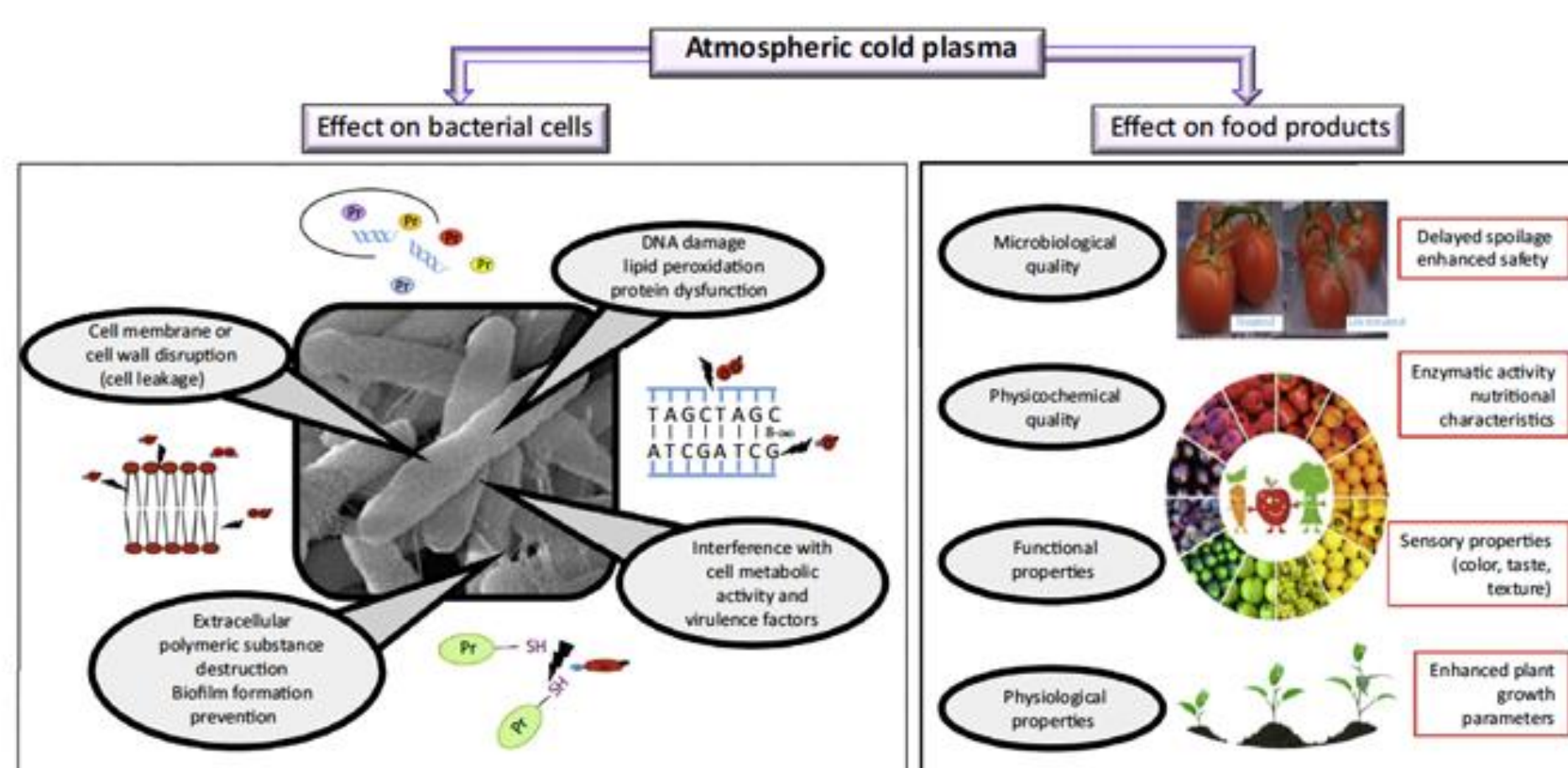
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### State of the art

Cold atmospheric plasma (CAP), which in the past has been mainly used in the medical field, has recently drawn considerable attention as a novel non-thermal technology for food product decontamination. Despite the high potentiality, there are still many aspects about CAP technology that are unknown or that need clarification, in particular regarding food quality, functional characteristics and potential toxicity of treated products. A scientific assessment prior to authorisation to ensure the novel technologies safety is required by EFSA.



### Objective

The main objective of PLASMAFOOD project is to provide a deeper knowledge about aspects still scarcely investigated about CAP treatment of foods to fill the gaps identified in the literature and therefore promoting the application of this emerging novel technology.

### Expected Impacts

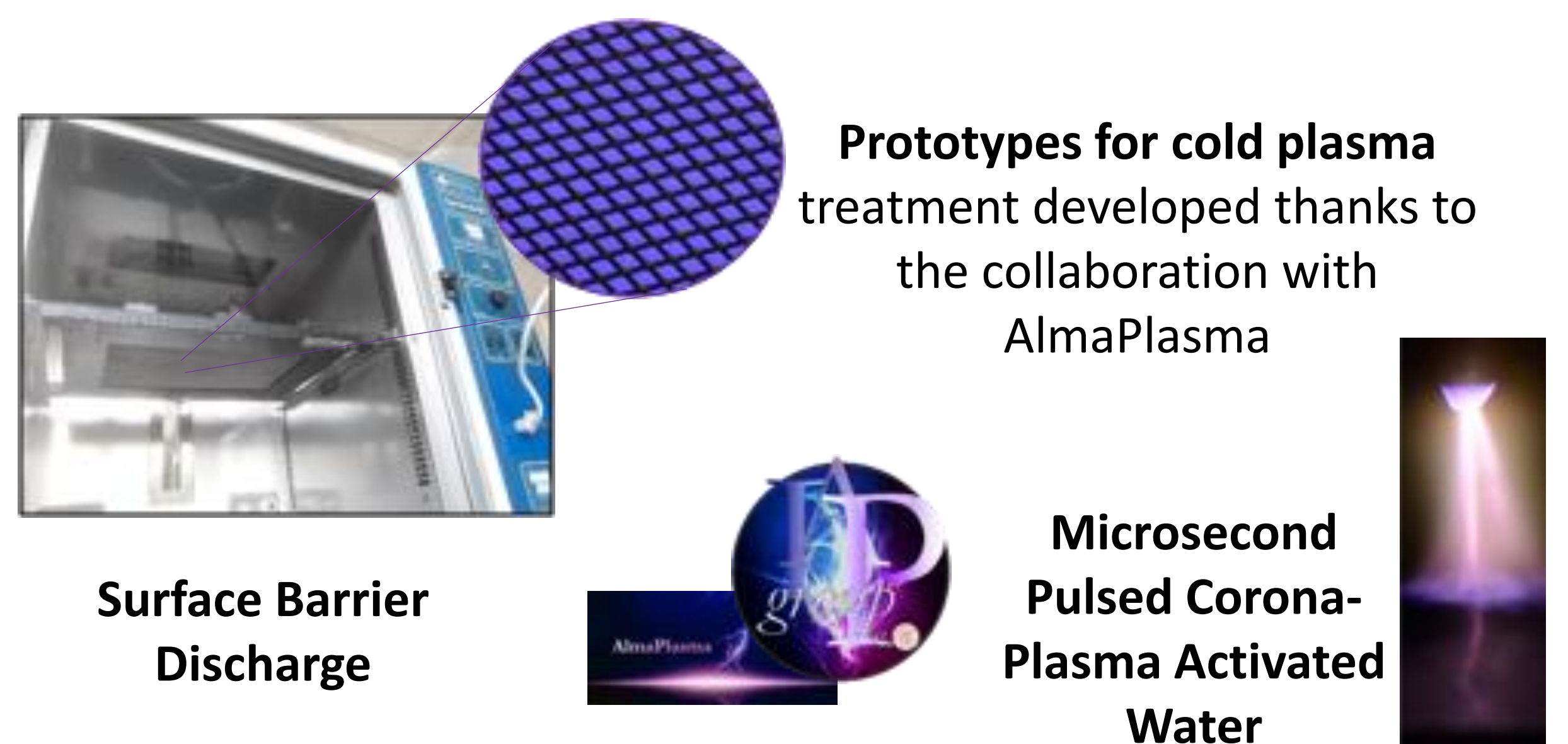
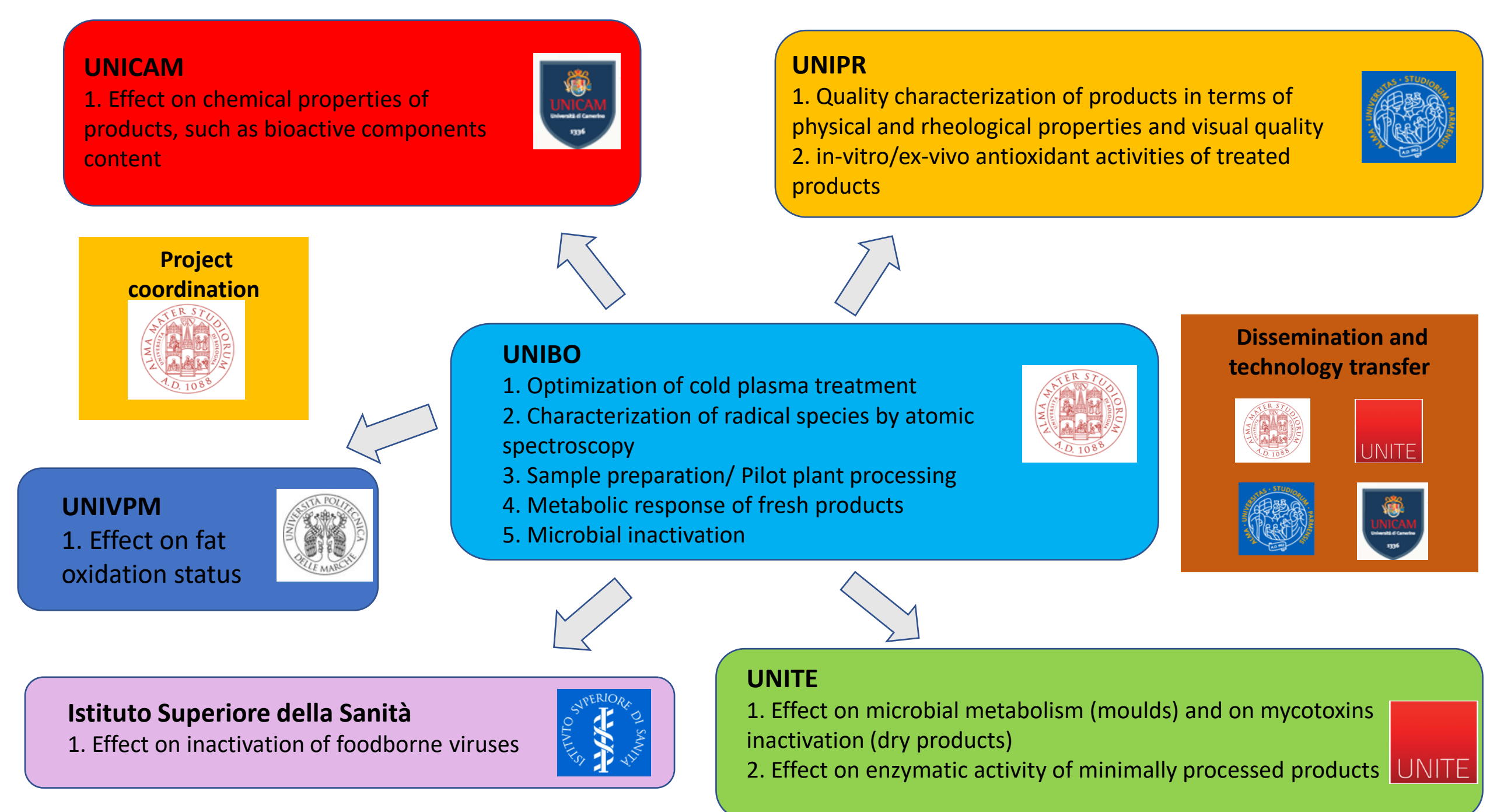
- Providing a detailed description of the reactive species produced in gas phase by plasma in relation to its technical parameters
- Offering an alternative non-thermal decontaminating solution for the replacement of existing systems (such as heat treatments and use of traditional chemical preservatives like sulphites) avoiding the presence of chemical in the final product;
- Optimizing plasma processing to obtain the highest level of safety with the lowest possible effect on food quality on different categories of food products;
- Providing a profile as comprehensive as possible of the plasma-induced physical/chemical/biochemical/microbiological changes in the food;
- Obtaining extension of the shelf-life of the considered products, thus allowing to enlarge their trade and to differentiate the range of commercialized products, with unquestionable economic return.

Moreover, the shelf-life extension will help to reduce the waste, and the cost of the discharge, with economic and social advantages

### Acknowledgments

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### Units Framework of the project developed by the five Research Units (RU)



### Project development

Five different categories of food products were chosen based on their different characteristics, different kinetics of quality degradation and different issues related to safety, in particular, minimally process fruit and vegetables (MPFV), semidried fruit (SDF), dry fruit (DF), fish products (FP) and molluscs (M).



The project is divided in **6 Work Packages**, each one dealing with a specific aspect:

- WP1:** Optimization of processing parameters for CAP treatments of different products
- WP2:** Effect of CAP on safety aspects of food product
- WP3:** Evaluation of qualitative and microbiological aspects of CAP treated products during shelf-life
- WP4:** Nutritional profile
- WP5:** Modelling of data
- WP6:** Dissemination and Communication



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