



Farhad GARAVAND

Technology Centre:	DPTC - Dairy Processing Technology Centre
Academic Mentor:	Dr. Laura G. Gómez-Mascaraque
Company Partner:	Abbott Nutrition Ireland
Company Mentor:	Dr. David Daly

Dr. Farhad Garavand completed his PhD (2018) in Food Science & Technology - Food Biotechnology at the University of Tehran, MSc (2013) in Food Science & Technology - Food Chemistry at University of Tehran, and a BSc (2010) in Food Engineering (Processing) at Gorgan University in Iran. Farhad conducted a research period as Visiting Research Scholar at UNICUSAO and University of Rome Tor Vergata (Rome, Italy) (2016-2017). He also worked as Postdoctoral Research Officer at Teagasc Moorepark Food Research Centre (Cork, Ireland) on separation, characterization and stabilisation of milk bioactives using membrane filtration (2019-2020).

Dr. Laura G. Gómez-Mascaraque

Dr. Laura G. Gómez-Mascaraque is a Research Officer in the Department of Food Chemistry and Technology of the Teagasc Food Research Centre in Moorepark, mainly working on food microstructure with a particular focus on dairy products and plant proteins. Her main areas of interest are food microstructure, microstructured functional ingredients, microencapsulation of food ingredients, plant proteins, food biopolymers, hydrogels, emulsions, microscopy and spectroscopy.

Dr. David Daly

Dr. David Daly is senior specialist technical support & development scientist coordinator at Abbott Nutrition. He has gained significant experience in the demanding infant nutrition/Dairy development field through his work with Abbott Nutrition, Danone early life nutrition and Food for health Ireland. He has undertaken the organisation, completion and evaluation of scale-up trials and analyses of prototype products and novel processes. Through this work he gained hands-on exposure to many aspects of analyses, as well as existing and emerging technologies relevant to the dairy sector.

Host Institution: Teagasc Food Research Centre – Moorepark

The Teagasc Food Research Centre Moorepark supports and delivers science-based solutions to the agri-food sector by developing innovative technologies for the Irish food industry. The Food Chemistry and Technology department, in particular, provides research in the area of dairy chemistry, dairy processing, novel technologies and ingredients.

Technology Centre / Technology Gateway: DPTC

The DPTC is a centre of excellence for dairy processing research and innovation, providing the Irish dairy sector with world class research and innovation capabilities as well as human capital and expertise through knowledge transfer and training activities. The DPTC translates learning and know-how from other industrial sectors to the Irish dairy sector.

Industry Partner: Abbott Nutrition

Created in 1903, Abbott's nutrition business is a division of Abbott, the global healthcare company. Their teams of passionate scientists and experts work hard to discover and develop nutrition products that make life better for people of all ages. As a leader in nutrition science, research and development, their purpose is to deliver nutrition products and education that meet the changing needs of families across the world.

Farhad's project

“Psychosynbiotics: Co-encapsulation of lactulose and probiotic bacteria to obtain GABA (γ -aminobutyric acid)-enriched products in order to improve gut-mental health: optimization, functional properties, digestion and application in food product and supplement”

The current global trend is to develop health-promoting diets to meet the nutritional requirement on one hand, while also preventing or alleviating some disorders related to the human body. Applying some strategies like enrichment of food items, without compromising their quality, can be an interesting approach to boost human health by consuming a functional food.

As a consequence, making functional synbiotic dairy products enriched with probiotic metabolites (postbiotics) and postbiotic-enriched food supplements can cover the consumer's demand and industrial processing procedures. Co-encapsulation of dairy based prebiotic and probiotic bacteria can help maintaining the integrity of synbiotic systems and the resulting postbiotics (GABA, short chain fatty acids (SCFAs), etc.), facilitating delivery to the target tissue (gut) to boost the gut-mental health and support the psychosynbiotic concept.

The results of this work will promote the psychosynbiotic idea by supporting the possibility of an intact delivery of probiotic bacteria, prebiotics and their postbiotic (GABA and SCFAs) through the gastrointestinal system to boost their health-promoting attributes.

Moreover, postbiotic-enriched food products and supplements from the outcomes of the current research will be an effective way to obtain an economic food supplement and will be of great interest for the forthcoming research in the area of functional foods, and health-nutrition development industries.