



# Mestawet Taye Asfaw

<b>Technology Centre:</b>	Dairy Processing Technology Centre (DPTC)
<b>Academic Mentor:</b>	Dr. Seamus O'Mahony
<b>Company Partner:</b>	Carbery Food Ingredients
<b>Company Mentor:</b>	Mr. Patrick Mulcahy

Dr. Mestawet Taye Asfaw received her PhD Degree (2013) from the Norwegian University of Life Sciences, Norway with her work focusing on  $\alpha_{s1}$ -casein genetic polymorphism and effects on milk technological properties. She completed her MSc from Sokoine University of Agriculture, Tanzania (2000) and BSc degrees in Animal Science from Hawassa University Ethiopia (1998). Mestawet was working as an Associate Professor at the School of Animal and Range Sciences, College of Agriculture, Hawassa University, Ethiopia (2003–2021). She won multiple awards including Certificate of Outstanding Performance from Ministry of Science and Higher Education of Ethiopia (2021), Visiting Scholar Travel Award from University of Wisconsin, USA (2018), Young Professional Award from Ethiopian Society of Animal Production (2017) and For Women in Science International Fellowship -L'Oréal-UNESCO (2007). She also won multiple competitive research funding awards from various national and international organizations.

## Dr. Seamus O'Mahony

Dr. Seamus O'Mahony is a Lecturer in Food Science, School of Food and Nutritional Sciences and Academic Programme Director in UCC, having held a number of industrial research and development roles before joining UCC. He is an international leader in nutritional dairy ingredient science and technology, with a particular emphasis on the development of high quality, nutritionally balanced, sustainable protein ingredients for infant nutrition applications using integrated membrane filtration technology. Dr O'Mahony is a Pillar Leader and Principal Investigator in the Dairy Processing Technology Centre, which is a major national, multi-institutional, interdisciplinary, Enterprise Ireland funded Technology Centre. He is a Funded Investigator in both the APC Microbiome Institute and Vistamilk Science Foundation Ireland research centres. He has managed large, multi-disciplinary, global research and development projects and worked as an infant formula industry professional with a large research group in the area of dairy ingredients. He has established an internationally recognised, well funded research group in the areas of ingredient development & functionality, formulation science & technology, powder technology & engineering and bio-functional food systems which are applied in the enhancement/development of premium formulated nutritional products (e.g., infant and clinical nutrition). His high engagement in transferring research to industry, impact positively on ingredient development, process optimization, manufacturing competitiveness and side-stream valorization, through industry training with the UCC Food Industry Training unit and others also provides a great direct opportunity for Mestawet's proposed project.

## Mr. Patrick Mulcahy

Mr. Patrick Mulcahy is a permanent employee of Carbery. He is an honours graduate of UCC in Food Science and Technology. His career path spans from project technologist and research and development technologist to senior development technologist and development manager. Mr. Mulcahy, with his industrial career experience is currently the Ingredient Development Manager at Carbery and has been a partner and collaborator with various institutions such as UCC and Teagasc Moorepark on a range of projects. He has been the DPTC Industry Mentor on Pillar 3 (Product Development) and has also participated in initial DPTC formation discussions as well as ongoing DPTC Industry Steering meetings. His key areas of interest include but is not limited to whey protein functionality, especially gelation, and nutritional applications (including infant formula and sports foods) are well in line with Mestawet's research project. He also has vast experience in providing training and organising exhibitions, which will be important knowledge input for the dissemination of findings.

## Dairy Processing Technology Centre - DPTC

The Dairy Processing Technology Centre (DPTC) is an industry–academic collaborative research centre, based at University of Limerick, with a research agenda driven by the long-term growth opportunities for the dairy sector. It has brought Irish universities, research institutes and the dairy industry together under a number of common themes relating to milk and milk product processing.

## Carbery Food Ingredients

Carbery is a global company owned by the farmers of west Cork, with a goal to create delicious and nutritious dairy products for customers in 50 countries around the world. Carbery Group is a global leader in food ingredients, a pioneer in the introduction of whey protein isolate (WPI) in Ireland and one of the few Irish companies with a well-established whey valorisation strategy capable of producing a range of whey-protein based products. Carbery is engaged in key strategic platforms of Nutrition, Dairy and Taste. In its Nutrition focus, Carbery produces an advanced range of whey proteins, tailored to meet the demands of customers' markets in infant, performance and clinical nutrition. Carbery has a strong research and development team with 14% of employees being engaged therein.

## University College Cork - UCC

With over 170 years of establishment and success, University College Cork (UCC) is one of the top 2% Universities worldwide. The University has a very well deserved reputation where it was named Irish University of the Year on five occasions and named as a top performing University among 1200 universities. UCC has enormous facilities and resources for professional development. The institutional resources available through schemes such as the Postdoc Development Hub and the Agri-Food Graduate Development Programme coordinated by UCC, are other attractions for knowledge development.

## Mestawet's project

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### **“Development of Whey Protein-Based Phospholipid-Enriched Ingredients for Nutri-Functional Applications”**

Milk is a highly diversified biological fluid that contains protein, fat, carbohydrate, minerals and vitamins for human growth and development. This fluid milk is processed into different products and by-products, with whey being the main by-product from the dairy and cheese industries. It represents 80–90% of the volume of processed milk during the manufacture of cheese, with global annual production amounting to 190 million tons. Globally, about half is converted into useful products such as human and animal feed while the rest is disposed of as waste material. The disposal of whey presents a considerable environmental challenge. Over the past several years, the interest in high-protein ingredients such as whey protein concentrate (WPC) and whey protein isolate (WPI) has increased. During the production of WPI a side-stream rich in phospholipids (PL) which are naturally present in the milk fat globule membrane (MFGM), and other components such as mineral and lactose are produced. Phospholipids have very high biological and functional properties where studies have indicated that they positively influence gut health and brain development in infants. This research project is therefore designed for developing a process for innovating PL enriched quality dairy ingredient development through environmentally sustainable and efficient process line for the application of nutraceutical and other consumer targeted food ingredients from an under-valued dairy side-stream.