



## ***Caitriona Guinane***

Applied Biosciences

Munster Technological University

Lecturer and Principal Investigator, Department  
of Biological Sciences

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### **Expertise**

- Bacterial genomics
- Antimicrobial peptides (Bacteriocins)
- Probiotic traits and genomic safety analysis
- Gut microbiome and impact on health/simulated colon models
- Functional food development

### **Research focus in VistaMilk**

Food and Health. Development of prebiotics and probiotics. Functional food development & novel dairy foods for personalised nutrition

### **Research outcomes**

- Two Invention Disclosure Forms on probiotic strains
- A European and International PCT application on a probiotic strain has been filed by MTU and Teagasc (Publication No: WO 2023/118232)
- Member of NutRI research group, Munster Technical University
- In vitro bioassay pipelines developed for streamlined screening of probiotic traits



## **Lorraine Brennan**

Nutritional Metabolomics

University College Dublin

Professor and College of Health and Agriculture  
Science Vice Principal for Research

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### **Expertise**

- Metabolomic profiling for understanding metabolism
- Human nutrition
- Precision nutrition
- Strategies for prevention of metabolic diseases
- Food systems research

### **Research focus in VistaMilk**

Aligned to the food theme, bringing together expertise in metabolomics and human nutrition. Contributing expertise linked to the development of innovative dairy products for optimal consumer health

### **Research outcomes**

- Development of novel statistical packages for metabolomic analyses
- Establishment of evidence to support development of innovative foods (vitamin D enhanced mushrooms)
- Advisory role for development of EU Food2030 policy documents



## **André Brodkorb**

Food Digestion

Teagasc

Principal Research Officer

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### **Expertise**

- Structure/function of food proteins
- In vivo and in vitro food digestion
- Dairy food structures
- Alternative food proteins

### **Research focus in VistaMilk**

To lead the in vitro digestion platform of dairy and non-dairy protein foods

### **Research outcomes**

- Technology transfer from Teagasc patent to licencing and Startup company Anabio Technology Ltd.
- Research income of €27.1m, of which €7.96m as project coordinator or major pillar/work package lead, plus >€1.6m direct client income (as coordinator only)
- Invited expert on Joint FAO/WHO Expert Meetings on Nutrition, nitrogen to protein conversion factor (JEMNU), WHO Headquarters, Geneva, Switzerland, July 2019
- Host to >20 live international webinars with over 5,000 live views and more than 20,000 international views on YouTube Infogest channel; administrator of the food digestion LinkedIn group with 1,800 followers and YouTube channel on food digestion with over 91,000 views



## ***Paul Cotter***

Microbiology

Teagasc

Head of Food Biosciences/Senior Principal  
Research Officer

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### **Expertise**

- Food and health microbiome research
- Gut microbiome
- Fermented/functional foods
- Food and food chain microbiomes
- DNA sequencing

### **Research focus in VistaMilk**

Food and health research, gut microbiome digital twin

### **Research outcomes**

- Establishment and ongoing management of Teagasc DNA Sequencing Centre (including lead of Irish Coronavirus Sequencing Consortium)
- Extensive engagement (including multiple projects) with industry including Danone, Novozymes, PepsiCo, Kerry, Tirlan, Carbery, Dairygold, DSM, FrieslandCampina and many others
- Co-ordinator of EU innovation action 'MASTER' focus on microbiome applications of relevance to sustainable food systems (29 partners, €10.9m) that generated 24 impactful outputs relating to marine, plant, soil, rumen, fermented foods, waste valorisation and gut health (strains, consortia, protocols, kits, products, databases and pipelines)
- 9 patents and 21 Invention Disclosure Forms, relating to novel antimicrobial peptides, food quality and safety, new probiotics and biotherapeutics and functional foods
- Chief technical officer and co-founder of SeqBiome Ltd.

# Claire Gormley

Statistics

University College Dublin

Professor, in School of Mathematics and Statistics

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## Expertise

- Statistical modelling
- High-dimensional data
- Modelling spectral data
- Bayesian methods

## Research focus in VistaMilk

Develop novel, next generation analytical techniques to appropriately model the multimodal, multiresolution and multipurpose data generated across the soil to society pathway

## Research outcomes

- Development of probabilistic approaches to predict milk traits from spectral data, providing predictions and their associated uncertainty
- Provision of open source software to facilitate widespread use of developed tools

# John Kenny

Food Science

Teagasc

Senior Research Officer

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## Expertise

- Microbial genomics
- Microbial engineering
- Bacteriophage
- Sequencing technologies and associated automation
- Synthetic biology

## Research focus in VistaMilk

Contribute to research on fermented food, microbiome work, including application of sequencing technologies

## Research outcomes

- Manager at Centre for Genomic Research, University of Liverpool
- Developed automated solutions for various liquid handling manufacturers and reagent providers
- Technique and database developed for Next Generation Sequencing applications



## ***Kieran Kilcawley***

Food Chemistry

Teagasc

Principal Research Officer

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### **Expertise**

- Flavour chemistry foods and beverages
- Cheese biochemistry
- Fatty acid analysis
- Gas chromatography mass spectrometry
- Sensory analysis and olfactometry

### **Research focus in VistaMilk**

Factors influencing sensory quality of dairy foods - focus on volatilome and fatty acid profiles, lipid oxidation, consumer perception

### **Research outcomes**

- Identifying volatiles that impact sensory perception and consumer acceptance
- Impact of bovine diet on fatty acid profile, volatilome and sensory perception milk dairy products
- Impact of pasture and concentrate diets on volatilome of beef and lamb meat
- Application of 2 dimensional gas chromatography mass spectrometry in foods and beverages
- Technical services to industry regarding lipid oxidation, fatty acids, volatiles and olfactory analysis



## **Laura G. Gómez-Mascaraque**

Food Science

Teagasc

Senior Research Officer

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### **Expertise**

- Food microstructure
- Microscopy
- Raman spectroscopy

### **Research focus in VistaMilk**

Contribute to food research - impact of animal, feed, seasonality and processing on the structure and functionality of dairy products and ingredients

### **Research outcomes**

- Developed new imaging methods applied to food (including dairy products) using advanced microscopy techniques
- Use of Raman spectroscopy to study differences in milk fat composition
- Provide external microscopy analysis services to dairy companies
- 3 Invention Disclosure Forms (EI Refs: 2018-Teagasc-012-I, 2019-Teagasc-017-I, 2021-Teagasc-009-I) and one patent application (EP22171944.6)





## **Noel McCarthy**

Food Chemistry

Teagasc

Senior Research Officer

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### **Expertise**

- Milk protein chemistry
- Designing nutritional formulations (e.g., infant and medical nutritional formulas)
- Dairy processing (filtration, heat treatment, emulsification, evaporation and drying)
- Impact of bovine milk protein genetic variants on dairy processing and product functionality

### **Research focus in VistaMilk**

Tailoring the nutritional and techno-functional properties of milk through selective breeding for specific protein genetic variants

### **Research outcomes**

- Research on  $\beta$ -casein genetic variants and its impact on yogurt and cheese production is the first study to detail how a change to A2 milk production would affect the Irish dairy industry, specifically milk processors
- Led a number of industry funded research projects with a value of ~€2 million
- Lead investigator on Enterprise Ireland and DAFM funded projects with a total value of ~€3.5 million



## ***Kanishka Nilaweera***

Diet and Health Outcomes

Teagasc

Senior Research Officer

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Phone: +353 (0)25 42674

### **Expertise**

- Tissues communication in the body
- Diet and health outcomes
- Weight management, immune responses and age-appropriate growth

### **Research focus in VistaMilk**

Dietary strategies to improve human health. Modelling how diet affects human health outcomes. Predicting new health promoting diets

### **Research outcomes**

- Established a new research facility in Teagasc Moorepark to screen for health-promoting dairy ingredients
- Attracted over €2m research funding to support dairy research
- Established that dairy proteins can be tailored to target the activity of specific tissues e.g. showed the potential of whey to be developed as a health and/or cosmetic ingredient for reduction of fat that are stored differently in males and females in the body
- 3 Invention Disclosure Forms filed

# Tom O'Callaghan

Dairy Science

University College Cork

Senior Lecturer

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## Expertise

- Dairy science
- Food chemistry
- Food processing
- Food and agricultural metabolomics
- Links between primary production practises and milk composition, quality and processability

## Research focus in VistaMilk

Understanding the implications of farm practises (housing, diet, breeding programme) and strategies (feed additives, nitrogen use efficiency and methane) on the composition and functionality of the rumen and composition, processability and quality of milk and dairy products across the supply chain

## Research outcomes

- Invention disclosure submitted for mid-infrared spectroscopy analysis based grass fed milk authentication algorithm
- Development of underlying features and unique characteristics for marketing of Irish grass fed dairy
- Developing of the Irish milk metabolome database
- In excess of €3m in research funding

# Seamus O'Mahony

Dairy Nutrition

University College Cork

Professor, in Food and Nutritional Sciences

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## Expertise

- Food and dairy ingredients
- Food formulation and design
- Specialised nutrition products (e.g., infant and life stage nutrition)
- Education and training in food and dairy science
- Specialised training pathways for dairy professionals

## Research focus in VistaMilk

Adding value to milk and dairy products using science-based innovation and building absorptive capacity for innovation amongst the dairy processing community

## Research outcomes

- Impact Award in the 2019 UCC University Staff Recognition Awards
- Contribute strongly to the positioning of Dairy Science as the Number 2 Research Topic Cluster at UCC and to UCC's position in the Top 100 (ranked 59th) Universities in the Agriculture & Forestry subject area (QS World Rankings, April 2022)



## ***Orla O'Sullivan***

Computational biology

Teagasc

Senior Research Officer

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### **Expertise**

- Food for health
- Gut, rumen, food and soil microbiome
- "-omic data integration"
- Emerging omics technologies
- Microbiome data analysis

### **Research focus in VistaMilk**

Contribute to microbiome profiling of soil, food, gut and rumen; both in technology development and data analysis. Development of novel dairy foods for personalised human nutrition

### **Research outcomes**

- Development of robust bioinformatics pipeline to profile soil microbiome
- Scientific advisor for SeqBiome Ltd
- Scientific advisor for Open Research Europe
- Co-Coordinator of EU RIA "DOMINO" which focuses on developing novel sustainable fermented foods for health



## ***Diarmuid Sheehan***

Food Chemistry

Teagasc

Principal Research Officer

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### **Expertise**

- Cheese chemistry and technology
- Processing challenges of a seasonal milk supply
- Diversification of the € 1.3 bn national cheese product export portfolio
- Research platforms to optimise the quality and sustainability of Irish cheese exports
- Technology transfer and scale up to industrial scale

### **Research focus in VistaMilk**

Contribute to interfacing of dairy product matrices with sensor technology to develop remote systems to monitor ripening and quality metrics for the global cheese industry

### **Research outcomes**

- 8 Invention Disclosure Forms, 2 patents and 2 Non Exclusive, Royalty-Free licences
- Development of > 300 cheese types for commercial exploitation including product launch under Kerrygold brand
- Development of national milk compositional database
- Top 5 published researcher in field, globally
- Supported growth of Irish cheese exports to > €1.3b

# Catherine Stanton

Nutrition

Teagasc

Senior Principal Research Officer

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## Expertise

- Gut microbiome
- Milk microbiota
- Probiotics
- Human studies
- Animal studies

## Research focus in VistaMilk

Early life nutritional interventions and effects on gut microbiome development, health and disease

## Research outcomes

- Investigating the effects of different early life nutritional interventions on gut microbiome development and health outcomes from birth to adulthood in a pig models
- The impact of environmental factors and maternal stress exposure on the developing gut microbiota in piglets - manuscripts in preparation

# John Tobin

Dairy Science and Process Engineering

Teagasc

Head of Department Food Chemistry and Technology

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## Expertise

- Dairy chemistry, milk functionality and processability
- Dairy processing including thermal, evaporative and drying technologies
- Membrane separation technologies for the selective partition, concentration and isolation of milk components
- Impact of genetic variation among milk proteins on the chemistry and functionality of dairy products
- Optimisation of process efficiency and energy utilisation in food processes

## Research focus in VistaMilk

To create dairy products with improved functional, digestive, nutritional and sensorial properties through identification of the impact of genetics relative to the milk protein profile

## Research outcomes

- Filed 4 patents with high commercial impact, describing new process designs for fractionation of milk and whey, which has led to 3 subsequent innovation filings based on the technologies developed.
- Delivering targeted process and technological innovations for energy reduction and water reuse for sustainable dairy processes within the Enterprise Ireland funded Dairy Processing Technology Centre
- Delivery of the Teagasc milk standards program, and proficiency/split sampling schemes, which ensures transparency surrounding determination of milk composition in milk testing laboratories throughout the country
- Led multiple wholly industry projects as project coordinator (both collaborative and contract) with a total value €2.65m



# *Jonathan Magan*

Food Chemistry

Teagasc

Research Officer

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## Expertise

- Effect of cow diet on milk composition
- Milk chemistry
- Seasonal milk compositional factors
- Functional properties of milk
- Dairy product processing

## Research focus in VistaMilk

Develop research on the effect of primary production factors at farm level on milk and end-product composition and quality - analysis of unique genetic profiles for protein composition, methane-reducing food additives and alternative forage sources

## Research outcomes

- Contribution to substantial body of data underpinning the point-of-difference of Irish grass-fed dairy products
- Contribution to establishment of seasonal milk compositional and functional databases and mitigation strategies for seasonal processing issues
- One Invention Disclosure Form



## ***Pádraig Lyons***

Renewable Energy

Tyndall National Institute, UCC

Head of Group, International Energy  
Research Centre

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### **Expertise**

- Renewable energy
- Energy storage (electrical/thermal)
- Real-time digital simulation
- Energy policy
- Energy systems integration

### **Research focus in VistaMilk**

Renewable energy and energy efficiency in agriculture, agri-photovoltaics, energy data analytics, electrification of farming, energy system integration in agriculture, electrical infrastructure utilisation and smart grids

### **Research outcomes**

- Development of a research programme that informed the development of system services for Transmission System Operators that support the integration of renewables on the electrical power system. The approach utilised co-simulation using laboratory based energy storage to emulate grid-scale storage in collaboration with real-time digital simulation known as Power Hardware in the Loop
- Led research that led to unique data set that provided insights into the real world operation of heat pumps in retrofitted Irish homes
- Led research as part of Energy Policy Insights for Climate Action (EPICA) programme that was funded by the Department for Energy Climate and Communications that has influenced the development of the Irish Government's Climate Action Plan and other government policy



## ***Sean Hogan***

Dairy Chemistry

Teagasc

Research Officer

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### **Expertise**

- Dairy chemistry
- Dairy ingredients processing and functionality
- Milk fat chemistry and analysis
- Effects of seasonality on dairy products manufacture and quality
- Physico-chemical characterisation of foods

### **Research focus in VistaMilk**

Seasonality, dairy chemistry, milk fat, butter, proteins, fatty acids phospholipids, processing, dietary-compositional relationships, dairy products quality, functionality, structure, infant formula, nutrition

### **Research outcomes**

- Lead investigator in Teagasc milk fat research platform
- Development of improved process efficiencies in industrial butter manufacturing
- Investigator in national and EU projects
- Establishment of state-of-the-art food structure characterisation methods.