

DPTC Pulse

Issue 05, January 2025

MESSAGE FROM THE DPTC DIRECTOR

Welcome to DPTC Pulse.

Dear Colleagues and Partners,

As we celebrate DPTC's 10th anniversary, I am proud to reflect on our journey since our launch in December 2014. From the very beginning, DPTC has been committed to propelling the Irish dairy processing industry to global leadership in sustainability and high-quality dairy ingredients. Operating in a strategically important sector, DPTC supports Ireland's most vital indigenous industry, which plays a significant role in the economy. Our strong industry-academic partnership fosters long-term growth and competitiveness, promoting a culture of innovation and collaboration.



At the DPTC Circular Dairy Summit - L-R: Conor Mulvihill, DII; Mark Christal, EI; Minister Martin Heydon; Prof. Norelee Kennedy, UL; Dr Anne Marie Henihan, DPTC; Ian Marshall, OBE, QUB. See [p9 to read more](#) about the event.

Our primary mandate remains enabling our industry partners to meet climate and sustainability targets and expand export opportunities. By leveraging our multidisciplinary, cross-sectoral knowledge base and networks, we will ensure our research is industrially relevant and delivers real, meaningful impact.

We are excited to support Enterprise Ireland's vision for the new 'Go Large' Food Centre, which will build on our success and further strengthen our commitment to innovation and sustainability. The objective for 2025 is to firmly set our partners and researchers up for success



Issue Contents

DPTC Update	3
Research Highlights	7
Latest News	8
Meetings and Events	14

In the Press	17
Funding News	22
Obituaries	24

in this new and exciting research landscape beyond DPTC, with a strong focus on commercialisation. We also look forward to continuing our partnerships with Bord Bia, IBF, RGFI, and DII, and our work with the RDS Circular Economy awards to recognise progress in this space.

We extend our heartfelt thanks to Prof. Norelee Kennedy, who has completed her five-year term as VP Research at the University of Limerick. Since she assumed the role in 2020, Prof. Kennedy has forged impactful partnerships with government, industry, and HEI leaders, driving research excellence and impact. Her support throughout DPTC Phase 2 has been invaluable, and we are deeply grateful for her contributions.

I want to acknowledge the dedication of the DPTC management team, our high-calibre researchers, and the continued support from Enterprise Ireland, industry, and academia. Together, we have an opportunity to shape the future research agenda, securing the future of the dairy sector.

Dr Anne Marie Henihan

Centre Director

DPTC Update

AWARDS

Dr Seán Brady Receives ICOS Plunkett Award



We are proud to announce that DPTC Chair, Dr. Seán Brady, has [received the prestigious 'Plunkett Award'](#) from the Irish Co-operative Organisation Society (ICOS) for his exceptional contributions to the Irish co-operative and agrifood sector.

Dr. Brady's extensive leadership has been instrumental in supporting the growth of Irish agriculture. His recognition by ICOS highlights the value he brings to DPTC.

Edward Carr, President of ICOS, praised Dr. Brady's impact: "His energy, insight, and tireless commitment make him a truly iconic figure in our industry."

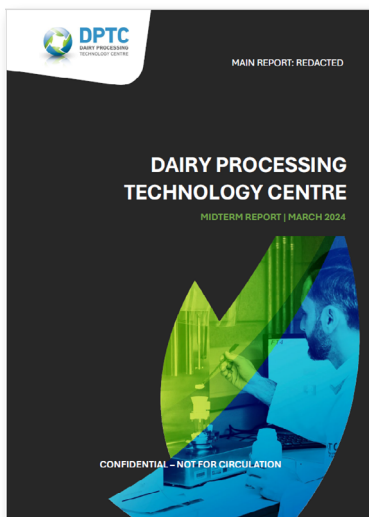
Dr. Brady expressed his gratitude: "The co-operative agri-food industry in Ireland holds a unique and vital place in our nation's heart and economy. I am deeply grateful to the many individuals and organisations I have had the privilege to work alongside."

UCD Researcher Wins Prestigious Award at IDF World Dairy Summit



Jiani Luo, from University College Dublin, was awarded Best Poster in the Dairy Science and Technology category at the IDF World Dairy Summit 2024. This recognition highlights the innovative research and contributions being made by UCD in the field of dairy science. Congratulations to Jiani Luo for this outstanding achievement!

MID-TERM REVIEW



We are delighted to share highlights from our Mid-Term Review in March 2024, showcasing the remarkable progress and collaborative spirit within DPTC.

Summary of the Review

Commissioned by Enterprise Ireland, the review evaluated our ongoing projects and strategic initiatives, reflecting on our achievements in advancing dairy processing research. The panel, led by Frontline and supported by international experts, commended our impactful research and industry collaboration. The panel praised our strategic focus on sustainable processing, carbon reduction, nutrient recovery, and waste valorisation. Our strong leadership, effective coordination, and collaborative model were highlighted, along with our good practices in balancing experimental work and modelling, securing funding, and training researchers. Stakeholders were also noted to have recognised our role in bridging academia and industry, facilitating industry-led research, and addressing common challenges.

Showcase of True Collaboration

The review highlighted the synergy between our industry partners, researchers, and academic institutions, driving innovation and addressing critical challenges in the dairy processing sector. Key projects in sustainable milk processing and adaptive processing strategies were showcased.

We acknowledge the extraordinary efforts of our researchers, PIs, and industry partners. Their dedication and hard work were evident throughout the two-day review, driving our success.

Looking Ahead

We remain committed to fostering collaboration and innovation. Insights from the review will guide us in enhancing our research impact and delivering tangible benefits to our industry partners. We look forward to building on our successes and positioning the sector for future growth in dairy processing technology.

See [Funding News](#) for a preview of how DPTC researchers are addressing some of the outcomes of the Stakeholder Analysis report.

RESEARCHER SHOWCASE PORTFOLIO

Next month, we will release a comprehensive **Researcher Showcase Portfolio** for our DPTC researchers, celebrating their remarkable achievements, expertise, skills, backgrounds, and research. This portfolio underscores the exceptional talent pipeline DPTC has developed. We encourage our industry partners to explore these profiles and connect with our researchers, who are poised to bring their innovative contributions to new opportunities as we approach the conclusion of our programme.

DPTC ASSOCIATE MEMBERSHIP



The Associate Membership model provides external organisations with a suite of benefits and dedicated support to derive maximum impact from their connection with DPTC. Benefits include access to the Irish dairy processing community, training and funding opportunities, business and research development. To pursue a project or collaborative opportunity with any of our Industry Partners or Associate Members, please contact Paudie.Fitzgibbon@dptc.ie.

New Associate Members



OptaHaul provides route optimisation software for the dairy industry, reducing costs and greenhouse gas emissions in farm-to-plant milk transport.

By cutting mileage and fuel usage, OptaHaul helps make milk transport more efficient. The company plans to enhance its product with live milk supply monitoring, offering valuable supply chain insights for Irish dairy processors. See Optahaul's introductory webinar and presentation [here](#).

Opportunity for Engagement: OptaHaul has expressed interest in a feasibility study for this live milk supply monitoring solution, using historical and real-time data with an industry partner.

DPTC Associate Member Overview



AD Biorefine Consultancy Ltd. specialises in optimising anaerobic digestion and biorefinery systems. With extensive knowledge in scale-up and deployment, the company has run trials with pilot-scale vortex cavitation units to enhance the valorisation of dairy processing sludges. Principal consultant Stephen Nolan brings valuable experience from managing Ireland's first biomethane-to-grid facility. See AD Biorefine's introductory webinar and presentation [here](#).

DPTC Collaboration: AD Biorefine is actively working with DPTC researchers on the scale up of hydrodynamic cavitation treatment of dairy sludges.



CEM Technology Ireland designs and develops advanced laboratory instrumentation for industries including food processing and pharmaceutical manufacturing. Their analysers, such as SMART 6, ORACLE, and SPRINT, provide highly accurate analysis of dairy products, surpassing traditional methods. CEM offers dedicated technical support through Ciaran Connolly and Sarah Flynn, fostering collaboration with DPTC members to integrate cutting-edge technologies. See CEM's introductory webinar [here](#).

DPTC Collaboration: CEM is collaborating with DPTC with ongoing projects to validate their Oracle and Sprint analysers. This partnership aims to enhance analytical capabilities and support sustainability agendas through innovative case studies and potential publications.



MONITORING & TESTING

Fitz Scientific is a leading Irish company in environmental and food monitoring. Their INAB-accredited lab meets ISO17025 standards for microbiological testing, including Listeria and Salmonella. Fitz Scientific recently developed key tests for food safety and nutritional analysis with accreditation to ISO17025 standard. Through collaboration with DPTC, Fitz Scientific aims to advance new methods and support the dairy industry, leveraging DPTC's research to enhance their capabilities and impact. See Fitz Scientific's introductory webinar [here](#).

DPTC Collaboration: Fitz Scientific is currently exploring collaborative opportunities with DPTC; if you are interested in collaborating, please contact Paudie.Fitzgibbon@dptc.ie.



InnoGlobal Technology (formerly Innopharma Technology) empowers manufacturers with Industry 4.0 solutions through advanced automation and digitalisation. Collaborating with DPTC, InnoGlobal aims to enhance digital transformation in the dairy industry, leveraging cutting-edge technologies and expertise. See InnoGlobal's introductory webinar [here](#).

DPTC Collaboration: InnoGlobal is organising a workshop for DPTC industry partners to showcase how their advanced process analytical technologies and process control software can enhance manufacturing processes, driving innovation and efficiency. InnoGlobal are also keen to collaborate with DPTC members to pursue opportunities e.g. Horizon Europe.



Kaizen PLM

Kaizen PLM, Siemens Industry Software's authorised partner in the UK and Ireland, supports Siemens PLM solutions for the dairy processing sector.

Specialising in virtual commissioning and Insights Hub, Kaizen PLM enhances efficiency and reduces downtime in dairy operations. See Kaizen PLM's introductory webinar [here](#).

DPTC Collaboration: Kaizen is working on an Enterprise Ireland Feasibility Study application with one of DPTC's industry partners on a Data Discovery project, aiming to drive innovation and sustainability in the dairy industry.



Siemens – Process Automation Software provides leading mechanistic modelling software and services for the formulated products industries. Their integrated software, gPROMS FormulatedProducts, models manufacturing processes and product performance, supporting innovation and development.

See Siemens PSE's introductory webinar [here](#).

DPTC Collaboration: Siemens is collaborating with DPTC to host an adaptive processing workshop focusing on spray dryer and evaporator operations in February 2025. This workshop will provide hands-on experience with the Siemens gPROMS application, aligning with DPTC research on predictive modelling to develop and verify adaptive processing strategies.

DPTC CONNECT

Introducing DPTC Connect

We are pleased to introduce DPTC Connect, a new platform launched on 1 October 2024. This platform connects solution providers with the dairy sector via webinars and exhibitions at selected events. We welcome Balcas Energy and Biopharma Group as our first members, who will be giving presentations in February (see [page 14](#) for more details).



Balcas Energy: A leader in renewable energy solutions, Balcas Energy is committed to promoting sustainability. Their innovative approaches to biomass energy contribute to a circular economy by transforming waste into valuable resources.



Biopharma Group: Specialising in advanced bioprocessing technologies, Biopharma Group enhances efficiency and sustainability. Their expertise in circular bio-economy practices helps reduce waste and improve resource utilisation.

Research Highlights

RESEARCHER SPOTLIGHT

DPTC is proud to spotlight the work of our dedicated researchers driving innovation and sustainability in the dairy industry. Our researchers bring diverse expertise, from advanced nutrient recovery technologies to sustainable wastewater treatment and milk composition-driven adaptive processing. Through cutting-edge projects and strong industry collaborations, they address key challenges and develop practical solutions to enhance efficiency and environmental stewardship in dairy processing. Their contributions underscore DPTC's commitment to fostering research excellence and delivering impactful advancements for a sustainable future.

RFA1: Dr. Sara Pacheco Pappenheim

Overall Researcher Award in Milk Composition-driven Adaptive Processing



Dr. Sara Pacheco is a dedicated researcher contributing to innovative solutions in the dairy industry. Sara has a PhD in Food Science and Technology from the University of Wageningen, where her work focused on milk fat triacylglycerols: factors affecting its composition and structure, and its effects on milk solid fat content. With a strong background in food analytical research and product development, Sara focuses on developing ways to improve butter manufacturing processes and quality in the context of the Irish grass-based system, addressing critical challenges and driving advancements in sustainability and efficiency. Her work, in collaboration with industry partners, exemplifies DPTC's mission to bridge scientific research and real-world applications, fostering a more sustainable future for dairy processing.

RFA2: Alejandra Villa Montoya

Overall Researcher Award in Sustainable Milk Processing



Dr. Alejandra Villa Montoya, a skilled microbiologist with expertise in wastewater treatment and microbial analysis, holds a master's in Agricultural Microbiology from São Paulo State University (Brazil) and a PhD in Sanitary Engineering from the University of São Paulo (Brazil), where she specialised in hydrogen production, homoacetogenesis control, and microbiome characterisation. Now working with Professor Vincent O'Flaherty at the University of Galway, Alejandra focuses on valorising dairy industry side streams through volatile fatty acid (VFA) production. Her innovative work aligns with DPTC's mission, driving economic and environmental advancements in the dairy sector.

Research Highlights: Our latest research highlights are reserved for our DPTC Full Members, and are available in the Value Capture Folders on our Members Only SharePoint. These folders contain valuable insights and updates on our ongoing projects and innovations. To access this information, please visit the Members Only SharePoint and navigate to the Value Capture folders within your company folder. We encourage you to explore these resources to stay informed about our latest advancements and how they can benefit your work.

Latest News



DPTC 2024 Annual Conference

*Researchers Driving the
Future of Dairy Processing*

*November 12
Osprey Hotel • Naas*

On November 12, 2024, the DPTC Annual Conference at the Osprey Hotel in Naas brought our community together for a day of reflection and celebration.

The event celebrated groundbreaking work in adaptive and sustainable milk processing, and the conference connected attendees with industry leaders, fostering transformative opportunities and collaborations.

Speakers: **Chair: Dr Anne Marie Henihan**, DPTC Director; **Nigel Risner** from Leading Authorities encouraged breaking barriers and innovating for the future; **Niamh Dooley**, co-founder of BiaSol, shared insights on her company's start-up and growth; **Dermot Scanlon** from Serosep discussed the inspiration behind his innovative company; **Prof. J.J. Leahy** presented advancements and trends in sustainable dairy processing; and **Prof. Diarmuid Sheehan** addressed seasonal dairy processing.

Sponsored Awards

DPTC honoured exceptional research through our sponsored awards, recognising the hard work and dedication of our researchers.

Best Overall Researcher in Milk Composition-Driven Adaptive Milk Processing: Dr Sara Pacheco Pappenheim, Teagasc

Best Overall Researcher Award in Sustainable Milk Processing: Dr Alejandra Villa Montoya, UoG.

Special Recognition: Outstanding posters and presentations received special recognition, showcasing the creativity and expertise within our community.

Best Poster Award: Dr Corine Nzeteu, UoG

Best Presentation Award: Aritra Sinha, UCC

All of the posters and presentations from the day can be found on [DPTC SharePoint](#).

We would like to thank our industry partners for their generous award sponsorship, and our judging panels: Brian Murray, Niamh Harboune, Lotte Bach Larsen, Cal Flynn, Stephen Nolan, Mariagrazia Proto and Shane Mulcahy.

The DPTC Annual Conference 2024 was a resounding success, thanks to the contributions of our researchers and the unwavering support of our sponsors. We are excited to continue our journey of innovation and collaboration in the years to come.





A selection of photographs from our Annual Conference, including top right: With their Best Researcher and Special Recognition awards, from left to right: Corine Nzeteu, Alejandra Villa Montoya, Sara Pacheco Pappenheim, Aritra Sinha.

DPTC PRESENTS:

CIRCULAR DAIRY SUMMIT 2024

October 24th | The Osprey Hotel, Naas, Co. Kildare

Circular Dairy Economy: Harnessing Opportunities for a Sustainable Future




DPTC hosted the Circular Dairy Summit on 24 October 2024, at the Osprey Hotel in Naas, bringing together over 200 industry leaders, policymakers, researchers, and stakeholders to discuss the future of the Irish dairy sector within the circular bioeconomy.

Event Highlights: The summit began with a welcome from former Minister for Agriculture, Ivan Yates, and a keynote address by Martin Heydon, Minister of State for the Department of Agriculture, Food and the Marine, emphasising sustainable practices in the dairy sector.

A key moment was the unveiling of the [DPTC's Stakeholder Landscape Analysis report](#), "Circular Dairy Bioeconomy in Ireland: Harnessing Opportunities for a Sustainable Future," outlining a roadmap to circularity for the Irish dairy sector.

The summit showcased cutting-edge research in nutrient recycling, anaerobic digestion, and biorefining technologies,

with notable projects like the national bioeconomy pilot facility at Lisheen and the EIT Climate KIC - Dairy Flagship.

Key Recommendations from the Stakeholder Landscape Analysis:

- **Financial Strategies:** Implement grants, subsidies, tax credits, and low-interest loans.
- **Technological Innovations:** Prioritise nutrient recycling and optimise anaerobic digestion processes.
- **Policy Support:** Develop clear regulatory frameworks and promote cross-sectoral collaboration.
- **Market Development:** Enhance consumer perception and ensure a reliable supply of feedstocks.



The summit underscored the significance of cross-sectoral collaboration and knowledge sharing, highlighting the need for formal frameworks and regional hubs to connect stakeholders and promote best practices.

Next Steps: We are actively following up on the key findings from our stakeholder landscape analysis. Professor J.J. Leahy from the University of Limerick has been awarded €99,800 by DAFM to explore policy options for promoting biobased fertilisers, supporting the development of clear regulatory frameworks and cross-sectoral collaboration (see [page 23](#) to read more). The learnings from the report will also be integrated in the sectoral road map for value creation.

We thank our sponsors for their generous support:



EHEDG Irish Section Launched: A New Era in Hygienic Design



In August 2024, DPTC facilitated the launch of the Irish regional section of the European Hygienic Engineering and Design Group (EHEDG) at the University of Limerick. The event featured a tour of the Bernal Institute’s state-of-the-art facilities, showcasing cutting-edge research and innovations in materials, process technologies, and food safety.

This collaboration brought together key stakeholders from the Irish food and dairy sectors to promote best practices in hygienic design and engineering. Chaired by Dr Niamh Burke, the Irish committee leveraged its expertise and strong industry connections to ensure the

successful establishment of this regional section. This initiative creates a platform for knowledge sharing, collaboration, and innovation, underscoring DPTC’s commitment to advancing Ireland’s reputation as a leader in food safety and processing excellence on the global stage.



DPTC Knowledge Day 2024: Navigating Future Challenges in Dairy Processing

On 7 March 2024, DPTC hosted its Annual Knowledge Day at the University of Limerick. The event focused on navigating the future challenges within dairy processing to achieve sustainable growth and foster innovation.

The day began with a warm welcome to all attendees, setting the stage for a series of insightful presentations and discussions. Chaired by Dr. Miriam Ryan from Dairy Industry Ireland, the event featured a distinguished panel of speakers, including David Kennedy from Bord Bia - The Irish Food Board, Martin Fleming from Enterprise Ireland, Dr. Noel McCarthy and Prof. Paul Cotter from Teagasc, and Dr. Bengt Eliasson and Peter Howard from Tetra Pak.

Throughout the day, the speakers shared their expert opinions and insights, which not only supported but also informed DPTC’s research agenda. Key topics included market development, value creation, funding supports for dairy processing innovation, and the impact of milk composition on dairy processing.

The event also provided an excellent opportunity for networking, with Associate Members such as Fitz Scientific, Innopharma Technology, and Unison Process Solutions showcasing their valuable technology solutions to industry and academic partners.

Dr. Miriam Ryan expressed her delight in chairing the event, highlighting the importance of discussions on the latest research, innovation growth markets, and R&D funding mechanisms for Irish dairy processors.



DPTC ABROAD

October 2024: **European Hygienic Engineering & Design Group (EHEDG) World Congress** - Dr Niamh Burke, DPTC Technical Lead, represented DPTC at the EHEDG World Congress in October 2024. She shared insights on raw milk quality, hygienic design, and sustainable dairy processing. View Niamh's presentation [here](#).

24 September 2024: **Bord Bia - China Event** - DPTC Business Development Officer Paudie Fitzgibbon met with Chinese journalists at UL in September last year to showcase the work DPTC does and emphasises the technical expertise of dairy processing in Ireland to the Chinese market.

June 2024: **IDF Cheese Science & Technology Symposium** - DPTC researcher, Prof. Diarmuid Sheehan, was a Keynote Speaker at the International Dairy Foundation Cheese Science and Technology Symposium, held in Norway in June last year. Presentations from all of the speakers at the symposium are available at [here](#).

DPTC Supports Ireland's Biomethane Future



L-R: Dr Anne Marie Henihan, DPTC, with PJ McCarthy, CEO RGFI, Minister Eamon Ryan, DECC and Denis Drennan, President ICMSA. Picture Jason Clarke

DPTC was a proud Gold Sponsor at Ireland Biomethane - Pathway to 2030 event held at Croke Park in Dublin. Hosted by the Renewable Gas Forum Ireland (RGFI), this event marked the launch of Ireland's National Biomethane Strategy. Dr Anne Marie Henihan (left) moderated an insightful panel discussion on 'Opportunities Beyond Energy'.

Alongside the launch of the National Biomethane Strategy, DPTC promoted sustainable processing research and built new partnerships to advance dairy processing by participating in the following events:

5 November 2024: **Food Matters Conference** - Moving toward nature positive production and focusing on "Leading edge thinking" and emerging trends in sustainability.

2 May 2024: **RDS Circular Economy Awards** - DPTC supporting the National Circular Bioeconomy Agenda: DPTC Director Dr Anne Marie Henihan was Head Judge in at the Awards last May, which recognise Irish businesses, entrepreneurs and innovators making a positive difference in meeting the climate change challenge.

22 February 2024: **Inaugural ESG in Dairy Summit** - "Corporate summit on putting environmental and social impact at the core of dairy's future". DPTC representation on technology and innovation panel discussion.

OTHER NEWS

Arrabawn and Tipperary Co-op Confirm Merger Decision



We congratulate our DPTC industry members, Arrabawn and Tipperary Co-operative, on their recent merger, announced on 7 November 2024. The new entity, Arrabawn Tipperary Co-operative Society Limited, will be owned by over 4,800

members, with more than 1,400 milk suppliers providing nearly 750 million litres of milk annually and a projected turnover exceeding €700 million.

Arrabawn, headquartered in Nenagh, Co. Tipperary, collects milk from over 1,000 shareholder farmers, generating a turnover of over €403 million per year. Tipperary Co-op, with over 400 suppliers within a 40km radius of its processing site, produces a wide range of dairy products and ingredients.

Tipperary Co-op Chair, William Ryan, stated, “We will have a valuable product mix with streamlined processes which is key to maximising milk price return.” Arrabawn Chair, Edward Carr, described it as “a historic day” for the organisation.

We look forward to the positive impact of this merger on the Irish dairy industry and the continued success of our industry members.

DPTC PI Prof. Paula Bourke Among Top 1% of World’s Most Cited Academics



Professor Paula Bourke from the UCD School of Biosystems and Food Engineering has been named among the top 1% of the world’s most cited academics in the 2024 Highly Cited Researchers report by Clarivate Analytics. This recognition highlights her significant influence in her field, with her work extending the frontiers of knowledge and contributing to a healthier, more sustainable world. Professor Bourke has authored multiple Highly Cited Papers, ranking in the top 1% by citations for her field over the past decade.

Meetings & Events

KNOWLEDGE TRANSFER EVENTS

DPTC's Friday Webinar Series: Bringing New Knowledge and Opportunities to Our Community

DPTC is dedicated to continuous learning and innovation in dairy processing and the circular bioeconomy. Our **Friday Webinar Series** is central to this mission, offering diverse topics and insights from industry experts.

In 2025, we will incorporate formal training into our webinars to complement our on-site training and trials. This enhancement will provide a flexible way to engage more industry stakeholders and ensure access to the latest advancements and best practices.

All webinars are recorded and available on-demand via the Members Only DPTC SharePoint, fostering continuous learning. Below is a selection of webinars from the past six months. Click the links to explore these sessions and stay updated with the latest developments.

Friday Webinars Past	
Bioenergy in the Dairy Processing Sector - James McGreer, RGFI	
Food Waste Charter - Fiona McCoolle and Catriona Collins	
Pareire - Regulatory Divergence and it's Impact on Food and Packaging Compliance - Joe Tierney & Billy Carr	
The DANMILK Project, Results and Learnings - Prof. Lotte Bach Larsen	
Valorisation of Dairy Industry Side Streams through Fermentation - Alejandra Villa	
OptaHaul - Associate Member Presentation - Gary Gallagher	
Workplace-Based Learning Opportunities for Industry - Ursula Mullane	
GEA / Dairy Membrane Filtration - Mads Bjerre Andersen	
Chlorates and Milk Processing - Lorna Twomey and John Tobin	
Heat Stability, Fouling and Cleaning - Mike Lewis	
Coming Up!	
Title	Date
"Digestate Management Challenge" - Jordi Pous Miralles, Beta Technology Centre	17 January, 2025
"Evolution of Sanitation & Food Safety" - Nathan Mirdami, Head Global Hygeine, Kerry	31 January, 2025
"Microplastic Contamination in Food and Its Impact on Human Health" - Junli Xu, UCD	7 February, 2025
DPTC Connect Presentation "Carbon Neutral, Future Friendly" - Colm Hatton - Balcas Energy	14 February, 2025
DPTC Connect Presentation - Richard Lewis, Biopharma Group	21 February, 2025

DPTC MENTORSHIP PROGRAMME

DPTC Launches Mentorship Programme to Bridge Skills Gap and Foster Innovation

We are excited to announce the launch of the DPTC Mentorship Programme in Q1 2025. This initiative is a key part of our industry training programme, designed to foster collaboration and accelerate the refinement of technologies and processes through shared learnings.

Collaboration and Knowledge Exchange

The mentorship programme will provide hands-on support from industry partners through a two-way mentorship framework. Industry experts will work closely with researchers to apply findings practically, ensuring our research addresses real-world challenges.

Aligning Training with Industry Needs

The programme aligns with the strategic objectives and training requirements of the industry, bridging the skills gap. Industry representatives will provide insights to shape and inform research, ensuring it delivers tangible value to all partners.

Building on Success

This initiative will ensure that industrial trials, technical guidance documents, and training programmes are designed with the end user in mind. Skills and criteria matching with industry representatives will be at the forefront.



Fostering Dynamic Partnerships

The mentorship programme fosters productive partnerships between researchers and industry representatives, enhancing the translation of research into practical applications. Industry mentors will provide guidance on regulatory requirements, market trends, and process optimisation.

Driving Innovation and Sustainability

This collaboration accelerates the development of innovative solutions and nurtures a skilled workforce. It strengthens industry-academic networks, facilitating ongoing knowledge exchange and future collaborative projects, driving long-term growth and sustainability.

By partnering with industry leaders, DPTC will deliver flexible, network-based learning, including webinars and workshops. Practical, on-site trials and hands-on support will ensure the real-world application of new technologies. Ongoing resources such as expert webinars, digital toolkits, and knowledge-sharing platforms will support continuous professional development.

We look forward to the positive impact this mentorship programme will have on our community and the broader dairy processing industry.

UPCOMING EVENTS AND MEETINGS

DPTC Researcher Training

Date	Title
15 January (Teams)	Techno-economic analysis training for RFA2 researchers
13 February (Teams)	Technical guidance document writing training for all researchers

Please contact Niamh.Burke@dptc.ie for more information on researcher training events.

DPTC Technical Workshops

RFA1	
Date	Title
23 January, 9am - 4pm, Teagasc	Butter/Cream/Milk FA/PAT Workshop
28 January, 10am - 1pm, Teagasc	Cheese WP9 Workshop

RFA2	
Date	Title
15 January, 11am - 1pm	Reducing Site Emissions and Energy Costs
12 February, 11am - 1pm	Pre-Treatment Technologies to Transform Dairy Processing Sludges
12 March, 11am - 1pm	Valorisation of Sidestreams through the Carboxylate Platform
16 April, 11am - 1pm	Odour Management Methodologies and Training
14 May, 11am - 1pm	Transformation of Dairy Waste into Fertiliser

External Events

ESG in Dairy Summit:

Corporate summit on putting environmental and social impact at the core of dairy's future

Midlands Park Hotel | Thursday, February 27, 2025



The [2nd Annual ESG in Dairy Summit](#) will take place at the Midlands Park Hotel in Portlaoise on 27 February, 2025. Following the success of the inaugural summit in February 2024, this event promises to be an essential gathering for the dairy industry.

The summit will bring together agricultural and dairy leaders, policymakers, co-ops and processors, farmer representative bodies, and ESG audit and advisory professionals. Attendees will explore the critical role of Environmental, Social, and Governance (ESG) principles in shaping the future of the dairy industry.

This is an opportunity to understand why ESG must take centre stage in discussions about the industry's future, addressing key issues and sharing insights on sustainable practices. DPTC Director Dr Anne Marie Henihan will be presenting on the day. We encourage our members to attend and be part of this important conversation that will drive positive change and innovation in the dairy sector.

In the Press

Welcome to the Peer-Reviewed Publications section “*In the Press*”, where we showcase abstracts from recently published articles arising from DPTC research, or by competitively-funded research aligned with DPTC, e.g. CareerFIT.



We are proud to announce that, so far, DPTC research has resulted in 148 peer-reviewed publications. A comprehensive abstracts book, covering all publications since DPTC Phase 1, is [available on our website](#) along with a full article repository [located on SharePoint](#). Please keep us updated and send your publications to abigail.pattenden@dptc.ie.

The Impact of pH on Fouling and Related Physicochemical Properties of Skim Milk Concentrate during Heat Treatment Using a Laboratory-Scale Fouling Rig

Murphy, T., Finnegan, E., Tarapata, J., O’Callaghan, T.F., O’Mahony, J.A.

[FOODS, 2024](#)

The objective of this study was to investigate the effect of pH (6.1, 6.3, 6.5, and 6.7) on heat-induced changes in concentrated skim milk as related to fouling in heat exchangers. Skim milk (30%, w/w, total solids) was recirculated in a laboratory-scale fouling rig at an initial target temperature of 85 degrees C for 90 min to simulate thermal processing and preheating of evaporated liquid concentrate feeds in dairy processing. This study investigated key changes in relevant physicochemical properties, such as viscosity, particle size, and sedimentation, as major contributors to fouling at lower pHs (6.1 and 6.3). Additionally, protein aggregation and calcium phosphate precipitation were identified as significant contributors to fouling deposits. Possible strategies to mitigate fouling were determined, including optimizing pH and adjusting heat treatment parameters to minimize protein denaturation and mineral deposition. The findings indicate that carefully controlling pH and processing parameters can greatly enhance the efficiency of milk concentration by evaporation and tailor finished product quality. Moreover, this study showed that monitoring of CIP solutions for protein content and turbidity provides valuable information on the intensity of fouling and the efficiency of cleaning.

Funding source: DPTC

Physicochemical properties and stability of milk permeate as influenced by ultrafiltration processing parameters

Tsermoula, P., Barone, G., O’Mahony, J.A.

[International Dairy Journal, 2024](#)

The objective of this study was to determine the effect of membrane molecular weight cut-off (5 and 10 kDa), and filtration temperature (25, 15 and 10 degrees C) on the physicochemical properties of milk permeate (MP). Although MPs produced had a similar gross chemical composition, MP produced with the 10 kDa membrane at 25 degrees C had the lowest pH (6.64) and ionic calcium content (2.33 mM), while MP produced with the 5 kDa membrane at 10 degrees C had the highest levels of 6.82 and 2.85 mM for pH and ionic calcium, respectively. Incubation of MPs at 60 degrees C resulted in precipitation, with MPs produced with the 10 kDa membrane having larger, less soluble and thermodynamically more stable particles than MPs produced with the 5 kDa membrane. These results

demonstrate that filtration parameters significantly affected the physicochemical properties of MPs, with implications for downstream processing.

Funding source: DPTC

Physicochemical properties of micellar casein retentates generated at different microfiltration temperatures

France, T.C., Bot, F., Kelly, A.L., Crowley, S., O'Mahony, J.A.

[Journal of Dairy Science, 2024](#)

Processing temperature has a significant influence on the composition and functionality of the resulting streams following microfiltration (MF) of skim milk. In this study, MF and diafiltration (DF) were performed at 4 or 50 degrees C to produce beta-casein (beta-CN)-depleted and nondepleted (i.e., native casein profile) micellar casein isolate retentates, respectively. Microfiltration combined with extensive DF resulted in a 40% depletion of beta-CN at 4 degrees C, whereas no beta-CN depletion occurred at 50 degrees C. Microfiltration at 4 degrees C led to higher transmission of calcium into permeates, with retentate generated at 4 degrees C containing less total calcium compared with retentate generated at 50 degrees C, based on the volume of retentate remaining. Higher heat stability at 120 degrees C was measured for retentates generated at 4 degrees C compared with those at 50 degrees C, across all pH values measured. Retentates generated at 4 degrees C also had significantly lower ionic calcium values at each pH compared with those generated at 50 degrees C. Higher apparent viscosities at 4 degrees C were measured for retentates generated at 4 degrees C compared with retentates generated at 50 degrees C, likely due to increased voluminosity of beta-CN-depleted casein micelles. The results of this study provide new information on how changing the composition of MF retentate, by appropriate control of processing temperature and DF, can alter physicochemical properties of casein micelles, with potential implications for ingredient functionality.

Funding source: DPTC

Enhancing BMP and digestibility of DAF sludge via hydrodynamic cavitation

Islam, S., Ranade, V.

[Chemical Engineering and Processing - Process Intensification](#)

This study addresses fats, oils, and grease bioconversion challenges in dissolved air floatation (DAF) sludge from dairy processing waste streams. A hydrodynamic cavitation (HC) based pre-treatment method was developed for enhanced anaerobic digestion of DAF sludge. Bench-scale pre-treatment experiments were carried out using a vortex-based HC device at 20 L/min and 250 kPa pressure drop. Influence of severity of the pre-treatment (number of passes through HC device) and substrate concentration on biomethane potential (BMP) was quantified. The study revealed that soluble chemical oxygen demand (sCOD) increases with number of passes (34 % after 80 passes). Higher sludge concentration was found to increase the lag time observed in the BMP data. It was possible to tolerate 3 % VS sludge. The pre-treatment showed a notable increase in BMP, exceeding 82 % of theoretical BMP, with VS removal surpassing 73 %. The highest methane yield achieved was 756 mL/gVS of sludge. The net energy gain (after subtracting energy required for pre-treatment) was found to be more than 100 kWh/ton of sludge. The developed pre-treatment process and presented results provide a basis for the effective valorisation of DAF sludge, promoting a circular economy approach.

Funding source: DPTC

Alteration of Physicochemical Properties and Heating Stability of Reconstituted Acid Whey Powder by Calcium Chelating Salts

Purwanti, N., Mulcahy, S., Murphy, E.G.

[Food and Bioprocess Technology](#)

Trisodium citrate (TSC) and ethylenediaminetetraacetic acid disodium salt (Na₂-EDTA) were applied in reconstituted acid whey powder (AWP) at 20% w/w, which mimicked acid whey concentration during industrial whey processing. Physicochemical properties and heat stability of the AWP suspensions with 0–50 mM TSC and Na₂-EDTA at pH 6.2 were investigated. TSC-containing suspensions prior to heating had decreasing Ca²⁺ activity, levels of sedimentation, and subtle reduction of aggregate size with increasing TSC concentrations (0–50 mM). Unheated Na₂-EDTA-containing suspensions had lower levels of sedimentation and smaller aggregate sizes than unheated TSC-containing suspensions; however, reduction of Ca²⁺ activity was only observed up to 20 mM Na₂-EDTA. Stronger effects of Na₂-EDTA than TSC on levels of sediment, viscosity, and aggregate size of AWP suspensions were observed after heating, except for 50 mM Na₂-EDTA. A remarkable difference between TSC and Na₂-EDTA addition was the nature of aggregates formed in heated suspensions. TSC-containing suspensions contained larger aggregates than corresponding Na₂-EDTA-containing suspensions, which exhibited increasing shear thinning behavior as a function of concentration. In contrast, the smaller aggregates in the corresponding Na₂-EDTA-containing suspension showed shear thickening. The inverse relationship between aggregate size and levels of sediment for TSC-containing suspensions post-heat treatment may indicate the formation of loose aggregates that resist sedimentation.

Funding source: DPTC CareerFIT

Contrasting Phosphorus Build-up and Drawdown Dynamics in Soils Receiving Dairy Processing Sludge and Mineral Fertilisers

Khomenko O., Fenton O., Leahy J.J., Daly K.

[Journal of Soil Science and Plant Nutrition, 2024](#)

Sustainable utilisation of waste from the food industry is required to transition to a circular economy. The dairy industry relies on high phosphorus (P) inputs and produces large quantities of P-rich dairy processing sludge (DPS). Recycling DPS into P fertilisers provides an opportunity to decrease the reliance on chemical P fertilisers. However, current soil nutrient management planning (NMP) is based on chemical P and does not account for recycled alternatives. A pot trial using a novel isotope pool dilution technique was used to describe build-up and drawdown cycles of P in soils fertilised with DPS. Changes in available, exchangeable, and Mehlich3 P (M3-P) pools were recorded over 36 weeks of grass growth. Results demonstrated that in the period of high P demand (12 weeks), these P pools were depleted. As crop growth and demand decreased, available P recovered through mobilisation of P from exchangeable P and M3-P reserves. DPS allowed available P to recover and build up to agronomic target levels after 24 weeks. Using DPS, build-up of available and exchangeable P was slower but P use efficiency was higher at stages of slow growth. Dairy waste created a more stable P pool which could be utilised by crops over a growing season indicating that NMP needs to account for this in the decision support for growers. Isotope studies revealed that extractive agronomic tests do not capture drawdown in P reserves.

Funding source: Eu - REFLOW ITN

Hydrochar from dairy sludge as phosphorus fertiliser affects greenhouse gas emissions and maize yield

Hu Y., Taghizadeh-Toosi A., Baral K.R.; Smith A.M., Khalaf N., Sommer S.G.

[Acta Agriculturae Scandinavica Section B: Soil and Plant Science, 2024](#)

Dairy processing sludge is a phosphorus (P) rich waste with a high potential to replace mineral phosphorus fertiliser in crop production, with possible enhancement of greenhouse gas emissions to the environment. Hydrothermal carbonisation is a technology that transforms the sludge into a hydrochar. The objective of this study is examining P availability of two hydrochars produced from Danish and Irish dairy sludge and their influence on greenhouse gas emissions and maize yields. The trial assessed (i) Danish dairy sludge; (ii) hydrochar derived from Danish sludge; (iii) hydrochar made from Irish dairy sludge; (iv) mineral phosphorus fertiliser; and (v) control. Emissions of nitrous oxide and carbon dioxide, soil pH, mineral nitrogen contents and crop yields were measured. Treatment with Danish dairy sludge had significantly higher cumulative nitrous oxide emissions while the emissions from both hydrochars were not significantly different compared to mineral phosphorous feriliser. Statistical modelling showed that temperature, soil nitrate content, interactions both between temperature and precipitation, and between soil moisture and precipitation were drivers for nitrous oxide emissions. There was no difference in emissions among all treatments when scaled for yield. Hydrochar may alleviate the enhanced nitrous oxide emissions in soil without constraining P availability and maize crop yields.

Funding source: Eu - REFLOW ITN

Persian everlasting pea (*Lathyrus rotundifolius* L.) protein isolate as a potential protein source for food application: Effect of ultrasound-assisted extraction method on the properties of the protein isolates

Youshanlouei, Y., Kiani, H., Mousavi, M., Mousavi, Z., Tao, Y., Halim, R.

[Journal of Food Process Engineering, 2024](#)

Finding new protein sources and processes comprising targeted functional properties is crucial for the increasing global food demand. In the current paper, a new protein isolate is introduced with potential benefits based on the seeds of Persian everlasting pea (*Lathyrus rotundifolius* L.). Conventional aqueous extraction for the preparation of protein isolates (CPEP) was compared with pre-ultrasonic (PUPEP) and ultrasound-assisted (UAPEP) extractions, and the physicochemical and functional properties of the proteins were investigated. By the implication of ultrasound trials, protein recovery was increased from 49.88% for CPEP to 55.02% and 56.11%, for PUPEP and UAPEP, respectively. According to gel electrophoresis, no major distinction in molecular weight between protein fractions of different samples was perceived and sonication practice did not convert the primary structures of proteins. FTIR results uncovered changes in different extraction modes, implying that ultrasound could transform the secondary structures of the protein. Thermal properties and surface tension were decreased during sonication due to the conformational changes. The results of this study indicated that Persian everlasting pea protein isolate could be considered as a novel source of valuable protein and functional ingredient in the food industry.

Funding source: DPTC CareerFIT

Seasonal and geographical impact on the Irish raw milk microbiota correlates with chemical composition and climatic variables

Yap M., O'Sullivan O., O'Toole P.W., Sheehan J.J., Fenelon M.A., Cotter P.D.

[mSystems](#)

Season and location have previously been shown to be associated with differences in the microbiota of raw milk, especially in milk from pasture-based systems. Here, we further advance research in this area by examining differences in the raw milk microbiota from several locations across Ireland over 12 months, and by investigating microbiota associations with climatic variables and chemical composition. Shotgun metagenomic sequencing was used to investigate the microbiota of raw milk collected from nine locations (n = 241). Concurrent chemical analysis of the protein, fat, lactose, total solids, nonprotein nitrogen contents, and titratable acidity (TA) of the same raw milk were performed. Although the raw milk microbiota was highly diverse, a core microbiota was found, with *Pseudomonas*_E, *Lactococcus*, *Acinetobacter*, and *Leuconostoc* present in all samples. Microbiota diversity significantly differed by season and location, with differences in seasonality and geography corresponding to 11.8% and 10.5% of the variation in the microbiota. Functional and antibiotic resistance profiles also varied across season and location. The analysis of other metadata revealed additional interactions, such as an association between mean daily air and grass temperatures with the abundance of spoilage taxa like *Pseudomonas* species. Correlations were identified between pathogenic, mastitis-related species, fat content, and the number of sun hours, suggesting a seasonal effect. Ultimately, this study expands our understanding of the interconnected nature of the microbiota, environment/climate variables, and chemical composition of raw milk and provides evidence of a season- and location-specific microbiota.

Funding source: DPTC and VistaMilk collaboration

Funding News

Horizon Europe



A selection of some Horizon Europe Calls relevant to DPTC. Visit [DPTC SharePoint](#) for a full list of relevant calls.

Digital and Emerging Technologies for competitiveness and fit for the Green Deal

Objective: Develop and deploy digital and emerging technologies to enhance competitiveness and support the Green Deal objectives, including reducing carbon footprints and increasing sustainability in various industries, including dairy processing.

More info: [CL4-2025-TWIN-TRANSITION-01-01](#)

AI, Data and Robotics for Industry

Objective: Leverage AI, data, and robotics to improve industrial processes, enhance efficiency, and reduce environmental impact, including applications in dairy processing.

More info: [CL4-2025-DIGITAL-EMERGING-01-03](#)

Circular and climate-neutral industries

Objective: Promote circular and climate-neutral industrial processes, focusing on reducing waste, improving resource efficiency, and minimizing carbon emissions in industries, including dairy processing.

More info: [CL4-2025-TWIN-TRANSITION-01-04](#)

Deadline for all above: 19 March 2025

Efficient, sustainable and inclusive energy use

Objective: Supports research projects aimed at enhancing energy efficiency, sustainability, and inclusivity in energy use, which can be applied to dairy processing to reduce energy consumption and carbon footprint.

More info: [CL5-2024-D4-02](#)

Circular bio-based systems for sustainable and resilient agriculture

Objective: Promote circular bio-based systems to enhance sustainability and resilience in agriculture, including dairy processing.

More info: [CL6-2025-CIRCBIO-01-02](#)

Reducing environmental pollution from agricultural practices

Objective: Develop and implement innovative solutions to reduce environmental pollution from agricultural practices, including dairy farming.

More info: [CL6-2025-ZEROPOLLUTION-01-03](#)

Call deadline for all above: 22 February 2025 (First Stage), 17 September 2025 (Second Stage)

FutureFoodS: European Partnership for a sustainable Future of Food Systems

The EU FutureFoodS Funding Call is now open: visit the [DAFM webpages](#) for more details.

Scope: FutureFoodS is an innovative European partnership focused on transforming Europe's food production and consumption towards more sustainable and resilient systems.

More info: [Webinar](#)

Deadline for pre-proposals: 15 January 2025

Full proposal deadline: 9 July 2025



An Roinn Fiontar,
Trádála agus Fostaíochta
Department of Enterprise,
Trade and Employment

Contact abigail.pattenden@dptc.ie for more information on any of these Calls.

FUNDING WINS

Congratulations to Prof. J.J. Leahy on DAFM Funding Win for FERTILIZE



We are thrilled to announce that Professor J.J. Leahy from the University of Limerick has been awarded €99,800 by DAFM (Department of Agriculture, Food and the Marine) under the 2024 Policy & Strategic Studies Research Call. His project, **FERTILIZE: Policy options for facilitating the adoption of biobased fertilisers from digestate in an Irish context**, aims to explore and develop policy options to promote the use of biobased fertilisers derived from digestate. This funding will support critical research that aligns with Ireland's sustainability goals and advances the adoption of environmentally friendly agricultural practices.

This project directly addresses one of the key recommendations from our recent Stakeholder Landscape Analysis report ([see pages 9-10](#)), which highlighted the need for improved regulatory support. By establishing clear and flexible regulatory frameworks, this research will help overcome the challenges posed by inconsistent and complex regulations.

Congratulations to J.J. and his team on this significant achievement!



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

DPTC and Arrabawn Coop Secure Prestigious TU RISE PhD Scholarship



We are delighted to announce that Dr. Anna Piterina from DPTC at the University of Limerick, along with our industry partner Arrabawn Coop, has been awarded a prestigious TU RISE PhD Scholarship for the project titled **EFFICIENT monitoring of Organic Matter in wastewater treatment facilities for enhanced treatment and cost optimisation (EFFICIOM)**. This four-year project, with a budget of €121,000, aims to develop a fluorescence spectroscopy-based analytical method to optimise the operational control of aerobic activated sludge treatment processes in the dairy industry.

The supervisory team includes Dr. SM Ashekuzzaman (MTU), Dr. Michael McAuliff (MTU, Cork), Dr. Md Galal Uddin (Galway University), and industry mentors Mr. Shane Mulcahy and Mr. Brian Murray from Arrabawn Coop. The project will involve a 12-week placement at Arrabawn Coop, ensuring practical industry engagement and collaboration.

Congratulations to Dr. Piterina, Arrabawn Coop, and the entire team on securing this significant funding, which will contribute to advancing sustainable wastewater treatment practices in the dairy sector.

Obituaries

PROFESSOR TIM GUINEE

December 2024



It is with sadness that we announce the passing of Professor Tim Guinee in December last year.

Professor Tim Guinee participated as a representative of the Teagasc Food Research Centre and contributed as Project Lead and Principal Investigator in DPTC Phase 1. His role also encompassed mentoring early-stage, talented researchers throughout these projects.

Tim was a source of incredible passion, discipline, and inspiration for many of his colleagues. His involvement was both critical and invaluable to the success of the centre. His work and approach consistently upheld the highest standards, aligning seamlessly with the centre's and members' objectives, demonstrating scientific excellence while addressing practical, real-world questions.

Dr Anna Piterina, DPTC

Readers may also like to read the following obituary by one of Tim's former colleagues, Dr Sanja Seratlic, [here](#).

DPTC OPERATIONS MANAGEMENT TEAM



Centre Director
[Dr Anne Marie Henihan](#)



Marketing & Operations Officer
[Orla Kelly](#)



Funding Officer
[Dr Abigail Pattenden](#)



Business Development Officer
[Paudie Fitzgibbon](#)



RFA1 Programme Coordinator
[Dr Anna Piterina](#)



Dairy Processing Tech. Lead
[Dr Niamh Burke](#)

<p>OUR INDUSTRY MEMBERS</p>	<p>OUR ACADEMIC MEMBERS</p>
<p>OUR COLLABORATORS</p>	<p>OUR ASSOCIATE MEMBERS</p>

Dairy Processing Technology Centre
Analog Devices Building, University Of Limerick, Limerick, Ireland

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