Technology

Profiles

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PROFILE

Declan J. Troy

Assistant Director of Research and Head of Technology Transfer

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Education

M.Sc. (Biochemistry) University College Dublin. 1987.

Graduateship of Royal Society of Chemistry, RSC, UK. 1982.

Career

2010–Present: Assistant Director of Research, Teagasc.

Head of Centre, Ashtown Food Research Centre, Teagasc.

Head of Meat Technology Department, Ashtown Food Research Centre, Teagasc.

Principle Research Officer, Ashtown Food Research Centre, Teagasc.

Expertise

Declan has published over 100 scientific peer reviewed publications, book chapters and scientific articles, mainly in the area of food/meat quality. The main focus of his research was on the biochemistry of muscle proteins and their effects on meat tenderness. Declan has always encouraged the up-take of science based innovations by the food industry and has interacted widely with the sector to this end. His work has contributed to the introduction of new technologies at industrial level particularly in Irelands competitive beef sector.

He has coordinated numerous EU meat science projects and has coordinated *ProSafeBeef*, a €20 million project with 41 transnational partners aimed at advancing beef safety and quality through research and innovation. This landmark project included close interaction with the meat science and industry community. He also coordinated two EU Framework Marie Curie Training Sites for early stage career meat science Ph.D. students in meat biochemistry and functional meat products. Currently he is the Director of the Marine Functional Food Research Initiative (NutraMara) a multidisciplinary programme aimed at discovering bioactive components from Irish marine sources for use in added value functional food products. He has collaborated in his research programme with many different research groups from all around the world including Australia, Korea and USA. He has been invited to speak at many international scientific conferences and industry seminars. He has supervised numerous Ph.D. students to completion. Declan sits on many national and international committees formulating research priorities in food science and advising state agencies and companies. Currently as Assistant Director of Research and Head of Technology Transfer, Declan is leading the Teagasc Technology Transfer Strategy.

Selected Publications

1. Byrne, C.E., Troy, D.J. and Buckley, D.J. (2000). Postmortem changes in muscle electrical properties of bovine *M.longissimus dorsi* and their relationship to meat quality attributes and pH fall. *Meat Science*, 54, 23–34.
2. Byrne, C.E., Downey, G., Troy, D.J. and Buckley, D.J. (1998) Non-destructive prediction of selected quality attributes of beef by near-infrared reflectance spectroscopy between 750 and 1098nm. *Meat Science*, 49 (4), 399–409.
3. Tsitsilonis, O.E, Stoeva, S., Echner, H., Balafas, A., Margomenou, L., Katsoulas, H.L., Troy, D.J., Voelter, W., Papamichail, M. and Lymberi, P. (2002) A skeletal muscle troponin –t ELISA based on the use of an antibody against the soluble troponin T (16–31) fragment. *Journal of Immunological Methods* 268 (2), 141–148.
4. Troy, D. J. and Kerry, J. (2010) Consumer perception and the role of science in the meat industry. *Meat Science*, 86, (1), 214–226.
5. Juárez, M., Marco,A., Brunton, N.,Lynch, B., Troy,D.J. and Mullen, A.M. (2009). Cooking effect on fatty acid profile of pork breakfast sausages enriched in conjugated linoleic acid by dietary supplementation or direct addition *Food Chemistry*, 117, (3), 1 393–397.

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PROFILE

Dr. Mark Fenelon

Head of Food Research Programme

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Phone: +353 (0)25 42355

Education

Diploma in Process and Chemical Engineering University College Cork. 2007.

Ph.D Food Science and Technology, University College Cork. 2000.

B.Sc. Dairy and Food Science, University College Cork. 1994.

Higher Diploma in Food Science and Technology. 1993.

Career

March 2015–Present: Head of Food Programme (Ashtown and Moorepark Centres), Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork

Jun 2010–Present: Head of Food Chemistry & Technology Department, Teagasc Food Research Centre.

2004–2010: Principal Research Officer, Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork.

2000–2004: Food Technologist/ Project Manager at Wyeth Nutritionals, Askeaton, Co. Limerick.

Expertise

- Current programme focuses on ingredient interaction, i.e., protein – protein, protein – carbohydrate and protein – mineral interactions and impact during processing. Research includes improving the functional aspects of re-formulated foods in the nutritional beverage sector.
- Responsible for the recent development and implementation of the new separations/dehydration and ingredients facility located at Teagasc Food Research Centre, Moorepark.
- Experience includes chemistry and process related knowledge of dairy products including cheese, ingredients and infant formula. Knowledge of project management systems from both an academic and industrial perspective.

Selected Publications

1. Maher G. P., M. A Auty, Y. H. Roos, L.M. Zychowski and M. A. Fenelon. 2015. Microstructure and lactose crystallization properties in spray dried nanoemulsions. *Food Structure* Vol 3; 1–11.
2. Murphy, E.G., Y. H. Roos, S. A. Hogan, P. G. Maher, C. G. Flynn, and M. A. Fenelon. 2015. Physical stability of infant milk formula made with selectively hydrolysed whey proteins. *International Dairy Journal* 40; 39–46.
3. Maher G. P., Y. H. Roos and M. A. Fenelon. 2014. Physicochemical properties of spray dried nanoemulsions with varying final water and sugar contents. *Journal of Food Engineering*. Volume 126; 113–119.
4. Murphy, E.G., M.A. Fenelon, Y.H. Roos and S. A. Hogan. 2014. Decoupling Macronutrient Interactions during Heating of Model Infant Milk Formulas. *Journal Agricultural & Food Chemistry* 62; 10585−10593.
5. McCarthy, N. A., P. M. Kelly, P. G. Maher and M. A. Fenelon. 2014. Dissolution of milk concentrate (MPC) powders by Ultrasonication. *Journal of Food Engineering*. 126; 142–148.

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PROFILE

Dr. Olivia McAuliffe

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Phone: +353 (25) 42609

Education

PhD Microbiology (1995–1999), University College Cork.

BSc Microbiology (1991–1995), University College Cork.

Career

2017–Present: Principal Research Officer, Teagasc Food Research Centre, Moorepark.

2009–2017: Senior Research Officer, Teagasc Food Research Centre, Moorepark.

2003–2009: Research Officer, Teagasc Food Research Centre, Moorepark.

2000–2003: Post-Doctoral Research Fellow, North Carolina State University, Raleigh, NC, USA.

1999–2000: Post-Doctoral Research Fellow, National Food Biotechnology Centre, University College Cork.

Expertise

Olivia is a Principal Research Officer in the Dept. of Food Biosciences at Moorepark. Her research programme focuses on bacterial cultures for fermentation and biotransformation, and the bacteriophages that infect them. Her research group has developed valuable capabilities in strain discovery, selection and improvement, implementing a genomics-based approach to studying these organisms, their metabolism and their potential applications in food fermentations. She has published over 90 peer-reviewed publications on these topics. She works closely with a number of high profile national and international companies, providing research services and delivering 'knowledge-based' solutions to the selection and generation of desirable cultures for new product development.

Selected Publications

1. Stefanovic E, Kilcawley KN, Rea MC, Fitzgerald GF, McAuliffe O. 2017. Genetic, enzymatic and metabolite profiling of the *Lactobacillus casei* group reveals strain biodiversity and potential applications for flavour diversification. *Journal of Applied Microbiology* 122(5):1245–1261.
2. Stefanovic E, Thierry A, Maillard MB, Bertuzzi A, Rea MC, Fitzgerald G, McAuliffe O, Kilcawley KN. 2017. Strains of the *Lactobacillus casei* group show diverse abilities for the production of flavor compounds in 2 model systems. *Journal of Dairy Science* 100(9):6918–6929.
3. Stefanovic E, Fitzgerald G, McAuliffe O. 2017. Advances in the genomics and metabolomics of dairy lactobacilli. *Food Microbiology* 61:33–49.
4. Casey A, Jordan K, Coffey A, Fox EM, McAuliffe O. 2016. Comparative genomic analysis of two serotype 1/2b *Listeria monocytogenes* isolates from analogous environmental niches demonstrates the influence of hypervariable hotspots in defining pathogenesis. *Frontiers in Nutrition* 3:54.
5. Casey A, Jordan K, Neve H, Coffey A, McAuliffe O. 2015. A tail of two phages: genomic and functional analysis of *Listeria monocytogenes* phages vB_LmoS_188 and vB_LmoS_293 reveal the receptor-binding proteins involved in host specificity. *Frontiers in Microbiology* 6:1107.
6. Cavanagh D, Casey A, Altermann E, Cotter PD, Fitzgerald GF, McAuliffe O. 2015. Evaluation of non-dairy *Lactococcus lactis* with potential dairy applications reveals extensive phenotype-genotype disparity: implications for a revised species. *Applied and Environmental Microbiology* 81:3961–3972.

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PROFILE

Dr. Paul Cotter

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Education

1996 B.Sc. (Hons) 1st class Microbiology, University College Cork (UCC), Ireland (Graduated in 1st position)

2001 Ph.D. Molecular Biology, University College Cork (UCC), Ireland

Career

2016 Head of Food Biosciences Department, Teagasc Food Research Centre

2009 Principal Research Officer, Teagasc Food Research Centre

2009 Manager of Teagasc Next Gen DNA Sequencing platform

2009 PI, APC Microbiome Institute

2007–09 Lecturer Microbiology Dept., UCC

2002–06 Post-Doc/Senior Research Fellow UCC

Expertise

- Microbiology of foods and the role of microbes in health, spoilage and disease.
- Microbiology of the gut and its modulation by diet and exercise.
- Food grade antimicrobials to control spoilage and pathogenic bacteria.
- Next generation DNA sequencing technologies.
- Spore-forming bacteria; control and testing.

Selected Publications (of >200)

1. Quigley L, O'Sullivan DJ, Daly D, O'Sullivan O, Burdikova Z, Vana R, Beresford TP, Ross RP, Fitzgerald GF, McSweeney PLH, Giblin L, Sheehan JJ, Cotter PD. 2016. Thermus and the pink discoloration defect in cheese. *mSystems* 1:e00023–16
2. Clarke, S.F., E.F. Murphy, O. O'Sullivan, A.J. Lucey, M. Humphreys, A. Hogan, P. Hayes, M. O'Reilly, I.B Jeffery, R. Wood-Martin, D.M. Kerins, E. Quigley, R.P. Ross, P.W. O'Toole, M.P. Molloy, E. Falvey, F. Shanahan and P.D. Cotter. 2014. Exercise and associated dietary extremes impact on gut microbial diversity. *Gut*. 63:1913–20
3. O'Sullivan, D., P.D. Cotter, O. O'Sullivan, L. Giblin, P. McSweeney and J.J. Sheehan. 2015. Temporal and spatial differences in microbial composition during the manufacture of a Continental-type cheese. *Appl Environ Microbiol*. 81:2525–33.
4. Field, D., N. Gaudin, F. Lyons, P.M. O'Connor, P.D. Cotter, C. Hill and R.P. Ross. 2015. A bioengineered nisin derivative to control biofilms of Staphylococcus pseudintermedius. *PLoS One* 10:e0119684.
5. Walsh, C.J., C.M. Guinane, P.W. O'Toole and P.D. Cotter. 2014. Beneficial modulation of the gut microbiota. *FEBS Letts* Epub. doi: 10.1016/j. febslet.2014.03.035
6. Doyle, C.J., D. Gleeson, K. Jordan, T.P. Beresford, R.P. Ross, G.F. Fitzgerald and P.D Cotter. 2014. Clostridia and their significance with respect to milk and dairy products. *Int J Food Microbiol*. 197:77–87.

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PROFILE

Dr. John Tobin

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Phone: +353 (0)25 42233

Education

Ph.D. Food Science and Technology, University College Cork (UCC), Ireland. 2012

B.Sc. (Hons) Food Science and Technology, University College Cork. 2006

Career

2016–Present: Head of Food Chemistry and Technology Department, Teagasc Food Research Centre, Moorepark, Fermoy, Cork

2014–2015: Senior Process Technologist – Danone Nutricia Early Life Nutrition – Utrecht NL

2011–2013: Process Specialist – Danone Nutricia Early Life Nutrition – Utrecht NL

2009–2011: Research Officer – Teagasc Food Research Centre, Moorepark, Fermoy, Cork, Ireland

Expertise

Dr. Tobin's primary research interests include the links between dairy science, process technology and process engineering. Process technology platforms he is involved in include thermal processing, evaporation, spray drying, homogenisation, high shear technologies and separation/ fractionation technologies. In particular his primary areas of expertise revolve around the complete deconstruction of milk by filtration and separation technologies, coupled with mapping of the physical partition of milk components during fractionation. He is also extensively involved in thermal processing particularly relating to the controlled denaturation and aggregation of protein streams in both low and high dry matter environments. His experience in thermal processing covers both direct (PHE/THE) and indirect (steam injection/infusion) technologies and also delves into the stability and interactions of complex nutritional formulations within all facets of thermal and concentration processes.

Selected Publications

1. Tobin, J. T., Heffernan, S. P., Mulvihill, D. M., Huppertz, T., & Kelly, A. L. (2015). Applications of High-Pressure Homogenization and Microfluidization for Milk and Dairy Products. *Emerging Dairy Processing Technologies: Opportunities for the Dairy Industry*, 93.
2. Tobin, J. T., Fitzsimons, S. M., Chaurin, V., Kelly, A. L., & Fenelon, M. A. (2012). Thermodynamic incompatibility between denatured whey protein and konjac glucomannan. *Food Hydrocolloids*, 27, 1, 201–207.
3. Tobin, J. T., Fitzsimons, S. M., Kelly, A. L., & Fenelon, M. A. (2011). The effect of native and modified konjac on the physical attributes of pasteurized and UHT-treated skim milk. *International Dairy Journal*, 21, 790–797.
4. Tobin, J. T., Fitzsimons, S. M., Kelly, A. L., Kelly, P. M., Auty, M. A. E., & Fenelon, M. A. (2010). Microparticulation of mixtures of whey protein and inulin. *International Journal of Dairy Technology*, 63, 32–40.
5. Murphy, E. G., Tobin, J. T., Roos. Y. H., & Fenelon, M. A. (2013). A high-solids steam injection process for the manufacture of powdered infant milk formula *Dairy Science & Technology* 93, 463–475.

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PROFILE

Dr. Geraldine Duffy

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Education

Ph.D. on "Development of rapid methods for the isolation and detection of *Listeria monocytogenes* from meat" University of Ulster, Jordanstown, N.I. (1994)

Bachelor of Science Degree, University College Dublin, Belfield, Dublin 4.

Career

Head of Food Safety, Teagasc, Food Research Centre, Ashtown, Dublin (2005 to present)

Principal Research Officer, Teagasc Food Research Centre, Ashtown, Dublin

OECD Postdoctoral fellowship, Eastern Regional Research Centre, Agricultural

Research Service, U.S.D.A., Philadelphia (1996)

Post Doctoral Fellowship at University of Nottingham and Unilever, UK (1994)

EU training fellowship, TNO, The Netherlands Organisation for Applied and Scientific Research (1993)

Expertise

Research focuses on transmission, behaviour and control of microbial pathogens, in particular verocytotoxigenic *E. coli*, *Salmonella* and *Campylobacter* along the farm to fork chain. The research is applied to the development of food safety management systems including quantitative risk assessment models and novel interventions for control of known and emergent food borne pathogens. She has published widely in the field of microbial food safety with over 100 publications including books and book chapters. Dr. Duffy has considerable experience in the co-ordination of national and international research programmes and under the European Commission Framework Research Programme she has co-ordinated a 41 partner multi-national European Union Framework integrated research project on beef safety and quality (*Prosafebeef*). She is member of a number of professional committees including the Scientific Committee of the Food Safety Authority of Ireland and has served as a food safety expert for the European Food Safety Authority (EFSA) W.H.O/FAO and I.L.S.I. (International Life Science Institute).

Selected Publications

1. Burns AM, Duffy G, Walsh D., Tiwari, B, Grant, J., Lawlor, P.G., and Gardiner GE, (2016). Survival characteristics of monophasic Salmonella Typhimurium 4,[5],12:i: strains derived from pig feed ingredients and compound feed. *Food Control* 64, 105–114.
2. Lawal, D., Burgess, C., McCabe, E., Whyte, P. and Duffy, G. (2015). Development of a quantitative real time PCR assay to detect and enumerate Escherichia coli O157 and O26 serogroups in bovine recto-anal swabs *J. Micro methods* 114:9–15.
3. O'Leary, D., McCabe, E.M., McCusker, M.P., Martins, M., Fanning, S. and Duffy, G. (2015). Acid environments affect biofilm formation and gene expression in isolates of Salmonella enterica Typhimurium DT104. *Int J Food Microbiol*. 3; 206: 7–16
4. Thomas, K.M., McCann, M., Collery, M.M, Logan, A., Whyte, P., McDowell, D.A. and Duffy, G, (2013). Transfer of Verocytotoxigenic Escherichia coli O157, O26, O111, O103 and O145 from Fleece to Carcass during Sheep Slaughter in an Irish export abattoir. *Food Micro*. 34 (1) 38–45.
5. Thomas, K.M., McCann, M., Collery, M.M, Logan, A., Whyte, P., McDowell, D.A. and Duffy, G, (2012). Tracking Verocytotoxigenic Escherichia coli O157, O26, O111, O103 and O145 in Irish Cattle at slaughter. *Int J. Food Micro* 153(3):288–96

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PROFILE

Dr. Eimear Gallagher

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Education

Ph.D. University College Cork (2005)

M.Sc. University College Cork (2000)

B.Sc. University College Cork (1997)

Career

2017–Present: Principal Research Officer, Teagasc Research Centre, Ashtown, Dublin 15

2016-Present: Head of Food Quality and Sensory Science Department, Teagasc Food Research Centre, Ashtown, Dublin 15

2000–2017: Senior Research Officer, Teagasc Research Centre, Ashtown, Dublin 15.

1999–2000: Research Scientist, Scientific Support team, Nestlé PTC, York, YO1 1XY, England. (7 month contract).

1997–1997: Research Assistant, Dept. of Food and Nutritional Sciences, National University of Ireland, Cork.

Expertise

Dr. Gallagher's expertise lies predominantly in cereal and bakery research. She has extensive experience in grain milling, empirical dough rheology, confocal and scanning microscopy, digital imaging and sensory analysis. She has developed a particular capability in the gluten-free area, where she has conducted research in product reengineering, instrumental texture analysis, fundamental rheology and nutritional profiling. She is also a coordinator of Sensory Food Network Ireland, a national network of excellence in sensory food science. As well as conducting publicly funded research, Dr. Gallagher also has a number of confidential, industry-led short-term projects

Selected Publications

1. O'Shea, N., Kilcawley, K. and Gallagher, E. (2016). Influence of α-amylase and xylanase on the chemical, physical and volatile compound properties of wheat bread supplemented with wholegrain barley flour. *European Food Research and Technology DOI*: 10.1007/s00217–016–2651-y.
2. Ktenioudaki, A., Alvarez, L., Kilcawley, K., Gallagher, E. (2015). Application of bioprocessing techniques (sourdough fermentation and technological aids) for brewer's spent grain breads. *Invited paper for the special issue of Food Research International*, doi:10.1016/j.foodres.2015.03.008.
3. O'Shea, N., Ktenioudaki, A., Smyth, T.P., McLoughlin, P., Doran, L., Auty, M., Arendt, E.K. and Gallagher, E. (2015). Physicochemical assessment of two fruit by-products as functional ingredients: Apple and orange pomace. *Journal of Food Engineering*, 153: 89–95.
4. Ktenioudaki, A., Alvarez-Jubete, L. and Gallagher, E. (2015). A review of the process-induced changes in the phytochemical content of cereal grains: The breadmaking process. *Critical Reviews in Food Science and Nutrition*. 55(5):611–9.
5. Ktenioudaki, A., Crofton, E., Scannell, A.G.M., Hannon, J.A., Kilcawley, K.N. and Gallagher, E. (2013). Sensory properties and aromatic composition of baked snacks containing brewer's spent grain. *Journal of Cereal Science*, 57 (3): 384–390.

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PROFILE

Ciara McDonagh

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Education

M.Sc. (Agricultural Science) 1998–2000
National University College Dublin (UCD).

B.Sc. (Applied Sciences – Food Science and Technology) 1993–1997. Dublin Institute of Technology, Kevin St. – awarded by Trinity College Dublin.

Career

2010–Present: Food Industry Development, Teagasc Food Research Centre, Ashtown.

2005–2010: Innovation Unit Manager, Teagasc Food Research Centre, Ashtown.

2001–2004: Research Officer, Meat Technology Department, Teagasc.

2000–2001: Research Assistant, National Food Biotechnology Centre, NUI, Cork.

Expertise

Ciara plays an integral role in the food industry development programme, providing direct technology development support to the food processing industry through product development, contract research, training, consultancy and information services. Working with the Technology Transfer Office, Ciara has developed the Teagasc Portfolio of Technologies to ensure the early transfer to industry of knowledge generated from the Teagasc food research programme. She is also responsible for the delivery of the Food Innovation Gateways Events, showcasing these technologies to industry. In addition, she manages the Teagasc Customer Relationship Management System, which has been developed to support interactions with industry, streamline information exchange and ensure innovation needs are being met.

Selected Publications

1. McDonagh, C. (2009). Technology Transfer Guides for the Meat Sector
2. McDonagh, C., Sommerfield, A., O'Neill, E., and McCarthy, P. (2006). From Concept to Completion – A Roadmap for Entrepreneurs.
3. Mc Donagh, C., Mullen, A.M, Kerry J.P. & Troy, D.J. (2006). Evaluation of inherent variation in porcine M. *thoracis* et *lumborum* and M. *semimembranosus*. *Journal of the Science of Food and Agriculture*. 86(2), 292–298.
4. Mc Donagh, C., Kerry J.P., Troy, D.J. & Mullen, A.M. (2005). Relationship between the subjective and objective assessment of pork M. *semimembrosus* and prediction of further processed pork quality. Food Science and Technology International. 11(2), 149–154
5. 2005–2012: Confidential Research Reports for client companies.

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PROFILE

Dr. Mark A. E. Auty

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Education

Ph.D. Dairy Chemistry (University College Cork) 2004.

B.Sc. Microbiology (Surrey) 1985.

Fellow of the Royal Microscopical Society.

Career

1997–Present: Senior Research Officer, Food Chemistry and Technology Department, Moorepark; manager of the National Food Imaging Centre. Since joining Teagasc, Mark has published 71 peer reviewed scientific articles and from 2006 has been awarded in excess of €5.5m in research funding.

1985–1996: Senior Scientist at Leatherhead Food International.

Expertise

Dr. Auty is a food microstructure expert with many years' experience in applying microstructural analysis to understanding food functionality. Particular research interests include food nanotechnology, microscopy and relating the microstructure of food ingredients and products to processing and consumer quality. Dr. Auty provides specialist expertise for a wide range of projects at Teagasc, including projects on protein functionality, powders, cheese, probiotics, fermented milks, cereals and meat products. His expertise is in regular demand from the food industry. With a strong international reputation, he gives many invited and keynote presentations worldwide and is associate editor of the Food Structure scientific journal.

Selected Publications

1. Zychowski, L.M., Logan, A., Augustin, M-A., Kelly, A.L., Zabara, A., O'Mahony, S.A., Conn, C.E. and Auty, M.A.E. 2016. Effect of phytosterols on the crystallization behaviour of oil-in-water milk fat emulsions, *Journal of Agricultural and Food Chemistry*. 64: 6546–6554.
2. Oboroceanu, D., Wang, L., Magner, E. & Auty, M.A.E. 2014. Fibrillization of whey proteins improves foaming capacity and foam stability at low protein concentrations. *Journal of Food Engineering*. 121: 102–111.
3. Ciron, C.I.E., Kelly, A.L. and Auty, M.A.E. (2012). Modifying the microstructure of low-fat yogurt by microfluidization of milk under different pressures to enhance rheological and sensory properties. *Food Chemistry*, 130: 510–519.
4. Abhyankar, A.R., Mulvihill, D.M. and Auty, M.A.E. (2011). Combined microscopic and dynamic rheological methods for studying the structural breakdown properties of whey protein gels and emulsion filled gels. *Food Hydrocolloids*, 25: 275–282. (8th out of top 25 hottest topic articles in 2011).
5. Ciron, C.I.E, Kelly, A.L., Auty, M.A.E. (2011). Effect of microfluidization of heat-treated milk on rheological and sensory properties of reduced-fat yogurt. *Food Hydrocolloids*, 25: 1470–1476.

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PROFILE

Dr. Ramón Aznar Roca

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Education

PhD Analytical Chemistry. Technical University of Madrid (UPM), Spain 2016

M.Agr.Sc. (Earth Science), Technical University of Madrid (UPM), Spain 2014

M.Agr.Sc + B.Agr.Sc. (Earth Science), Technical University of Valencia (UPV), Spain 2010

Career

2017–Present: Research Assistant, Nutraceutical Food Bioscience, Teagasc, Ireland

2016: Post-Doc Trinity College Dublin (TCD), Ireland

2015: Pre-Doc Visiting Scientist, Joint Research Centre (JRC) of European Commission (EU), Ispra, Italy

2013–2016: Research Assistant and PhD Student, Spanish National Institute for Agricultural and Food Research and Technology (INIA), Madrid, Spain

Expertise

The research interests of Dr. Aznar include applying and developing novel analytical techniques, to detect emerging contaminants in complex environmental matrices and bioactive compounds in food matrices.

Dr. Aznar has contributed actively to different European and national funded projects (Spain, Italy and Ireland). As an example, previous research work has focused on assessing the ubiquitous presence of pharmaceutical compounds in the environment, developing and validating new analytical methods by gas chromatography-mass spectrometry (GC-MS) and tandem mass spectrometry (GC-MS/MS), and method development and validation to detect Silver nanoparticles (NP-Ag) in food contact materials and medical devices at Joint Research Centre (JRC) of the European Commision, using a novel technique entitled single particle-inductively coupled plasma-mass spectrometry (SP-ICP-MS).

In previous roles, Dr. Aznar has gained extensive knowledge in method development, optimization and validation, using a wide range of equipment (spectrophotometers, gas and liquid chromatography, ICP) with different detectors (UV, MS, MS/MS and QTOF).

Dr. Aznar recently joined Teagasc as a Research Lab Technician in the Nutraceutical Research Facility at Ashtown and is interested in investigating the extraction, characterisation and quantification of health-beneficial molecules from primary food sources, focusing in Irish seaweed.

Selected Publications

1. Aznar, R. Barahona, F. Geiss, O. Ponti, J. Tadeo, J.L and Barrero-Moreno, J (2017). Quantification and size characterisation of silver nanoparticles in environmental aqueous samples and consumer products by single particle-ICPMS. *Talanta,* 175, 200–208.
2. Aznar, R. Albero, B. Sánchez-Brunete, C. Miguel, E. Martín-Girela, I and Tadeo, J.L (2017). Simultaneous determination of multiclass emerging contaminants in aquatic plants by ultrasound assisted matrix solid phase dispersion and GC-MS. *Environmental Science and Pollution Research*, 24, 7911–7920.
3. Aznar, R. Moreno-Ramón, H. Albero, B. Sánchez-Brunete, C and Tadeo, J.L (2016). Spatio-temporal distribution of pyrethroids in soil in Mediterranean paddy fields. *Journal of Soil and Sediments*, 17, 1503–1513.
4. Aznar, R. Sánchez-Brunete, C. Albero, B. Rodríguez, J.A. and Tadeo, J.L. (2014). Occurrence and analysis of selected pharmaceutical compounds in soil from Spanish agricultural fields. *Environmental Science and Pollution Research,* 21, 4772–4782.

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PROFILE

Dr. Gerard Barry

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Education

Ph.D. Factors Affecting Milk Protein Composition, 1980

B.Sc. Biochemistry with Microbiology, 1977

Career

1988–Present: Food Industry Development, Teagasc Food Research Centre, Ashtown

1982–1986: Technical & Operations Management Meat Processing Sector

1980–1982: Teagasc Researcher, Dairy Research Centre, Moorepark.

Expertise

- Design, development and delivery of training courses.
- Food Safety Systems/HACCP.
- Implementation of Quality Management Systems in.
- Food, Feed & Laboratory areas.
- Internal & Third Party auditing of Food Safety & Quality Management Standards.
- Internal auditing in Competent Authorities.
- Standards Development.

Projects include:

- Development of Certified Training Programmes.
- Design & delivery of specialised training to Competent Authorities and Development Agencies.
- Delivery of training across a range of food safety related topics including microbiology, HACCP, food standards, auditing, laboratory accreditation etc.
- Organisation and delivery of a range of seminars on topics of interest to the food industry.
- Addressing varied client queries in the area of food safety & quality, including legislative and standards requirements (e.g. BRC, Bord Bia, ISO 22000 etc).
- Problem solving and shelf-life extension.

Selected Publications

1. Barry G, Clancy M (1998) Food Catering, A Serious Business. *Hotel and Catering Times* October/ November Ed. P 4–7.
2. Doyle T, Barry (1994). Food Safety The Systematic Approach. *Food Ireland*, June Edition, P17–20.
3. Barry G (2010). Ensuring Good Food Standards, *TResearch*, Volume 5, Number 1, Spring 2010 Pages 20–21 (ISSN 1649–8917).
4. Barry (2012) Shelf-life of Food, *TResearch*, Volume, Number 1, Spring 2012 Pages 20–21 (ISSN 1649–8917).

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Technology

PROFILE

Dr. Tom Beresford

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Education

B.Sc. University College, Cork, Ireland. 1985

Ph.D. University College, Cork, Ireland. 1991

Research Experience

1990–1991: Post Doctoral Research Scientist BioResearch Ireland, University College Cork.

1991–1993: Post Doctoral Research Scientist New Zealand Dairy Research Institute.

1993–2000: Research Officer.

2000–2002: Senior Research Officer.

2002–2005: Principal Research Officer.

2005–Present: Senior Principal Research Officer Teagasc Food Research Centre, Moorepark.

Management Experience

2000–2004: Acting Head, Cheese Department.

2004–2009: Head, Food Cultures & Safety Department.

2009–2016: Head, Food Biosciences Department.

Expertise

Dr. Beresford's primary research interests relate to aspects of cheese microbiology, in particular, the influence of various starter and non-starter organisms on the biochemistry of cheese ripening. Of particular interest is the contribution of *Lactobacillus helveticus* as a cheese ripening organism. As part of this work the complete sequence of DPC4571, an *L. helveticus* strain with interesting technological characteristics from the Moorepark culture collection, has been elucidated. A particular focus of his current research relates to the potential of bacterial exopolysaccharide to impact on both the techno – and bio-functionality of dairy products. In addition, he is interested in microbial fermentation with particular reference to the capacity of a range of bacteria to release bioactive peptides from protein molecules. He also undertakes research on microbial quality of milk.

Selected Publications

1. Callanan, M.J., Kaleta, P., O'Callaghan, J., O'Sullivan, O., Jordan, K.N., McAuliffe, O., Sangrador-Vegas, A., Slattery, L., Fitzgerald, G. F., Beresford, T.P., Ross, R.P. (2008) Genome sequence of *Lactobacillus helveticus*, an an organism distinguished by selective gene loss and insertion sequence element expansion. *Journal of Bacteriology,* 190, 2, 727–735.
2. Kaleta, P., O'Callaghan, J., Fitzgerald, G.F., Beresford, T.P., Ross, R. P. (2010) Crucial role for insertion sequence elements in *Lactobacillus helveticus* evolution as revealed by interstrain genomic comparison. *Applied & Environmental Microbiology* 76, 1, 212–220.
3. Costa, N.E., Hannon, J.A., Guinee, T.P., Auty, M.A.E., McSweeney, P.L.H and Beresford, T.P. (2010) Effect of exopolysaccharide produced by isogenic strains of *Lactococcus lactis* on half-fat Cheddar cheese. *Journal of Dairy Science* 93, 3469–3486.
4. Slattery, L., O'Callaghan, J., Fitzgerald, G.F., Beresford, T.P., and Ross, R.P. (2010) Invited review: *Lactobacillus helveticus* – A thermophilic dairy starter related to gut bacteria. *Journal of Dairy Science* 93, 4435–4445.
5. Quigley, L., O'Sullivan, O., Beresford, T., Ross, R.P. Fitzgerald, G.F. and Cotter, P. (2011). Molecular approaches to analyzing the microbial composition of raw milk and raw milk cheese. *International Journal of Food Microbiology* 150, 81–94.

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PROFILE

Dr. Declan Bolton

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Education

B.Sc. University College Dublin, Ireland. 1991

Ph.D. University College Dublin, Ireland. 1995

Grad. Dip. Business, NCEA, Ireland. 1996

Career

Research Assistant (University College Dublin) (1990)

Research Scientist (USDA-ERRC, Philadelphia) (1996)

Research Officer, Teagasc (1996–2003)

Senior Research Officer, Teagasc (2003–2006)

Principal Research Officer, Teagasc (2006 to date)

Member of the European Food Safety Authority, Biohazard Panel, Parma, Italy, (2012 to date)

Expert Consultant, FAO/WHO, Rome, Italy (2015)

Expertise

- **Food safety microbiology** including *Campylobacter*, *Escherichia coli* O157/VTEC, *Salmonella* and other foodborne bacterial pathogens.
- **Food spoilage microbiology** including blown pack spoilage (*Clostridium estertheticum, Clostridium gasigenes*, etc.) and shelf-life.
- **Food safety, shelf-life, HACCP and pre-requisites (GMP and GHP)** for beef, pork lamb, poultry, fish and foods of non-animal origin (vegetables, cereals, fruit, etc.) including primary production, processing, transport, retail and catering.

Selected Publications

1. Leonard Koolman, Paul Whyte, Joseph Meade, James Lyng, Declan Bolton (2014). Use of chemical treatments applied alone and in combination to reduce Campylobacter on raw poultry. *Food Control*, 46, 299–303.
2. Declan J. Bolton (2015) Campylobacter virulence and survival factors. Food Microbiology, 48, 99–108.
3. Leonard Koolman, Paul Whyte, Catherine Burgess and Declan J. Bolton (2015). Distribution of virulence-associated genes in a selection of Campylobacter isolates. *Foodborne Pathogens and Disease*, 12 (5), 424–433.
4. Declan J. Bolton, Des Walsh and Joan Carroll (2015). A four year survey of blown pack spoilage Clostridium estertheticum and Clostridium gasigenes on beef primals. *Letters in Applied Microbiology*, 61(2), 153–157.
5. Leonard Koolman, Paul Whyte, Catherine Burgess and Declan Bolton (2016) Virulence gene expression, adhesion and invasion of Campylobacter jejuni exposed to oxidative stress (H2O2). *International Journal of Food Microbiology*, 220, 33–38.
6. Tara Battersby, Paul Whyte and Declan J. Bolton (2016) The pattern of Campylobacter contamination on broiler farms; external and internal sources. *Journal of Applied Microbiology*, 102, 1108–1118.
7. Tara Battersby, Paul Whyte and Declan Bolton (2016). Protecting broilers against Campylobacter infection by preventing direct contact between the farmer and broilers. *Food Control*, 69, 346–351.

Technology

PROFILE

Kevin Brennan

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Phone: +353 (0)1 8059522

Education

M.Sc. Food Science, University of Reading (UK).

Food Microbiology, Institute of Technology, Co. Carlow.

Certificate in IT (computer systems) Institute of Technology, Blanchardstown.

Certificate in Equine AI and veterinary treatment.

Career

Current since 1996: Teagasc Food Research Centre, Ashtown, Dublin 15.

SGS Yarsley Ltd, Leopardstown Business Park, Co. Dublin.

Bioresearch Ireland Ltd, National Biotechnology Research Centre, University College Cork.

SGS Yarsley UK Ltd, Redhill, Surrey, UK.

Expertise

- Providing specialised training, consulting & independent contract technical auditing services (Bord Bia MPQAS, BRC and contract internal auditing) to the food sector, regulatory authorities and development agencies.
- Development and implementation of food safety and quality assurance standards. (incorporating: animal welfare, farm to fork traceability, food safety and quality).
- Technology/knowledge transfer of ready to use food safety research outputs to SMEs.
- Development of practical interpretative guides for SMEs in relation to application of food safety legislation.
- Animal welfare training and competency assessment in line with current animal welfare regulations.

Selected Publications

1. Brennan, K.A. (2013) Traceability and identification of Horse meat, *Teagasc TResearch*.
2. Brennan, K.A. (2012) Quality assurance and microbiological criteria regulations, *Teagasc TResearch*.
3. Brennan, K.A., Compliance with EC reg 2073/2005 – red meat sampling, Institute of Food Science and Technology '*Food Science and Technology Ireland*' Volume 2, July 2008.
4. Brennan, K.A., Guidance note NFC/3/2007 'Microbiological Criteria for Food Stuffs – red meat specific', April 2007, ISBN 1 84170 449 0.
5. Brennan, K.A. & Langan J.W. (2003), Guidance Note on the implementation of the microbiological testing procedures and interpretation of results as required by European Communities (Fresh Meat and Poultry Checks on General Hygiene) Regulations 2003 (redmeat specific), Training Guidance Note No: NFC/Meat/1/2003, ISBN 1 84170 331 1.
6. Brennan, K.A. (2003), Guidance Note on the implementation of the microbiological testing procedures and interpretation of results as required by European Communities (Fresh Meat and Poultry Checks on General Hygiene) Regulations 2003 (poultry specific), Training Guidance Note No: NFC/Meat/2/2003, ISBN 1 84170 346 X.
7. Brennan, K.A., Food Safety Management and Audit, proceedings of EU-RAIN international conference, Dublin December 1–2nd 2006.
8. Brennan, K.A. (1999), HACCP Certification and I.S. 343, Proceedings of International Quality Conference, Dublin, October 1999.
9. Brennan, K.A. (1998), Dissemination of Food Safety and Quality Research in Europe, Proceedings of International Meat Conference, Madrid, Spain.

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PROFILE

Dr. André Brodkorb

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Phone: +353 (0)25 42431

Education

1995: Degree in Chemistry, Friedrich Schiller Universität Jena, Germany

2001: Ph.D. in Bio-physical Chemistry, Université Libré de Bruxelles, Belgium

Career

2001–2002: Post-doctorate in Bio-physical Chemistry, Trinity College Dublin

2002–Present: Research officer in Teagasc Food Research Centre, Moorepark

Expertise

- Protein Structure/Function relationship; Structure = molecular structure (primary, secondary and tertiary), modification, and aggregation; Function = physico-chemical properties (e.g. gelation, viscosity, emulsification, hydrophobicity), bio-activity.
- *In vivo* and *in vitro* gastro-intestinal digestion of food and food components.
- Bioencapsulation – protection of sensitive food ingredients e.g. probiotic bacteria, during processing, storage and gastro-intestinal digestion.
- Bioactivity and structure of novel protein/ligand complexes.
- Separation and fractionation of proteins/peptides – development and evaluation of novel chromatographic and non-chromatographic purification and fractionation of mainly globular proteins and proteolytic fractions thereof.
- Food colloids – structure, stability and function.

Selected Publications

1. Gough, R., O'Connor, P. M., Rea, M. C., Gómez-Sala, B., Miao, S., Hill, C., & Brodkorb, A. (2017). Simulated gastrointestinal digestion of nisin and interaction between nisin and bile. *LWT – Food Science and Technology*, 86, 530–537.
2. Minekus, M., Alminger, M., Alvito, P., Ballance, S.,Bohn, T., Bourlieu, C., Brodkorb, A. (2014). A standardised static *in vitro* digestion method suitable for food – an international consensus. *Food & Function*, 5(6), 1113–1124.
3. O'Loughlin, I. B., Murray, B. A., FitzGerald, R. J., Brodkorb, A., & Kelly, P. M. (2014). Pilot-scale production of hydrolysates with altered biofunctionalities based on thermally-denatured whey protein isolate. *International Dairy Journal*, 34, 146–152.
4. Sullivan, L. M., Kehoe, J. J., Barry, L., Buckley, M. J. M., Shanahan, F., Mok, K. H., & Brodkorb, A. (2014). Gastric digestion of α-lactalbumin in adult human subjects using capsule endoscopy and nasogastric tube sampling. *British Journal of Nutrition*, 112, 638–646.
5. Doherty, S. B., Auty, M. A., Stanton, C., Ross, R. P.,Fitzgerald, G. F., & Brodkorb, A. (2012). Survival ofentrapped *Lactobacillus rhamnosus* GG in wheyprotein micro-beads during simulated ex vivo gastrointestinaltransit. *International Dairy Journal*, 22(1),31–43.
6. Kehoe, J. J., Wang, L., Morris, E. R., & Brodkorb, A.(2011). Formation of non-native β-lactoglobulin during heat-induced denaturation. *Food Biophysics*, 6(4),487–496.

Technology

PROFILE

Dr. Kaye Burgess

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Education

Ph.D. Microbiology, University College Cork
B.Sc. (Hons) Microbiology, University College Cork (1H)

Career

March 2017–Present: Senior Research Officer, Teagasc Food Research Centre Ashtown

Sept 2005–Feb 2017: Research Officer, Teagasc Food Research Centre Ashtown

June 2005–Aug 2005: Postdoctoral researcher, Department of Microbiology, University College Cork

Expertise

Dr. Burgess's research focus is on using molecular tools to provide an understanding of the behaviour and virulence of microbial pathogens, in particular Gram-negative pathogens, along the farm to fork chain. She is particularly interested in the role that stresses encountered in the food chain may have on the virulence and persistence of foodborne pathogens, such as verocytotoxigenic *E. coli* (VTEC). Current activities include coordination of projects on identifying traits which contribute to persistence of VTEC in the primary production environment and reducing *L. monocytogenes* biofilm formation on food industry surfaces. She is a work package leader on the EU FP7 funded project *Aquavalens*, which is focused on technologies to ensure the safety of European drinking water supplies. Other areas of interest include novel detection methods for pathogens and spoilage organisms, the use of biological agents for the control of foodborne pathogens and antimicrobial resistance and horizontal gene transfer in food production.

Selected Publications

1. Lenahan M., Sheridan A., Morris D., Duffy G., Fanning S., and C.M. Burgess (2014). Transcriptomic analysis of triclosan-susceptible and – tolerant *Escherichia coli* O157:H19 in response to triclosan exposure. *Microb Drug Resist*. 20(2): 91–103.
2. Sheridan Á., Lenahan M., Condell O., Bonilla-Santiago R., Sergeant K., Renaut J., Duffy G., Fanning S., Nally J.E., and C.M. Burgess. (2013) Proteomic and phenotypic analysis of triclosan tolerant verocytotoxigenic *Escherichia coli* O157:H19. *J Proteomics* 80: 78–90.
3. Sheridan Á., M. Lenahan, G. Duffy, S. Fanning and C.M. Burgess (2012). The potential of biocide tolerance in *Escherichia coli* and its impact on the response to food processing stresses. *Food Control*, 26:98–106.
4. Murphy S, Gaffney M, Fanning S and Burgess CM (2016) Potential for transfer of *Escherichia coli* O157:H7, *Listeria monocytogenes* and *Salmonella* Senftenberg from contaminated food waste derived compost and anaerobic digestate liquid to lettuce plants. *Food Microbiol* 59:7–13.
5. Burgess CM, Gianotti A, Gruzdev N, Holah J, Knøchel S, Lehner A, Margas E, Esser SS, Sela Saldinger S, Tresse O (2016). The response of foodborne pathogens to osmotic and desiccation stresses in the food chain. *Int J Food Microbiol* 221:37–53.
6. Nyambe S, Burgess CM, Whyte P, O'Kiely P and Bolton D (2017). The fate of verocytotoxigenic *Escherichia coli* C600φ3538(Δvtx2 ::cat) and its vtx2 prophage during grass silage preparation. *J Appl Microbiol*. 122(5):1197–1206.
7. Lawal D, Burgess CM, McCabe E, Whyte P, Duffy G. (2015). Development of a quantitative real time PCR assay to detect and enumerate *Escherichia coli* O157 and O26 serogroups in bovine recto-anal swabs. *J Microbiol Methods* 114:9–15.

Technology

PROFILE

Sarah Cahalane

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Education

BA. Natural Science, Trinity College Dublin, 2002

M.Sc. Dublin City University, 2004

Career

2004–2006: Immunology Research Assistant, St. Vincent's University Hospital, Dublin 4

2006–2008: Research Funding and Lab Manager, Comparative Immunology Lab, Trinity College Dublin, Dublin 2

2008–2010: Evaluation Officer, Teagasc, Carlow

2010–Present: Intellectual Property Support Officer, Teagasc, Carlow

Expertise

Sarah's scientific background is essential to her position within the Teagasc Technology Transfer Office (TTO). In her role in the TTO she assists and provides support to the Head of the Intellectual Propoerty (IP) Management unit and facilitates interactions between Teagasc research staff, Industry and other research performing organisations through the use of transparent, consistent and equitable IP management and technology transfer policies.

Sarah is involved in drafting, reviewing and negotiating research agreements which range from simple non-disclosure agreements to more complex consortium agreements, contract research and collaboration agreements. She is responsible for presenting the Teagasc TTO's capabilities and activities on our website (www.teagasc.ie/research/collaboration) and she actively participates in the promotion of Teagasc's technologies at Technology Transfer events.

Selected Publications

1. Higgs, R., Cormican, P., Cahalane, S., et al. (2006) Induction of a novel chicken toll-like receptor following *Salmonella enterica* serovar *Typhimurium* infection. *Infection and Immunity* 74, 1692–1698.
2. Higgs, R., Lynn, D.J., Cahalane, S., et al. (2007) Modification of chicken avian beta-defensin-8 at positively selected amino acid sites enhances specific antimicrobial activity. *Immunogenetics* 59, 573–80.
3. Meade, K.G., Cahalane, S., Narciandi, F., et al. (2008) Directed alteration of a novel bovine beta-defensin to improve antimicrobial efficacy against methicillin-resistant *Staphylococcus aureus* (MRSA). *International Journal of Antimicrobial Agents* 32, 392–97.
4. Cormican, P., Meade, K.G., Cahalane, S., et al. (2008) Evolution, expression and effectiveness in a cluster of novel bovine beta-defensins. *Immunogenetics* 60, 147–56.

Technology

PROFILE

Dr. Alka Choudhary

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Education

PhD. National Institute of Pharmaceutical Education and Research, S.A.S. Nagar, India, 2015.

M.S. (Pharm.) Natural Products, National Institute of Pharmaceutical Education and Research, S.A.S. Nagar, India, 2011.

Career

2016–Present: Postdoctoral fellow, Food Biosciences Department, Teagasc Food Research Centre, Ashtown

2015–2016: Research Associate, ICAR-CIPHET, India

Expertise

At Teagasc, Dr. Alka Choudhary is involved in characterization of bioactives from marine bacteria using mass spectrometry. She completed her PhD on natural products where she focused on phytochemical investigations including qualitative and quantitative analysis using various spectroscopy and spectrometry techniques. She is interested in structure elucidation of natural and synthetic compounds based on MS, UV, FT-IR, and NMR techniques. She has also worked on the development of food biopolymer-based micro- and nano-scale delivery systems for bioactive ingredients in functional foods.

Publications

1. Choudhary, A, Mittal, A. K., Radhika, M, Tripathy, D., Chatterjee, A., Banerjee, U. C., Singh, I. P. Two new stereoisomeric antioxidant triterpenes from *Potentilla fulgens. Fitoterapia 2013, 91, 290–297.*
2. Choudhary, A., Manukonda, R., Chatterjee, A., Banerjee, U. C. , Singh, I. P. Qualitative and quantitative analysis of *Potentilla fulgens* roots by NMR, Matrix-assisted Laser Desorption/Ionisation with Time-of-Flight MS, Electrospray Ionisation MS/MS and HPLC/UV. *Phytochemical Analysis* 2015, 26, 161–170.
3. Choudhary, A., Kumar, R., Srivastava, R. B., Surapaneni, S. K., Tikoo, K., Singh, I. P. Isolation and characterization of phenolic compounds from *Rhodiola imbricata*, a Trans-Himalyan food crop having antioxidant and anticancer potential. *Journal of Functional Foods*, 2015, 16, 183–193.
4. Choudhary, A., Naughton, L.M., Montánchez, I., Dobson, A.D.W., Rai, D.K. Current Status and Future Prospects of Marine Natural Products (MNPs) as Antimicrobials. *Marine Drugs 2017*, 15, 272.

Technology

PROFILE

Bernard Corrigan

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Education

Diploma in Food Science

B.Sc in Biochem. And Analytical Science

Career

Technologist Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork

Previously worked in the phama. Industry UK including Genzyme and Glaxo.

Expertise

- Elemental Analysis of dairy products.
- Analysis of dairy products esp powder testing.
- Protein.
- Chromatography

Technology

PROFILE

Sarah Cooney

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Education

B. Sc. In Food Science and Technology, University College Cork. 2009

Higher Certificate in Good Laboratory Practice and Core Skills, Waterford Institute of Technology. 2017

Career

2014–Present: Laboratory Technician, Food Chemistry and Technology Department, Teagasc, Moorepark, Co. Cork

2014–2014: Assistant Quality Manager, Irish Bacon Slicers, Ballincollig, Co. Cork

2014–2014: Technical Manager, Glenisk, Killeigh, Co. Offaly

2011–2013: Quality Assurance, Dew Valley Foods, Thurles, Co. Tipperary

Expertise

- Preparation of the Milk Standards which are sent to Co-ops and creameries across the country.
- ISO standard methods for analysis of milk, cheese and dairy powders. Including Kjeldahl for protein analysis and Rose-Gottlieb for fat analysis.
- Operation and calibration of the DairySpec FT for rapid analysis of raw milk.
- Technical Manager for the laboratory which was recently awarded INAB accreditation for standard ISO 17025:2005. The scope of this accreditation includes, fat and protein on liquid milk and dairy powders. Moisture on dairy powders and total solids on liquids.
- Laboratory Health and Safety Compliance Supervisor for the Technical Services Laboratory.
- Conducts the Split Sample Appeal Scheme for Co-ops and dairy farmers.
- Performs analysis including ash content, % intact casein, % non-protein nitrogen and % non-casein nitrogen.

Technology

PROFILE

Dr. Fiona Crispie

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Education

BA Nat. Sci. Trinity College Dublin

Ph.D. Microbiology University College, Cork.

Career

2001–2002: Post-Doctoral Researcher, University College Cork.

2002–2006: Post-Doctoral Researcher, University College Cork/Teagasc.

2006–2009: Research Officer, Teagasc.

2009–2017: Senior Post-Doctoral Researcher, Next Generation Sequencing Platform, APC (Teagasc).

2017–Present: Technologist, Teagasc Food Research Centre

Expertise

- Next generation DNA sequencing technologies.
- Microbiology of the gut.
- Antimicrobials to control spoilage and pathogenic bacteria.

Selected Publications

1. Pusceddu MM, El Aidy S, Crispie F, O'Sullivan O, Cotter P, Stanton C, Kelly P, Cryan JF, Dinan TG. 2015. N-3 Polyunsaturated Fatty Acids (PUFAs) Reverse the Impact of Early-Life Stress on the Gut Microbiota. *PLoS One*. 10(10):e013972.
2. Golubeva AV, Crampton S, Desbonnet L, Edge D, O'Sullivan O, Lomasney KW, Zhdanov AV, Crispie F, Moloney RD, Borre YE, Cotter PD, Hyland NP, O'Halloran KD, Dinan TG, O'Keeffe GW, Cryan JF. 2015. Prenatal stress-induced alterations in major physiological systems correlate with gut microbiota composition in adulthood. *Psychoneuroendocrinology*. 60:58–74.
3. Desbonnet L, Clarke G, Traplin A, O'Sullivan O, Crispie F, Moloney RD, Cotter PD, Dinan TG, Cryan JF. 2015. Gut microbiota depletion from early adolescence in mice: Implications for brain and behaviour. *Brain Behav Immun*. 48:165–73.
4. Davey KJ, Cotter PD, O'Sullivan O, Crispie F, Dinan TG, Cryan JF, O'Mahony SM. 2013. Antipsychotics and the gut microbiome: olanzapine-induced metabolic dysfunction is attenuated by antibiotic administration in the rat. *Transl Psychiatry* 1;3:e309.
5. Dobson A, Crispie F, Rea MC, O'Sullivan O, Casey PG, Lawlor PG, Cotter PD, Ross P, Gardiner GE, Hill C. 2011. Fate and efficacy of lacticin 3147-producing *Lactococcus lact*is in the mammalian gastrointestinal tract. *FEMS Microbiol Ecol*. 76(3) 602–14.
6. Rea MC, Dobson A, O'Sullivan O, Crispie F, Fouhy F, Cotter PD, Shanahan F, Kiely B, Hill C, Ross RP. 2011.
7. Effect of broad – and narrow-spectrum antimicrobials on *Clostridium difficile* and microbial diversity in a model of the distal colon. *Proc Natl Acad Sci U S A*. 108(1):4639–44.

Technology

PROFILE

Dr. Emily Crofton

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Education

PhD in Sensory and Consumer Science, University College Dublin (2009–2013).

Postgraduate Diploma in Education (PGDE), NUI Maynooth (2007–2008).

BSc in Food Science, University College Dublin (2003–2007).

Career

2016 – present: Research Officer, Teagasc Food Research Centre, Ashtown, Dublin 15.

2014–2016: Manager – Sensory Food Network Ireland, Teagasc Food Research Centre, Ashtown, Dublin 15.

Sep – Dec 2014: Online Tutor for the Principles of Sensory Science module as part of the MSc in Food, Nutrition and Health, University College Dublin.

2009–2010: Sensory Analysis Lecturer, UCD Institute of Food and Health, University College Dublin.

2007–2008: Secondary School Teacher in Biology and Science, St. Joseph's Secondary School, Dublin 7.

Expertise

Dr. Emily Crofton is a research officer at Teagasc. She has extensive experience in applying a range of sensory evaluation techniques for both product development and quality control applications, in addition to using both qualitative and quantitative research methods to study consumer behaviour. Emily also spent time as a postdoctoral researcher, managing the development of a national sensory science network called Sensory Food Network Ireland. She has over 10 years teaching experience, having designed and delivered sensory analysis courses within an academic and industry setting. Her interests lie broadly in utilising sensory and consumer methods to enhance consumer-led product development initiatives. Emily is currently leading a project which aims to capture the complexity of how different production systems impact the sensory profile, consumer liking and emotional appeal of beef. Emily is also passionate about science communication, and has organised and spoken at many events in this area.

Publications

1. Crofton, E.C., Markey, A. and Scannell, A.G.M. (2014). Perceptions of healthy snacking among Irish adolescents: A qualitative investigation. *International Journal of Health Promotion and Education*, 52: 188–199.
2. Crofton, E.C., Markey, A. and Scannell, A.G.M. (2013). Consumers' expectations and needs towards healthy cereal based snacks: An exploratory study among Irish adults. *British Food Journal*, 115: 1130–1148.
3. Ktenioudaki, A., Crofton, E., Scannell, A.G.M., Hannon, J.A., Kilcawley, K.N. and Gallagher, E. (2013). Sensory properties and aromatic composition of baked snacks containing brewer's spent grain. *Journal of Cereal Science*, 57 (3): 384–39.

Technology

PROFILE

Dr. Martin Danaher

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Education

Ph.D. in Analytical Chemistry, University College Cork 2003.

B.Sc. Industrial Chemistry, University of Limerick, 1997.

Career

2002–Present: Teagasc Food Researcher.

1997–1998: R&D Chemist, Gerard Laboratories.

1998–2002: Ph.D. student – "Teagasc Walsh Fellow."

Expertise

- Analytical chemistry: Chromatographic separations, sample purification, mass spectrometry, biosensors and immunoassays.
- Residue analysis: Agrochemical, environmental, natural toxins and medicinal adulterants.
- Databases: Coordinator of Ireland's "National Food Residue" and "Veterinary Drug and Feed Additive" Databases.
- Exposure and Risk Assessment: Exposure and risk assessment to contaminants from food.

Selected Publications

1. O'Mahony, J., Moloney, M., McConnell, R.I., Benchikh, E.O., Lowry, P., Furey, A., and Danaher. M., (2011). Simultaneous detection of four nitrofuran metabolites in honey using a multiplexing biochip screening assay. *Biosensors and Bioelectronics* 26 (10), pp. 4076–4081.
2. Vinogradova, T., Danaher, M., Baxter, A., Moloney, M., Victory, D. and Haughey, S.A. (2011). Rapid surface plasmon resonance immunobiosensor assay for microcystin toxins in blue-green algae food supplements. *Talanta*, 84 (3), pp. 638–643.
3. Whelan, M., Kinsella, B., Furey, A., Moloney, M., Cantwell, H., Lehotay, S.J. and Danaher, M. (2010). Determination of anthelmintic drug residues in milk using ultra high performance liquid chromatography-tandem mass spectrometry with rapid polarity switching *Journal of Chromatography A,* 1217 (27), pp. 4612–4622.
4. Kinsella, B., Lehotay, S.J., Mastovske, K., Lightfield, A.R. and Danaher, M. (2009). New method for the analysis of flukicide and other anthelmintic residues in bovine milk and liver using liquid chromatography-tandem mass spectrometry. Analytica Chimica Acta, 637(1–2), pp. 196–207.
5. Kinsella, B., O'Mahony, J., Malone, E., Moloney, M., Cantwell, H., Furey, A. and Danaher, M. (2009). Current trends in sample preparation for growth promoter and veterinary drug residue analysis. Journal of Chromatography A, 1216(46), pp. 7977–8015.

Technology

PROFILE

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Education

PhD. Universidad Complutense de Madrid, Spain, 2013

M.Sc. (Food Safety and Biotechnology), Universidad de Burgos, Spain 2007

B.Sc. (Food Science and Technology), Universidad de Burgos, Spain 2006

Career

2017–Present: Research Officer, Meat Technology Ireland, Food Quality and Sensory Department, Teagasc

2015–2017: Postdoctoral Researcher, Food Quality and Sensory Department, Teagasc

2013–2015: Research fellow, Institute for Global Food Security, Queen's University Belfast

Expertise

The research interests of Dr. Delgado-Pando include functional foods, novel technologies and meat products. Gonzalo joined Teagasc as a postdoctoral researcher for the DAFM-funded project called PROSSLOW. Within this project he worked on obtaining successful ways of reducing the salt content of traditionally processed Irish cured meats without impacting the consumer acceptance, quality and safety of the products. During previous roles, Dr. Delgado-Pando has gained a strong knowledge of novel technologies such as high pressure processing, cold plasma and novel continuous microwave and how these technologies affect the technological and nutritional properties of the food products. He also has strong skills regarding development of functional meat products, chemometrics and multivariate analysis. Dr. Delgado-Pando recently joined Meat Technology Ireland, at Teagasc, working on novel meat characterisation technologies with potential to be implemented for in-line use. Some of the technologies under scrutiny are: video imaging analysis, ultrasound, computed tomography, and dual-energy x-ray absorptiometry. The objective of this MTI project is to improve process efficiency in the Irish meat industry.

Selected Publications

1. Delgado-Pando, G., Fischer, E., Allen, P., Kerry, J. P., O'Sullivan, M. G., & Hamill, R. M. (in press). Salt content and minimum acceptable levels in whole-muscle cured meat products. *Meat Science*
2. Delgado-Pando,G., Stratakos,A., & Koidis,A. (2016). Nutritional Properties of Ready-to-Eat Pasta Salads: Effect of Processing and Storage Conditions. *Journal of Food Processing and Preservation*. doi:10.1111/jfpp.13124
3. Stratakos, A., Delgado-Pando, G., Linton, M., Patterson, M.F.,& Koidis, A. (2016). Industrial scale microwave processing of tomato juice using a novel continuous microwave system, *Food Chemistry*, 190(1), 622–628
4. Stratakos, A. C., Delgado-Pando, G., Linton, M., Patterson, M. F., & Koidis, A. (2015). Synergism between high-pressure processing and active packaging against Listeria monocytogenes in ready-to-eat chicken breast. *Innovative Food Science & Emerging Technologies*, 27,41–47
5. Delgado-Pando, G., Celada, P., Sanchez-Muniz, F. J., Jimenez-Colmenero, F., & Olmedilla-Alonso, B. (2014). Effects of improved fat content of frankfurters and pates on lipid and lipoprotein profile of volunteers at increased cardiovascular risk: a placebo-controlled study. *Eur J Nutr, 53*(1), 83–93.
6. Jiménez-Colmenero, F., & Delgado-Pando, G. (2013). 16 – Fibre-enriched meat products. In J. A. D. Poutanen (Ed.), *Fibre-Rich and Wholegrain Foods*, (pp. 329–347): Woodhead Publishing.

Technology

PROFILE

Kieran Downey

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Education

BSc. Food Science, University of Cork. 2003

Diploma in Project Management. 2007

MBS. Business Practice, IMI. 2015

Career

2000–2003: Laboratory/Production – Dairygold

2003–2005: Assistant Production Manager – Carbery Group

2005–2008: Research Technologist – Wyeth Nutritionals

2008–2009: Food Technologist – Teagasc

2010–2011: Technical Manager – Moorepark Technology ltd (MTL)

2011–Present: General Manager – Moorepark Technology Ltd (MTL)

Expertise

Kieran Downey was appointed General Manager in 2011 of Moorepark Technology Ltd (MTL) which is a Food Industry Pilot Plant Facility with seven operating units. MTL's core business is the rental of the pilot plant to food companies and public research institutions for the purposes of carrying out product and process development, training, or small scale start-up manufacture.

Kieran leads a staff of sixteen, comprising food technologists, process engineers and plant operators and maintains MTL as a leading international provider of pilot-plant services, with particular expertise in wet processing, separation technologies and spray drying.

Competencies include the following food technology areas:

- Dairy technologies
- Infant formula technologies
- Separation technologies: mechanical and membrane separation – UF, MF, NF, clarification, decantation
- Evaporation and spray drying technologies
- Wet processing – HTST/UHT, homogenisation equipment

The main focus of Kieran's research and development work has been:

- New product development
- Product optimisation
- Cost optimisation
- Contract research
- Process engineering and efficiency
- Client training courses

Technology

PROFILE

Dr. Anna Fenelon

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Education

PhD. National University Ireland, Maynooth, 2003

B.Sc. (Chemistry), National University Ireland, Maynooth, 1999

Career

2008–Present: Technologist, Environment, Soils and Land Use Department, Teagasc

2004–2008: R&D Engineer, Hewlett Packard Manufacturing, Leixlip, Co. Kildare, Ireland

2003–2004: Post Doctoral Researcher, National University Ireland, Maynooth, Ireland

Expertise

Dr. Fenelon is the laboratory manager in the Teagasc Environmental Research Centre, Johnstown Castle. She manages a team of 8 experienced technical staff who work in combination with the research team across a suite of laboratories to deliver project goals of the Teagasc Environmental Research programme.

In addition to management duties, Dr. Fenelon's research area of interest is Analytical Chemistry. She is focused on mid/near-infra red spectroscopy and X-ray fluorescence spectroscopy for the application of rapid analysis techniques. In recent work, Dr. Fenelon has developed a rapid, multi-element method for the analysis of major nutrients in grass using energy dispersive X-ray flouresence. This work in now being extended to trace analysis in grass and other matrices, such as soil, dairy waste and milk powders. Dr. Fenelon is also currently part of a team developing methods which predict chemical parameters such as % organic matter, particle size and cation exchange capacity using molecular spectroscopy techniques. This work is comprised of scanning samples in the MIR and NIR region of the electromagnetic spectrum and combining chemometric techniques to build calibration models which predict these parameterscf.

Selected Publications

1. Daly, K. and Fenelon, A. 2017. A rapid and multi-element method for the analysis of major nutrients in grass *(lolium perennae)* using energy dispersive X-Ray fluorescence spectroscopy. *Irish Journal of Agriculture and Food Research*. 1–11. DOI: 10.1515/ijafr-2017-0001
2. Dunne, K. Holden, N., Fenelon, A. and Daly, K. 2017. The application of DRIFT in mid-Infrared spectroscopy for the prediction of soil phosphorus sorption capacity. 18th ICNIRS (International Conference on Near Infrared Spectroscopy) – NIR Spectroscopy at work in Industry, 2017. 11th – 15th June 2017, Bella Center, Copenhagen, Denmark.
3. Massey, P., O'Connor, C., Sills, P., Fenelon, A., Moloney-Finn, Stone, D. Reidy, B. and Creamer, R. Irish soil Information system: Laboratory Standard Operating Procedures, *STRIVE report*; 2014.

Technology

PROFILE

Laura Finnegan

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Education

B.A. Human Genetics, Trinity College Dublin (2015)

Career

2016–Present: Technician, Next Generation Sequencing Platform, APC (Teagasc).

2012–2015: Guinness Storehouse, St James' Gate, Dublin

Expertise

The Next Generation Sequencing Facility in Teagasc is one of the platform technologies of the APC – a national institute which aims to study the complexity of the gastrointestinal bacterial community and its links to human health, disease and mental well-being. The centre features Illumina NextSeq and MiSeq platforms, as well as Ion Torrent PGM and Proton sequencers and an Oxford Nanopore MinION. In her role as NGS technician, Laura is primarily involved in DNA library preparation, library QC and sequencing on the selected platform. While in this position, Laura has developed expertise in the following areas:

- DNA and RNA extraction – from food and human/animal samples.
- EMA extraction – for removal of dead bacteria DNA from a sample.
- 16S and ITS metagenomic library preparation and sequencing.
- Whole-genome shotgun library preparation and sequencing.
- Library QC – using nanodrop, Qubit quantification, Agilent Bioanalyser and qPCR.
- Total bacterial quantification by qPCR.
- Scientific Communication – through involvement in Education and Public Engagement programmes organized with the aim of informing society, engaging with industry and inspiring future young scientists. Laura has represented Teagasc and the APC Microbiome Institute at UCC open days and family-focused events in Cork city and surrounding towns, giving talks to primary school children on the importance of a good diet for a healthy microbiome, as well as mentoring transition year and third-level students during work placements.

Technology

PROFILE

Dr. Linda Giblin

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Education

Ph.D. University College Cork, Ireland. 1989

B.Sc. Biotechology, Dublin City University, Ireland 1995

Career

2002–Present: Senior Research Officer, Food BioSciences Department, Teagasc Food Research Centre, Moorepark, Ireland.

1999–2002: Research/Senior Scientist, Xanthon Inc (biotech start-up), Research Triangle Park, North Carolina, U.S.A.

1997–1998: Post-doctoral Scientist, Institute of Molecular BioSciences, Massey University, New Zealand.

1994–1997: Wellcome Post-doctoral Scientist, Biochemistry Department, University College Cork, Ireland.

Expertise

- Foods for Health, Food Bioactives.
- Life Stage Nutrition: Foods for pregnant women, foods for the elderly, foods for the infant.
- Food Bioavailability and Bioaccessibility.
- Foods for weight management, in particular satiety.
- Adipocyte and muscle health.
- Genotype-phenotype interactions.
- Large animal trials: Porcine post-prandial studies, Porcine models for pregnancy, Bovine mammary challenges.

Selected Publications

1. Kondrashina, A., Papkovsky, D., Giblin L. (2017). Physiological Gut Oxygenation Alters GLP-1 Secretion From the Enteroendocrine Cell Line STC-1. *Mol Nutr Food Res*., doi10.1002/mnfr.201700568.
2. McCarthy, T., Bruen, C., O'Halloran, F., Schellekens, H., Kilcawley, K., Cryan, J. F., Giblin, L. (2017). Aroma compound diacetyl suppresses glucagon-like peptide-1 production and secretion in STC-1 cells. *Food Chem.,* 228, 35–42.
3. Giblin, L., McGrath, B. A., Murray, B. A., le Roux, C. W., Docherty, N. G., McSweeney, P.L., Kelly, A.L. (2017). Letter to the Editor Regarding Equivalent Increases in Circulating GLP-1 Following Jejunal Delivery of Intact and Hydrolysed Casein: Relevance to Satiety Induction following Bariatric Surgery. *Obes Surg.,* 27, 816–817.
4. O'Halloran, F., Beecher, C., Chaurin, V., Sweeney, T., Giblin, L. (2016). Lactoferrin affects the adherence and invasion of Streptococcus dysgalactiae ssp. dysgalactiae in mammary epithelial cells. *J Dairy Sci.,* 99(6), 4619–28
5. Schellekens, H., De Francesco, P. N., Kandil, D., Theeuwes, W. F., McCarthy, T., van Oeffelen, W. E., Perello, M., Giblin, L., Dinan, T. G., Cryan, J. F. (2015). Ghrelin's Orexigenic Effect Is Modulated via a Serotonin 2C Receptor Interaction. *ACS Chem Neurosci*., 6, 1186–1197.
6. Power-Grant, O., Bruen, C., Brennan, L., Giblin, L., Jakeman, P., FitzGerald, R. J. (2015). In vitro bioactive properties of intact and enzymatically hydrolysed whey protein: targeting the enteroinsular axis. *Food Funct*., 6(3),972–80.
7. O'Sullivan, D. J., Fallico, V., O'Sullivan, O., McSweeney, P. L., Sheehan, J. J., Cotter, P. D., Giblin, L. (2015). High-throughput DNA sequencing to survey bacterial histidine and tyrosine decarboxylases in raw milk cheeses. *BMC Microbiol*., 15, 266-doi10.1186/s12866-015-0596-0.
8. Giblin, L., Darimont, C., Leone, P., McNamara, L. B., Blancher, F., Berry, D,. Castañeda-Gutiérrez, E., Lawlor, P. G. (2015). Offspring subcutaneous adipose markers are sensitive to the timing of maternal gestational weight gain. *Reprod Biol Endocrinol.* 13–16 doi10.1186/s12958-015-0009.

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Technology

PROFILE

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Education

M.Sc. (Agr.) Degree in Food Science & Technology UCD 1993.

Graduate Diploma in Food Science & Technology (IFST, UK) DIT, Kevin St. 1991.

B.Sc. (Biochemistry, Physiology, Human Nutrition) NUI, Galway 1989.

Career

Jan 2010–Present: Food Industry Support (NPD & Sensory Analysis) – Teagasc, Food Research Centre, Ashtown.

Jan 2008–Jan 2010: Artisan Meat Technologist – Teagasc, Food Research Centre, Ashtown.

Feb 2002–Jan 2008: Food Safety Consultant & Trainer, Teagasc, Food Research Centre, Ashtown.

Sep 2000–Feb 2002: Food Safety Consultant with Verner Wheelock Associates (VWA).

Jan 1999–Sep 2000: Food Safety Consultant (self employed).

Mar 1994–Dec 1998: Quality Assurance Manager Goldstar Meats (renamed Kepak, Glasnevin).

Jun 1992–Mar 1994: Quality Technician – Batchelors Ltd. Bannow Road, Cabra, Dublin 7.

Expertise

Areas of expertise include:
Working as part of the Food Industry Development Department to support food businesses through advice, consultancy, auditing and training, in the areas of sensory analysis, product development, innovation, food safety, labelling and food business technical process development.

Consultancy projects undertaken include:

- Product reformulations, new product development from concept to production trials, sensory analysis of a wide range of food products for food businesses and to support the research programme in Teagasc. A major proportion of product and process development projects undertaken focus on shelf life extensions through product, process and packaging re-design.
- Development, delivery, piloting and validation of certified training programmes for all sectors of the food industry to meet client's customer & legislative requirements (topics include product & process development, food legislation, food labelling, hygiene, food safety, HACCP, plant design & food assurance standards, NPD and sensory).
- Descriptive Sensory Panel set up and training.
- Management of the Sensory Analysis Unit in Ashtown.
- Implementation of quality assurance and food safety management systems in a wide range of food businesses.
- Providing a technical advisory service to the meat & speciality food sector through mentoring, training and consultancy in the areas of food product and process development, food safety management systems and regulatory compliance.

Technology

PROFILE

Prof. TP Guinee

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Education/Career

Professor Timothy P. Guinee is a Principal Research Officer in Food Chemistry and Technology at Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland. He graduated with a B.Sc. in Dairy Science (1980) and a Ph.D. in Dairy Chemistry (1985) from University College Cork. He was employed as a lecturer in Food – and Environmental – sciences at Sligo Regional Technical College between 1984–1986. From 1986 to 1990, he worked in commercial R&D, as a Senior Researcher Scientist in Ireland, Germany and US on various aspects of cheeses (natural, processed, analogue types) and applications of milk protein ingredients in cheese and fermented milk products. He was appointed as a Senior Research Officer in Teagasc in 1990 and was promoted to Principal Research Officer in 2000.

Expertise

His particular interests include the study of the rheology and functional properties (e.g., viscosity, gelation, texture, heating behaviour) of composite high protein food matrices, and the exploitation of these properties in food manufacture and assembly/formulation, with particular emphasis on gels and cheese-based systems. He has investigated the influences of various factors on the properties of cheeses, including milk composition/ treatments, gelation conditions, processing treatments, added ingredients, cheese composition and maturation conditions. A key aspect of his research involves the optimization of protein-protein, protein-mineral and protein-water interactions for the control of structure-functional relationships of foods, such as texture and heat stability. This approach has been applied in the development of reduced-fat cheese and a new cheese technology platform (based on gelation of reassembled milks). He has been an editorial board member for *International Dairy Journal* (from 2005) and formerly a co-editor. In 2011, he was appointed Adjunct Professor to the College of Science, Engineering and Food Science, University College Cork.

Selected Publications

1. Guinee, T.P. (2016). Protein in cheese products: structure-function relationships. In P.L.H. McSweeney and S.A. O'Mahony (Eds), Advanced Dairy Chemistry, Vol. 1 B Proteins: Applied Aspects (4th ed.) Springer Science+Business Media, New York, 347–415.
2. Guinee, T.P. and O'Callaghan D.J. (2013). Effect of increasing the protein-to-fat ratio and reducing fat content on the chemical and physical properties of processed cheese product. *J. Dairy Sci.* 6830–6839.
3. Guinee, T.P., Pudja, P., Miočinović, J., Wiley, J., & Mullins, C.M. (2015). Textural and cooking properties and viscoelastic changes on heating and cooling of Balkan cheeses. *Journal of Dairy Science*, 98, 7573–7586.
4. Henneberry, S., Kelly, P.M., Kilcawley, K.N., Wilkinson, M.G., Guinee, T.P. (2015). Interactive effects of salt and fat reduction on composition, rheology and functional properties of Mozzarella-style cheese. *Dairy Science and Technology*, 95, 613–638.
5. Henneberry, S., O'Sullivan, M. G., Kilcawley, K. N., Kelly, P. M., Wilkinson, M. G., & Guinee, T. P. (2016). Sensory quality of unheated and heated Mozzarella-style cheeses with different fat, salt and calcium levels. *International Journal of Dairy Technology*, 69, 38–50.
6. Hickey, D.K., Guinee T.P., Hou, J., and Wilkinson M.G. (2013). Effects of variation in cheese composition and maturation on water activity in Cheddar cheese during ripening. *Int. Dairy J.* 30, 53–58.
7. Hou, J., Hannon, J.A., McSweeney, P.L.H., Beresford, T.P. and Guinee, T.P. (2012). Effect of curd washing on composition, lactose metabolism, pH, and the growth of non-starter lactic acid bacteria in full fat Cheddar cheese. *Int. Dairy J.*, 25, 21–28.
8. Hou, J., Hannon, J.A., McSweeney, P.L.H., Beresford, T.P. and Guinee, T.P. (2014). Effect of curd washing on cheese proteolysis, texture, volatile compounds, and sensory grading in full fat Cheddar cheese. *Int. Dairy J.*, 34, 190–198.

Technology

PROFILE

Dr. Ruth Hamill

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Education

Ph.D. (Population Genetics), School of Biology and Environmental Science, UCD

B.Sc. (Zoology, 1H1), School of Biology and Environmental Science, UCD

Experience

2006–Present: Research Officer, Muscle Molecular Biology, Teagasc Food Research Centre, Ashtown

2002–2005: Post-doctoral Research Fellow, Population Genetics, University of St Andrews, Scotland

Expertise

Dr. Hamill's expertise focuses on muscle biology and meat science with a view to increasing understanding of the biological processes underpinning meat quality, the development of biological (genomic) markers of quality and understanding the structure/function relationship in meat products. Her research programme is collaborative and nationally (FIRM/RSF) and European (FP7/COST) funded and she has also worked on confidential industry projects. She is currently a collaborator on a number of active projects in the healthier meat products area (e.g. Prosslow) and is a PI and Co-ordinator of a FIRM-funded project (Meat4Vitality) focused on developing novel meat products targeting the specific nutritional needs of older people and has previously co-ordinated a project (MeatMatrix) in this area focused on applying spectroscopic, microscopy, calorimetric and rheology techniques in model meat and myofibrillar systems to enhance understanding of the molecular mechanisms underpinning technological and sensorial quality. Through these projects the aim is to help facilitate the adoption of a more knowledge-based approach to the generation of targeted food systems and novel meat products delivering desired characteristics.

Selected Publications

1. Keenan, D. F., Resconi, V. C., Smyth, T. J., Lefranc, C., Botinestean, C., Kerry, J. P., Hamill, R. M. (2015). The effect of partial-fat substitutions with encapsulated and unencapsulated fish oils on the technological and eating quality of beef burgers over storage. *Meat Science*, available online, doi:10.1016/j.meatsci.2015.04.013
2. Tobin, B. D., M. G. O'Sullivan, R. Hamill and J. P. Kerry (2014). European consumer attitudes on the associated health benefits of neutraceutical-containing processed meats using Co-enzyme Q10 as a sample functional ingredient. *Meat Science* 97(2): 207–213.
3. Keenan, D. F., Auty, M. A. E., Doran, L., Kerry, J.P., Hamill, R. M. (2014). Investigating the influence of inulin as a fat substitute in comminuted products using rheology, calorimetric and microscopy techniques. *Food Structure*, 01: 2014
4. Hamill, RM, Aslan, O, Mullen, AM, O'Doherty, JV, McBryan, J, Morris, DG and Sweeney, T (2013). Transcriptome analysis of porcine *M. semimembranosus* divergent in intramuscular fat as a consequence of dietary protein restriction. *BMC Genomics.* 2013, 14:453
5. McArdle, R, Hamill, R.M. and Kerry, J.P. (2011). Utilisation of hydrocolloids in processed meat systems. In: *Processed meats: improving safety, nutrition and quality*, p. 243–269. Edited by J.P. Kerry and J.F. Kerry, Woodhead Publishing.

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PROFILE

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Education

B.Sc. University College Dublin, Ireland. 2002
Ph.D. University College Cork, Ireland. 2007
Leadership Development Diploma. 2016

Career

May 2016–July 2016: Guest researcher at Chalmers University of Technology, The Biology and Biological Engineering Unit, Gothenburg, Sweden.

February–March 2015: Hosted researcher at NMBU, Oslo, Norway.

October 2008–Present: Natural Products Chemist, Teagasc Food Research Centre, Ashtown, Dublin 15

October 2008–Present: Guest lecturer Dublin Institute of Technology module TFFP3055 Nutraceutical Product development.

June 2007–October 2008: Researcher at the Centre of Applied Marine Biotechnology, Letterkenny Institute of Technology, Donegal, Ireland.

December 2006–June 2007: Researcher at Teagasc Moorepark Biotechnology Centre and University College Cork.

Expertise

- High quality scientific research skills.
- Novel proteins from marine, meat and cereal sources – WP leader on NutraMara, ReValueProtein and NutriCereals Ireland.
- Isolation and characterization of techno-functional and health ingredients.
- Project management/evaluation.
- Technology & knowledge transfer.
- Innovation and new product development.
- Bioassay development – Heart health, renin, PAF-AH, ACE-I inhibitory, diabetes, mental health, antimicrobial PEP inhibitory, anti-oxidative, opioid.
- Allergenicity – member of EU COST Action ImPARAS EU FA1402.
- Seaweed and microalgae – member of EU COST Action EU ALGAE EU 1408.
- Event organization and moderation (conferences & workshops).
- Book editor and writer.

Selected Publications

1. Lafarga, T., & Hayes, M. (2016), Meat-derived bioactive protein hydrolysates and peptides as food ingredients: overcoming current challenges. *Food Reviews international*, DOI: http://dx.doi.org/10.1080/87559129.2016.1175013.
2. Dave, L. A., Hayes, M., Mora, L., Montoya, C. A., Moughan, P. J., Rutherfurd, S. M. (2016), Gastrointestinal endogenous protein-derived bioactive peptides: An in vitro study of their gut modulatory potential. *International Journal of Molecular Sciences*, 17, 482; doi:10.3390/ijms17040482.
3. Dave, L. A., Hayes, M., Montoya, C. A., Rutherfurd, S. M., Moughan, P. (2016), Human gut endogenous proteins as a source of angiotensin-I-converting enzyme (ACE-I), renin inhibitory and antioxidant peptides. *Peptides*, 76, 30–44. doi:10.1016/j.peptides.2015.11.003.
4. Dave, L. A., Hayes, M., Moughan, P. J., Rutherfurd, S. M. (2016), Novel Dipeptidyl Peptidase IV inhibitory and antioxidant peptides derived from human gastrointestinal endogenous proteins. *Int. J. Pept. Res. Ther.* 1–15. DOI 10.1007/s10989–016–9515-y.
5. Gangopadhyay, N., Wynne, K., O'Connor, P. Gallagher, E., Brunton, N. and Hayes, M. (2016), In silico and in vitro analysis of the angiotensin-I-converting enzyme inhibitory activity of hydrolysates generated from crude Barley (Hordeum vulgare) protein concentrates. *Food Chemistry*, 203, 367–374.

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PROFILE

Dr. Rita Hickey

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Education

2008 FETAC Level 6 Advanced Certificate in Agriculture.

2003 Ph.D. Microbiology from NUI Cork (UCC).

1998 B.Sc. Hons (1H) from NUI Dublin (UCD).

Career

2007–Present Senior Research Officer, Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland.

2005–2007 Process Specialist, Abbott Diagnostics, Sligo.

2004–2005 Research Officer, APC, Teagasc, Ireland.

2003–2004 Postdoctoral Researcher, MFRC, Teagasc, Ireland.

Expertise

Dr. Hickey's main research interests focus on the investigation of the biological properties of sugars isolated from food sources. She is the lead PI on the FHI Infant Nutrition workpackage for Food for Health Ireland and was a funded PI on the SFI-funded Alimentary Glycobiology Research Cluster (AGRC). She is a faculty member of the APC Microbiome Institute (APC). She has close linkages with Prof. Joshi's group in NUIG, through various AGRC- and DAFM-funded projects. Rita also collaborates with Prof. Douwe van Sinderen and Dr. Seamus O'Mahony in UCC. A major area of interest is the effect of food derived oligosaccharides on host-microbial interactions in the gut. For instance, milk oligosaccharides can alter intestinal glycosylation, which in turn contributes to early immune development and maturation of the newborn intestinal tract. Rita's research team focus on the development of strategies to characterise and produce food derived carbohydrates.

- Food oligosaccharides and glycoproteins – extraction, enrichment, fractionation and structural analysis.
- Development of bioassays for investigating the bioactive properties of glycans isolated from food sources.
- Manager of tissue culture facilities at Moorepark.
- Chromotography – Size-exclusion, Affinity and Ion Exchange Chromatography.

Selected Publications

1. O'Riordan N., Kilcoyne M., Joshi L. and Hickey R.M. (2017) Exploitation of SPR to Investigate the Importance of Glycan Chains in the Interaction between Lactoferrin and Bacteria. *Sensors* 17, 1515 (1–10).
2. Kavanaugh, D., O' Callaghan J. C., Kane, M., Joshi, L. and R. M. Hickey. (2015). The intestinal glycome and its modulation by diet and nutrition. *Nutrition Reviews.* Special article. (6):359–75.
3. O'Riordan, N., Kane, M., Joshi, L., Hickey, R. M.* (2014). Structural and functional characteristics of bovine milk protein glycosylation. *Glycobiology* 24: 220–236. Most downloaded article from 2014 in Glycobiology
4. O'Riordan, N., Kane, M., Joshi, L. and Hickey, R. M. (2014). Glycosidase activities in bovine milk over lactation. *International Dairy Journal*, 35 (2): 116–121.
5. Kavanaugh, D., O'Callaghan, J, Buttò, L. F., Slattery, H., Lane, J. A. Clyne, M., Kane M., Joshi, L. and R. M. Hickey. (2013). Exposure of *Bifidobacterium longum* subsp. *infantis* to milk oligosaccharides increases adhesion to epithelial cells and induces a substantial transcriptional response. PLoS ONE 8(6):e67224.

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Technology

PROFILE

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Education

PhD. University College Dublin, Ireland. 2000.

MSc.Agr.Sc. (Food Science), University College Dublin, Ireland. 1995.

Career

2007–Present: Research Officer, Food Chemistry and Technology Department, Teagasc

2001–2006: Post-Doctoral Researcher, Department of Food Technology, University College Cork.

1995–2000: Teaching Assistant, Department of Chemistry, DIT, Bolton Street.

Expertise

Dr. Sean Hogan has extensive research experience in dairy chemistry, formulation and processing. His career with Teagasc has focused on the relationships between composition and behaviour during spray drying, ingredient interactions in concentrated dairy systems, development of functional lipid structures and the effects of diet on dairy product quality and functionality. His current research interests include the development of human milk-fat substitutes for infant formula manufacture, identification of nutri-biomarkers in whey, dietary influences on fatty acid and phospholipid profiles of milk and the application of novel technologies to milk processing and dairy products analysis. He is also involved in projects on valorization of dairy co-products through concentration and drying technologies and development of an *in vitro* infant digestion model. He is also focused on the development of a lipid chemistry platform to enhance analytical capabilities within Teagasc. His areas of expertise include colloidal and macro-ingredient interactions in dairy systems, formulation, rheology and food structure.

Selected Publications

1. Kondor, A., and Hogan, S. A. (2017). Relationships between surface energy analysis and functional characteristics of dairy powders. *Food Chemistry,* 237, 1155–1162.
2. Hogan, S.A. O'Loughlin, I.B. and Kelly, P.M. Soft matter characterization of whey protein powders systems. (2016). *International Dairy Journal*, 52, 1–9.
3. Murphy, E. G., Fenelon, M.A., Roos, Y. H. and Hogan, S. A. (2014). Decoupling macronutrient interactions during heating of model infant milk formulas. *Journal of Agriculture and Food Chemistry*, 62, 10585−10593.
4. Murphy, E. G., Roos, Y. H. Hogan, S. A. Maher, P. G., Flynn C.G. and Fenelon, M.A. Physical stability of infant milk formula made with selectively hydrolysed whey proteins. (2015). *International Dairy Journal,* 40, 39–46.
5. Hogan, S.A. and O'Callaghan, D.J. (2013). Moisture sorption and stickiness behaviour of hydrolysed whey protein/lactose powders. *Dairy Science & Technology,* 93, 205–221.

Technology

PROFILE

Dr. Mohammad B. Hossain

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Education

MSc. Leibniz University of Hannover, Germany. 2006

PhD. Dublin Institute of Technology, Ireland. 2012

Career

2010–Present: Research Officer, Food Biosciences, Teagasc Food Research Centre, Ashtown.

Expertise

Dr. Hossain's research focuses primarily on the extraction, enrichment and characterisation of antioxidant, antimicrobial, anti-inflammatory, anticarcinogenic and cholesterol-lowering phytochemicals from plant sources. His research involves utilisation of various novel extraction techniques such as pressurised liquid extraction, ultrasound assisted extraction, pulsed electric field assisted extraction and enzyme assisted extraction for efficient and environmentally friendly extraction of these compounds with a view to valorising the low – or no-value agro-industrial by-products. His expertise includes a range of separation and analytical techniques such as size exclusion, ion exchange, normal phase, reversed phase, hydrophilic interaction liquid chromatography combined with various detection systems such as mass spectrometry, UV-Vis, fluorescence and refractive index.

Selected Publications

1. Hossain, M. B., Rai, D. K., & Brunton, N. P. (2015). Optimisation and validation of ultra-high performance liquid chromatographic-tandem mass spectrometry method for qualitative and quantitative analysis of potato steroidal alkaloids. *Journal of Chromatography B, 997*, 110–115.
2. Hossain, M. B., Aguiló-Aguayo, I., Lyng, J. G., Brunton, N. P., and Rai, D. K. (2015). Effect of pulsed electric field and pulsed light pre-treatment on the extraction of steroidal alkaloids from potato peels. *Innovative Food Science & Emerging Technologies*, *29*, 9–14.
3. Hossain, M. B., Camphuis, G., Aguiló-Aguayo, I., Gangopadhyay, N., and Rai, D. K. (2014). Antioxidant activity guided separation of major polyphenols of marjoram (Origanum majorana L.) using flash chromatography and their identification by liquid chromatography coupled with electrospray ionization tandem mass spectrometry†. *Journal of Separation Science*, *37*(22), 3205–3213.
4. Hossain. M.B., Patras, A., Barry-Ryan. C., Martin-Diana. A.B. and Brunton. N.P. (2011). Application of principal component and hierarchical cluster analysis to classify different spices based on *in-vitro* antioxidant activity and individual polyphenolic antioxidant compounds. *Journal of Functional Foods*, 3, 179–189.
5. Hossain. M.B., Barry-Ryan. C., Martin-Diana. A.B. and Brunton. N.P. (2010). Optimisation of accelerated solvent extraction of antioxidant compounds from rosemary (*Rosmarinus officinalis* L.), marjoram (*Origanum majorana* L.) and oregano (*Origanum vulgare* L.) using response surface methodology. *Food Chemistry,* 126, 339–346.
6. Hossain. M.B., Rai, D.K., Brunton. N.P., Martin-Diana. A.B. and Barry-Ryan. C. (2010). Characterization of phenolics composition in Lamiaceae spices by LC-ESI-MS/MS. *Journal of Agricultural and Food Chemistry*, 58, 10576–10581.
7. Kenny, O. M., McCarthy, C. M., Brunton, N. P., Hossain, M. B., Rai, D. K., Collins, S. G., Jones, P. W., Maguire, A. R., & O'Brien, N. M. (2013). Anti-inflammatory properties of potato glycoalkaloids in stimulated Jurkat and Raw 264.7 mouse macrophages. *Life Sci*, *92*(13), 775–782.

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PROFILE

Dr. Kieran Jordan

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Education

B.Sc. (University College Galway).

M.Sc., Ph.D. (University College, Cork).

Teagasc Food Research Centre.

Expertise

Dr. Jordan works on survival and occurrence of foodborne pathogens in dairy products, including *Listeria monocytogenes, S. aureus* and pathogenic *E. coli*, including adaptive tolerance responses and applications of molecular methodology in the study of foodborne pathogens.

Recent research projects funded include:

- Translating fundamental research on Listeria monocytogenes for the benefit of a multi-sectoral ready-to-eat food industry.
- Assuring the safety of mushrooms by the introduction of novel processes to reduce Listeria monocytogenes biofilms and environmental contamination in mushroom production facilities.
- Dairy Processing Technology Centre.
- Milk quality for a changing dairy industry.
- Safe and Healthy Foods.
- Risk assessment in relation to coagulase positive *Staphylococcus aureus*.

Selected Publications

1. Robin Condron, Choreh Farrokh, Kieran Jordan, Peter McClure, Tom Ross and Olivier Cerf. 2015. Guidelines for experimental design protocol and validation procedure for the measurement of heat resistance of microorganisms in milk. *International Journal of Food Microbiology* 192, 20–25.
2. Kieran Jordan. 2014. Monitoring occurrence and persistence of Listeria monocytogenes in foods and food processing environments in the Republic of Ireland. *Frontiers in Microbiology* 5, 436.
3. Kieran Jordan, Marion Dalmasso, Juergen Zentek, Anneluise Mader, Geert Bruggeman, JohnWallace, Dario De Medici, Alfonsina Fiore, Estella Prukner-Radovcic, Maja Lukac, Lars Axelsson, Askild Holck, Hanne Ingmer andMindaugas Malakauskas. 2014. Microbes versus microbes: control of pathogens in the food chain. *Journal of the Science of Food and Agriculture*, 94, 3079–3089.
4. Karen Hunt, Francis Butler and Kieran Jordan. 2014. Factors affecting Staphylococcal Enterotoxin C bovine production in milk. *International Dairy Journal* 39, 41–46.
5. David O'Beirne, E. Gleeson, M. Auty and K. Jordan 2014. Effects of processing and storage variables on penetration and survival of Escherichia coli O157:H7 in fresh-cut packaged carrots. *Food Control* 40, 71–77.

Technology

PROFILE

Dr. Kieran Kilcawley

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Education

BSc. University of Westminster, UK. 1994

PhD. University College, Cork, Ireland. 2002.

Career

1990–1996: Research Technician, Imperial Biotechnology Ltd, London, UK

1996–2004: Research Officer, Teagasc Food Research Centre, Moorepark

2004–2008: Senior Research Office

2008–Present: Principle Research Officer

Expertise

Dr. Kilcawley's research interests are primarily focused on the impact of volatile compounds on sensory perception of foods and beverages. Most of his experience is directly related to biochemistry and enzymology of foods with a particular emphasis on cheese flavour. He is actively involved in flavour research and in providing a service to industry. The flavour chemistry facility has extensive gas chromatography mass spectrometry capability, including gas chromatography olfactory and uses a range of different automated volatile extraction techniques.

Dr. Kilcawley is a member of the Sensory Food Network Ireland, International Dairy Federation, American Dairy Science Association and Irish Mass Spectrometry Society.

Dr. Kilcawley has have published >50 peer review research articles and 11 book chapters. He is a member of the editorial board for Dairy Science & Technology and the Journal of Dairy Research. He is a reviewer for a wide number of international peer reviewed journals.

Dr. Kilcawley was actively involved in the organisation of the Eight & Ninth International Cheese Symposia in Cork in 2011 & 2014 in association with the French National Institute for Agricultural Research (INRA) and University College Cork, Ireland (UCC). He was a member of the scientific committee for the IDF Symposia on Cheese in 2016.

Selected Publications

1. Faulkner, H., O'Callaghan, T.F., McAuliffe, S., Hennessy, D., Stanton, C., O'Sullivan, M.G., Kerry, J.P & Kilcawley , K.N (In Press). Impact of different forage types on the volatile and sensory properties of bovine milk. *J. Dairy Sci*.
2. O'Callaghan, T.F. Hennessy, D, McAuliffe, S, Kilcawley, K.N, O'Donovan, M, Dillon, P., Ross, R.P, Stanton, C (2016). Effect of pasture versus indoor feeding systems on raw milk composition and quality over an entire lactation. *J. Dairy Sci*, 99, (12), 9424–9440.
3. Mannion, D.T. Furey, A, Kilcawley, K.N (2016). Comparison and validation of 2 analytical methods for the determination of free fatty acids in dairy products by gas chromatography with flame ionization detection. *J. Dairy Sci*, 99, 5047–5063.
4. Yarlagadda, A.B., Wilkinson, M.G., Ryan, S.P., Doolan, I.A., O'Sullivan, M.G., & Kilcawley, K.N (2014). Utilisation of a cell-free extract of lactic acid bacteria entrapped in yeast to enhance flavour development in Cheddar cheese. International *J. Dairy Tech*, 67, 1, 21–30.
5. Rulikowska, A. Kilcawley, K.N, Doolan, I.A. Alonso-Gomez, M. Nongonierma, A.B. Hannon, J.A, Wilkinson, M.G (2013). The impact of reduced sodium chloride content on Cheddar cheese quality. *Int. Dairy J*, 28, 45–55.
6. Kilcawley, K,N, Nongonierma, A.B, Hannon, J.A, Doolan, I.A, Wilkinson, M.G (2012). Evaluation of commercial enzyme systems to accelerate Cheddar cheese ripening. *Int. Dairy J.* 26, 50–57.
7. Hickey, D.K, Kilcawley, K.N, Beresford, T.P, Sheehan, E.M, Wilkinson, M.G. (2006) Starter bacteria are the prime agents of lipolysis in Cheddar cheese. *J. Agri. and Food Chem*, 54, 8229–8235.
8. Kilcawley, K.N, Wilkinson, M.G, Fox, P.F. (1998). Review enzyme-modified cheese. *Int. Dairy J.* 8: 1–10

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PROFILE

Dr. Valentyn Maidannyk

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Education

PhD. University College Cork, Ireland. 2017

M.Sc. (Colloid Chemistry),Lomonosov Moscow State University, Moscow, Russian Federation. 2012.

Career

2017–Present: Post-Doctoral researcher, Food Chemistry and Technology Department, Teagasc.

Expertise

Research interests include Food Material Science, Food Technology, Microscopy, Food Processing and Colloid Chemistry. Dr. Maidannyk has extensive experience and practical skills in preparation, analysis and dehydration of various carbohydrate; carbohydrate-protein; carbohydrate-protein-lipid and partially crystalline systems. Previous research work includes creation and developing of a new fundamental approach, named “Strength” concept (including mathematical definition and statistics). The main methods: DSC, DMA, DEA, Volume Rheology, Light Optical Microscopy, Confocal Laser Scanning Microscopy and Scanning Electron Microscopy which were employed to characterize varied food systems. The FIRM-funded project (11-F-001) involved experimental design, scale-up and analysis of various technological properties of modelled food and dairy systems.

Selected Publications

1. Maidannyk, V. A., Roos, Y. H. (2016). Modifications of the WLF model for characterization of the relaxation time-temperature relationship in trehalose-whey protein isolate systems. *Journal of Food Engineering, 188, 21–31.*
2. Nurhadi, B., Roos, Y.H., Maidannyk, V. (2016). Physical properties of maltodextrin DE 10: Water sorption, water plasticization and enthalpy relaxation. *Journal of Food Engineering 174, 68–74.*
3. Maidannyk, V. A., & Roos, Y. H. (2017). Water sorption, glass transition and “strength” of lactose–Whey protein systems. *Food Hydrocolloids, 70, 76–87.*
4. Maidannyk, V. A., Nurhadi, B., & Roos, Y. H. (2017). Structural strength analysis of amorphous trehalose-maltodextrin systems. *Food Research International, 96, 121–131.*
5. Maidannyk, V. A., Roos, Y. H. (2018). Structural strength analysis of partially crystalline trehalose. *LWT-Food Science and Technology, 88, 9–17.*

Technology

PROFILE

David T. Mannion

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Education

MSc. Cork Institute of Technology, Ireland. 2015

B.Sc. (Chemical Instrumentation and Analytical Science), Limerick Institute of Technology, Ireland. 2009

Career

2016–Present: Technologist, Food Quality and Sensory Department, Teagasc

2015–2016: Technician, Food Bioscience Department, Teagasc

2013–2015: Walsh Fellow, Food Bioscience Department, Teagasc

Feb 2013-Nov 2013: Technician (Intern), Food Bioscience Department, Teagasc

Expertise

David's main research interests are related to instrumentation and analytical method development, particularly in relation to flavour in food and beverages, fatty acid profiling and lipid oxidation. His key interests involve identification of aroma compounds involved in sensory perception, measuring of fatty acids for product quality and flavour impact, identification of biomarkers responsible for food authentication and traceability, effect of lipid oxidation on product stability, particularly in dairy products. He is involved in the provision of gas chromatography and mass spectrometry analysis and cover areas of advanced extraction techniques for isolation and detection of compounds, method development and validation, data processing and chemometrics.

Selected Publications

1. Mannion, David T., Ambrose Furey, and Kieran N. Kilcawley. "Free fatty acids quantification in dairy products." *International journal of dairy technology* 69.1 (2016): 1–12.
2. Mannion, David T., Ambrose Furey, and Kieran N. Kilcawley. "Comparison and validation of 2 analytical methods for the determination of free fatty acids in dairy products by gas chromatography with flame ionization detection." *Journal of dairy science 99.7* (2016): 5047–5063.

Technology

PROFILE

Dr. Mariarosaria Marotta

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Education

Certified Diploma in Project Management, Institute Project Manangement, Ireland. 2015

PhD. Second University of Naples, Italy. 2005

Post-grad degree (Clinical Biochemistry and Chemistry), Second University of Naples, Italy. 2001

M.Sc. (Biological Sciences), University 'Federico II', Naples, italy. 1997

Career

2013–Present: Research Officer, Food Biosciences Department, Teagasc (Food for Health Ireland)

2009–2013: Research Officer, University College Cork (Food for Health Ireland)

2008–2009: Research Officer, Food Biosciences Department, Teagasc

2005–2007: Science Teacher, Secondary Schools, Italy

Expertise

Dr. Marotta's research focuses on the sourcing of milk carbohydrates with health promoting properties for inclusion in in infant formula. Previous research work has included investigating anti-infective properties of milk carbohydrates and enzymes for application in the food industry. Dr Marotta has vast experience in assay development (enzymatic, cell-based, quantitative and qualitative), chromatography and ultrafiltration/diafiltration methods from laboratory to pilot scale.

In 2009, Dr Marotta joined Food for Health Ireland and she is currently working as the Programme Manager for the Infant Nutrition workpackage.

Selected Publications

1. Ross S., Lane J.A., Marotta M., Kavanaugh D.W., Ryan J.T. Joshi L. and Hickey R.M. (2016) "The role of oligosaccharides in host-microbial interactions for human health" Journal of Clinical Gastroenterology 50 Suppl 2, S131-S132
2. Marotta M., Ryan J.T. and Hickey R.M. (2014) "The predominant milk oligosaccharide 6'-sialyllactose reduces the internalisation of *Pseudomonas aeruginosa in human pneumocytes" Journal of Functional Foods* 6: 367–373
3. Mehra R., Barile D., Marotta M., Lebrilla C.B., Chu C. and German J.B. (2014) "Novel high-molecular weight fucosylated milk oligosaccharides identified in dairy streams" *PLOS ONE*: 8;9(5):e96040
4. Marotta M. and Hickey R.M. (2014) "The role of human milk oligosaccharides in preventing respiratory infections in infants". In: *Oligosaccharides: Food Sources, Biological Roles and Health Implications, Nova Science Publishers, Inc.*, New York, pp. 115–142
5. Mariño K., Lane J.A., Abrahams J.L., Struwe W., Harvey D., Marotta M., Hickey R.M. and Rudd P.M. (2011) "Method for milk oligosaccharide profiling by 2-aminobenzamide labelling and hydrophilic interaction chromatography (HILIC)" *Glycobiology* 21(10): 1317–1330
6. Barile D., Marotta M., Chu C., Mehra R., Grimm R., Lebrilla C.B. and German J.B. (2010) "Neutral and acidic oligosaccharides in Holstein-Friesian colostrum during the first 3 days of lactation measured by high performance liquid chromatography on a microfluidic chip and time-of-flight mass spectrometry" *Journal of Dairy Science* 93: 3940–3949

Technology

PROFILE

Anne Marie McAuliffe

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Education

B.Sc. (Food Science and Technology), University College Cork, Ireland. 2009

QQI Level 5 in Safety and Health at Work. 2017

Career

2011–Present: Laboratory Technician, Food Chemistry and Technology Department, Teagasc, Moorepark

2010–2011: Microbiologist, Newmarket Co-Op, Newmarket, Co. Cork

Expertise

- Dairy Support Technician in the Technical Services Laboratory.
- Quality manager of an ISO17025 accredited laboratory.
- Technical support to the Teagasc Food Programme and to industry clients.
- Production of milk reference standards for the Irish Dairy industry.
- Compositional analysis of dairy products using International Standards, specifically % Protein by Kjeldahl, % Fat by Rose Gottlieb, % Total solids on liquid dairy products and % moisture on dairy powders.
- Performance of multiple other techniques including D/L-lactic acid assay, % ash, % non-casein nitrogen, % non-protein nitrogen and intact casein.
- Amino acid composition using ion-exchange chromatography.
- Administrator of the Moorepark split sample appeal scheme for dairy farmers.
- Health and safety co-ordinator for the Food Chemistry and Technology Department.

Technology

PROFILE

Dr. Noel McCarthy

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Education

Ph.D. Food Science and Technology – 2013, University College Cork. (Title: The impact of protein profile on the physical stability of infant formulae)

B.Sc. Food Science and Technology (2008), University College Cork.

Career

2014–Present: Research Officer (Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork)

2013–2014: Food Technologist – Abbott Nutrition (Cootehill, Co. Cavan)

2012–2013: Post-Doctoral Researcher (Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork)

Expertise

- Emulsification and rheological properties of dairy systems.
- Separation and purification of milk protein fractions by membrane filtration.
- Factors affecting powder characteristics and functionality during spray drying.
- Protein powder solubility and dispersion mechanisms.

Selected Publications

1. McCarthy, N. A., Kelly, A. L., O'Mahony, J. A., Hickey, D. K., Chaurin, V., & Fenelon, M. A. (2012). Effect of protein content on emulsion stability of a model infant formula. *International Dairy Journal, 25*, 80–86.
2. McCarthy, N.A., Kelly, A.L., O'Mahony, J.A., Fenelon, M.A., (2013). The physical characteristics and emulsification properties of partially dephosphorylated bovine β-casein. *Food Chemistry,* 138, 1304–1311.
3. McCarthy, N. A., Kelly, A. L., O'Mahony, J. A., & Fenelon, M. A. (2014). Sensitivity of emulsions stabilised by bovine β-casein and lactoferrin to heat and CaCl2. *Food Hydrocolloids,* 35(0), 420–428.
4. McCarthy, N.A., Kelly, A.L., O'Mahony, J.A., Fenelon, M.A., (2013). The physical characteristics and emulsification properties of partially dephosphorylated bovine β-casein. *Food Chemistry,* 138, 1304–1311.
5. McCarthy, N. A., Kelly, P. M., Maher, P. G., & Fenelon, M. A. (2014). Dissolution of milk protein concentrate (MPC) powders by ultrasonication. *Journal of Food Engineering,* 126(0), 142–148.

Technology

PROFILE

Dr. Sinéad McCarthy

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Education

Dr. Sinéad McCarthy graduated with a B.Sc from UCC in 1993. She also completed an M.Sc in UCC in 1996, where she studied dietary vitamin E and lipid stability in turkey tissues. In 2003, she graduated from UCC with a Ph.D., in the area of public health nutrition which examined the predictors and prevalence of obesity in Irish adults.

Career

For nearly two decades, Sinéad has been involved in many areas of nutrition research, with a focus on food and health and has published extensively.

Sinéad's first research post in UCC was the area of human nutritional physiology, examining the anti – oxidative effects of carotenoid and fish oil consumption, as a part of two multi centred EU projects. In 1997, Sinéad moved to TCD as a research officer on the Irish National Food Consumption programmes, from which she was awarded her Ph.D. and attained funding to conduct additional food consumption surveys. She was the Scientific Officer on the Framework 6 Lipgene project and was actively involved in the human nutrition dietary intervention work-package of Lipgene. In 2007, Sinéad joined Teagasc at Ashtown Food Research Centre, where she is responsible for leading Teagasc's consumer behaviour research programme in relation to food and health. She is actively involved in the area of consumer food choice determinants and its potential impact on health. Sinéad is a member of the Food Safety Authority of Ireland Public Health Nutrition sub-committee and the Nutrition and Health Foundation Scientific committee. She is also an active member of the Nutrition Society.

Expertise

Sinéad has significant expertise in the areas of consumer behaviour in relation to nutrition, food and health. She has extensive experience in designing national food consumption surveys in addition to designing and validating consumer behaviour questionnaires. She is experienced in qualitative research techniques such as focus groups and in-depth interviews and has extensive analytical skills using large consumer databases and biostatistics. She has developed a reputation in this area both nationally and internationally and this has been demonstrated in her success in securing external funding. She is involved in many on-going projects covering sensory science, consumer food and health behaviour, food expenditure patterns, consumer acceptance of novel food technologies, consumer acceptance of marine derived functional foods and drivers of cheese consumption. Sinead is also one of the co-ordinators of the newly formed Sensory Food Network Ireland.

Selected Publications

1. McCarthy SN. Weekly patterns, diet quality and energy balance *Physiology & Behaviour* 2014:555–59.
2. Greehy, G.M.; McCarthy, M.B.; Henchion, M.M.; Dillon, E.J.; McCarthy, S.N. Complexity and conundrums. Citizens' evaluations of potentially contentious novel food technologies using a deliberative discourse approach Appetite, 2013:37–46.
3. Newcombe M, McCarthy M, Cronin JM, McCarthy SN, "Eat like a man": A Social Constructionist Analysis of the Role of Food in Men's Lives. *Appetite*, 2012:391–8.
4. Shaw D, Tierney A, McCarthy S, Upritchard J, Vermunt S, Gulseth H, Drevon CA, Blaak E, Saris WHM, Karlstrom B, Helal O, Defoort C, Gallego R, Lopez – Miranda J, Siedlecka D, Malczewska-Malec M, Roche HM and Lovegrove JA. LIPGENE food-exchange model for alteration of dietary fat quantity and quality in free-living participants from eight European countries. *British J Nutr* (2009), 101, 750–759.
5. Joyce T, McCarthy SN, Gibney MJ. Relationship between energy from added sugars and frequency of added sugars intake in Irish children, teenagers and adults. *Br J Nutr.* 2008 May;99(5):1117–26.

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PROFILE

Dr. Ciara McDonnell

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Education

PhD. University College Dublin, Ireland. 2013

B.Agr.Sc. (Food Science), University College Dublin, Ireland. 2009

Career

2016–Present: Research Officer, Food Quality and Sensory Science, Teagasc.

2014–2016: Research Manager, AllinAll Ingredients.

2013–2014: Technical Manager, Mark & Chappell.

2013: Research Assistant, University College Dublin.

Expertise

Ciara McDonnell (Ph.D.) is a Research Officer at the Teagasc Food Research Centre, Ashtown. Following completion of her PhD on novel meat processing technologies, Dr. McDonnell spent three years working in the food industry. During her time as Research Manager for a leading ingredient supplier to the processed meat industry, Dr. McDonnell assisted various meat processors in overcoming technical issues through ingredient and process innovations.

Her research interests are strongly focused on technologies for improved meat production in both the fresh and processed meat sectors. This includes technologies for carcass evaluation with the objective of improved product consistency and predictive output. In the processed meat sector, Dr. McDonnell is leading projects on clean processing technologies for the development of healthier processed meats, produced by environmentally friendly and efficient processes.

Dr. McDonnell was the co-ordinator of the 63rd International Congress of Meat Science and Technology and is Guest Editor for the international journal, Meat Science.

Selected Publications

1. McDonnell, C. K., Allen, P., Duane, G., Morin, C., Casey, E., Lyng, J. G. (2018). One-directional modelling to assess the mechanistic actions of power ultrasound on NaCl diffusion in pork, *Ultrasonics Sonochemistry*, 40, 206–212.
2. Warner, R.D., McDonnell, C.K., Bekhit, A.E.D., Claus, J., Vaskoska, R., Sikes, A., Dunshea, F.R., Ha, M. (2017) Systematic review of emerging and innovative technologies for meat tenderisation, *Meat Science*, 132, 72–89.
3. McDonnell, C. K., Tiwari, B. K. (2017). Ultrasound: A clean, green extraction technology for bioactives and contaminants (2017), *Comprehensive Analytical Chemistry,* Volume 76, Pages 111–129.
4. McDonnell, C. K., Allen, P., Arimi, J. M., Lyng, J.G. (2014). Optimisation of pilot-scale production of ultrasound-accelerated pork curing. *Innovative Food Science and Emerging Technologies,* 26, 191–198
5. McDonnell, C. K., Allen, P, Morin, C., Lyng, J. G. (2014). The effect of ultrasonic curing on meat protein and water-protein interactions in meat. *Food Chemistry,* 147, 245–251.
6. McDonnell, C. K, Lyng, J. G., Allen, P. (2014). The use of power ultrasound for accelerating the curing of pork. *Meat Science*, 147, 142–149
7. McDonnell, C. K., Allen, P., Duggan, E., Arimi, J. M., Casey, E., Duane, G., Lyng, J. G. (2013). The effect of salt and fibre direction on water dynamics, distribution and mobility in pork muscle: a low field NMR study. *Meat Science,* 95, 51–58.
8. McDonnell, C. K., Allen, P, Chardonnereau, F., Arimi, J. M., Lyng, J. G (2013). The use of pulsed electric fields for accelerating the curing of pork. *LWT – Food Science and Technology,* 59, 1054–1060

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Technology

PROFILE

Lauren McMaster

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Education

Professional Diploma in Digital Marketing, Digital Marketing Institute, 2016

MSc. Communications for Rural Business with Strategic Marketing Management, Queen's University Belfast, 2014

BSc. Consumer Studies, University of Ulster, 2010

Career

2017–Present: Manager Sensory Food Network Ireland, Teagasc

2015–2017: International Marketing Executive, CDE Global

2012–2015: Coordinator ***safe***food Knowledge Networks, ***safe***food

2008–2009: Marketing Assistant, Livestock and Meat Commission for Northern Ireland

Expertise

Lauren is the manager of Sensory Food Network Ireland. The Network delivers a comprehensive sensory science service to the food and beverage industry on the island of Ireland by fostering collaboration between industry and research organisations and by driving performance improvements throughout the Network.

Combining her experience in food industry support and commercial marketing roles, Lauren is focussed on the growth and further development of the Network. This includes expanding the dissemination programme for the Network to include workshops, articles, digital campaigns and outreach activities.

Lauren is the point of contact for Sensory Food Network Ireland for any sensory-related industry enquiries from the food industry.

Technology

PROFILE

Dr. Song Miao

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Education

Ph.D. in Food Science and Technology, National University of Ireland, University College Cork, Ireland

M Sc. in Food Technology, Shanghai Ocean University, China

B. Eng. in Food Engineering, Shanghai Ocean University, China

Careers

May 2009–Present: Senior Research Officer (Permanent), Department of Food Chemistry and Technology, Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland.

Dec 2014–Present: Adjunct Professor, College of Food Science, Fujian Agriculture and Forestry University, China

Feb 2006–May 2009: Research Manager/Drying Granulation Scientist, Foods Structural Design, Unilever Food and Health Research Institute, Unilever R&D Vlaardingen, the Netherlands.

Jan 2005–Feb, 2006: Postdoctoral Research Officer, Biotechnology Centre, Moorepark, Teagasc, Fermoy, Co. Cork. Ireland

Oct 2001–Dec 2004: Research Scientist/Ph.D. Candidate, Department of Food and Nutritional Sciences, University College Cork, Ireland.

Jan 1995–Sep 2001: Senior Lecturer, Faculty of Food Science and Technology, Shanghai Fisheries University.

Jan 1996–Sep 2001: Senior Research Fellow, Faculty of Food Science and Technology, Shanghai Fisheries University.

Expertise

- Physico-chemical properties of biomaterials.
- Dehydration and granulation.
- Novel foods structural and textural designs.
- Stickiness and flowability of powders.
- State transition and phase transition in foods.
- Encapsulation and functional food ingredients.
- Structured emulsions for functional delivery.
- Stabilization of probiotics.
- Dairy ingredients.

Selected Publications

1. Like Mao, Yrjö H. Roos, Costas G. Biliaderis and Song Miao*. 2015. Food Emulsions as Delivery Systems for Flavor Compounds – A Review, *Critical Reviews in Food Science and Nutrition*, in Press. DOI: 10.1080/10408398.2015.1098586
2. Mao, L.; Roos, Y.H.; Miao, S.*, 2015, Effect of maltodextrins on the stability and volatile release behavior of oil-in-water emulsions subjected to freeze-thaw treatment, *Food Hydrocolloids*, 50: 219–227.
3. Lu, W., Kelly, A.L., Miao, S.*, 2016, Emulsion-based encapsulation and delivery systems for polyphenols, *Trends in Food Science and Technology*, 47:1–9
4. Li, R., Roos, Y. H., Miao, S.* 2016.Flavor release from spray-dried amorphous matrix: effect of lactose content and water plasticization. *Food Research International*, 86, 147–155.
5. Ji, J., Fitzpatrick, J., Cronin, K., Maguire, P., Zhang, H., Miao, S.*, 2016. Rehydration behaviours of high protein dairy powders: The influence of agglomeration on wettability, dispersibility and solubility. *Food hydrocolloids* 58, 194–203.
6. Ji, J., Cronin, K., Fitzpatrick, J., Maguire, P., Zhang, H., Miao, S.*, 2016. The structural modification and rehydration behaviours of milk protein isolate powders: The effect of granule growth in the high shear granulation process. *Journal of Food Engineering* 189, 1–8.
7. Fitzpatrick, J.J., van Lauwe, A., Coursol, M., O'Brien, A., Fitzpatrick, K.L., Ji, J., Miao, S.*, 2016. Investigation of the rehydration behaviour of food powders by comparing the behaviour of twelve powders with different properties. *Powder Technology* 297, 340–348.

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PROFILE

Dr. Mary Moloney

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Education

B.Sc. University of Limerick, Ireland. 2000

Ph.D. University of Limerick, Ireland. 2004

Career

2002: R&D Analyst, Clonmel Healthcare

2004: Research Assistant, Universtiy of Limerick

2004–2005: Quality Analyst, Medtronic Vascular, Galway

2005–2006: Research Officer, Residue Laboratories, Teagasc Food Research Centre, Ashtown

2006–Present: Laboratory Technologist, Residue Laboratories, Teagasc Food Research Centre, Ashtown

Expertise

Dr. Moloney assists in the management of the Residues laboratories as Deputy Head of Laboratory and Deputy Quality Manager. The Residue laboratories are accredited to ISO 17025 and function as a national reference laboratory.

Her expertise is primarily in the area of contaminant analysis, focussing on foods of animal origin. She has worked extensively in the area of coccidiostat feed additives and veterinary drugs developing and validating multi-residue methods for the determination of coccidiostats in target and non-target tissues. Other areas of interest include nitrofurans, nitroimadazoles, carbmates and anthelmintics. She is currently working on multi-residue methods for antibiotics in aquaculture and pesticides in animal fat in particular the pyrethroid pesticides. Dr. Moloney works primarily with UHPLC coupled to tandem mass spectrometry but also has some experience screening technologies.

Selected Publications

1. Moloney, M., Clarke, L., O'Mahoney, J., Gadaj, A., O'Kennedy, R., Danaher, M. (2012) Determination of 20 coccdiostats in egg and avian muscle tissue using ultra high performance liquid chromatography coupled to tandem mass spectrometry. *Journal of Chromatography A,* 1253, 94–104.
2. Clarke, L., P., Moloney, M., O'Mahoney, J., O'Kennedy, R., Danaher, M. (2013) Determination of 20 coccdiostats in milk, duck muscle and non-avin muscle using UHPLC-MS/MS. *Food Addtives and Contaminants,* Part A, 30, 6, 958–969.
3. Whelan, M., Kinsella, B., Furey, A., Moloney, M., Cantwell, H., Lehotay, S.J., Danaher, M (2010) Determination of anthelmintic drug residues in milk using ultra high performance liquid chromatography-tandem mass spectrometry with rapid polarity switching. *Journal of Chromatography A*, 1217, 27, 4612–4622.
4. Radovnikovic, A., Moloney, M., Byrne, P., Danaher, M. (2011) Detection of banned nitrofuran metabolites in animal plasma samples using UHPLC-MS/MS. *Journal of Chromatography B*, 879, 2, 159–166.
5. Vinogradova, T., Danaher, M., Baxter, A., Moloney, M., Victory, D., Haughey, S.A. (2011). Rapid surface plasmon resonance immunobiosensor assay for microcystin toxins in blue green algae food supplements. *Talanta, 84*, 3, 638–643.

Technology

PROFILE

Dr. Sheila Morgan

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Education

B.Sc., NUI Maynooth.

Ph.D., University College Cork.

Career

1997–Present: Teagasc, Food Research Centre, Moorepark.

1995–1997: Microbiology Department, University College Cork.

Expertise

- Antimicrobial research (food and biomedical).
- Antimicrobial powder development.
- Gut microbiology and the effect of antimicrobials on gut populations.
- Scientific administration and project management.

Sheila currently works as a project manager for a number of large funded projects including the APC Microbiome Institute (www.apc.ucc.ie), Food for Health Ireland (www.fhi.ie) and the Dairy Processing Technology Centre (www.dptc.ie).

Selected Publications

1. Fate of the two-component lantibiotic lacticin 3147 in the gastrointestinal tract. Gardiner GE, Rea MC, O'Riordan B, O'Connor P, Morgan SM, Lawlor PG, Lynch PB, Cronin M, Ross RP, Hill C. *Appl Environ Microbiol.* 2007 73: 7103–9.
2. A lacticin 3147 enriched food ingredient reduces Streptococcus mutans isolated from the human oral cavity in saliva. O'Connor EB, O'Riordan B, Morgan SM, Whelton H, O'Mullane DM, Ross RP, Hill C. J *Appl Microbiol.* 2006 100:1251–60
3. Sequential actions of the two component peptides of the lantibiotic lacticin 3147 explain its antimicrobial activity at nanomolar concentrations. Morgan SM, O'Connor PM, Cotter PD, Ross RP, Hill C. *Antimicrob Agents Chemother.* 2005 49: 2606–11.
4. Evaluation of a spray-dried lacticin 3147 powder for the control of Listeria monocytogenes and Bacillus cereus in a range of food systems. Morgan SM, Galvin M, Ross RP, Hill C. *Lett Appl Microbio*l. 2001 33: 387–91.
5. Efficient method for the detection of microbially-produced antibacterial substances from food systems. Morgan SM, Hickey R, Ross RP, Hill C. *J Appl Microbiol.* 2000 89: 56–62.

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PROFILE

Dr. Anne Maria Mullen

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Education

B.Sc. Biochemistry (1991), University College Galway
Ph.D. (1995) Pharmacology, University College Galway

Career

Current: Principal Research Officer, Teagasc Food Research Centre, Ashtown

1996–1998: Contract Research Officer, Teagasc Food Research Centre, Ashtown

Expertise

Dr. Mullen is currently overseeing the research programme for recovery of value from meat by-product and waste streams. Her research interests also address issues relating to various aspects of meat processing (post slaughter interventions) and meat quality (technological, eating etc.). In particular she has focused on biochemical and molecular factors underpinning variability in meat quality and the impact of post-mortem process interventions on product quality. Dr. Mullen was responsible for expanding the meat research programme to incorporate the application of relevant genome and proteome platforms in addressing issues of importance in meat quality. She has co-ordinated and collaborated on projects funded through EU Framework, FIRM (Irish) and Enterprise Ireland. In addition, Dr. Mullen served as Head of Department leading a staff of up to 20 comprising permanent and contract researchers, technical personnel and students. Publications relate to molecular basis of meat quality, recovery of value from meat processing streams, and general meat quality. She has presented her research on many occasions at international and national conferences; she is a member of the Enterprise Ireland – Global Skills Team (Pet Food). She regularly contributes to proposal and Ph.D. evaluations at national and international levels and is also involved with training and information programmes in meat technology for the Irish meat industry and relevant agencies.

Selected Publications

1. Mullen, A.M. and Álvarez C. (2016) Offal: Types and Composition, In *Encyclopedia of Food and Health, Academic Press*, Oxford, Pages 152–157, ISBN 9780123849533.
2. Lomas, A.J., Ryan, C.N.M., Sorushanova, A., Shologu, N., Sideri, A.I., Tsioli, V., Fthenakis, G., Tzora, A., Skoufos, G., Quinlan, L., O'Laighin, G., Mullen, A.M., Kelly, J.L., Kearns, S., Biggs, M., Pandit, A., Zeugolis, D.I. (2015) 'The Past, Present and Future in Scaffold-based Tendon Treatments.' *Advanced Drug Delivery Reviews*. 84, 257–277.
3. Anne Maria Mullen, Carlos Álvarez, Milica Pojić, Tamara Dapčević Hadnadev and Maria Papageorgiou (2015) Chapter 2 – Classification and target compounds, In *Food Waste Recovery*, edited by Charis M. Galanakis, Academic Press, San Diego, Pages 25–57, ISBN 9780128003510.
4. Marcos, B. and Mullen, A.M. (2014) High pressure induced changes in beef muscle proteome: Correlation with quality parameters, *Meat Science*, Volume 97, Issue 1, May 2014, Pages 11–20.
5. Claire C. O'Flynn, Malco C. Cruz-Romero, Declan Troy, Anne M. Mullen, Joe P. Kerry (2014), The application of high-pressure treatment in the reduction of salt levels in reduced-phosphate breakfast sausages, *Meat Science*, Volume 96, Issue 3, Pages 1266–1274.
6. Di Luca, A, Elia, G., Hamill, R. and Mullen, A.M. (2013). 2-D DIGE proteomic analysis of early post mortem muscle exudate highlights the importance of the stress response for improved water-holding capacity of fresh pork meat. *Proteomics* 13, 9, 1528–1544.
7. Hamill, R., Ozlem Aslan, Mullen, A.M., O'Doherty, JV, McBryan, J, Morris, D.G. and Torres Sweeney (2013). Transcriptome analysis of porcine M. semimembranosus divergent in intramuscular fat as a consequence of dietary protein restriction. *BMC Genomics* 14:453–467.

Technology

PROFILE

Dr. Sean Mulvany

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Education

PhD. University College Dublin, Ireland. 2003

Career

2017–Present: Head of Technology Transfer, Teagasc

2015–2016: ICT Technology Transfer Case Manager, Trinity College Dublin

2006–2015: Commercialisation Specialist, Enterprise Ireland

2004–2006: Founder and Director of Berand Ltd.

Expertise

Sean has worked at the cutting-edge of industry relevant innovation as it arises in public research performing organisations for many years. In that time, he inhabited each of the key stakeholder roles. As a basic researcher investigating how the brain encodes memories, he moved as a postdoc into discovering new therapeutic targets to treat disorders of memory, such as Alzheimer's, in partnership with Wyeth (now part of Pfizer). As an entrepreneur, he cofounded a university spinout based on state-funded research capability. Latterly, he has supported research and innovation in universities and companies through his position in Enterprise Ireland. As a Technology Transfer Case Manager in Trinity College, he had responsibility for driving industry collaboration from initial problem statement to closing deals on research funding, contracts and IP access. In Teagasc, Sean leads the Technology Transfer team with responsibility for the identification, protection and commercialisation of Teagasc innovations and works collaboratively with companies to ensure these innovations are commercialised to maximum societal and economic impact in Ireland.

Technology

PROFILE

Dr. Eoin Murphy

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Education

PhD. University College Cork, Ireland. 2015

B.Eng (Hons). Chemical and Biopharmaceutical Engineering, Cork Institute of Technology, Ireland. 2008

Career

2016–Present: Research Officer, Food Chemistry and Technology Department, Teagasc

2015–2016: Senior Process Technology, Danone Nutricia Early Life Nutrition

2013–2015: Product Technologist, Biostime Pharma

2009–2013: Walsh Fellow, Teagasc

Expertise

The research interests of Dr Murphy include novel processing technologies, powdered food ingredients and nutritional formulations. His main research focus is in the area of optimisation of spray drying processes and development of next generation dehydration technologies. Previous research work has focused on the interactions between processing and composition during the manufacture of Infant Milk Formula (IMF) powders. The research demonstrated the potential to improve efficiency during IMF manufacture by understanding the effects of processing on physicochemical properties of formulations e.g. protein aggregation, viscosity. Dr Murphy has worked in the IMF industry, gaining a strong knowledge of new product development, novel process design and quality issues related to dairy ingredients and nutritional formulations. Main areas of expertise/interest:

- Spray drying.
- Evaporation.
- Membrane processing.
- Novel process development.
- Dairy process engineering.
- Powder functionality.

Selected Publications

1. Murphy EG, Tobin JT, Roos YH, & Fenelon MA (2011). The effect of high velocity steam injection on the colloidal stability of concentrated emulsions for the manufacture of infant formulations. *Procedia Food Science*, 1, 1309–1315.
2. Murphy EG, Tobin JT, Roos YH, & Fenelon MA (2013). A high-solids steam injection process for the manufacture of powdered infant milk formula. D*airy Science & Technology*, 93, 463–475.
3. Murphy EG, Fenelon MA, Roos YH & Hogan SA (2014). Decoupling Macronutrient Interactions during Heating of Model Infant Milk Formulas. *Journal of agricultural and food chemistry*, 62, 10585–10593.
4. Murphy EG, Roos YH, Hogan SA, Maher PG, Flynn CG, & Fenelon MA (2015). Physical stability of infant milk formula made with selectively hydrolysed whey proteins. *International Dairy Journal*, 40, 39–46.

Technology

PROFILE

Dr. Kanishka N. Nilaweera

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Education

PhD Neuroscience, University of Aberdeen, UK. (2002).

BSc, University of Aberdeen, UK. (1998).

Career

2009–Present: Senior Research Officer, Teagasc Food Research Centre, Fermoy, Cork, Ireland.

2007–2009: Post-doctoral Research Associate, School of Biomedical Sciences, University of Nottingham, UK.

2005–2007: Post-doctoral Research Associate, Rowett Research Institute, Aberdeen, UK.

2002–2005: Post-doctoral Research Assistant, Rowett Services Ltd, Aberdeen UK.

1996–1997: Industrial Student Placement, Molecular and Cell Biology Department, Zeneca Pharmaceuticals, UK.

Expertise

Dr. Nilaweera's research aims to identify nutrients and their bioactive components that reduce weight gain, so that these can be commercialised as Functional Food ingredients to tackle the obesity problem. The work involves animal feeding trials and related molecular biology work. Utilising this approach, he has shown that intake of dairy whey proteins reduces the expression of nutrient transporters in the intestine and alters the composition of the gut microbiota, important for harvesting energy from ingested food. The impact on the gut appears to underlie how the whey proteins reduce weight gain.

Selected Publications

1. Nilaweera KN, Cabrera-Rubio R, Speakman JR, O' Connor PM, McAuliffe A, Guinane CM, Lawton E, Crispie F, Aguilera M, Stanley M, Boscaini S, Joyce S, Melgar S, Cryan JF, Cotter PD. Whey protein-effects on energy balance link the intestinal mechanisms of energy absorption with adiposity and hypothalamic neuropeptide gene expression. *Am J Physiol Endocrinol Metab*. 2017 Jul 1;313(1):E1-E11
2. McManus BL, Korpela R, Speakman JR, Cryan JF, Cotter PD, Nilaweera KN. Bovine serum albumin as the dominant form of dietary protein reduces subcutaneous fat mass, plasma leptin and plasma corticosterone in high fat-fed C57/BL6J mice. *British Journal of Nutrition* 2015 August;114 94); 654–662.
3. McAllan, L, Speakman, J.R., Cryan, J.F. and Nilaweera, KN. Whey protein isolate decreases murine stomach weight and intestinal length and alters the expression of Wnt signalling associated genes. *British Journal of Nutrition* 2015, January; 113 (2); 372–379.
4. McAllan L, Skuse P, Cotter P, O' Connor P, Cryan JF, Ross RP, Fitzgerald G, Roche HM and Nilaweera KN. Protein quality and the protein to carbohydrate ratio within a high fat diet influences energy balance and the gut microbiota in C57BL/6J mice. *PLoS One*,2014 Feb 10;9(2):e88904.

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PROFILE

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Education

PhD. University College Cork 2014–Present (Pending)

B.Sc. (Food Science), University College Cork, 2014

Career

2017–Present: Research Officer, Food Chemistry and Technology Department, Teagasc

2014: Assistant production manager Carbery Food Ingredients Ltd.

Expertise

Tom O'Callaghan recently joined Teagasc as a Dairy Chemistry Scientist. Tom is manager of the Dairy Chemistry Laboratory in Teagasc Moorepark. His research interests focus on the effects of primary production systems on the composition and quality of milk and dairy products and the effects of food processing technologies on the quality and functionality of dairy ingredients.

Previous research work has included examining the effects of pasture versus indoor total mixed ration feeding systems on the nutritional composition, characteristics and sensory quality of milk and dairy products. This project demonstrated the beneficial effects of pasture feeding on the fatty acid profile of products with increased proportions of CLA and Omega 3 fatty acids.

These projects have also investigated various methods for verification of pasture derived milk and dairy products which include fatty acid profiling and NMR metabolomics.

Tom has an on-going collaboration with the University of Alberta, where he is a guest researcher and has carried out research in collaboration with The Metabolomics Innovation Centre examining the rumen and milk metabolome.

During previous roles, Tom has gained a strong knowledge of analytical chemistry, product development and dairy processing for the production of high value dairy products.

Selected Publications

1. O'Callaghan, T. F., H. Faulkner, S. McAuliffe, M. G. O'Sullivan, D. Hennessy, P. Dillon, K. N. Kilcawley, C. Stanton, and R. P. Ross. 2016. Quality characteristics, chemical composition, and sensory properties of butter from cows on pasture versus indoor feeding systems. *Journal of Dairy Science*.
2. O'Callaghan, T. F., D. Hennessy, S. McAuliffe, K. N. Kilcawley, M. O'Donovan, P. Dillon, R. P. Ross, and C. Stanton. 2016. Effect of pasture versus indoor feeding systems on raw milk composition and quality over an entire lactation. *Journal of Dairy Science*.
3. O'Callaghan, T. F., D. T. Mannion, D. Hennessy, S. McAuliffe, M. G. O'Sullivan, N. Leeuwendaal, T. P. Beresford, P. Dillon, K. N. Kilcawley, J. J. Sheehan, R. P. Ross, and C. Stanton. 2017. Effect of pasture versus indoor feeding systems on quality characteristics, nutritional composition, and sensory and volatile properties of full-fat Cheddar cheese. *Journal of Dairy Science* 100(8):6053–6073.
4. Murphy, K., D. Curley, T. F. O'Callaghan, C.-A. O'Shea, E. M. Dempsey, P. W. O'Toole, R. P. Ross, C. A. Ryan, and C. Stanton. 2017. The Composition of Human Milk and Infant Faecal Microbiota Over the First Three Months of Life: A Pilot Study. *Scientific Reports* 7:40597.
5. Ntemiri, A., F. N. Chonchúir, T. F. O'Callaghan, C. Stanton, R. P. Ross, and P. W. O'Toole. 2017. Glycomacropeptide Sustains Microbiota Diversity and Promotes Specific Taxa in an Artificial Colon Model of Elderly Gut Microbiota. *Journal of Agricultural and Food Chemistry* 65(8):1836–1846.

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PROFILE

Paula O'Connor

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Education

M.Sc. University College Cork, Ireland. 1992

B.Sc. (Hons) in Food Microbiology, University College Cork, Ireland. 1989

Career

1995–Present: Research Technician, Food Biosciences Department, Teagasc

1993–1995: Laboratory technician, Waterford Foods plc.

1991–1993: Microbiologist, Slaney Cooked Meats

Expertise

Paula runs the Bioactive Peptide Discovery Unit (BPDU) which is a unique facility designed to purify and characterise bioactive peptides from a number of sources. Her main areas of expertise are peptide purification, MALDI TOF mass spectrometry, peptide synthesis and amino acid analysis. She is interested in the development of novel antimicrobials as alternatives to antibiotics with a particular interest in bacteriocins which are small peptides produced by bacteria that kill closely related strains (narrow spectrum) or different genera (broad spectrum). She routinely purifies known bacteriocins such as nisin, lacticin and thuricin using reversed phase HPLC and ion exchange chromatography. Her expertise in peptide purification has been further enhanced through the purification and characterisation of 11 novel bacteriocins to date. Paula is also a skilled peptide chemist and routinely synthesises peptides from 2–60 amino acids in length. Her work allows her to collaborate extensively with other research institutes and industry and she has published extensively in her fields of expertise. She is currently doing a part time PhD entitled 'Bacteriocins from the mammalian gut' and through her studies purified and characterised a novel nisin variant, nisin H, from a porcine streptococcal isolate. She has also identified the key residues and structures required for activity within the anti-staphylococcal bacteriocin Bactofencin A using a peptide synthesis approach.

Selected Publications

1. Collins F.W.J, O'Connor P.M., O'Sullivan O., Gomez-Sala B., Rea M.C., Hill C and Ross R.P. (2017) Bacteriocin Gene-Trait matching across the complete Lactobacillus Pan-genome. *Scientific Reports* DOI: 10.1038/s41598-017-03339-y
2. Collins F.W.J., O'Connor P.M., O'Sullivan O. Rea M.C., Hill C. and Ross R.P. Formicin-a novel broad-spectrum two-component lantibiotic produced by *Bacillus paralicheniformis* APC 1576 *Microbiology*: 162:1662–1671
3. O'Connor P.M., O'Shea E.F., Guinane C.M., O'Sullivan O., Cotter P., Ross R.P. and Hill C. (2015) Nisin H is a new nisin variant produced by the gut-derived strain *Streptococcus hyointestinalis* DPC6484. *Applied and Environmental Microbiology* 81:3953–3960
4. O'Connor P.M, Ross R.P., Hill C. and Cotter P.D. (2015) Antimicrobial antagonists against food pathogens; a bacteriocin perspective. *Current Opinion in Food Science* 2:51–57
5. O'Shea E.F., O'Connor P.M., O'Sullivan O., Cotter P.D., Ross R.P. and Hill C. (2013) Bactofencin A, a new type of cationic bacteriocin with an unusual cognate immunity protein. *mBio* 4:1–13 doi:10.1128/mBio.00498-13
6. Rea M.C., O'Connor P.M., Crispie F., Hill C. and Ross R.P. (2010) Thuricin CD, a posttranslationally modified bacteriocin with a narrow spectrum of activity against *Clostridium difficile*. *Proceedings of the National Academy of Sciences* 107:9352–9357
7. Cotter P.D., O'Connor P.M., Draper L.A., Lawton E.M., Deegan L.H., Hill C. and Ross R.P. (2005) Posttranlational conversion of L-serines to D alanines is vital for optimal production and activity of the lantibiotic lacticin 3147. *Proceedings of the National Academy of Sciences* 102:18584–18589

Technology

PROFILE

Dr. Norah O'Shea

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Education

BSc. University College, Cork, 2008

MSc. University College, Cork, 2009

PhD. University College, Cork, 2014

Career

2016–Present: Research Officer, Food Chemistry and Technology Department, Teagasc

2016–2017: Post-Doctoral Research Scientist (DPTC)

2014–2016: Post-Doctoral Research Scientist

Teagasc Food Research Centre, Ashtown

Expertise

The research interests of Dr O'Shea include:

- Process analytical technologies (PAT, inline viscometers) for process improvements in the development of dairy concentrates and production of dairy powders.
- Assessing how to implement and validate PAT instruments and sensors at a pilot and commercial scale.
- Development of rheological test methods to evaluate PAT tools (process viscometers).
- Gaining an understanding of the rheological properties of dairy structures e.g. dairy concentrate behavior, heat induced protein changes.

Dr O'Shea has previously worked on FIRM funded projects that looked at cereal ingredients and food structures (gluten-free formulations, cracker, extrudates and bread formulations). Part of this work included investigating the nutritional (composition), rheological (dough structure), texture and sensory properties of the different formulations.

Selected Publications

1. O'Shea, N., Kilcawley, K.N. and Gallagher, E. (2017) Aromatic Composition and Physicochemical Characteristics of Crackers Containing Barley Fractions. *Cereal Chemistry* 94:3, 611–618.
2. O'Shea, N., Ktenioudaki, A., Smyth, T.P., McLoughlin, P., Doran, L., Auty, M.A.E., Arendt, E.K., Gallagher, E. (2015) Physicochemical assessment of two fruit by-products as functional ingredients: Apple and orange pomace. *Journal of Food Engineering,* 153, 89–95.
3. O'Shea, N., Roessle, C., Arendt, E.K., Gallagher, E. (2015) Modelling the effects of orange pomace using response surface design for gluten-free bread baking. *Food Chemistry*, 166, 223–230
4. O'Shea, N., Arendt, E.K., Gallagher, E. (2014) State of the art in gluten-free research. *Journal of Food Science*, 79, 6, R1069
5. O'Shea, N., Arendt, E.K., Gallagher, E. (2014) Enhancing an extruded puffed snack, by optimising die head temperature, screw speed and apple pomace inclusion. *Food Bioprocess Technology*, 7, 1767–1782
6. O'Shea, N., Doran, L., Auty, M.A.E., Arendt, E.K., Gallagher, E. (2013) The rheology, microstructure and sensory characteristics of a gluten-free bread formulation enhanced with orange pomace. *Food & Function* 4, 1856–1863

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PROFILE

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Education

BSc. University College, Cork, Ireland. 2000

PhD. University College, Cork, Ireland. 2001

Career

2004: Post-Doctoral Research Scientist, Conway Institute, University College Dublin

2005: Senior Demonstrator/Lecturer, Department of Biochemistry, University College Cork

2006–2007: Research Officer, Teagasc Food Research Centre, Moorepark

2008–2013: Researcher, ELDERMET, University College Cork and Teagasc Food Research Centre, Moorepark

2014: Research Fellow, Alimentary Pharmabiotic Centre and Teagasc Food Research Centre, Moorepark

2014–Present: SIRG Research Fellow, Teagasc Food Research Centre, Moorepark

Expertise

Orla is a bioinformatician working on the food programme in Teagasc. Her primary research focus is on the genomics of single bacteria and phage and metagenomics of various environments including human gut and lung, rumen and food. Understanding the genomes of bacteria and phage can aid in the identification of genes responsible for certain traits including flavour and textures in food and probiotics and antibiotic resistance in health. Metagenomic analysis allows both the community profiling and functional analysis of the microbiota of an environment and lends itself to identifying fluxes in bacterial populations in health versus disease, at stage of life (e.g. infant versus elderly) and causative factors in food spoilage. Of particular interest to her is the role of exercise and diet, particularly whey protein, on the human gut microbiome in elite athletes, and in healthy and diseased cohorts.

Selected Publications

1. Claesson, M. J., Jeffery, I. B., Conde, S., Power, S. E., O'Connor, E. M., Cusack, S., Harris, H. M., Coakley M., Lakshminarayanan, B., O'sullivan, O., Fitzgerald, G. F., Deane, J., O'Connor, M., Harnedy, N., O'Connor, K., O'Mahony, D., Van Sinderen, D., Wallace, M., Brennan, L., Stanton, C., Marchesi, J. R., Fitzgerald, A. P., Shanahan, F., Hill, C., Ross, R. P. & O'Toole, P. W. (2012) Gut Microbiota composition correlates with diet and health in the elderly. *Nature,* 488**,** 178–84.
2. Clarke, S. F., Murphy, E. F., O'Sullivan, O., Lucey, A. J., Humphreys, M., Hogan, A., Hayes, P., O'Reilly, M., Jeffery, I. B., Wood-Martin, R., Kerins, D. M., Quigley, E., Ross, R. P., O'Toole, P. W., Molloy, M. G., Falvey, E., Shanahan, F. & Cotter, P. D. (2014) Exercise and associated dietary extremes impact on gut microbial diversity. *Gut,* 63**,** 1913–20.
3. O'Sullivan, O., Rea, M. C., Shanahan, F., O'Toole, P. W., Stanton, C., Ross, R. P. & Hill, C. (2012) Clostridium difficile carriage in elderly subjects and associated changes in the intestinal microbiota. *J Clin Microbiol,* 50**,** 867–75.
4. Lavelle, A., Lennon, G., O'Sullivan, O., Docherty, N., Balfe, A., Maguire, A., Mulcahy, H. E., Doherty, G., O'Donoghue, D., Hyland, J., Ross, R. P., Coffey, J. C., Sheahan, K., Cotter, P. D., Shanahan, F., Winter, D. C. & O'Connell, P. R. (2015) spatial variation of the colonic microbiota in patients with ulcerative colitis and control volunteers. *Gut*.
5. O'Sullivan, O., Cronin, O., Clarke, S. F., Murphy, E. F., Molloy, M. G., Shanahan, F. & Cotter, P. D. (2015) Exercise and the Microbiota. *Gut Microbes,* 6**,** 131–6.

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PROFILE

Dr. Dilip Rai

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Education

Ph.D.: Karolinska Institute, Stockholm, Sweden. 2003.

B.Sc.: Trinity College Dublin, Ireland, 1998.

Diploma: DIT Kevin Street, Dublin, Ireland, 1998.

Career

2009–Present: Senior Research Officer, Teagasc Food Research Centre, Ashtown, Dublin 15.

2013–Present: Adjunct Lecturer, School of Chemistry and Chemical Biology, University College Dublin.

2014–Present: Scientific Committee Member of the EU COST Action FA1403: Plant Bioactives inter-Individual Variation.

2003–2008: Post-Doctoral Research Scientist, Centre for Synthesis and Chemical Biology, University College Dublin.

Expertise

Dr. Rai leads a research team in the field of nutraceuticals in recovering and characterising food molecules that possess health-promoting effects. He has published numerous research articles in assessing the effect of various food-processing (domestic, industrial and novel physical) technologies on the levels of health-benefiting plant – molecules with emphasis on Irish grown plant foods such as barley, carrots, broccoli, mushrooms and onions. He currently leads research projects focusing on valorisation of food-processing by-products to generate sustainable sources of functional food ingredients (molecules) and bio-fuels.

Selected Publications

1. Hossain, M.B., Brunton, N.P., and Rai, D.K. (2016). Effect of drying methods on the steroidal alkaloid content of potato peels, shoots and berries. *Molecules*, 21(4): 403–413.
2. Gangopadhyay, N., Rai, D.K., Brunton, N.P., Gallagher, E., and Hossain, M.B.(2016). Antioxidant-guided isolation and mass spectrometric identification of the major polyphenols in barley (Hordeum vulgare) grain. *Food Chemistry*, 210, 212–220.
3. Lafarga, T., Rai, D.K., O'Connor, P., and Hayes, M. (2016). Generation of bioactive hydrolysates and peptides from bovine hemoglobin with in vitro renin, angiotensin-I-converting enzyme and dipeptidyl peptidase-IV inhibitory activities. *Journal of Food Biochemistry*, DOI: 10.1111/jfbc.12259.
4. Gangopadhyay, N., Wynne, K., O'Connor, P., Gallagher, E.,., Brunton, N.P., Rai, D.K., and Hayes, M. (2016). In silico and in vitro analyses of the angiotensin-I converting enzyme inhibitory activity of hydrolysates generated from crude barley (Hordeum vulgare) protein concentrates. *Food Chemistry*, 203, 367–374.
5. Aguiló-Aguayo, I., Suarez, M., Plaza, L., Hossain, M. B.; Brunton, N.; Lyng, J.G.; and Rai, D.K. (2015). Optimization of pulsed electric field pre-treatments to enhance health-promoting glucosinolates in broccoli flowers and stalk. *Journal of the Science of Food and Agriculture*, 95 (9): 1868–1875.

Technology

PROFILE

Dr. Mary Rea

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Education

B.Sc., M.Sc. and Ph.D. in Microbiology from University College Cork.

Career

1976–1977: Research Assistant Clinical Biochemistry Department, St Finbarr's Hospital Cork.

1977–1981: Contract Research Officer, An Foras Taluntais, Moorepark.

1989–2008: Contract Research Officer, Cheese Microbiology and Biotechnology Departments and member of the SFI funded Alimentary Pharmabiotic Centre.

2008–Present: Principal Research Officer in the Biosciences Department, Teagasc Food Research Centre, Moorepark. Platform leader APC Microbiome Institute

Expertise

- Food preservation and biomedical applications of bacteriocins.
- Mining the GIT for antimicrobial producing bacteria targeting gut pathogens including *Clostridium difficile*, *Salmonella* sp, *Listeria monocytogenes* and *Cronobacter sakazakii.*
- Cheese microbiology including the microflora of smear ripened cheese.
- *Mycobacterium avium paratuberculosis*: survival in dairy foods.

Selected Publications

1. Mesa-Pereira B, O'Connor PM, Rea MC, Cotter PD, Hill C, Ross RP (2017) Controlled functional expression of the bacteriocins pediocin PA-1 and bactofencin A in Escherichia coli. *Sci Reports*. 8;7(1):3069. doi: 10.1038/s41598-017-02868-w.
2. Fergus W. J. Collins, FW, O'Connor, PM., O'Sullivan, O., Gómez-Sala, B., Rea, MC., Hill, C., & Ross, RP. (2017). Bacteriocin Gene-Trait matching across the complete *Lactobacillus* Pan-genome. *Scientific Reports* | 7: *3481* | DOI:10.1038/s41598-017-03339-y
3. Gough, R., Gómez-Sala, B., O'Connor PM., Rea, MC., Miao, S., Hill, C. and Brodkorb. A. (2017). A Simple Method for the Purification of Nisin. *Probiotics & Antimicrobial Proteins*. DOI 10.1007/s12602-017-9287-5
4. Bertuzzi, A.S., Guinane, C.M., Crispie, F., Kilcawley, K.N.,McSweeney,P.L.H. and. Rea, M.C. (2017). Genome Sequence of *Staphylococcus saprophyticus* DPC5671, Strain Isolated from Cheddar Cheese. *J. bacteriology Genome Announc*. Apr; 5(16): e00193-17
5. Bertuzzi, AS., Kilcawley, KN., Sheehan, JJ., O'Sullivan, M.G., Kennedy, D., McSweeney, PLH.and Rea. M.C. (2017). Use of smear bacteria and yeasts to modify flavour and appearance of Cheddar cheese. *International Dairy Journal* 72: 44–54
6. Stefanovic E., Kilcawley, K.N., Rea, M.C., Fitzgerald G.F. and McAuliffe, O. (2017).Genetic, enzymatic and metabolite profiling of the Lactobacillus casei group reveals strain biodiversity and potential applications for flavour diversification. *J. Applied Microbiology.* 122: 1245–1261

Technology

PROFILE

Dr. Diarmuid Sheehan

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Education

Ph.D. Food Science and Technology (Food Chemistry).
M.Sc. Food Science and Technology (Food Technology).
B.Sc. Food Science and Technology.

Career

2011–Present: Programme Manager – Cheese, Dairy Innovation Centre.

2001–Present: Research Officer, Teagasc. 1995–2001: Cheese Technologist, M.T.L. /Teagasc.

Expertise

Diarmuid's research programme is focused on technological and biochemical aspects of cheese manufacture and ripening key to enabling diversification of a predominantly Cheddar based Irish cheese industry. His research is also focused on investigation of factors influencing cheese quality and consistency. In particular, his research seeks to determine the influence of varying cheese manufacture parameters on localised variability in curd microstructure, compositional profile, physico-chemical parameters and on bacterial profiles and metabolic activity. This serves to underpin development of (i) novel hybrid cheeses, combining characteristics of diverse cheese types but capable of manufacture on Cheddar-type process plants and (ii) diverse continental cheese types for manufacture on plants with brine salting facilities. In addition his programme focuses on determining the influence of underlying biochemical and microbial factors on specific quality issues (e.g. pink defect, eye quality and split defects) of continental – type cheeses manufactured from a seasonal Irish milk supply.

Selected Publications

1. Hickey, C. D., Auty, M.A.E., Wilkinson, M.G., and Sheehan, J.J. (2015). The influence of cheese manufacture parameters on cheese microstructure, microbial activity and their interactions during ripening: A Review. *Trends in Food Science and Technology (In press).*
2. El-Bakry M, and Sheehan, J.J. (2014). Analysing Cheese Microstructure: A Review of Recent Developments, *Journal of Food Engineering*, *125,* 84–96.
3. Sheehan, J.J. (2013). Milk quality and cheese diversification. *Irish Journal of Agricultural and Food Research, 52,* 243–253.
4. O'Sullivan, D., Giblin, L., McSweeney, P.L.H., Sheehan, J.J., and Cotter, P. D. (2013). Nucleic acid-based approaches to investigate microbial-related cheese quality defect, *Frontiers in Microbiology*, http://www.frontiersin.org/Journal/Abstract.aspx?s=441&name=food_microbiology&ART_DOI=10.3389/fmicb.2013.00001.
5. Daly, D.F.M., McSweeney, P.L.H. and Sheehan, J.J. (2010). Split defect and secondary fermentation in Swiss-type cheeses – a review. *Dairy Science and Technology*, 90, 3–26.

Technology

PROFILE

Dr. Sharon Sheahan

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Education

B.Sc. Biotechnology (Hons), National University of Ireland (Galway), Galway, 1996

Ph.D. University of Edinburgh, Edinburgh, 2002

Career

2003–2005: Post-doctoral Research Scientist, The University of Glasgow, Glasgow

2005–2007: Post-doctoral Research Scientist, The University of Oxford, Oxford

2007–2014: Intellectual Property Manager, Alimentary Pharmabiotic Centre, University College Cork

2014–Present: Commercialisation Manager, Teagasc TTO

Role and Responsibilities

In 2013, Teagasc, UCC and Cork IT TTOs formed the UCT Consortium, supported by Enterprise Ireland through the Technology Transfer Strengthening Initiative (TTSI), whereby Teagasc TTO benefits from the close partnership and experience of its partners to increase efficiencies in technology and knowledge transfer. Dr. Sheahan's role as Commercialisation Case Manager under this Consortium is to facilitate the commercialisation of Intellectual Property developed by Teagasc. This involves identifying and creating opportunities to develop and protect novel IP and innovations, the goal being to maximise exploitation of research outputs. This is becoming an increasingly important part of National policy, to optimise return on investment in publicly-funded research, to develop benefits of economic and social importance, and to improve competitiveness in industry.

Responsibilities include performing invention, technology, patentability and commercial evaluations, prior art and market analysis, drafting and negotiation of agreements for research collaborations, technology licensing, confidential disclosures, and material transfers, as well as providing grant application support. This requires extensive interaction and communication across a broad spectrum of researchers, funding agencies, industry representatives, technology transfer professionals, and patent attorneys, to deliver impact in the area of agri-food.

Selected Publications

1. Jansson, M., Durant, S.T., Cho, E.C., Sheahan, S., Edelmann, M., Kessler, B., La Thangue, N.B. (2008). Arginine methylation regulates the p53 response. *Nat. Cell. Biol.* 12, 1431.
2. Sheahan, S., Bellamy, C.O., Harland, S.N., Harrison, D.J., Prost, S. TGF-b induces apoptosis and EMT in primary hepatocytes independently of p53, p21Cip1 or Rb status. (2008). *BMC Cancer* 8, 191.
3. Sheahan, S., Bellamy, C.O., Dunbar, D.R., Harrison, D. J., Prost, S. (2007). Deficiency of G1 regulators P53, P21Cip1 and/or PRb decreases hepatocyte sensitivity to TGF-b cell cycle arrest. *BMC Cancer* 7, 215.
4. Sheahan, S., Bellamy, C.O.C., Treanor, L., Harrison, D.J., Prost, S. (2004). Additive effect of p53, p21 and Rb deletion in triple knockout primary hepatocytes. *Oncogene* 23, 1489.
5. Prost, S., Sheahan, S., Rannie, D., Harrison, D. J. (2001). Adenovirus-mediated Cre deletion of floxed sequences in primary mouse cells is an efficient alternative for studies of gene deletion. *Nucleic Acids Res.* 29, E80.
6. Prost, S., Sheahan, S., Rannie, D. (2000). Induced deletion of the retinoblastoma gene (Rb) from mouse hepatocytes rapidly changes p53, cell cycle and polyploidy regulation. *Journal of Pathology*, 190, 63A.

Technology

PROFILE

Dr. Paul James Simpson

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Education

Hull University 1983–1986, B.Sc. (Hons) Biology, Second Class, Division One.

University College Cork, 1986–1988, M.Sc. Biotechnology.

Antibiotic inhibition of fungal pathogens by root colonizing fluorescent Pseudomonas species.

University College Cork, 2002–2005, Ph.D. Microbiology.

Pediococci and Bifidobacteria: Isolation, Genomic Characterisation and Evaluation for Probiotic Applications in Humans and Animal.

Career

1999–Present: Research Officer, Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork.

1995–1999: Higher Scientific Officer, Medical Research Council, Radiation and Genome Stability Unit, Harwell, Oxon, England.

1988–1995: Scientific Officer, Medical Research Council, Radiation and Genome Stability Unit, Harwell, Oxon, England.

Expertise

Dr. Simpson's principle areas of expertise include the isolation, characterization and fermentation of bacteria, relating to probiotic applications and functional food ingredients. Techniques encompass the use of molecular genetic methods such as Pulse-Field-gel-Electrophoresis and PCR, proteomics, specifically 2D Gels, HPLC, Gas Chromatography, Mass Spectroscopy, Spray and Freeze-drying.

Selected Publications

1. Simpson, P.J., Stanton, C., Fitzgerald, G. F., and Ross, R.P. Genomic diversity within the genus *Pediococcus* as revealed by randomly amplified polymorphic DNA PCR and pulsed-field gel electrophoresis. *Appl. Environ. Microbiol.*, 68: 765–771, 2002.
2. Simpson, P.J., Stanton, C., Fitzgerald, G. F., and Ross, R.P. Genomic diversity and relatedness of bifidobacteria from a porcine cecum. *J. Bacteriology*, 185: 2571–2581, 2003.
3. Simpson, P.J., Fitzgerald, G. F., Ross, R.P., and Stanton, C. The evaluation of a mupirocin based selective medium for the enumeration of bifidobacteria from probiotic animal feed *J. Microbiol.* Methods, 57:9–16, 2004.
4. Simpson, P.J., Fitzgerald, G. F., Ross, R.P., and Stanton, C. *Bifidobacterium psychraerophilum* sp. nov. and *Aeriscardovia aerophila* gen. nov., sp. nov., isolated from a porcine caecum. *Int. J. System. Evol. Microbiol.*, 54:401–406, 2004.
5. Simpson, P. J., C. Stanton, G. F. Fitzgerald, and R. P. Ross. Intrinsic tolerance of Bifidobacterium species to heat and oxygen and survival following spray drying and storage. *J. Appl. Micro.* 99:493–501, 2005.

Technology

PROFILE

Helen Slattery

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Education

NCEA Certificate Applied Chemistry, CIT, 1979.

Career

1990–Present: Research Technician, Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork.

1986–1990: Research Assistant, Food Chemistry Dept., UCC.

1983–1986: Research Technician, Biocon Biochemicals, Carrigaline, Co. Cork.

1979–1983: Technician, Research Department, Kerry Co-op, Ardfert, Co. Kerry.

Expertise

Helen's expertise relates to the identification and quantification of oligosaccharides and other sugars using various HPLC methods. Earlier research projects involved the fractionation and separation of oligosaccharides from various whey streams using membrane filtration and chromatographic processes.

Previous research projects involved the purification and analysis of different milk and whey proteins to enhance their functional properties.

Other projects have involved development of HPLC methods to measure biogenic amines in cheese and for the analysis of phospholipids and triglycerides.

Selected Publications

1. Slattery, H, Fitzgerald, R.J., (1998). Functional properties and bitterness of sodium caseinate hydrolysates prepared with a Bacillus proteinase. *Journal of Food Science, No. 63, Vol 3, 1998.*
2. O'Halloran, F, Slattery, H, Fitzgerald, G, Ross, R.P., and Stanton, C. (2004). Development of bioactive whey protein hydrolysates for fortification of beverages. *Poster (2004).*
3. Ryan, J.T., Slattery, H., Hickey, R., Marotta, M. (2017). Bovine Milk Oligosaccharides as anti-adhesives against the respiratory tract patogen Streptococcus pneumonia. *International Dairy Journal 2017. submitted.*

Technology

PROFILE

Prof. Catherine Stanton

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Education

B.Sc (Hons, 2.1) Nutrition/Food Chemistry, (1983) University College Cork (Awarding Body: NUI).

M.Sc Nutrition (1986) University College Cork (NUI) (Awarding Body: NUI).

Ph.D Biochemistry (1988) Bournemouth University, UK (Awarding Body: Council for National Academic Awards, CNAA, UK).

D.Sc. (2008) National University of Ireland (Awarding Body: NUI).

Career

2016: Research Professor, College of Medicine and Health, University College Cork.

2012: Adjunct Professor, College of Medicine and Health, Dept. of Psychiatry, University College Cork.

2003–Present: Principal Investigator, Alimentary Microbiome Institute, (APC)

2003–Present: Principal Research Officer, Teagasc , Moorepark, Fermoy, Co. Cork

2001–2002: Senior Research Officer, Teagasc, Moorepark, Fermoy, Co. Cork

1994–2000: Research Officer, Teagasc, Moorepark, Fermoy, Co. Cork

1992–1994: Research Associate, Wake Forest Univ. Medical Center, NC, USA

1990–1992: Postdoctoral Fellow, Wake Forest University Med. Center, NC, USA

1989–1990: Senior Research Scientist, Johnson & Johnson UK, Glasgow, Scotland

Expertise

- Nutritional aspects of dairy foods, functional foods.
- Probiotic cultures: health benefits, bioactive metabolite production and host health.
- Infant gut microbiota: Influence of Dietary and Environmental Factors.
- Probiotics: technological aspects, development of functional foods.
- Bioactive lipids: Microbial production of bioactive FA, CLAs, SCFA, n-3 FA, lipids and health benefits.
- Bioactive peptides.

Selected Publications

1. Marques TM, Patterson E, Wall R, O'Sullivan O, Fitzgerald GF, Cotter PD, Dinan TG, Cryan JF, Ross RP, Stanton C. (2016). Influence of GABA and GABA-producing Lactobacillus brevis DPC 6108 on the development of diabetes in a streptozotocin rat model. *Benef Microbes.* Mar 25:1–12. [Epub ahead of print]
2. Ryan PM, Burdíková Z, Beresford T, Auty MA, Fitzgerald GF, Ross RP, Sheehan JJ, Stanton C. (2015). Reduced-fat Cheddar and Swiss-type cheeses harboring exopolysaccharide-producing probiotic Lactobacillus mucosae DPC 6426. *J Dairy Sci.* Dec;98(12):8531–44. doi: 10.3168/jds.2015–9996. Epub 2015 Sep 26.
3. Ryan PM, Ross RP, Fitzgerald GF, Caplice NM, Stanton C. (2015). Functional food addressing heart health: do we have to target the gut microbiota? *Curr Opin Clin Nutr Metab Care.* Nov;18(6):566–71. doi: 10.1097/MCO.0000000000000224.
4. Robertson RC, Guihéneuf F, Bahar B, Schmid M, Stengel DB, Fitzgerald GF, Ross RP, Stanton C. (2015). The Anti-Inflammatory Effect of Algae-Derived Lipid Extracts on Lipopolysaccharide (LPS)-Stimulated Human THP-1 Macrophages. *Mar Drugs.* Aug 20;13(8):5402–24. doi: 10.3390/md13085402
5. Marques, T. M., Wall, R., O'Sullivan, O., Fitzgerald, G. F., Shanahan, F., Quigley, E. M., Cotter, P. D., Cryan, J. F., Dinan, T. G., Ross, R. P. & Stanton, C. (2015). Dietary trans-10, cis-12-conjugated linoleic acid alters fatty acid metabolism and microbiota composition in mice. *British Journal of Nutrition*, 113: 728–738.

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Technology

PROFILE

Dr. Brijesh Tiwari

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Education

B.Sc. Govind Ballabh Pant University of Agriculture and Technology, India. 2001

M.Sc. Central Food Technological Research Institute, India, 2003

Ph.D. University College Dublin, Ireland, 2009

Career

2017–Present: Principal Research Officer, Teagasc Research Centre, Dublin

2013–2017: Senior Research Officer, Teagasc Food Research Centre, Dublin

2015 –Present: Adjunct Senior Lecturer, Dublin Institute of Technology, Dublin

2011–2013: Senior Lecturer, Manchester Metropolitan University, UK

2010–2011: Lecturer, Manchester Metropolitan University, UK

2008–2010: Lecturer, University College Dublin, Ireland

2004–2006: Research Scientist, Indian Institute of Crop Processing Technology, India

Expertise

Dr. Tiwari's primary research interests relate to novel food processing, extraction and preservation technologies, with a strong focus on investigation of biochemical and microbial kinetics in food and food products. He is particularly interested in the investigation of technological aspects (nutritional, microbial, enzymatic and chemical inactivation phenomena) in thermal and non-thermal processing studies.

A particular focus of his current research relates to the investigation of green and sustainable solutions to food industry challenges. In addition, he is interested in extraction technologies with particular reference to extraction of biomolecules from food processing by-products and waste streams.

Selected Publications

1. Ojha, K. S., Mason, T. J., O'Donnell, C. P., Kerry, J. P., & Tiwari, B. K. (2017). Ultrasound technology for food fermentation applications. *Ultrasonics sonochemistry*. 34, 410–417.
2. Ojha, K. S., Kerry, J. P., Alvarez, C., Walsh, D., & Tiwari, B. K. (2016). Effect of high intensity ultrasound on the fermentation profile of Lactobacillus sakei in a meat model system. *Ultrasonics sonochemistry, 31*, 539–545.
3. Ojha, K. S., Alvarez, C., Kumar, P., O'Donnell, C. P., & Tiwari, B. K. (2016). Effect of enzymatic hydrolysis on the production of free amino acids from boarfish (Capros aper) using second order polynomial regression models. *LWT-Food Science and Technology,* 68, 470–476.
4. Ojha, K. S., Keenan, D. F., Bright, A., Kerry, J. P., & Tiwari, B. K. (2016). Ultrasound assisted diffusion of sodium salt replacer and effect on physicochemical properties of pork meat. *International Journal of Food Science & Technology,* 51(1), 37–45.
5. Hayes, M., & Tiwari, B. K. (2015). Bioactive Carbohydrates and Peptides in Foods: An Overview of Sources, Downstream Processing Steps and Associated Bioactivities. *International Journal of Molecular Sciences,* 16(9), 22485–22508.
6. Kadam, S. U., O'Donnell, C. P., Rai, D. K., Hossain, M. B., Burgess, C. M., Walsh, D., & Tiwari, B. K. (2015). Laminarin from irish brown seaweeds ascophyllum nodosum and laminaria hyperborea: Ultrasound assisted extraction, characterization and bioactivity. *Marine drugs,* 13(7), 4270–4280.
7. Tiwari, B. K. (2015). Ultrasound: A clean, green extraction technology. *TrAC Trends in Analytical Chemistry,* 71, 100–109.

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Technology

PROFILE

Dr. Miriam Walsh

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Education

B.Sc. (Hons), Analytical Science, Dublin City University (DCU) 1992

Ph.D. (Chem), DCU, 1997

M.Sc. (Technology Management), UCD, 2005

Diploma in IP and Technology Law, 2014

Career

1996–1997: Assistant Lecturer, Dublin City University

1997–2000: Technical Support Chemist, Chemoran,

2001–2002: Technical Support, Unitech, Dublin

2003–2005: Programme Manager, Chemistry Dept., UCD

2005–2006: IP Officer, Trinity College Dublin

2006–Present: Teagasc Technology Transfer Office

Role and Responsibilities

Teagasc Technology Transfer Office (TTO), aims to be a conduit for technology transfer of Teagasc research outputs. From 2013, Teagasc TTO with UCC and Cork IT TTOs formed the UCT consortium, supported by Enterprise Ireland through Technology Transfer Strengthening Initiative (TTSI), whereby Teagasc TTO benefits from close partnership and experience of its partners to increase efficiencies in knowledge transfer.

As head of the Intellectual Property (IP) unit, her role involves working closely with the head of TTO, Declan Troy, to ensure an effective TTO through implementation of transparent and consistent policies and procedures for management of IP and technology transfer, in line with best practice and National IP policy.

They strive to facilitate the professional management of research outputs through strategic management, by close alignment with the research and technology transfer strategic priorities and by evidence of impact on research community and related industry.

Dr. Walsh manages the unit involved in negotiating research agreements emanating from formal links with Irish and international companies and peer research institutes, especially within agri-food space. This ranges from non-disclosure agreements, to collaboration and license agreements. This unit also manages Teagasc patent and IP portfolio, facilitating the licensing of such IP to industry and other end users. They also provide support and guidance to Teagasc staff in this area, including applying for commercially focused state funding. Other important responsibilities include close engagement with key stakeholders, including all funding agencies, Knowledge Transfer Ireland (KTI), the government, collaborating parties and tracking and reporting on the performance of Teagasc research directorate in terms of predefined metrics of technology transfer activities.

Teagasc uses a range of mechanisms in order to engage with industry/stakeholders at varying levels of complexity, ranging from consultancy provision and commercial services to large scale collaborations and licenses. While they use National IP protocol and template agreements to facilitate formalisation of such interactions, they are flexible in the specifics of the interaction and happy to discuss various options with each individual party.

Relevant Articles

1. “Harnessing the Power of IP”, *TResearch*, vol 2, no 1, Spring 2007.
2. “Encouraging Innovation”, *TResearch*, vol 5, no 2, Summer 2010.
3. “Gateways to Technology Transfer”, *TResearch*, vol 7, no 2, Summer 2012.

Technology

PROFILE

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Education

M.Sc. Education & Training Management, Dublin City University 2002.

M.Sc. Agricultural Chemistry, University College Dublin 1990.

B.Sc. Industrial Microbiology, University College Dublin 1986.

Career

2011–Present: Food Industry Development, Teagasc Food Research Centre, Ashtown.

2004–2010: European Commission Food & Veterinary Office.

1998–2004: Food Safety & Quality Consultant & Trainer, Teagasc Food Research Centre, Ashtown.

1994–1998: Quality/ Regulatory Affairs Manager, Medical Devices Industry.

1991–1994: Medical Devices Directorate, Department of Health (UK).

1990–1991: Irish Sea Fisheries Board (BIM).

Expertise

- Delivery of consultancy, auditing and training projects to food industry clients.
- Design & delivery of specialised training and events including microbiology, hygiene, HACCP, food standards development, auditing, food law, and labelling.
- Providing training to support change management and delivery to multi-cultural groups.
- Establishing and updating quality management systems.
- Auditing and developing internal audit procedures and systems.
- Addressing varied client queries in the area of food safety & quality including legislative compliance, standards requirements and product development.
- Initiating and organising multi-agency projects to better serve the food industry.
- Developing industry standards.

Selected Publications

1. White, I. (2014) Food Labelling & Allergen Awareness, *TResearch* Volume 9: Number 1, Spring 2014 pp30–31
2. White, I, (2013) Tips for Producers & Suppliers of Packaging to the Food Industry, *The Irish Packaging Directory*
3. White, I, (2012) Facing the Future for Food Labelling Laws, *The Irish Packaging Directory*, pp18–21
4. White, I. (2011) Package Your Way to New Markets, *TResearch* Volume 6: Number 4, Winter 2011, pp 14–15
5. European Commission Decisions (2008/654/EC) (2007/363/EC) (2006/677/EC) relating to auditing, developing and reporting on multi-annual national control plans within Member States' Competent Authorities.