



# VistaMilk

## MAKING AN IMPACT

### Internet of Things (IoT) platform for wireless sensor network applications in dairy processing

By Rahul Umes Mhapsekar, PhD student, Walton Inst.



Dairy products provide a great source of nutrients that are vital for health and nutrition. With the world's population steadily increasing it is necessary and pertinent to improve the quality of dairy products such as milk.

Industry 4.0 (automation of traditional manufacturing and industrial practices, using modern smart technology including large-scale machine-to-machine communication and the internet of things (IoT)) will help increase the efficiency and productivity of dairy processing plants and improve the quality of milk.

At Vistamilk, a platform is currently under development to optimise a wide range of Wireless Sensor Network (WSN) configurations used in the dairy processing industry. Thereafter Artificial Intelligence (AI) will provide helpful visuals to dairy process engineers and production managers.

This research will answer questions like:

- What wireless technologies should be used to develop an efficient IoT platform to improve the production and quality of milk?
- How can data security and privacy be provided to the platform?
- How can AI predictions help to improve the productivity and efficiency of dairy processing plants?

Industrial equipment connected to the internet will provide Industrial IoT and Business Intelligence tools, helping dairy processing plants to increase the efficiency and productivity of the process.

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## MEET THE RESEARCHER

**Name:** Wiley Barton

**Host:** Teagasc Moorepark, Dept. of Food biosciences

**Education:**

- Bachelor's degree of Science, Biology and Chemistry (University of New Mexico, US)
- PhD, Medicine and Health, Dept. of Medicine, University College Cork, Bioinformatics based investigation of the influence of physical activity on the human gut microbiome



**Hobbies:** Cats, Entomology, Hip-Hop, Philosophy, Aliens, Visual art

**Role in VistaMilk:** Wiley is currently involved in the development and assessment of computational based methodologies for the analysis of Omics data generated through VistaMilk (e.g. metagenomics sequencing). This role entails the organisation of programming in R and Linux, to extract data related to the biological systems studied in VistaMilk; for example, microbial DNA from the rumen of dairy cows configured into microbial metabolic pathways. These then statistically assess hypotheses and graphically present information in an understandable format.

## NEW STAFF



**William McCarthy**  
Postdoctoral researcher  
TP7- Dairy Process  
[WilliamP.McCarthy@teagasc.ie](mailto:WilliamP.McCarthy@teagasc.ie)

## PUBLICATIONS

**[Mid infrared spectroscopy and milk quality traits: a data analysis competition at the “International Workshop on Spectroscopy and Chemometrics 2021](#)**

*Maria Frizzarin, Antonio Bevilacqua, Bhaskar Dhariyal, Katarina Domijan, Federico Ferraccioli, Elena Hayes, Georgiana Ifrim, Agnieszka Konkolewska, Thach Le Nguyen, Uche Mbaka, Giovanna Ranzato, Ashish Singh, Marco Stefanucci, and Alessandro Casa*

**[Incorporation of the grazing utilization sub index and new updates to the Pasture Profit Index](#)**

*T. Tubritt, L. Shalloo, T.J. Gilliland, N. McHugh, M.O'Donovan*

**[A Graph-based Molecular Communications Model Analysis of the Human Gut Bacteriome](#)**

*Samitha Somathilaka, Daniel P. Martins, Wiley Barton, Orla O'Sullivan, Paul D. Cotter, Sasitharan Balasubramaniam*

**[Uncertainty Estimation and Out-of-Distribution Detection for Counterfactual Explanations: Pitfalls and Solutions](#)**

*Eoin Delaney, Derek Greene & Mark Keane*

## OTHER NEWS



**Figure 1** VistaMilk funded investigator John Upton will be speaking at the upcoming Teagasc Research Insights event



**Figure 2** VistaMilk director Donagh Berry spoke with the Farmers Journal about the importance of measuring methane, nitrogen efficiency and investing in existing technologies to make farms more sustainable, efficient and environmentally friendly. Click image for podcast.

## FUNDING OPPORTUNITIES

Horizon Europe Work Programmes now published and calls open. First submission deadlines in autumn 2021. Get in touch with [Guillaume Le Palud](#) to discuss opportunities and support.

[ERA-NETs FOSC and SUSFOOD2 joint call](#) on “innovative solutions for resilient, climate-smart and sustainable food systems”. Topics on “Innovations to improve food systems sustainability, with a focus on increasing resource efficiency and reducing waste” and “Food Systems adaptation and resilience to system shocks”. Full application August 16th 2021. Call details [here](#).

[EJP SOIL](#) “Towards climate smart sustainable agricultural soils” first external call open to all Irish RPOs. Deadline September 7th 2021. Call topics and details [here](#).

[NGI TruBlo Open Call](#) for small scale research projects on one of the 2 topics: Trust and reputation models on blockchains and Proof-of-validity and proof-of location. Deadline September 10th 2021. More details [here](#).

[OECD Travel Bursary Fellowship](#) for sustainable agriculture and food systems research projects (6-26 weeks) in another OECD country (AgTech, breeding, climate, ecosystems, AMR, food zoonoses...). Deadline 10th September 2021. Details [here](#).

[Marie Curie Actions](#) Fellowships and Doctoral Networks calls opened on June 22nd 2021. Deadline on October 12th 2021.

[LIFE](#): EU’s environmental programme. 2021 call now open on Nature and Biodiversity, Circular economy and quality of life, Climate change mitigation and clean energy transition. More details [here](#). Multiple deadlines.

## EDUCATION & PUBLIC ENGAGEMENT

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