



# VistaMilk

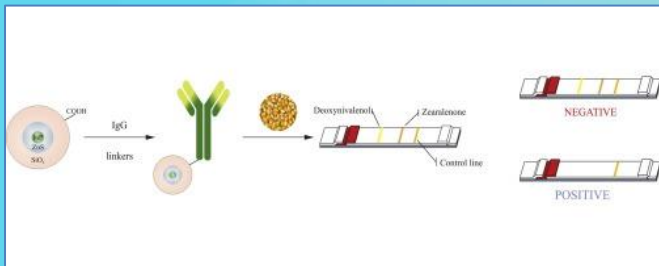
## MAKING AN IMPACT

### DIRECT WRITING OF FUNCTIONAL MATERIALS FOR MILK QUALITY POINT-OF-CARE TESTS

By PhD student Alida Russo (Tyndall)

Over the years antibiotics have been life-changing and often life-saving for both human and animals. However, Antimicrobial Resistance (AMR) is becoming a threat to human health because of an overuse of antibiotics in agriculture, livestock farming, pharmaceutical industries and aquaculture. Residual antibiotics have been found in soil, water, and food.

The aim of this project is to develop a Multiplex Lateral Flow Immunoassay for detection of residual antibiotics in milk using commercial writing pens (BIC® or fountain pens) loaded with



biomolecules and nanoparticles inks. This “BioPen” will allow the bioassay reagents to be “written” directly on nitrocellulose paper, enabling easy point-of-care analysis. The readout will be in the form of both colorimetric (ink colour change) and spectroscopic (Surface Enhanced Raman Scattering) outputs, thus providing a high level of detection.

By using this BioPen and nitrocellulose paper, farmers will be able to quickly spot samples of milk and get an immediate colour readout of the presence or absence of antibiotics, providing them with the information they require to choose the best course of action and treatment. It is hoped that the development of this BioPen assay will help to reduce AMR by reducing presence of antibiotics in milk.

Current work is focusing on functionalising the metal nanoparticles with antibodies for targeted applications within VistaMilk.

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**Supervisor:** Daniela Iacopino ([daniela.iacopino@tyndall.ie](mailto:daniela.iacopino@tyndall.ie))

## PUBLICATIONS

[The probiotic L. casei LC-XCAL™ improves metabolic health in a diet-induced obesity mouse model without altering the microbiome](#)

Calum J. Walsh, Selena Healy, Paul W. O’Toole, Eileen F. Murphy & Paul D. Cotter - Gut Microbes (2020)

[Breed and trait-specific associations define the genetic architecture of calving performance traits in cattle](#)

DC Purfield, RD Evans, DP Berry - Journal of Animal Science, 2020

## MEET THE RESEARCHER

**Name:** Aonghus Lawlor

**Host:** Insight Centre for Data Analytics, UCD

**Education:** MSc Physics University of Cambridge, PhD Soft Condensed Matter, University College Dublin  
**Hobbies:** Gardening, long walks in the countryside, listening to music and filling in surveys



**Role in Vistamilk:** I work on TP3 with Dan Milbourne and his team in Carlow. Perennial ryegrass is the dominant species in Irish pastures, and Teagasc has responsibility for breeding varieties to enhance profitability and sustainability for Irish production environments. The grass breeding programme takes a long time, completing a cycle of recombining parental plants to commercialising a product in about 12 years. It is possible to achieve some genetic gain, but the improvements are relatively modest. We are trying to increase the rate of genetic gain by improving the use of NIRS (Near Infrared Reflectance Spectroscopy) to measure plant constituents related to the nutritional quality of the grass. We are applying some machine learning/deep learning techniques to analyse the spectra so we can better identify important features and use them to build improved genomic selection models for grass yield and quality.

**Contact:** [aonghus.lawlor@ucd.ie](mailto:aonghus.lawlor@ucd.ie)

## FUNDING

Note that disruptions due to COVID-19 have led to changes in some of the deadlines below. Future modifications could happen in the coming days and weeks.

- [SmartCow](#): for funded access to European cattle research infrastructures. SmartCow Transnational Access [third call for proposals open](#). Application deadline June 25<sup>th</sup> 2020.
- [Enterprise Ireland's Commercialisation Fund for 3rd Level Researchers](#) for the creation of technology based start-up companies and the transfer of innovations developed in RPOs to industry. Deadline July 3rd 2020.
- [AGROBOFOOD](#): for consortia of SMEs only. Projects must look at providing robotic technology solutions to agri-food sector problems. Grants between €300-500k per project. NEW deadline September 1<sup>st</sup> 2020. Call details [here](#).
- [ERC Advanced Grants](#): for established PIs looking for long-term funding to pursue a ground-breaking, high-risk project. [2020 call](#) is open, deadline August 26<sup>th</sup> 2020.
- [BioBased Industry Joint Undertaking](#) for projects on new sustainable value chains, from efficient processing of biomass feedstock supply to bringing bio-based products to the market. [2020 call](#) is open, deadline 3<sup>rd</sup> September 2020.
- [EJP SOIL](#) : Towards climate-smart sustainable management of agricultural soils. Call to open June 30<sup>th</sup> and submission deadline on September 4<sup>th</sup> 2020. Further details [here](#).
- [Marie Curie Individual Fellowships](#): for non-Ireland based researchers to undertake fully-funded postdoctoral fellowships in ROI. Deadline September 9<sup>th</sup> 2020.
- [OECD Co-operative Research Programme](#) for short-term fellowships in Agriculture systems and technologies. Deadline 10<sup>th</sup> September 2020. Details [here](#).
- [LIFE](#) for nature and biodiversity, climate change mitigation and adaptation projects. Deadline October 6<sup>th</sup> 2020.
- [2nd Career-Fit+ call](#): for Enterprise Ireland Tech Centres and Tech Gateways only. Post-doctoral projects to work with an Irish industry partner. Next call to open in the Autumn 2020.
- [Events](#): Online [ECSEL JU Symposium](#): "Key Digital Technologies enabling European economic recovery" on June 24<sup>th</sup>. Register [here](#).

## EDUCATION AND PUBLIC ENGAGEMENT

Check out our social media channels over the bank holiday weekend as VistaMilk researchers and farmers celebrate [World Milk Day](#) on the 1<sup>st</sup> June.

Why not raise a glass of milk on the day and post a picture to social media. Don't forget to tag us @VistaMilk and use the hashtags

#EnjoyDairy & #MilkMatters



## NEW STAFF



**Left:** Ben Lahart, PhD student [Ben.lahart@teagasc.ie](mailto:Ben.lahart@teagasc.ie)  
**Middle:** Ciaran Coakley, RA [Ciaran.coakley@teagasc.ie](mailto:Ciaran.coakley@teagasc.ie)  
**Bottom:** Fiona Dunne, Postdoc [Fiona.dunne@teagasc.ie](mailto:Fiona.dunne@teagasc.ie)

## OTHER NEWS

We would like to welcome [Claire Gormley](#) and [Orla O'Sullivan](#) to VistaMilk as newly appointed Principal Investigators.



**Left:** Prof. Claire Gormley, Associate Professor of Statistics, UCD  
**Right:** Dr. Orla O'Sullivan, Senior Computational biologist, Teagasc

VistaMilk Funded Investigator at WIT/NRCI John Nolan wins prestigious HEIDELBERG ENGINEERING XTREME RESEARCH AWARD 2020 for his more work on the use of macular pigment as a biomarker for brain nutrition and its connection to cognitive function and Alzheimer's disease. Congratulations John from all of us! [Read the full article here](#)

