In this CVERA e-zine, we provide a brief overview of some of the recent work conducted by CVERA staff in collaboration with Colleagues from a wide range of national and international institutions. More in-depth information can be found at http://www.ucd.ie/cvera/, noting the role of CVERA to provide high quality independent scientific research and advice to support national evidence-based policy-making in animal health & welfare and public health and related matters.

COVID-19
Since mid-March, several CVERA colleagues have contributed to the work of the IEMAG (Irish Epidemiological Modelling Advisory Group), one of the 9 subgroups of the National Public Health Emergency Team (NPHET). Chaired by Philip Nolan, IEMAG provides advice and expertise in support of national decision-making in the area of epidemiological data and modelling. Areas of CVERA contribution have included estimating key epidemiological parameters (such as incubation period, proportion of infected people who are asymptomatic etc), providing biological input into model development, contributing to the design and assembly of national databases, spatial analysis and developing a COVID-19 early warning system. This latter work is adapted from an early warning system for bovine TB, currently under development. The following CVERA, UCD Veterinary Medicine and DAFM colleagues have each been involved: Ann Barber, Andrew Byrne (DAFM One Health), Miriam Casey, Áine Collins, John Griffin (DAFM retired), Liz Lane (DAFM), Jamie Madden, Conor McAloon (UCD Veterinary Medicine), Guy McGrath and Simon More. Peer reviewed papers resulting from this work will be added to the CVERA website as they are published.

Is moving from targeted culling to BCG-vaccination of badgers (*Meles meles*) associated with an unacceptable increased incidence of cattle herd tuberculosis in the Republic of Ireland? A practical non-inferiority wildlife intervention study in the Republic of Ireland (2011-2017)
Led by Prof Wayne Martin from the University of Guelph and DAFM colleagues, this work was undertaken to investigate, whether vaccination of badgers with Bacille Calmette-Guérin (BCG) is an alternative to badger culling within the national bTB eradication programme. Thus, in 2011, a five-year non-inferiority study was implemented in seven counties in the ROI. This study was designed to compare and contrast the bTB incidence in cattle herds in areas where intramuscular badger vaccination would be implemented versus remaining area of the same county where targeted badger culling was maintained as the standard treatment response to probable badger-sourced BTB breakdowns. Overall, our study results indicated that vaccination was not inferior to targeted badger-culling in four counties and badger

vaccination was deemed to produce ambivalent results in one (County Cork North). A post-study investigation, in County Galway, where vaccination was deemed inferior to target culling, revealed that widespread purchases of cattle from a nearby cattle mart, by herd owners in the vaccination area, was associated with the increased herd and vaccination area risk of bTB. No single 'biasing hypothesis' was evident for the apparent vaccine inferiority in the second study site (County Monaghan) where vaccination was deemed inferior to targeted culling; hence no further investigations were conducted. This open access paper is available at Preventive Veterinary Medicine 179, 105004.
https://doi.org/10.1016/j.prevetmed.2020.105004

Herd-level factors associated with detection of calves persistently infected with bovine viral diarrhoea virus (BVDV) in Irish cattle herds with negative herd status (NHS) during 2017

This project was led by Dr Damien Barrett SVI in DAFM with staff from UCD, AHI and ICBF. Considerable progress has been made in the national BVD eradication programme, with the animal-level prevalence of calves born persistently infected (PI) falling from 0.67% in 2013 to 0.06% in 2018. Over the same period, the herd-level prevalence fell from 11.3% to 1.1%. In the programme, herds in which all animals have a known negative status and which have not contained any PI animals for 12 months or more are assigned a negative herd status (NHS). Of concern within the programme, PI calves have been identified in a small proportion of herds that had previously been assigned NHS. Given this context, a case-control study was conducted to investigate potential risk factors associated with loss of NHS in 2017. Trojan cattle and the density of BVD infection within 10 km of the herd emerged as significant factors in a multivariable logistic regression model. This work adds to the evidence base in support of the BVD eradication programme, particularly establishing why BVD re-emerged in herds which had been free of BVD for at least the previous 12 months prior to the identification of a BVD positive calf. This information will be especially important in the context of identifying herds which may be more likely to contain BVD positive animals once the programme moves to herd-based serology status for trading purposes in the post-eradication phase. This open access paper is available at *Preventive Veterinary Medicine* 179, 104990.
https://doi.org/10.1016/j.prevetmed.2020.104990

A description and qualitative comparison of the elements of heterogeneous bovine viral diarrhoea control programs that influence confidence of freedom

This project was led by Annika van Roon from Utrecht University in the Netherlands in conjunction with colleagues from France, Germany, Sweden, the United Kingdom and Ireland. For endemic diseases in cattle that are not regulated within the EU, such as bovine viral diarrhoea (BVD), it can be difficult to compare the 'free status' that is generated by different national (or regional) control (or eradication) programmes. This creates problems for the safe trade of cattle between territories. Safe trade would be facilitated with an output-based framework that enables a transparent and standardized comparison of confidence of freedom for control programmes across herds, regions, or countries. The current paper represents the first step toward development of such a framework by seeking to describe and qualitatively compare elements of programmes that contribute to confidence of freedom. Using BVD as a case study, we identified a number of differences (including testing protocols and definitions of freedom) in BVD control programmes in 6 European countries (Germany, France, Ireland, the Netherlands, Sweden, and Scotland). The observed

heterogeneity will create difficulties when comparing confidence of freedom from infection. These results highlight the need for a standardized practical methodology to objectively and quantitatively determine confidence of freedom resulting from different control programmes around the world. This open access paper is available at *Journal of Dairy Science* 103, 4654–4671.
https://doi.org/10.3168/jds.2019-16915

The Seventh International Conference on *Mycobacterium bovis* (*M. bovis* 2020)
As a result of the COVID-19 pandemic, the Organising and Scientific Committees of *M. bovis* 2020 made the early decision to postpone the Conference until Summer 2021. The decision has been communicated to all speakers, delegates, venues, sponsors, delegate staff and suppliers and was made with their safety in mind. Subject to any regulations that are in place in 2021, we plan to carry the 2020 programme forward as much as possible. Updates on the rescheduled Conference will be added to https://www.mbovis2020.com/ as they are made.

This e-zine, and recent news items, can be found at: http://www.ucd.ie/cvera/news/

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