

Project number: 6509

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***Development of a nanosensor
blueprint (IBR-Nano) for rapid on-
farm detection of IBR-seropositive
individuals***

Description of Work

Infectious Bovine Rhinotracheitis (IBR), caused by Bovine Herpesvirus-1 (BoHV-1) is a respiratory disease of bovines which can result in high levels of morbidity and related productivity losses on Irish farms. Infection of pregnant cows with BoHV-1 can also result in abortion in mid to late gestation. Early identification of IBR is essential to achieving effective control, in that, intervention with vaccines can reduce clinical signs and reduce the number of carrier animals present within a herd. The objective of our project is to develop a biosensor-based pen-side test i.e. on-farm diagnostic device (*IBR-Nano*), for detection of BoHV-1 seropositive individuals thereby allowing application of an appropriate vaccination/control strategy. Efforts will also be made to source BoHV-1 strain-specific monoclonal antibodies that will allow identification of differing viral sub-types which will be of critical importance to future epidemiological studies in Ireland.

Pen-side diagnostics will address the need for label-free, point-of-care diagnostic technologies essential for stakeholders (veterinarians, farmers, processors) to make evidence-based decisions concerning the management of IBR on farm

International Context

The majority of the work being completed in this area relates to human health. Animal health applications are not as well researched or developed which means Teagasc are most likely ahead in terms of the type of sensors being compiled at present.

Opportunities

Teagasc has a relatively unique capability for this type of project in being able to marry epidemiological studies and the resultant sample archive to development and validation of a biosensor developed by project partners Tyndall. The Teagasc/Tyndall relationship is unique and will allow development of a platform technology that can be applied to a host of additional animal diseases. With regard to sample archiving, however, we do require a fully traceable, large sample volume biobank. This would again develop Teagasc's profile as a leader in veterinary diagnostics and epidemiology.