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UNIVERSITY OF PRETORIA  
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Faculty of Veterinary Science

Research project in virology available in the Department Veterinary Tropical Diseases

**Project title:** Rapid screening of bovine carcasses to determine the absence of foot-and-mouth disease virus

**Degree:** MSc (Veterinary Science)

**Study duration:** 2 years (starting date: immediately)

**Minimum academic requirements:** Honour's degree or equivalent in a relevant field. Experience in and knowledge of molecular biology is an advantage

**Restriction:** This call is restricted to South African applicants

**Funding:** Research funds are available, does not include living costs/stipend

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**Background:** There is no definitive test currently available that is able to certify a consignment of beef as being free from foot-and-mouth (FMD) virus because the virus may not be evenly distributed in 'boxed beef', for example. In addition, the testing of traded beef by polymerase chain reaction (PCR) assays would be unreliable or involve testing an impractical number of samples. The approach for this project is based on molecular detection of FMDV not of the beef itself, but rather one or more lymph nodes of carcasses from which the beef is derived. In infected cattle FMD virus is rapidly concentrated in lymph nodes that drain the pharyngeal region of cattle, particularly the medial and lateral retropharyngeal nodes (Juleff et al., 2008). Furthermore, detectable remnants of viral genome (and proteins) remain identifiable in these lymph nodes for more than a month following infection. Therefore, simple testing of lymph node samples provides a potentially sensitive indicator of whether the carcass concerned is, or has recently been, infected with FMD virus.

**Aim of the project:** The aim of this project is to develop methodology to declare beef free of foot-and-mouth disease (FMD) virus. Using the above approach in combination with ante- and post-mortem inspection, maturation and a rapid, modular (commercially available) test system, it may be possible to establish with a high degree of sensitivity that individual cattle carcasses are free of FMD virus, i.e. that such carcasses pose negligible risk of FMDV contamination, irrespective of the FMD status of the locality of production.

**Reference**

Juleff, N., Windsor, M., Reid, E. et al., 2008. Foot-and-mouth disease virus persists in the light zone of germinal centres. PLoS ONE, 3 (10) e3434.

- **CONTACT PERSON:** Prof. Melvyn Quan, Department Veterinary Tropical Diseases; E-mail: [melvyn.quan@up.ac.za](mailto:melvyn.quan@up.ac.za) Telephone: +27 (0)12 529 8142

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Please send your CV, certified academic records and a motivational letter to the above-mentioned contact person. Two academic reference letters will be an advantage in the selection of the successful candidate

**Deadline for submission of applications: 23 February 2021**