

A prioritized Research Agenda for the Control & Management of FMD in Livestock – Wildlife Interface Areas in Southern Africa

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SADC-TADs-WCS-AHEAD Workshop, 13th – 16th November, 2012
Phakalane, Gaborone, Botswana



FMD situation in Southern Africa



- FMD is endemic in nearly all countries of sub-Saharan Africa
- First FMD outbreak reports ~ 1950s (in many Southern African countries)
- Animal affected: Cattle, Pigs, small ruminants, wild animals
- Six (A, O, C, SAT1, SAT2 & SAT3) of seven FMDV serotypes have been reported in the region
- Outbreaks occur in different geographic regions
- Factors associated with outbreaks are not clearly known
- Epidemiology of FMD is complicated by involvement of wildlife





Key research question(s)



- What contributes to FMD endemicity in Southern and Eastern Africa?
- What are the options for FMD control and its risk management?



Gaps and prioritized research areas



- Transmission dynamics of SATs and non-SAT viruses in livestock-wildlife interface areas
 - ✓ role of buffalo in virus transmission
- Rapid, sensitive and field-deployable diagnostic/surveillance systems/methods
- Genetic, antigenic and evolutionary characteristics of FMDV recovered from livestock-wildlife interface areas
 - ✓ vaccination options ~ vaccine matching and selection of candidate strains
- Modelling FMD outbreaks and risk mapping
 - ✓ spatio-temporal distribution of FMDV serotypes
 - ✓ Animal movements in relation to FMD spread





SADC-TADs & SACIDS FMD projects goals



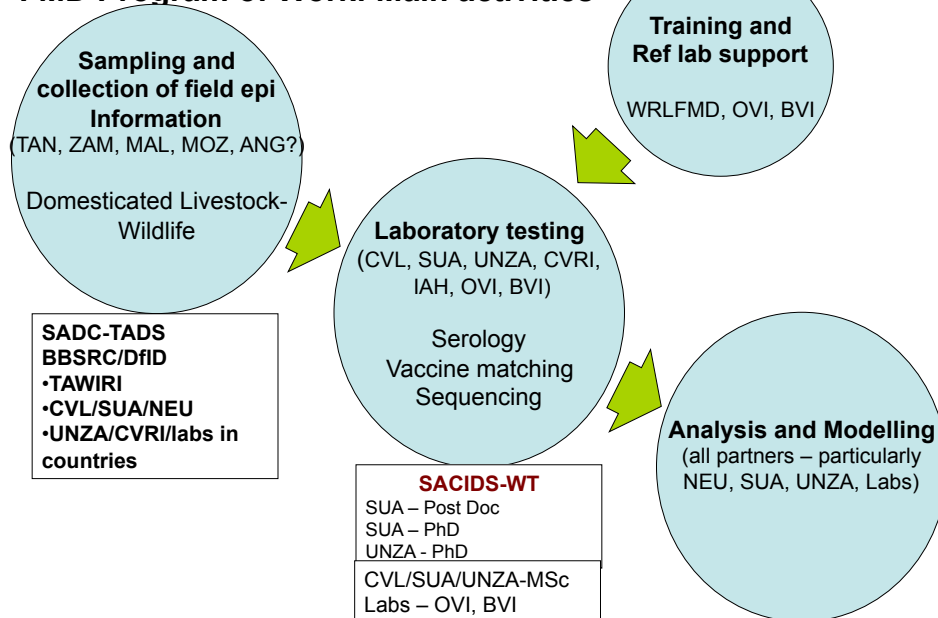
Research Objectives:

1. Serosurveys to determine the *spatial and temporal* distribution of FMDV serotypes in domesticated livestock and wildlife animals. (MSc)
2. Phylogeography of FMDV in endemic settings in Southern Africa (TZN). (PhD)
3. Investigation on the epidemiology of FMD endemicity in Southern Africa (ZAM). (PhD)
4. Identification of the *viral determinants* of protection by correlating the *capsid sequence-based* and *serological predictions of cross-protection* among selected FMDV strains. (Postdoc)
5. Investigation on the *evolutionary changes*, and predict the possibility for virus escape from the current vaccine strains by whole genome sequencing of selected FMDV serotypes detected in Southern Africa. (Postdoc)



SACIDS/SADC-TADs/other collaborators

FMD Program of Work: Main activities

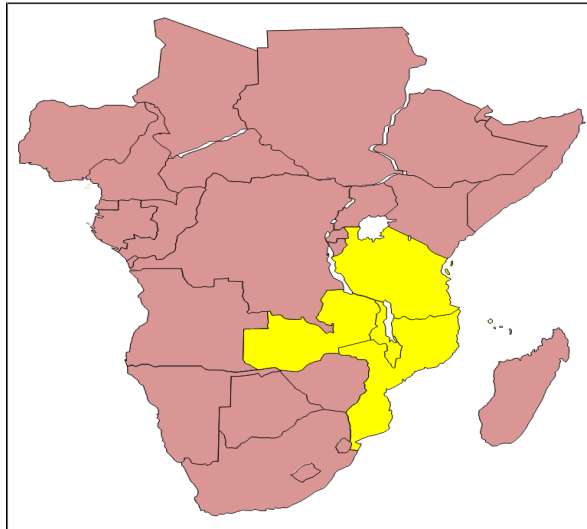




The study area in Southern Africa



Selected livestock-wildlife interface areas in Tanzania, Zambia, Mozambique and Malawi are involved, (+ Angola?)



Note: Yellow colour indicates countries for FMD endemicity study in Southern Africa



Recommendations and future work



- FMDV surveillance and outbreak investigation:
 - More sample collection
 - Appropriate diagnosis
 - Inference to molecular epidemiology hence right control options
- Research to describe the complex epidemiology, transmission dynamics and endemicity of FMD in livestock-wildlife interface areas is needed
 - SACIDS & SADC FMD Projects
 - Other initiatives? Plus respective governments??
- Molecular characterisation and analysis of many FMD samples in livestock-wildlife interface areas is needed to elucidate the transmission-phylogenetics and evolutionary nature of FMDV
- Antigenicity, cross-protection and vaccine-matching of the field isolates to be continuously conducted



Acknowledgements



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