

Kampala, Uganda

GFRA

Scientific Meeting

November 8-10, 2023

Hosted by the Global Foot-and-Mouth Disease
Research Alliance (GFRA)



“Tailoring research strategies and tools to control FMD in endemic settings.”
8th-10th November 2023

Speke Resort Munyonyo
Plot 94, 411, Kampala, Central Region, Uganda 00000 Kampala, Uganda
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Dear Delegate:

Foot and mouth disease remains a global challenge with many countries suffering numerous outbreaks every year, often despite investments into control actions and vaccines. However, for many resource poor countries there are many other more pressing priorities, resulting in farmers bearing the brunt of the disease and its impact on their livelihoods and food security. On the other side of the scale, we have those countries that are free from FMD and invest significantly into preventing any accidental or deliberate introduction that could have devastating impacts on their livestock export markets.

It has always been the vision that the Global Foot and Mouth Disease Research Alliance (GFRA) will provide solutions to these challenges. We realize that novel tools and approaches are necessary to assist in the global effort to control FMD. In addition, there is strength in numbers and therefore a networking approach is best suited for this complex challenge. The GFRA has been a flagship in demonstrating how collaborations can lead to improved vaccines and how a better understanding of the immune responses to vaccination and infection and virus structure can be used to design better control tools and measures.

This year, the GFRA 2023 Scientific Meeting is being held in beautiful Kampala, Uganda - a region where FMD is an ongoing challenge. You are invited to share your research results with the broader FMD scientific community and catch up with colleagues. We also encourage you to come and make new friends and explore the possibility of new collaborations. Together we can make a difference.

Alejandra Capozzo
GFRA Chief Executive Officer

Frank Mwiine
GFRA President



GFRA 2023 Full Scientific Meeting Programme

Day One: Wednesday 8th November Victoria Ballroom

Opening Session		
08:30-08:40	Opening Ceremony	
08:40-10:15	Strengthening foot and mouth disease (FMD) research and development to enable disease control and boosting trade from endemic countries	Hon. F. K. Tumwebaze
	GFRA accomplishments and impact after two decades – what next?	C. Gay
	Trends of FMD reporting from Eastern Africa countries to WOAHA from 2018-2023	S. Wakhusama
	Research networks and digital tools to support FMD surveillance and control, Opportunities and challenges	F. Rosso
	The immunogenicity of a foot-and-mouth disease virus serotype O vaccine in commercial and subsistence cattle herds in Zambia	F. Banda
10:15-10:45	Tea Time	
10:15-11:15	Poster Session 1	Albert Hall
Session 1: Session FMD Research in Africa (Part 1)		
11:15-11:20	Introduction	S. Kerfua, T. Knight-Jones
11:20-12:15	An on station evaluation of commercial foot-and mouth disease vaccines used in Uganda	S. Kerfua
	The interplay between transmission dynamics and vaccine effectiveness in the control of endemic FMD: the case of the crop-livestock mixed system in Ethiopia	W. Temesgen
	Efficacy of a foot-and-mouth disease vaccine against a heterologous SAT1 virus challenge in goats	D. Lazarus
	Foot-And-Mouth Disease SAT Specific Virus Peptide Phage Display Libraries For The Identification Of Epitopes	M. Chitray
12:15-12:30	Discussion	
12:30-14:00	Lunch	



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Session 2: Epidemiology (Part 1)		
14:00- 14:15	Keynote: Epidemiology of foot-and-mouth disease in Uganda: A researcher's insights from the past decade	S. Ochwo
14:15-14:20	Introduction	A. Sangula, S. Baluka
14:20-15:15	Optimising simple clinical and environmental approaches to sampling foot-and-mouth disease virus for next generation sequencing	M. Bronsvoot
	Molecular characterisation of foot-and-mouth disease virus using 'k-mer' clustering analysis	N. Singanallur
	Molecular epidemiology of FMDV in Tanzania: implications for FMD control in East and Southern Africa	C. J. Kasanga
	The role of small ruminants and the environment in the epidemiology and endemicity of FMDV: a longitudinal study in Northern Nigeria in 2021	G. Limon-Vega
15:15-15:30	Discussion	
15:30-16:00	Tea Break and Poster Viewing	Albert Hall
Session 3: Diagnostics		
16:15-16:30	Keynote: Can new technologies bridge surveillance gaps for FMD?	D. King
16:30-16:35	Introduction	W. Vosloo, D. King
16:35-17:30	Complete genome sequencing of FMDV using nanopore sequencing	A. Shaw
	Preliminary validation of multiplex lateral flow devices LFD1 and LFD2 for on-field identification and serotyping of foot-and-mouth disease viruses	E. Foglia
	Challenge methods for FMD studies in pigs compared	P. Eblé
	Revisiting an old classic: Using the IgG1 avidity ELISA to predict cross-protection in the Brehm et al. sample set	A. Capozzo
17:30-17:45	Discussion	
17:45-18:45	General Assembly	GFRA Executive Committee
19:30-20:30	Cocktail Hour	Infinity Poolside



Boehringer Ingelheim is the world leader in the sector of Veterinary Public Health and has a totally dedicated department known as Veterinary Public Health (VPH) which is committed to combating government-notifiable diseases, ie: diseases which are managed at State level as they pose a significant threat to humans, animals and agricultural economies in both developed and developing countries.

VPH partners with health authorities, governments and non-government organizations (NGO) to develop, produce and market vaccines mainly against transboundary diseases of which Foot-and-Mouth disease (FMD), rabies and bluetongue virus (BTV). bi holds the industry's largest portfolio of vaccine strains against these same diseases.



Further information

Should you require information, please free to visit our website: [Veterinary Public Health | Boehringer Ingelheim \(boehringer-ingelheim.com\)](http://Veterinary Public Health | Boehringer Ingelheim (boehringer-ingelheim.com))



Day Two: Thursday 9th November
Victoria Ballroom

Session 4: Pathogenesis	
08:30-08:35	Welcome Message
08:35-08:50	Keynote: Stealthy, Steadfast, or Surprising? FMDV pathogenesis in different host species C. Stenfeldt
08:50-08:55	Introduction J. Arzt, T. Tuthill
08:55-09:50	Leaderless FMDV O is fully attenuated in cattle and does not establish persistent infections M. Eschbaumer
	Leaderless FMDV O does not establish a persistent infection in multilayered cells derived from bovine dorsal soft palate S. Blaise-Boisseau
	Association between FMDV Persistent Infection and High Aryl Hydrocarbon Receptor Activation of Cattle Sera J. Zhu
	Incubation phase transmission of FMDV in cattle J. Arzt
09:50-10:05	Discussion
10:05-10:35	Tea Break
10:15-11:15	Poster Session 2 Albert Hall
Session 5: Epidemiology (Part 2)	
11:15-11:20	Introduction G. Limon-Vega, B. Byamukama
11:20-12:15	Occurrence and Control Strategies for Foot and Mouth Disease in Uganda: Systematic Review and Meta-analysis B. Byamukama
	Sero-survey of foot-and-mouth disease virus serotypes O and A in selected livestock-wildlife interface areas in Tanzania C. J. Kasanga
	Genetic and antigenic characterization of variants of serotype O/ME-SA/PANASIA sublineage circulating in Pakistan during 2012-2020 J. Syed
	Detection And Characterization Of Foot And Mouth Disease Viruses In Small Ruminants In Nigeria D. Ehizibolo
12:15-12:30	Discussion
12:30-14:00	Lunch





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PLANNING.
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Session 6: Virology		
14:00- 14:15	Keynote: Molecular Interplays of FMDV with the type I IFN Response and Importance of the Model	S. Blaise-Boisseau
14:15- 14:20	Introduction	G. Medina, M. Eschbaumer
14:20-15:15	Interferon stimulated genes correlate with mammalian resistance to foot-and-mouth disease	T. Tuthill
	Inter-serotypic recombination of foot-and-mouth disease virus following superinfection of carrier cattle	J. Arzt
	Development of an FMDV minigenome, pKLS3, and its applications	P. Semkum
	Mapping of FMDV antigenic sites recognized by single-domain antibodies reveals different 146S particle specific sites and particle flexibility	M. Harmsen
15:15-15:30	Discussion	
15:30-16:00	Tea Break and Poster Viewing	Albert Hall
Session 7: Immunology		
16:15-16:30	Keynote: Status update on using serology to evaluate vaccine suitability	A. Ludi
16:30-16:35	Introduction	J. Zhu, E. Pérez-Martín
16:35-17:30	Heterologous cross-neutralization with different Foot and Mouth Disease vaccine schemes against serotype O strains	M. Pérez-Filgueira
	Maternally derived antibodies to FMDV modulate the antigenic specificity of the antibody response in vaccinated cattle	J. Binti Senawi
	Impact of Fasciola hepatica infection on the long-term immune response induced by Foot-and-Mouth disease vaccination	A. Capozzo
	Optimising prime-boost interval to Enhance FMD Vaccination Efficacy in Cattle	R. Bommanna
17:30-17:45	Discussion	
18:45-19:30	Gala Dinner Activity	B. Perry & Panelists
19:30	Gala Dinner	Commonwealth Banquet Hall

Day Three: Friday 10th November
Victoria Ballroom

Session 8: Vaccines		
08:30-08:35	Welcome Message	
08:35- 08:50	Keynote: Advances on FMD Vaccines: Twenty-First Century Solutions To A Centuries-Old Problem	L. Rodriguez
08:50-08:55	Introduction	M. Chitray, M. Pérez-Filgueira
08:55-09:50	An overview on the efficacy of novel FMDV vaccines carrying antigenic signatures	E. Rieder
	Potential live-attenuated FMDV serotype O IND R2/1975 vaccine candidate strain generated through genome re-coding approach	J. Kumar Biswal
	Rethinking next-generation FMDV vaccines: use of codon deoptimization strategies	G. Medina
	Tackling FMD in Eastern Africa using stabilized virus-like particles vaccines	E. Pérez-Martín
09:50-10:05	Discussion	
10:05-10:30	Tea Break	
Session 9: FMD Research in Africa (Part 2)		
10:30-10:45	Keynote: Incentivizing adoption of high-quality FMD vaccines in Eastern Africa: Lessons Learned from the AgResults Model	N. Henning
10:45-10:50	Introduction	F. Mwiine, A. Namatovu
10:50-11:45	Foot-and-mouth disease situation in Nigeria	H. Gulak Ularamu
	Foot-and-mouth disease situation in Mozambique	I. Vieira
	Mutational Spectra of Foot and Mouth Disease Viruses Isolated from Egypt, 2020-2022	M. Fawzy
	Economic Impact of the Foot and Mouth Disease (FMD) on Domestic Small Ruminants Production in the Northern Regions of Cameroon	S. Dickmu
11:45-12:00	Discussion	
12:00-13:00	Wrap-up Session	
13:00-14:30	Lunch	



Session 10: Satellite Activities		
14:30-15:15	STAR-IDAZ FMD Roadmap Conference	<i>J. Salt, L. Elhachimi</i>
15:30-16:00	From sample-to-sequence: practical FMDV field-based sampling for MinION sequencing	<i>L. González</i>
16:00-16:15	Discussion	
16:15-16:45	A step-by-step guide to sequencing FMDV genomes using nanopore sequencing technology	<i>A. Shaw</i>
16:45-17:00	Discussion	
17:00-18:00	Workshop: Nanopore-based genome sequencing of Foot-and-Mouth Disease Virus	<i>A. Shaw & Team</i>

NOTES

Poster Session Number Guide

Session 1		
Title	Presenting Author	Poster No.
MOLECULAR DIFFERENTIATION AND PHYLOGENETIC ANALYSIS OF THE EGYPTIAN FOOT-AND-MOUTH DISEASE VIRUS COLLECTED FROM ISMAILIA GOVERNORATE, 2021	Ashour, Nourhan Ahmed	DI1
Development of foot and mouth disease serotype-specific blocking ELISAs using monoclonal antibodies	Babiuk, Shawn	DI2
Development and Validation of a Field-Applicable CMOS Image Sensor-Based Multi-Well Real-Time Reverse Transcription PCR System for Rapid and Accurate Detection and Serotyping of Foot-and-Mouth Disease Virus	Kang, Hyeonjeong	DI3
Filter paper as an alternative method for transportation of samples in resource-limited areas in Africa for diagnosis of foot-and-mouth disease	Kasanga, Christopher Jacob	DI4
Operation and Utilization of a Foot-and-Mouth Disease Serum Bank as a National Reference Laboratory for Foot-and-Mouth Disease Diagnosis in South Korea	Tae-Woon Kim	DI5
Lateral flow devices for the rapid detection of FMDV	Mioulet, Valérie	DI6
Comparison of sensitivity and specificity of commercial ELISA kits available in Thailand for detecting antibodies to non-structural proteins of foot and mouth disease virus	Ngamsomsuk, Parichat	DI7
Foot-and-mouth disease laboratory diagnosis in the framework of the PCP-FMD in Nigeria (2011-2022)	Wungak, Yiltawe Simwal	DI8
Phylogenetic and genotypic characteristics of the foot-and-mouth disease virus from outbreaks in South Korea, 2023	Kang, Hyeonjeong	EP1
Genotypic identification of Foot and mouth disease virus isolated from Cambodia between 2018-2022	Kang, Hyeonjeong	EP2
Genetic Analysis of Foot-and-Mouth Disease Virus O/ME-SA/SA-2018 in Bangladesh, 2022	Kang, Hyeonjeong	EP3
Phylogenetic analysis of Foot-and-mouth disease viruses circulating in Vietnam in 2022	Kang, Hyeonjeong	EP4
Clinical Prevalence of Foot-and-Mouth Disease in Smallholder Dairy Cattle in Northern Cameroon	Lendzele, Sevidzem Silas	EP5
Cross-sectional study of Senecavirus A infection in pig farms in Taiwan	Pan, Cheng-Ju	EP6
Antigenicity comparison of serotype O vaccine strains against foot- and mouth disease virus from the O/ME-SA/Ind-2001 lineage circulating viruses in Thailand	Samanit, Janya	EP7
SEROLOGICAL STUDY AND COMPARISON OF VARIOUS TYPES OF CATTLE GROUPS IN THE ZAMBEZI REGION OF NAMIBIA: A CROSS SECTIONAL STUDY	Samuntu, Freddy	EP8



Session 2		
Title	Presenting Author	Poster No.
Investigation of Foot-and-Mouth Disease Virus serotypes from Livestock in Kenya in the year 2020	Nduku Mutua, Hellen	PA1
Analyses of Bovine Immunoglobulin Constant Heavy Chain Protein Sequences and the Inferred Properties Regarding Antibody Binding to FM	Zhu, James	IM1
Mechanisms of Tissue Susceptibility to FMDV Persistent Infection Based on Genes Differentially Expressed between Target and Non-target Tissues	Zhu, James	IM2
Leaderless FMDV O does not establish a persistent infection in multilayered cells derived from bovine dorsal soft palate	Blaise-Boisseau, Sandra	VI1
Comparison of formaldehyde inactivation of dried FMDV with 3M Attest 1294-S and discs containing Bacillus atrophaeus spores	Dekker, Aldo	VI2
Comparison of VP1 sequences between samples transfected with FMDV and clinical samples	Kang, Hyeonjeong	VI3
Development and evaluation of multivalent FMD vaccine using local field isolates	Akram, Qaiser	VA1
COVAREGE OF A NOVEL MONOVALENT O1 CAMPOS VACCINE AGAINST FOOT AND MOUTH DISEASE (FMD) VIRUSES CIRCULATING IN AFRICA AND ASIA	Bustillo, Sofia Gomez	VA2
POST VACCINATION MONITORING (PVM) TO ASSESS THE EFFICACY OF THE FMD VACCINE USED IN JORDAN	Foglia, Efrem Alessandro	VA3
Evaluation of swine protection with commercial foot-and-mouth disease vaccines against challenge with an A/ASIA/Iran-05 lineage virus from South East Asia	Kim, Jaejo	VA4
The early efficacy study on the vaccination of commercial and experimental foot-and-mouth disease vaccines against the challenge with an O/CATHAY isolate from South East Asia in pigs	Kim, Jaejo	VA5
Construction of a FMDV-specific recombinant antibody phage-display bovine library for epitope identification and diagnostic reagents	Mangena, Maruping	VA6
Evaluation of Foot-and-Mouth Disease Virus Inactivation Kinetics with Binary Ethylenimine for Vaccine Production in South Korea	Park, Sang-Hyun	VA7
Stabilized SAT1 virus-like particles protect cattle against foot-and-mouth disease	Perez-Martin, Eva	VA8
Stabilized SAT2 virus-like particles protect cattle against foot-and-mouth disease	Perez-Martin, Eva	VA9
Selection and use of a reference antigen panel to assess the regional relevance of foot-and-mouth disease vaccines in East Africa	Paton, David	VA10
Improved in vitro and in vivo assays to assess the quality of FMD vaccine: Preliminary evidence from the Indian experience	Periyasamy, Tamil Selvan Ramasamy	VA11
Biogénesis Bagó FMD vaccines: immunogenicity studies in small ruminants and cross immunity against prevalent FMDV lineages in Middle East Asia	Scian, Romina	VA12
FMD vaccine strain Asia 1/Sindh-08: immunogenicity studies in cattle and cross immunity against prevalent Asia 1 field viruses	Scian, Romina	VA13



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