WOAH Collaborative Centre Reports Activities 2022

Activities in 2022

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Centre Information

Title of WOAH Collaborating Centre	
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Name Director of Institute (Responsible Official):	Misheck Mulumba
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Name of the writer:	Misheck Mulumba

TOR1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

DISEASE CONTROL	
Title of activity	Scope

African Horse Sickness diagnostics	Indirect ELISA = 837 Virus Neutralisation Test = 117 Real Time RT-PCR = 289
DISEASE CONTROL	
Title of activity	Scope
Bluetongue diagnostics	Competitive antibody ELISA = 1267 Virus Neutralisation Test = 96 Real Time RT-PCR = 1418
DISEASE CONTROL	
Title of activity	Scope
Rift Valley Fever diagnostics	Indirect antibody ELISA = 622 Capture antibody ELISA = 622 Virus Neutralisation Test = 16 Real Time RT-PCR = 140
DISEASE CONTROL	
Title of activity	Scope
African Swine Fever diagnostics	ASF Serology = 3132 ASF PCR = 388 ASF Genotyping = 128
DISEASE CONTROL	
Title of activity	Scope
Foot and Mouth Disease diagnostics	National and international tests combined. FMDV ELISA (SPCE) = 198 785 FMDV NSP ELISA = 7630 FMDV VNT = 92 FNDV PCR = 1215 FMDV Virus isolation = 37 FMDV Molecular Typing = 47
DISEASE CONTROL	
Title of activity	Scope
Rabies diagnostics	Monoclonal antibody typing = 10 Direct fluorescent antibody test = 335 PCR = 61 Fluorescent antibody virus neutralisation test = 4932
DISEASE CONTROL	
Title of activity	Scope

Lumpy skin disease diagnostics	VNT = 149 PCR = 53

DISEASE CONTROL	
Title of activity	Scope
Sheep pox and goat pox	None

TOR3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

Proposal title	Scope/Content	Applicable area
Sentinel® ASFV Antibody Rapid test	Assisted the Pirbright laboratory to validate a commercial ASF Antibody Rapid test.	Laboratory expertise
PCR test for distinguishing recombinant LSDVs using a region within ORF134	Krotova, A., Mazloum, A., van Schalkwyk, A., Prokhvatilova, L., Gubenko, O., Byadovskaya, O., Chvala, I. and Sprygin, A. 2023. The charaterization and differentiation f recombinant lumpy skin disease isolates using a region within ORF134. Applied Microbiology. 3(1): 35-44. https://doi.org/10.3390/applmicrobiol3010003	Training and education

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Centro de Vigilancia Sanitaria Veterinaria (VISAVET) Facultad de Veterinaria HCV Planta			

sotano Universidad Complutense de Madrid (UCM), Laboratorio Central de Sanidad Animal (LCV-Algete) and Pirbright institute	Spain United Kingdom	Europe	African Horse Sickness diagnosis differences among reference laboratories
The Commonwealth Scientific and Industrial Research organisation (CSIRO); Pirbright Institute; Istituto Zooprofilatticao Sperimentale dell'Abruzzo e del Molise "G. Caporale (IZS)	Australia Italy United Kingdom	Europe	(Bluetongue) To develop a template to populate diagnostic test validation data, for analysis and possible endorsement as an assay validated according to WOAH standards.
EcoHealth Alliance; National Institute for Communicable Diseases (NICD); University of Pretoria (UP	United States of America (NASA)	Americas	To understand and control the risk of Rift Valley Fever in South Africa
Institute of Virology, National Institute of Agricultural Technology (INTA), Argentina. The Pirbright Institute, UK. University of Glasgow, UK.	Institute of Virology, National Institute of Agricultural Technology (INTA), Argentina. The Pirbright Institute, UK. University of Glasgow, UK.	Europe	Development of novel diagnostics. Construction of foot-and-mouth disease (FMD) virus-specific phage display libraries and epitope identification for improved FMD vaccines generation.
The Pirbright Institute	United Kingdom	Europe	Validation of lateral flow devices for the diagnosis of African Swine Fever
Validation of lateral flow devices for the diagnosis of African Swine Fever	United States of America	Americas	Comprehensively assess the pig contact networks, pig management and socioeconomic factors, tick involvement in ASFV transmission, ASF seroprevalence and viral diversity in the sylvatic and domestic cycles.
University of Pretoria, Kansas State University	United States of America	Americas	Comprehensively assess the geographical expansion of the ASFV sylvatic cycle in South Africa
Reference Laboratory for African Swine Fever Virus, FGBI "Federal			To determine the complete

Centre for Animal Health, Russia	Russia	Asia and Pasific	genome sequences of ASVF circulating in Russia
The Pirbright Institute (UK), Sciensano (Belgium) and 24 others	Australia , Azerbaija n, Belgium, Bosnia and Herzegov ina, Bulgaria, Canada, France, German, Greece, Israel, Italy, Montene gro, North Macedo nia, Serbia, Slovenia, Spain. Sweden, Turkey, United KIngdom	Asia and Pasific Europe	To investigate the threats imposed by ASF and LSD to Europe, primarily, but, also globally, and to devise solutions
Federal Center for Animal Health, Vladimir; Department of Food Safety, Veterinary specialized Institute Kraljevo, Zicka, Kraljevo	Russia Serbia	Asia and Pasific	Development of Real-Time PCR Assay for the Specific Detection of the NISKHI Sheep Pox Vaccine Virus Strain DNA

TOR4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

No

TOR6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

NAME OF EXPERT	KIND OF CONSULTANCY	SUBJECT
Dr Livio Heath	WOAH Ad Hoc Group for FMDV	Evaluating applications by member states for WOAH recognition of disease status.
Dr David Wallace	Advisory	Review of LSD section for BSC concerning recombinant viruses in the field.
Dr David Wallace	Advisory	LSD chapter for Terrestrial manual update.

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 260

c) Hands-on training courses: 2

d) Internships (>1 month) : 0

TYPE OF TECHNICAL TRAINING PROVIDED (A, B, C OR D)	CONTENT	COUNTRY OF ORIGIN OF THE EXPERT(S) PROVIDED WITH TRAINING	NO. PARTICIPANTS FROM THE CORRESPONDING COUNTRY
c	Provided training LSD diagnostic test methods	Russia	2
b	Russia	Turkey	26
b	Provided training LSD diagnostic test methods	East African countries	154

TOR8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

Yes

NATIONAL/INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	Discussion of inconsistencies among OIE Reference Laboratories in results obtained using the real- time RT-PCR for African Horse sickness	Participant	2022-01-01	Online	
	Meeting to discuss which validated diagnostic method to				

International	choose for Development of a template for the validation data for addition of a test to a future online list of tests validated to the WOAH Standard	Participant	2022-06-01	Online	
International	Laboratory diagnosis for rabies	Speaker	2022-09-27	Online	
International	WOAH workshop for SE Asia region on LSD vaccines and QC	Sciensano	2022-05-13	Online	80
International	Twinning project proposal with CAHEC in China	WOAH		Online	10

TOR9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

22

Faber, E., Tshilwane, S. I., Van Kleef, M., & Pretorius, A. (2022a). Apoptosis versus survival of African horse sickness virus serotype 4-infected horse peripheral blood mononuclear cells. Virus Res., Jan 2;307:198609. https://www.doi.org/10.1016/j.virusres.2021.198609

Faber, E., Tshilwane, S. I., Van Kleef, M., & Pretorius, A. (2022a). The impact of Escherichia coli contamination products present in recombinant African horse sickness virus serotype 4 proteins on the innate and humoral immune responses. Mol Immunol., 152: 1-13. https://www.doi.org/10.1016/j.molimm.2022.09.013

Venter, G.J., Sebitsang, S.S., Swart, V.R., Boikanyo, S.N.B. & de Beer, C.J. (2022). Comparison of the efficiency of the Onderstepoort- and Centres for Disease Control ultraviolet light traps for the collection of livestock associated Culicoides species in South Africa. Medical and Veterinary Entomology 36, 113-126 https://doi.org/10.1111/mve.12558

Moetlhoa, B., Tjale, M., Pretorius, A., Hayeshi, R., Grobler, A., & Mokoena, N.B (2022). Rift Valle Fever vaccine strategies: Enhanced stability of RVF Clone 13. Vaccine. https://doi.org/10.1016/j.vaccine.2022.12.056. Epub 2022 Dec 31.

Review of the Pig-Adapted African Swine Fever Viruses in and Outside Africa. Penrith ML, Van Heerden J, Heath L, Abworo EO, Bastos. ADS. Pathogens. 2022 Oct 16;11(10):1190. doi: 10.3390/pathogens11101190.

Detection of African Swine Fever Virus in Ornithodoros Tick Species Associated with Indigenous and Extralimital Warthog Populations in South Africa. Craig AF, Schade-Weskott ML, Rametse T, Heath L, Kriel GJP, de Klerk-Lorist LM, van Schalkwyk L, Trujillo JD, Crafford JE,,Richt JA , Swanepoel R. Viruses. 2022 Jul 26;14(8):1617. doi: 10.3390/v14081617.

Whole-genome sequencing of African swine fever virus from wild boars in the Kaliningrad region reveals unique and distinguishing genomic mutations. Mazloum A , van Schalkwyk A , Shotin A , Zinyakov N, Igolkin A , Chernishev R, Debeljak Z, Korennoy F, Sprygin AV. Front Vet Sci. 2023 Jan 5;9:1019808. doi: 10.3389/fvets.2022.1019808. eCollection 2022.

Genetic Characterization of the Central Variable Region in African Swine Fever Virus Isolates in the Russian

Federation from 2013 to 2017. Mazloum A , Van Schalkwyk A , Chernyshev R, Shotin A , Korennoy FI, Igolkin A , Sprygin A. Pathogens. 2022 Aug 15;11(8):919. doi: 10.3390/pathogens11080919.
Ngoepe, E., Chirima JG., Mohale D., Mogano K., Toru Suzuki., Makita K. and Sabeta, C.T. (2022) Rabies outbreak in black-backed jackals (Canis mesomelas), South Africa, 2016. Epidemiology and Infection. Doi: 10.1017/s0950268821002685.
Veronica O. Ameh, George J. Chirima, Melvyn Quan and Claude T. Sabeta. (2022) Public Health Awareness on Bats and Their Disease Carrying Potential among Bat Handlers and Persons Residing Near Bat Roosts in Makurdi, Nigeria. Pathogens. 11(9):975. doi: 10.3390/pathogens11090975. PMID: 36145407; PMCID: PMC9505307.
Mapatse, M., Sabeta, C., Abernethy, D. and Fafetine, J. (2022) Knowledge Attitudes and Practices (KAPs) of rabies among households and healthcare practitioners at the Human-wildlife interface in Limpopo National Park, Massingir District, Mozambique. PLoS Neglected Tropical Diseases 16(3): e0010202. DOI:10.1371/journal.pntd.0010202
Malan, A.J., Coetzer, A., Sabeta, C.T. and Nel, L.H. (2022) Epidemiological interface of sylvatic and dog rabies in the North West province of South Africa. Tropical Medicine and Infectious Diseases. 7, 90. https://doi.org/10.3390/ 7 tropicalmed7060090.
Mogano K., Suzuki T., Mohale D., Phahladira B., Ngoepe E., Kamata Y., Chirima G., Sabeta C. and Makita K. (2022) Spatio-temporal epidemiology of animal and human rabies in northern South Africa in 1998-2017. Plos Neglected Tropical Diseases. DOI: 10.1371/journal.pntd.0010464.
Milton Mapatse, Ernest Ngoepe, Darrel Abernethy, José Manuel Fafetine, Iolanda Anahory and Claude Sabeta. (2022) Seroprevalence of rabies in dogs in Limpopo National Parkand phylogeny of rabies viruses in Mozambique. Pathogens. 11(9):1043. doi: 10.3390/pathogens11091043. PMID: 36145475; PMCID: PMC9506193.
Shumilova, I., Krotova, A., Nesterov, A., Byadovskaya, O., van Schalkwyk, A., and Sprygin, A. 2022. Overwintering of recombinant lumpy skin disease virus in northern latitudes, Russia. Transboundary and Emerging Diseases.
Krotova, A., Byadovskaya, O., Shumilova, I., Zinyakov, N., van Schalkwyk, A., and Sprygin, A. 2022. Molecular characterization of a novel recombinant lumpy skin disease virus isolated during an outbreak in Tyumen, Russia, in 2019. Transboundary and Emerging Diseases.
Krotova, A., Byadovskaya, O., Shumilova, I., van Schalkwyk, A., and Sprygin, A. 2022. An in-depth bioinformatic analysis of the novel recombinant lumpy skin disease virus strains: from unique patterns to established lineage. BMC genomics, 23(1), 1-10.
van Schalkwyk, A., Kara, P., and Heath, L. 2022. Phylogenomic characterization of historic lumpy skin disease virus isolates from South Africa. Archives of Virology, 1-8.
Sprygin, A., Mazloum, A., van Schalkwyk, A., & Babiuk, S. 2022. Capripoxviruses, leporipoxviruses, and orthopoxviruses: Occurrences of recombination. Frontiers in Microbiology, 13.
Nesterov A , Mazloum A , Byadovskaya O, Shumilova I, van Schalkwyk A , Krotova A , Kirpichenko V, Donnik I, Chvala I and Sprygin A. 2022 Experimentally controlled study indicates that the naturally occurring recombinant vaccine-like lumpy skin disease strain Udmurtiya/2019, detected during freezing winter in northern latitudes, is transmitted via indirect contact. Front. Vet. Sci. 9:1001426. doi: 10.3389/fvets.2022.1001426
Krotova, A., Mazloum, A., van Schalkwyk, A., Prokhvatilova, L., Gubenko, O., Byadovskaya, O., Chvala, I. and Sprygin, A. 2023. The characterization and differentiation of recombinant lumpy skin disease isolates using a region within ORF134. Applied Microbiology. 3(1):35-44. https://doi.org/10.3390/applmicrobiol3010003
Sprygin, A., Mazloum, A., Van Schalkwyk, A., Krotova, A., Shalina, K., Dmitric, M., Byadovskaya, O., Prokhvatilova, L., & Chvala, A. (2022). The Development of a Real-Time PCR Assay for Specific Detection of the NISKHI Sheep Pox Vaccine Virus Strain DNA. Applied Microbiology, 2(4), 956-964; https://doi.org/10.3390/applmicrobiol2040073

b) International conferences:
6
USDA BSL-3 and Transboundary Animal Diseases. Training Programme. Kansas State University, USA. 13-17 June 2022. Managing endemic transboundary animal diseases in South Africa: African swine fever. L Heath.

2022.
Global African Swine Fever Research Alliance 2022 Scientific Meeting. Dominican Republic. 21-27 May 2022. Assessing the Ornithodoros vector and associated ASFV status of selected wildlife reserves in the ASF control zone of South Africa. C Boshoff, A Bastos, L Heath. 2022
Global African Swine Fever Research Alliance 2022 Scientific Meeting. Dominican Republic. 21-27 May 2022. Rope-Based oral fluid sampling of warthogs: Lessons learned from South Africa. D Kleynhans, A Bastos, L Heath. 2022.
Global African Swine Fever Research Alliance 2022 Scientific Meeting. Dominican Republic. 21-27 May 2022. Phylogenomics of genotype II African swine fever viruses from outbreaks in southern Africa (1993-2019). R Mthombeni, A Bastos, A Van Schalkwyk, J Van Heerden Juanita, L Heath. 2022.
USDA BSL-3 and Transboundary Animal Diseases. Training Programme. Kansa State University, USA. 13-17 June 2022. Managing endemic transboundary animal diseases in South Africa: African swine fever. L Heath. 2022.
Current and future Challenges in veterinary virus genomics, The Pirbright Institute, UK. 21-22 June 2022. OIE coordinated genomics based response to ASF incursions in South Africa. L Heath. 2022.

c) National conferences:
3
Southern African Society for Veterinary Epidemiology and Preventive Medicine Workshop on FMDV. June 2022. Contribution of laboratory services and capacity for surveillance. L Heath. 2022
Attended the Southern African Society for Veterinary Epidemiology and Preventive Medicine (SASVEPM Conference), 24-26 August, 2022, and presented the following as a poster: ii. Miyen, M.J., Lopez, L. and Sabeta C.T. A serological assessment of rabies-neutralising antibodies in wildlife species to facilitate international movement (poster) and i. Mokano, K., Suzuki T., Mohale D., Phahladira B., Ngoepe E., Kamata Y., Chirima G., Sabeta C. and Makita K. Spatio-temporal epidemiology of animal and human rabies in northern South Africa during 1998-2017 as an oral.

d) Other (Provide website address or link to appropriate information):
1
Workshop in Dubai: van Schalkwyk, A. Phylogenetic characterization of LSDV isolates from Africa.
Lumpy Skin Disease Virus workshop, Dubai, UAE
16 to 18 November 2022

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

12. Additional comments regarding your report: