

OIE Reference Laboratory Reports Activities

Activities in 2021

This report has been submitted : 2022-01-13 07:49:02

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Rabies
Address of laboratory:	Rabies Unit Private Bag X05 Onderstepoort 0110 SOUTH AFRICA
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Name (including Title) of Head of Laboratory (Responsible Official):	Dr Munangatire Mparamoto
Name (including Title and Position) of OIE Reference Expert:	Claude Taurai Sabeta
Which of the following defines your laboratory? Check all that apply:	Governmental Research Academic

ToR 1: To use, promote and disseminate diagnostic methods validated according to OIE Standards

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

Diagnostic Test	Indicated in OIE Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests		Nationally	Internationally
Immunoperoxidase test	Yes	9	0
Direct diagnostic tests		Nationally	Internationally
Direct fluorescent antibody test	Yes	372	0
Fluorescent antibody virus neutralisation test	Yes	4244	280
Polymerase chain reaction	Yes	71	0

**ToR 2: To develop reference material in accordance with OIE requirements, and implement and promote the application of OIE Standards.
To store and distribute to national laboratories biological reference products and any other reagents used in the diagnosis and control of the designated pathogens or disease.**

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by the OIE?

No

3. Did your laboratory supply standard reference reagents (non OIE-approved) and/or other diagnostic reagents to OIE Member Countries?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient OIE Member Countries	Region of recipients
Anti-lyssavirus biological conjugate	Direct fluorescent antibody test	Produced and provided	0	11 mls	2	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Mokola lyssavirus and LEP seed for rabies vaccine	PCR control and rabies vaccine production	Provided	0	2 vials	1	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to OIE Member Countries?

No

ToR 3: To develop, standardise and validate, according to OIE Standards, new procedures for diagnosis and control of the designated pathogens or diseases

6. Did your laboratory develop new diagnostic methods validated according to OIE Standards for the designated pathogen or disease?

No

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

ToR 4: To provide diagnostic testing facilities, and, where appropriate, scientific and technical advice on disease control measures to OIE Member Countries

8. Did your laboratory carry out diagnostic testing for other OIE Member Countries?

No

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

No

ToR 5: To carry out and/or coordinate scientific and technical studies in collaboration with other laboratories, centres or organisations

10. Did your laboratory participate in international scientific studies in collaboration with OIE Member Countries other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
Serum Neutralisation profiles of Straw-Colored Fruit Bats (<i>Eidolon helvum</i>) against four Lineages of Lagos Bat Lyssavirus	12 months	To assess the neutralizing antibodies against four lineages of LBVs in straw-colored fruit bats (<i>Eidolon helvum</i>) in Makurdi, Nigeria.	Federal University of Agriculture Makurdi and the Animal and Plant Health Agency (UK)	NIGERIA
Data Analysis of Knowledge, Attitude and Practices Questionnaire and Rabies Serology Testing of Dogs in Rural Areas in Victoria Falls, Zimbabwe	9 months	To determine the Knowledge, Attitude and Practices (KAP) Questionnaire and laboratory results assessing rabies immunity from a sample of rural dogs.	Victoria Falls Wildlife Trust and Western University Canada.	ZIMBABWE

ToR 6: To collect, process, analyse, publish and disseminate epizootiological data relevant to the designated pathogens or diseases

11. Did your Laboratory collect epizootiological data relevant to international disease control?

Yes

If the answer is yes, please provide details of the data collected:
Rabies data from domestic and wildlife host species from specific provinces in South Africa

12. Did your laboratory disseminate epizootiological data that had been processed and analysed?

Yes

If the answer is yes, please provide details of the data collected:

Rabies data for animal samples tested at Onderstepoort were analysed and the trends analyses presented at the World Rabies Day in Kuruman (Northern Cape, South Africa). The data is also submitted to the Department of Agriculture in real time.

**13. What method of dissemination of information is most often used by your laboratory?
(Indicate in the appropriate box the number by category)**

a) Articles published in peer-reviewed journals: 3

1. Veronica O. Ameh, Guanghui Wu, Hooman Goharriz, Rebecca Shipley, Anthony R. Fooks, Claude T. Sabeta and Lorraine Mcelhinney. (2021) Serum Neutralization Profiles of Straw-Colored Fruit Bats (*Eidolon helvum*) in Makurdi (Nigeria), against Four Lineages of Lagos Bat Lyssavirus. *Viruses*, 13(12), 2378; <https://doi.org/10.3390/v13122378>.
2. Claude Sabeta, Ukamaka U Eze. and Mapatse, M. (2021) Limitations of diagnostic tests using rabies as an example. *EC Veterinary Science*. 6.3.
3. Rossouw L., Boshoff C., Sabeta C. and Kotzé J. (2021) Investigation of exposure to rabies virus in selected wildlife in the Kruger National Park. *Koedoe* 63(2), a1651. <https://doi.org/10.4102/koedoe.v63i2.1651>.

b) International conferences: 4

1. Veronica O. Ameh, Guanghui Wu, Hooman Goharriz, Rebecca Shipley, Anthony R. Fooks, Claude T. Sabeta and Lorraine M. McElhinney. "Serum Neutralisation profiles of Straw-Coloured Fruit Bats (*Eidolon helvum*) against four Lineages of Lagos Bat Lyssavirus' was presented as an oral presentation at the virtual IMED 2021 Conference, November 4-6, 2021.
2. Dr Sabeta made a presentation on "Towards capacity building for rabies diagnosis in the Southern African Development Community (SADC) and the Congo Basin" during a rabies-elimination symposium for West Africa in February 2021.
3. Mr Ernest Ngoepe attended two virtual meetings on the 7th Rabies in West Africa (RIWA) held on the 3rd- 6th May 2021 and an International Symposium on sustainable animal production and health: current status and way forward held on the 28th June – 02nd July 2021.

c) National conferences: 2

1. National Rabies Advisory Group Meeting
2. World Rabies Day celebrations on 29 September 2021

d) Other:

(Provide website address or link to appropriate information) 1
www.dallrd.gov.za

**ToR 7: To provide scientific and technical training for personnel from OIE Member Countries
To recommend the prescribed and alternative tests or vaccines as OIE Standards**

14. Did your laboratory provide scientific and technical training to laboratory personnel from other OIE Member Countries?

Yes

a) Technical visits: 0

- b) Seminars: 2
 c) Hands-on training courses: 0
 d) Internships (>1 month): 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
b	Ethiopia, virtual training	5

ToR 8: To maintain a system of quality assurance, biosafety and biosecurity relevant for the pathogen and the disease concerned

15. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)
Iso17025	V0003-02-2021.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
SANAS	ILAC

17. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

Yes

(See *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4*)

ToR 9: To organise and participate in scientific meetings on behalf of the OIE

18. Did your laboratory organise scientific meetings on behalf of the OIE?

No

19. Did your laboratory participate in scientific meetings on behalf of the OIE?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
OIE Rab Lab network	5/21	Virtual	Participant	Setting up the network
OIE Reference and Collaborating Centres in Africa	11/21	Virtual	Speaker	Sharing information on challenges facing reference laboratories and the way forward.

ToR 10: To establish and maintain a network with other OIE Reference Laboratories designated for the same pathogen or disease and organise regular inter-laboratory proficiency testing to ensure comparability of results

20. Did your laboratory exchange information with other OIE Reference Laboratories designated for the same pathogen or disease?

Yes

21. Was your laboratory involved in maintaining a network with OIE Reference Laboratories designated for the same pathogen or disease by organising or participating in proficiency tests?

Yes

Purpose of the proficiency tests: ¹	Role of your Reference Laboratory (organiser/participant)	No. participants	Participating OIE Ref. Labs/ organising OIE Ref. Lab.
To assess the technical competence of rabies diagnosticians using a variety of techniques.	Participant	40	The proficiency tests were organised by the European Rabies Reference Laboratory (Anses) in France and all Rabies reference Laboratories participated.

¹ validation of a diagnostic protocol: specify the test; quality control of vaccines: specify the vaccine type, etc.

22. Did your laboratory collaborate with other OIE Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

Yes

Title of the project or contract	Scope	Name(s) of relevant OIE Reference Laboratories
Serum Neutralisation profiles of Straw-Colored Fruit Bats (<i>Eidolon helvum</i>) against four Lineages of Lagos Bat Lyssavirus	Experimental	Animal and Plant Health Agency, United Kingdom.
To assess and enhance diagnostic capacities and capabilities in the SADC member countries	Training project, 2022-2026	Friedrich Loeffler Institute, Germany

ToR 11: To organise inter-laboratory proficiency testing with laboratories other than OIE Reference Laboratories for the same pathogens and diseases to ensure equivalence of results

23. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than OIE Reference Laboratories for the same disease?

Yes

Note: See Interlaboratory test comparisons in: Laboratory Proficiency Testing at: <http://www.oie.int/en/our-scientific-expertise/reference-laboratories/proficiency-testing> see point 1.3

Purpose for inter-laboratory test comparisons ¹	No. participating laboratories	Region(s) of participating OIE Member Countries
To assess the technical competence of laboratories on rabies diagnosis	57	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Serology test for rabies	6	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

ToR 12: To place expert consultants at the disposal of the OIE

24. Did your laboratory place expert consultants at the disposal of the OIE?

No

25. Additional comments regarding your report:

The following manuscripts were published in the year under review:

1. Veronica O. Ameh, Guanghui Wu, Hooman Goharriz, Rebecca Shipley, Anthony R. Fooks, Claude T. Sabeta and Lorraine Mcelhinney. (2021) Serum Neutralization Profiles of Straw-Colored Fruit Bats (*Eidolon helvum*) in Makurdi (Nigeria), against Four Lineages of Lagos Bat Lyssavirus. *Viruses*, 13(12), 2378; <https://doi.org/10.3390/v13122378>;
2. Claude Sabeta, Ukamaka U Eze. and Mapatse, M. (2021) Limitations of diagnostic tests using rabies as an example. *EC Veterinary Science*. 6.3
3. Rossouw L., Boshoff C., Sabeta C. and Kotzé J. (2021) Investigation of exposure to rabies virus in selected wildlife in the Kruger National Park. *Koedoe* 63(2), a1651. <https://doi.org/10.4102/koedoe.v63i2.1651>.

The ARC is actively participating in a twinning project with NAHDIC in Ethiopia. Since the kick-off of this twinning project, two virtual meetings (on MsTeams) were held between the ARC and NAHDIC. The first was held between technical expert, Dr Claude Sabeta and the candidate institute expert, Dr Redeat on the 18th of February 2021. In attendance for the ARC was Ms Debrah Mohale. This first meeting was intended to lay the foundation for the duration of the project (Annex 1a and 1b, presentations by Dr Sabeta and Belaineh respectively). What was evident from the presentations are the following; i. the current OIE/WHO approved methods that will be included in the training, the key activities of the project including the budget and procurement for reagents and exchange visits and the reporting periods. In her presentation, Dr Redeat focused on the capacity and responsibilities of counterparts from NAHDIC, the status of rabies in Ethiopia and the current capacity and challenge facing rabies diagnosis in Ethiopia. Incidentally, NAHDIC is not currently involved in rabies testing and this poses a good challenge as this is basically involves establishing new tests underpinned by ISO17025 quality measures. In the second meeting of 13 May 2021, in addition to discussions on the budget and procurement, it was agreed that going forward the ARC-OVI needs to develop and guide methods manual to incorporate the techniques that will be covered during the duration of the training and the conduct of a virtual training on rabies diagnosis should the covid-19 situation remain as is. In addition, logistical and laboratory preparation at NAHDIC for future rabies laboratory should also include waste disposal at NAHDIC. The issue of training national diagnosticians also came up and it was concluded that the trainers that receive the initial training at NAHDIC could easily provide such training within Ethiopia (training of the trainers concept).

In order to provide more scientific information on the disease, participants at both NAHDIC and the ARC we encouraged to attend two events, firstly, a 2-day rabies workshop held on the 16th and 17th February, 2021. The workshop was jointly organised by Dr Florence Cliquet (Nancy rabies and wildlife laboratory, France) and Dr Mariem Handous (Rabies Laboratory, Pasteur Institute of Tunis). Both countries of the region participate in a twinning project and during this workshop the participants presented epidemiological situations in their countries. Dr Sabeta presented on during the rabies workshop a topic on "Towards an improved and standardised regional diagnostic capacity for rabies in Africa". This event provided our colleagues in Ethiopia an opportunity to learn from the experiences of a panel of experts and participants matters about canine rabies control in the region. Similar to our twinning project (with NAHDIC), the ultimate objective of the west African twinning project is to create a network of laboratories for enhancing rabies surveillance and control in the region. The second event was the 7th international conference on Rabies in West Africa (RIWA), held from 3-6 May, 2021 again as a virtual meeting.

In conclusion, the ARC will procure the reagents and consumables for the training and for future rabies diagnostic activities so that the actual physical training can take place in the second half of 2021. NAHDIC on the other hand will confirm the trainees for the proposed training. In addition, NAHDIC will select and prepare the rooms that will be used as the rabies laboratory and this includes equipment such as fluorescent microscopes, freezers and refrigerators for storing samples and reagent.

Dr Sabeta managed to graduate two PhD students; Dr Milton Mapatse from the Eduardo Mondlane University in Mozambique and Dr Lynda Obodoechi from the University of Nigeria in Nsukka.