# OIE Reference Laboratory Reports Activities

## *Activities in 2018*

## This report has been submitted : 2019-02-07 17:15:15

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|---|---|
| **Name of disease (or topic) for which you are a designated OIE Reference Laboratory:** | Heartwater |
| **Address of laboratory:** | Unité Mixte de Recherche CIRAD-INRA, ASTRE, Animal Santé Territoires, Risques et Ecosystèmes Centre de Recherche et de Veille sur les maladies vectorielles dans la Caraïbe, Domaine de Duclos, Prise d'Eau, 34270 Petit Bourg Guadeloupe France |
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| **Website:** | https://umr-astre.cirad.fr |
| **Name (including Title) of Head of Laboratory (Responsible Official):** | Emmanuel Albina |
| **Name (including Title and Position) of OIE Reference Expert:** | Nathalie Vachiéry |
| **Which of the following defines your laboratory? Check all that apply:** | Other:  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 | |
|---|---|---|---|
| Indirect diagnostic tests | | Nationally | Internationally |
| indirect MAP-1B ELISA | Oui | 169 | 0 |
| Direct diagnostic tests | | Nationally | Internationally |
| pCS20 PCR nichée | Oui | 5 | 0 |
| pCS20 Sol1 QPCR | Oui | 25 | 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 |
|---|---|---|---|---|---|---|
| Antigène MAP1-B | ELISA MAP1-B | Produit | 0 | 300µl | Reunion/Comores | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| HRP conjugués anti ovin, bovin et caprin | ELISA MAP1-B | Importé | 0 | 1500µl | Reunion/Comores | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Contrôles sera positifs et négatifs ovin, bovin et caprin | ELISA MAP1-B | Importé | 0 | 270µl | Reunion/Comores | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Antigène MAP1-B | ELISA MAP1-B | Produit | 0 | 120µl | Niger | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Contrôles sera positifs et négatifs ovin, bovin et caprin | ELISA MAP1-B | Importé | 0 | 225µl | Niger | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |

| | | | | | | |
|---|---|---|---|---|---|---|
| HRP conjugués anti ovin, bovin et caprin | ELISA MAP1-B | Importé | 0 | 750µl | Niger | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Antigène MAP1-B | ELISA MAP1-B | Produit | 0 | 120µl | Kenya | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| HRP conjugués anti ovin, bovin et caprin | ELISA MAP1-B | Importé | 0 | 750µl | Kenya | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Contrôles sera positifs et négatifs ovin, bovin et caprin | ELISA MAP1-B | Importé | 0 | 225µl | Kenya | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Contrôle positif ADN Ehrlichia ruminantium | qPCR Sol1 | Produit | 0 | 10µl | Niger | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Contrôle positif ADN Ehrlichia ruminantium | qPCR Sol1 | Produit | 0 | 10µl | Kenya | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |

| | | | | | | |
|---|---|---|---|---|---|---|
| Antigène MAP1-B | ELISA MAP1-B | Produit | 0 | 700µl | Burkina Faso | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| HRP conjugués anti ovin | ELISA MAP1-B | Importé | 0 | 1000µl | Burkina Faso | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |
| Contrôles sera positifs et négatifs ovin | ELISA MAP1-B | Importé | 0 | 600µl | Burkina Faso | ☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East |

4. Did your laboratory produce vaccines?

Yes

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?

Yes

| Name of the OIE Member Country receiving a technical consultancy | Purpose | How the advice was provided |
|---|---|---|
| BURKINA FASO | Mise en place des méthodes de diagnostic (ELISA, PCR) | Réunion en présentiel et virtuelle |
| KENYA | Mise en place des méthodes de diagnostic (ELISA, PCR) | Réunion en présentiel et virtuelle, formation |
| NIGER | Mise en place des méthodes de diagnostic (ELISA, PCR) | Réunion en présentiel et virtuelle, formation |
| SOUTH AFRICA | Discussion sur les méthodes de diagnostic existante pour la cowdriose | Réunion en présentiel et virtuelle |
| UNITED STATES OF AMERICA | Atelier sur identification des besoins en diagnostic et recherche sur la cowdriose | Réunion en présentiel, Octobre 2018, Guadeloupe |

## *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 |
|---|---|---|---|---|
| Multivalent approach for the improvement of inactivated vaccines against small ruminant diseases in Africa (MultiVacc), funded by Centre de recherche pour le développement international (CRDI) | 30 mois | Développement d'un vaccin multivalent contre 2 maladies des petits ruminants, la pleuropneumonie contagieuse caprine et la cowdriose | CIRDES, Centre International Recherche-Développement sur l'Elevage en zone Subhumide | BURKINA FASO |
| MultiVacc, CRDI | 30 mois | Développement d'un vaccin multivalent contre 2 maladies des petits ruminants, la pleuropneumonie contagieuse caprine et la cowdriose | NoCSL, National Center of Specialization on Livestock | NIGER |
| MultiVacc, CRDI | 30 mois | Développement d'un vaccin multivalent contre 2 maladies des petits ruminants, la peripneumonie contagieuse caprine et la cowdriose | EPAC, Ecole Polytechnique d'Aborney-Calavi | BENIN |
| MultiVacc, CRDI | 30 mois | Développement d'un vaccin multivalent contre 2 maladies des petits ruminants, la pleuropneumonie contagieuse caprine et la cowdriose | KALRO, Kenyan Agricultural Livestock Research Organization | KENYA |
| Multivalent inactivated vaccine against heartwater in Africa (MuVHA) Funded by European Union, LEAP-Agri project | 36 mois | Développement d'un vaccin multivalent contre la cowdriose en Afrique | CIRDES, Centre International Recherche-Développement sur l'Elevage en zone Subhumide | BURKINA FASO |
| MuVHA, projet LEAP-AGRI Union Européenne | 36 mois | Développement d'un vaccin multivalent contre la cowdriose en Afrique | IBET, instituto de biologia experimental e tecnologia | PORTUGAL |
| MuVHA, projet LEAP-AGRI Union Européenne | 36 mois | Développement d'un vaccin multivalent contre la cowdriose en Afrique | ARC-OVI, Onderstepoort Veterinary Institute, UP, Université de Pretoria | SOUTH AFRICA |

| | | | | |
|---|---|---|---|---|
| Projet VETGov | 12 mois | Evaluation de la prévalence de la cowdriose chez les ruminants aux Comores | INRAPE, Ministère de l'Argiculture des Comores | COMOROS |
| MuVHA, projet LEAP-AGRI Union Européenne | 36 mois | Développement d'un vaccin multivalent contre la cowdriose en Afrique | INERA, Institut de l'Environnement et de recherches agricoles | BURKINA FASO |
| MuVHA, projet LEAP-AGRI Union Européenne | 36 mois | Développement d'un vaccin multivalent contre la cowdriose en Afrique | NoCSL, National Center of Specialization on Livestock | NIGER |

## *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

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

Yes

**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: 5
1. Pruneau L, Lebrigand K, Mari B, Lefrançois T, Meyer DF, Vachiery N. 2018. Comparative Transcriptome Profiling of Virulent and Attenuated Ehrlichia ruminantium Strains Highlighted Strong Regulation of map1- and Metabolism Related Genes. Frontiers in Cellular and Infection Microbiology. 2018 May 15; 8:153. doi: 10.3389/fcimb.2018.00153. eCollection 2018.

2. Moumène A, Gonzalez-Rizzo S, Lefrançois T, Vachiéry N and Meyer DF. 2018. Iron starvation Conditions Upregulate Ehrlichia ruminantium Type IV Secretion System, tr1 Transcription Factor and map1 Genes Family through the Master Regulatory Protein ErxR. Frontiers in Cellular and Infection Microbiology, 7:535. doi : 10.3389/fcimb.2017.00535.

3. Rodrigues V, Fernandez B, Vercoutere A, Chamayou L, Andersen A, Vigy O, Demettre E, Seveno M, Aprelon R, Giraud-Girard K, Stachurski F, Loire E, Vachiéry N and Holzmuller P. 2018. Immunomodulatory Effects of Amblyomma variegatum Saliva on Bovine Cells: Characterization of Cellular Responses and Identification of Molecular Determinants. Frontiers in Cellular and Infection Microbiology. DOI: 10.3389/fcimb.2017.00521.

4. Noroy C, Lefrançois T, and Meyer DF (2018) Searching Algorithm for Type IV Effector proteins (S4TE) 2.0 : improved tools for type IV effector prediction, analysis and comparison bioRxiv, 301150 ; doi : https://doi.org/10.1101/301150 (accepted in PLOS Computational Biology)

5. Noroy, C., and Meyer, D.F. (2017) Comparative genomics of the zoonotic pathogen Ehrlichia chaffeensis reveals candidate type IV effectors and putative host cell targets. Frontiers in Cellular and Infection Microbiology, 6:204. https://doi.org/10.3389/fcimb.2016.00204

b) International conferences: 3

1. Revisiting Ehrlichia ruminantium life cycle using proteomics: the host and the bacterium perspectives. Eloi Marcelino I., Holzmuller P., Fernandez B., Seveno M., Vigy O., Coelho A.V., Vachiéry N.. 2018. Sarrebruck : SFSM, 1 p.. European Mass Spectrometry Conference (EMSC 2018), 2108-03-11/2018-04-15, Sarrebruck (Deutschland).

2. Low effective population sizes in Amblyomma variegatum in West Africa: implication for the sustainability of acaricide-based control programs. Huber K., Jacquet S., Rivallan R., Adakal H., Vachiéry N., Risterucci A.M., Chevillon C.. 2018. In : 21st E-SOVE (European Society for Vector Ecology) Meeting Abstract Book. Arthropod Vector Science for the benefit of society: Educate, Empathize, Engage. Palermo : ESOVE, p. 120-120. E-SOVE (European Society for Vector Ecology) Meeting. 21, 2018-10-22/2018-10-26, Palermo (Italy).

3. Genetic diversity of Ehrlichia ruminantium in Mozambique. Laure Bournez, Nidia Cangi, Jonathan Gordon, Rosalie Aprelon, Valérie Pinarello, Thierry Lefrançois, Luis Neves, Nathalie Vachiéry. International Congress on Tropical Veterinary Medicine, 2nd Joint AITVM-STVM meeting, 23-28th September 2018, Buenos Aires, Argentina.

c) National conferences: 0

d) Other:
(Provide website address or link to appropriate information) 0

## *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: 5
b) Seminars: 0
c) Hands-on training courses: 2
d) Internships (>1 month): 1

| 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 |
|---|---|---|
| c | Niger | 1 |
| c | Kenya | 1 |
| d | Trinidad-and-Tobago | 1 |
| a | Afrique du Sud et Burkina Faso | 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 certified according to an International Standard?

Yes

| Quality management system adopted | Certificate scan (PDF, JPG, PNG format) |
|---|---|
| Integrated Environment/Security/Quality management ISO17025 | DuclosCirad_Attestation COFRAC.pdf |

16. Is your laboratory accredited by an international accreditation body?

Yes

| Test for which your laboratory is accredited | Accreditation body |
|---|---|
| ELISA MAPI-B | COFRAC |
| Nested PCR pCS20 | COFRAC |

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?

No

### *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?

Not applicable (Only OIE Reference Lab. designated for disease)

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?

Not applicable (Only OIE Reference Lab. designated for disease)

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?

Not applicable (Only OIE Reference Lab. designated for disease)

## *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?

No

*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*

## *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: