

WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

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Laboratory Information

Name of disease (or topic) for which you are a designated WOAHO Reference Laboratory:	Pleuropneumonie contagieuse caprine
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Website:	
Name (including Title) of Head of Laboratory (Responsible Official):	Dr Nathalie Vachier, Directeur de l'Unité de Recherche ASTRE du CIRAD
Name (including Title and Position) of WOAHO Reference Expert:	Dr Lucia Manso-Silvan, Responsable du Laboratoire de Référence OMSA/FAO pour la PPCC et la PPCB
Which of the following defines your laboratory? Check all that apply:	Governmental

TOR1: DIAGNOSTIC METHODS

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 WOAHO Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
cELISA PPCC		20	0
Direct diagnostic tests			
Isolement		1	20
PCR		1	20

TOR2: REFERENCE MATERIAL

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

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAHO Members?

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOAHO MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Kit sérologique	cELISA PPCC IDXX	fourni	0	1 mini kit (x80 réactions)	1	MAURITANIA,
Kit PCR PPCC	PCR PPCC	produit + fourni	0	1 mini kit (50 réactions)	3	ETHIOPIA, NIGERIA,
Kit qPCR SYBRGreen PPCC	PCR en temps réel PPCC	produit + fourni	0	1 mini kit (50 réactions)	3	ETHIOPIA, NIGERIA,
Kit qPCR TaqMan PPCC	PCR en temps réel	produit + fourni	0	1 mini kit (50 réactions)	3	ETHIOPIA, NIGERIA,

PPCC						
Contrôles ADN Positifs et Négatifs	PCR PPCC	produit + fourni	0	1000 réactions	3	ETHIOPIA, NIGERIA,

4. Did your laboratory produce vaccines?

Yes

5. Did your laboratory supply vaccines to WOAHA Members?

Yes

VACCINE NAME	AMOUNT SUPPLIED NATIONALLY	AMOUNT SUPPLIED NATIONALLY (ML, MG)	NAME OF RECIPIENT WOAHA MEMBERS
Stock parental de souche pour vaccin PPCC (projet MultiVacc)	0	500 doses lyophilisées (transfert sous protocole de Nagoya en cours)	ETHIOPIA

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

7. Did your laboratory validate diagnostic methods according to WOAHA Standards for the designated pathogen or disease?

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
PCR en temps réel TaqMan pour la détection spécifique de l'agent de la PPCC à partir soit de culture de mycoplasmes, soit d'organes (liquide pleural, poumon, ganglion) ; test compagnon pour ce diagnostic (détection de l'ADN de l'hôte).	Développement et validation selon la norme ISO/IEC 17025 en cours en vue d'une accréditation par le COFRAC

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

No

9. Did your laboratory validate vaccines according to WOAHA Standards for the designated pathogen or disease?

No

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAHA Members?

Yes

NAME OF WOAHA MEMBER COUNTRY SEEKING ASSISTANCE	DATE	WHICH DIAGNOSTIC TEST USED	NO. SAMPLES RECEIVED FOR PROVISION OF DIAGNOSTIC SUPPORT	NO. SAMPLES RECEIVED FOR PROVISION OF CONFIRMATORY DIAGNOSES
FRANCE	2023-09-30	cELISA PPCC	20	0
FRANCE	2023-09-30	Isolement, qPCR, PCR + séquençage	1	0
NIGERIA	2023-11-30	Isolement, PCR	0	20
ETHIOPIA	2023-12-15	QC vaccin PPCC par analyse bactériologique, PCR et spectrométrie de masse	0	3

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAHA Member?

Yes

NAME OF THE WOAHA MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
FRANCE PORTUGAL	Projet Sandstorm (infectious disease transmission at the wildlife-livestock interface in desert environments) : transmission des maladies infectieuses animales dans les interfaces faune-bétail dans les environnements désertiques, en utilisant le parc national d'Iona, en Angola, comme modèle (8 maladies ciblées, dont la PPCC).	Formation et appui technique au projet de thèse PhD d'un doctorant portugais. Formation technique au laboratoire du CIRAD, support et conseil en distanciel.

NIGERIA	Détection de la PPCC au Nigeria	Formation et appui technique, fourniture de protocoles et réactifs. Formation technique au laboratoire du CIRAD.
MAURITANIA	Surveillance de la PPCC en Mauritanie	Appui technique, fourniture de protocoles et recommandations pour détection directe et sérologique de la PPCC ; fourniture de kit sérologique.

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

12. Did your laboratory participate in international scientific studies in collaboration with WOAAH Members other than the own?

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAH MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Multivalent approach for the improvement of inactivated vaccines against small ruminant diseases in Africa ; transfer of a quality-controlled Mycoplasma capricolum subsp. capricolum master seed and vaccine production technology from CIRAD to AU-PANVAC » (MultiVacc 2)	6 mois	Production et contrôle qualité d'un stock parental de souche pour vaccin PPCC (500 flacons lyo) ; transfert du nouveau prototype vaccinal au PANVAC et NVI-ET pour la suite de sa validation. Visite des partenaires NVI et PANVAC et du point focal Nagoya en Ethiopie pour organiser le transfert de la souche et technologie vaccinale.	AU-PANVAC, NVI-ET, Ethiopian Biodiversity Institute (EBI)	ETHIOPIA
Typage moléculaire par analyse de génomes complets de souches de Mycoplasma capripneumoniae (Mccp) du Pakistan	1 an	Diversité de souches de Mccp circulant au Pakistan et en Asie à travers l'analyse de génomes complets.	University of Agriculture, Peshawar, Pakistan	PAKISTAN
DISCONTOOLS CAPP gap analysis	1 an	Analyse de lacunes en recherche et produits pour le contrôle de la PPCC : Constitution d'un groupe de 10 experts et coordination des travaux de revue et analyse de gaps en vue de la publication d'un rapport en 2024. L'objectif est de convenir des lacunes les plus critiques à combler dans les futurs projets de recherche européens	CIRAD nommé Expert référent pour « Discontools ». Coordinateur, 10 experts de différents pays d'Europe, Afrique, Asie et Amérique	GERMANY
JPI AMR MyMIC : Standardisation des protocoles pour l'analyse de la sensibilité aux antibiotiques des mycoplasmes vétérinaires.	2 ans	Standardisation des protocoles MIC pour l'analyse de la sensibilité des mycoplasmes pathogènes des animaux aux antibiotiques	ANSES Coordinateur, différentes institutions, principalement d'Europe. Consortium EU très large	FRANCE
RFEROA One Health « Research and field work to improve conservation outcomes in central Chad : Réserve de Faune du Ouadi Rimé-Ouadi Achim (RFEROA). »	2 ans	Recherche et travail de terrain pour améliorer les résultats de la conservation de la faune dans la réserve RFEROA, Tchad.	Smithsonian Conservation Biology Institute (SCBI), IRED	CHAD UNITED STATES OF AMERICA

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAAH?

Yes

Research need : 1

Please type the Research need: La situation concernant les vaccins pour le contrôle de la PPCC est dramatique. L'analyse de la séroconversion post-vaccinale

par ELISA de compétition et le suivi d'un foyer de PPCC nous ont permis de constater que les vaccins commerciaux contre la PPCC (i) n'induisent pas la séroconversion attendue (cf. Peyraud et al, 2014, doi: 10.1186/1746-6148-10-48) et (ii) ne protègent pas les animaux (cf. Lignereux et al, 2018, doi.org/10.1016/j.prevetmed.2018.06.002). Ensuite, l'application de la spectrométrie de masse au contrôle qualité de vaccins inactivés PPCC a montré des écarts très importants dans la composition protéique des vaccins disponibles sur le marché (teneur en protéines provenant principalement du milieu de culture, avec une quantité d'antigènes mycoplasmiens spécifiques extrêmement limitée (cf. Thiaucourt et al, 2018, doi: 10.1002/pmic.201800088). Jusqu'à présent, le contrôle qualité de ces vaccins repose sur un dosage de protéines totales, ce qui ne permet d'assurer ni l'identité ni la pureté des antigènes. Il est urgent de renforcer le contrôle qualité de ces vaccins avec des techniques adaptées. Il est aussi urgent de mettre en place des travaux de recherche afin de développer des vaccins améliorés pour le contrôle de la PPCC.

Relevance for WOA Disease Control, Standard Setting,

Relevance for the Codes or Manual Manual,

Field Vaccines,

Animal Category Terrestrial,

Disease:

Pleuropneumonie contagieuse caprine

Kind of disease (Zoonosis, Transboundary diseases) Transboundary diseases,

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer:

Notes:

Answer:

TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

Yes

IF THE ANSWER IS YES, PLEASE PROVIDE DETAILS OF THE DATA COLLECTED:

Typage moléculaire par analyse de génomes complets de souches de *Mycoplasma capricolum* subsp. *capripneumoniae* (Mccp) du Pakistan. Typage moléculaire par analyse de génomes complets de souches de *Mycoplasma capricolum* subsp. *capripneumoniae* (Mccp) du Pakistan. Rédaction d'article scientifique et thèse PhD en cours.

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

No

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

2

-Guesdon G., G. Gourgues, F. Rideau, T. Ipoutcha, L. Manso-Silván, M. Jules, P. Sirand-Pugnet, A. Blanchard, C. Lartigue (2023). Combining fusion of cells with CRISPR-Cas9 editing for the cloning of large DNA fragments or complete bacterial genomes in yeast. *ACS Synthetic Biology* 17;12(11):3252-3266. <https://doi.org/10.1021/acssynbio.3c00248>

-Gourgues G.; L. Manso-Silván; C. Chamberland; P. Sirand-Pugnet; F. Thiaucourt; A. Blanchard; V. Baby; C. Lartigue (2024). A toolbox for manipulating the genome of the major goat pathogen, *Mycoplasma capricolum* subsp. *capripneumoniae*. *Microbiology*;170(1). doi: 10.1099/mic.0.001423.

b) International conferences:

3

-Manso-Silván, L. & Wesonga, H. (2023). Multivalent approach for the improvement of inactivated vaccines against small ruminant diseases in Africa (MultiVacc). Focus on the development of an improved CCPP vaccine. In: LVIF Final Event Panel Discussion: From bench to market: Livestock vaccine development in and for LMIC. 13th International Veterinary Immunology Symposium (IVIS2023), Kruger National Park, South Africa, 17-21 November 2023.

-Manso-Silván, L (2023). Molecular epidemiology of contagious caprine pleuropneumonia ; In workshop on "Mycoplasmosis: diagnosis and vaccines for goats with special

focus on CCPP" November 6-7, 2023, Veterinary Faculty Outreach Centre Shuhama, India (Videoconference).

-Gourgues G, Manso-Silvan L, Guesdon G, Chaberland C, Thiaucourt F, Sirand-Pugnet P, Baby V, Blanchard A, Lartigue C (2023). Genome engineering of the major goat pathogen *Mycoplasma capricolum* subsp. *capripneumoniae* as a first step towards the rational design of improved vaccines. In : 24th Congress of the International Organization for Mycoplasmaology (Associated with the Japanese Society of Mycoplasmaology) July 16th–20th, 2023, Osaka, Japan.

c) National conferences:

0

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

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-Biguezoton Abel S., Ouattara Boris, Pousga Salimata, Dayo Guiguigbaza-Kossigan, Manso-Silvan Lucia. (2023). Contrôle de la Pleuropneumonie Contagieuse Caprine (PPCC) en Afrique de l'Ouest : conception d'un support de sensibilisation des agents des services vétérinaires décentralisés. Bobo Dioulasso : CIRDES-CIRAD, 3 p. <https://doi.org/10.13140/RG.2.2.22967.29603>

-Manso-Silvan L (2023). Rapport technique final du projet MultiVacc 2 : « Multivalent approach for the improvement of inactivated vaccines against small ruminant diseases in Africa ; transfer of a quality-controlled *Mycoplasma capricolum* subsp. *capricolum* master seed and vaccine production technology from CIRAD to AU-PANVAC », financé par le Centre de Recherches pour le Développement International (CRDI) et coordonné par le CIRAD en partenariat avec le « Pan African Veterinary Vaccine Centre of the African Union » (AU-PANVAC).

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOA H Members?

Yes

a) Technical visit : 0

b) Seminars : 3

c) Hands-on training courses: 1

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	TUNISIA	20
B	TANZANIA	20
B	ETHIOPIA	2
B	NIGERIA	1
B	PORTUGAL	1
C	ETHIOPIA	2
C	NIGERIA	1
C	PORTUGAL	1

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO/IEC 17025 : Accréditation COFRAC Essais, CIRAD n° 1-2207, portée disponible sous www.cofrac.fr	Attestation Accréditation COFRAC Essais, CIRAD n°1-2207_Juin 2023.pdf; Attestation Accréditation COFRAC Essais, CIRAD n°1-2207_Juin 2023.pdf	Attestation Accréditation COFRAC Essais, CIRAD n°1-2207_Juin 2023.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body

Semi-quantitative ELISA

COFRAC

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

Yes

Cf. Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOA?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOA?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
Workshop on "Mycoplasmiasis: diagnosis and vaccines for goats with special focus on CCPP"	2023-11-07	Veterinary Faculty Outreach Centre Shuhama, India (Videoconference)	Conferencier	Molecular epidemiology of contagious caprine pleuropneumonia.

TOR10: NETWORK WITH WOA REFERENCE LABORATORIES

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

No

24. Do you network (collaborate or share information) with other WOA Reference Laboratories designated for the same pathogen?

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOA Reference Laboratories designated for the same pathogen?

No

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

No

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOA Reference Laboratories for the same pathogen?

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the Test	WOAH Member Countries
Essai d'aptitude PCR PPCC	Organisateur	3	PCR et qPCR PPCC	ETHIOPIA, NIGERIA,

TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOA?

No

29. Additional comments regarding your report:

No