WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted: 3 mai 2024 18:10

Laboratory Information

<table>
<thead>
<tr>
<th>Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:</th>
<th>Escherichia coli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address of laboratory:</td>
<td>3200 Scotte, Saint-Hyacinthe, Québec, J2S 2M2, Canada</td>
</tr>
<tr>
<td>Tel.:</td>
<td>+1-450 773.85.21</td>
</tr>
<tr>
<td>E-mail address:</td>
<td><a href="mailto:john.morris.fairbrother@umontreal.ca">john.morris.fairbrother@umontreal.ca</a></td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.ecl-lab.ca">www.ecl-lab.ca</a></td>
</tr>
<tr>
<td>Name (including Title of Head of Laboratory (Responsible Official)):</td>
<td>Maud de Lagarde, DVM, DACVIM, PhD. Assistant Professor</td>
</tr>
<tr>
<td>Name (including Title and Position) of WOAH Reference Expert:</td>
<td>John Morris Fairbrother, BVSc, PhD. Adjunct Professor</td>
</tr>
<tr>
<td>Which of the following defines your laboratory? Check all that apply:</td>
<td>Academic institution</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Diagnostic Test</th>
<th>Indicated in WOAH Manual (Yes/No)</th>
<th>Total number of test performed last year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional PCR for pathogenic E. coli (up to 10 virulence genes)</td>
<td>Yes</td>
<td>4949 Nationally</td>
</tr>
<tr>
<td>Whole Genome Sequencing</td>
<td></td>
<td>83 Nationally</td>
</tr>
</tbody>
</table>

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?
No
3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?
Yes

<table>
<thead>
<tr>
<th>TYPE OF REAGENT AVAILABLE</th>
<th>RELATED DIAGNOSTIC TEST</th>
<th>PRODUCED/ PROVIDE</th>
<th>AMOUNT SUPPLIED NATIONALLY (ML, MG)</th>
<th>AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)</th>
<th>NO. OF RECIPIENT WOAH MEMBER COUNTRIES</th>
<th>COUNTRY OF RECipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli reference strains</td>
<td>Conventional PCR for pathogenic E. coli</td>
<td>produced and provided</td>
<td>9 ml</td>
<td>9 ml</td>
<td>3</td>
<td>CANADA, FRANCE, UNITED STATES OF AMERICA,</td>
</tr>
</tbody>
</table>
4. Did your laboratory produce vaccines?
No

5. Did your laboratory supply vaccines to WOAH Members?
No

**TOR3: NEW PROCEDURES**

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

<table>
<thead>
<tr>
<th>NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED</th>
<th>DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole genome sequencing (WGS) of E. coli isolates</td>
<td>We are offering rapid WGS testing of E. coli isolates for O:H serotyping, MLST, cgMLST, and detection of virulence genes and prediction of antimicrobial resistance based on the presence of antimicrobial resistance genes and chromosomal point mutations using Illumina Nextera XT or DNA Prep preparation kits and Illumina iSeq100/Miseq sequencing platforms and in-house in silico analysis.</td>
</tr>
<tr>
<td>Conventional PCR for pathogenic E. coli</td>
<td>We are developing conventional PCR tests for porcine and avian pathogenic E. coli using virulence markers based on our WGS results from strains isolated from diseased or healthy animals.</td>
</tr>
</tbody>
</table>

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?
No

8. Did your laboratory develop new vaccines for the designated pathogen or disease?
No

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?
No

**TOR4: DIAGNOSTIC TESTING FACILITIES**

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

<table>
<thead>
<tr>
<th>NAME OF WOAH MEMBER COUNTRY SEEKING ASSISTANCE</th>
<th>DATE</th>
<th>WHICH DIAGNOSTIC TEST USED</th>
<th>NO. SAMPLES RECEIVED FOR PROVISION OF DIAGNOSTIC SUPPORT</th>
<th>NO. SAMPLES RECEIVED FOR PROVISION OF CONFIRMATORY DIAGNOSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRANCE</td>
<td>2023-02-08</td>
<td>Whole genome sequencing</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>UNITED STATES OF AMERICA</td>
<td>2023-03-01</td>
<td>Conventional PCR for pathogenic E. coli</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?
No

**TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES**

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

<table>
<thead>
<tr>
<th>Title of the study</th>
<th>Duration</th>
<th>PURPOSE OF THE STUDY</th>
<th>PARTNERS (INSTITUTIONS)</th>
<th>WOAH MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimicrobial resistance and interrelatedness of extra-intestinal pathogenic Escherichia coli in human, poultry, companion animals and environment: a One Heal approach</td>
<td>1 year</td>
<td>Characterization of E. coli strains isolated from human urine, animal (birds and dogs) fecal samples and environmental samples in Nigeria</td>
<td>Federal University of Agriculture, Abeokuta (FUNAAB)</td>
<td>NIGERIA</td>
</tr>
<tr>
<td>Full characterization of E. coli isolated from ISU-VDL porcine</td>
<td></td>
<td>Characterization of E. coli strains</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 cases from 2015 to 2022 including toxins and serogroups and antimicrobial resistance profile

3 years

isolated from porcine cases in USA

Iowa State University

UNITED STATES OF AMERICA

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

No

**TOR6: EPIZOOLOGICAL DATA**

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

No

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

Yes

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

Quarterly and annual reports on surveillance of pathovirotypes and antimicrobial resistance of E. coli in diseased pigs in Québec.

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:

4


b) International conferences:

1


c) National conferences:

1


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

4

www.ecl-lab.ca/en (Our window for dissemination of information on our WOAH related activities.)

Reports

WOAH Reference Laboratory Reports Activities 2023 3
- Four 2023 quarterly reports on surveillance of pathovirotypes and antimicrobial resistance of Escherichia coli in diseased pigs, MAPAQ (Ministère de l’Agriculture, des Pêcheries et de l’Alimentation du Québec), RAIZO (Réseau d’alerte de d’information zoosanitaire) porcin, Québec, Canada, March, June, September, and December 2023.


**Book Chapter**

**TOR7: SCIENTIFIC AND TECHNICAL TRAINING**

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?
   - Yes
   - a) Technical visit : 0
   - b) Seminars : 0
   - c) Hands-on training courses: 0
   - d) Internships (>1 month) 2

<table>
<thead>
<tr>
<th>Type of technical training provided (a, b, c or d)</th>
<th>Country of origin of the expert(s) provided with training</th>
<th>No. participants from the corresponding country</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>NIGERIA</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>UNITED KINGDOM</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOR8: QUALITY ASSURANCE**

18. Does your laboratory have a Quality Management System?
   - Yes

<table>
<thead>
<tr>
<th>Quality management system adopted</th>
<th>Certificate scan (PDF, JPG, PNG format)</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Association of Veterinary Laboratory Diagnosticians (AAVLD)</td>
<td>2022.QC-CAN.SV_CERT (2023-02).Final.pdf</td>
</tr>
</tbody>
</table>

19. Is your quality management system accredited?
   - Yes

<table>
<thead>
<tr>
<th>Test for which your laboratory is accredited</th>
<th>Accreditation body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please, see: <a href="https://aavld.memberclicks.net/accreditation-requirements-page">https://aavld.memberclicks.net/accreditation-requirements-page</a></td>
<td>American Association of Veterinary Laboratory Diagnosticians (AAVLD)</td>
</tr>
</tbody>
</table>

20. Does your laboratory maintain a “biorisk management system” for the pathogen and the disease concerned?
   - Yes

Our laboratories have a biosafety level 2 status (BSL-2), and we use Standard Operating Procedures following BSL-2 requirements. A biosafety officer from Prevention and Security Department at University of Montreal supports and assists our laboratories for BSL-2 status, licenses, protocols and audits.

**TOR9: SCIENTIFIC MEETINGS**

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?
   - No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?
   - No

**TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES**

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?
   - Not applicable (only WOAH Reference Laboratory designated for the disease)

WOAH Reference Laboratory Reports Activities 2023
24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?
Not applicable (Only WOAH Reference Laboratory designated for the disease)

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen?
Not applicable (Only WOAH Reference Laboratory designated for the disease)

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?
Not applicable (Only WOAH Reference Laboratory designated for the disease)

**TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING**

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

<table>
<thead>
<tr>
<th>Purpose for inter-laboratory test comparisons</th>
<th>Role of your reference laboratory (organizer/participant)</th>
<th>No. participating laboratories</th>
<th>Name of the Test</th>
<th>WOAH Member Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>12th External Quality Assessment Scheme for Shiga toxin-producing Escherichia coli (STEC), 2022-2023 Covering the following: • Serotyping (O group and H type) • Virulence gene determination (aaic, aggR, eae, stx1, stx2 and subtyping) • Cluster analysis (WGS derived data) Organized by Statens Serum Institut (SSI).</td>
<td>Participant</td>
<td>26</td>
<td>Conventional PCR Serotyping Whole genome sequencing</td>
<td>AUSTRIA, BELGIUM, BULGARIA, CANADA, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, IRELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MONTENEGRO, NORWAY, POLAND, PORTUGAL, ROMANIA, SLOVENIA, SPAIN, SWEDEN, THE NETHERLANDS,</td>
</tr>
</tbody>
</table>

**TOR12: EXPERT CONSULTANTS**

28. Did your laboratory place expert consultants at the disposal of WOAH?
No

29. Additional comments regarding your report:
No