**WOAH Reference Laboratory Reports Activities 2022**

**Activities in 2022**

This report has been submitted: 31 mai 2023 23:32

**Laboratory Information**

| Name of disease (or topic) for which you are a designated WOAH Reference Laboratory: | Salmonellosis |
| Address of laboratory: | 110 Stone Road West Guelph, Ontario N1G 3W4 Canada |
| Tel.: | +15198262640 |
| E-mail address: | gitanjali.arya@phac-aspc.gc.ca |
| Name (including Title of Head of Laboratory (Responsible Official)): | Sara Christianson, Chief, Reference and Diagnostic Services, Division of Enteric Diseases, National Microbiology Laboratory Branch, Public Health Agency of Canada |
| Name (including Title and Position) of WOAH Reference Expert: | Dr. Gitanjali Arya, Head of Guelph Reference Services Unit and the WOAH Reference Laboratory for Salmonellosis, Division of Enteric Diseases, National Microbiology Laboratory Branch, Public Health Agency of Canada |
| 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

<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>
</tbody>
</table>

**WOAH Reference Laboratory Reports Activities 2022**
<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>5394</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonella Serotyping (total)</td>
<td>Yes</td>
<td>5394</td>
<td>0</td>
</tr>
<tr>
<td>Salmonella in Silico Typing Resource (SISTR) using Whole Genome Sequencing</td>
<td>No</td>
<td>3672</td>
<td>0</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?  
No

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>Long read sequencing and metagenomics techniques for Salmonella are currently in development</td>
<td>Clinical Metagenomics is Increasingly Accurate and Affordable to Detect Enteric Bacterial Pathogens in Stool <a href="https://pubmed.ncbi.nlm.nih.gov/35208895/">https://pubmed.ncbi.nlm.nih.gov/35208895/</a></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?  
Yes

<table>
<thead>
<tr>
<th>NAME OF THE NEW VACCINE DEVELOPED</th>
<th>DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>We are collaborating with in-country partners to develop a multicomponent plant-derived vaccine for poultry salmonellosis.</td>
<td>Funding Agency: Results Driven Agriculture Research (RDAR) PI: Dr. Joeneil Alcantara Co-Investigators: Drs. Justin Schonfeld, Martin Zuidhof, Wolfgang Koester, Emil Berberov Postal Address: 110 Stone Road West, Guelph, N1G 3W4, Ontario, Canada.</td>
</tr>
</tbody>
</table>

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?  
No

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?
Gitanjali Arya - Salmonellosis - CANADA

**NAME OF THE WOAH MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY** | **PURPOSE** | **HOW THE ADVICE WAS PROVIDED**
---|---|---
**TRINIDAD AND TOBAGO** | Review manuscripts comprising Salmonella isolates sequenced and analyzed by our laboratory. | EMAIL correspondence
**ETHIOPIA** | To serotype 60 Salmonella isolates and procedure to ship isolates | EMAIL correspondence
**MEXICO** | To serotype and/or sequence Salmonella isolates and procedure to ship isolates | EMAIL correspondence

**TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES**

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?
No

**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:**

We require our clients to submit following metadata with their Salmonella isolates: Date Collected, Country, province, source, source type and unique sample identification of the sample.

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

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

The Data is disseminated in form of publications, conferences and lectures.

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:

15


B) International conferences:

1. Salmonella plasmid population dynamics. Medizinische Fakultät Münster, University of Münster, Germany. (April 2022; James Robertson)


Ashley Kearney

5. PulseNet International survey on genomics implementation in middle and low-income countries. Meeting of the PulseNet Latin America & Caribbean Regional Network. Brasilia, Brazil. (November 2022; Ashley Kearney).


International Conference Abstracts:


c) National conferences:

6

Local and National Lectures:

1. Genomics and Bioinformatics in Public Health Microbiology. Bioinformatics Graduate Program, University of Guelph (February 2022; Justin Schonfeld & Kyrylo Bessonov)

2. Genomics and Bioinformatics in Public Health Microbiology. University of Toronto, Molecular Clinical Microbiology & Infectious Diseases, Toronto, ON. (January 2022; Justin Schonfeld)


Stakeholder and veterinary associations meeting:

• Agunos, A. Trends in antimicrobial use and resistance in poultry in Canada (2020-2021), Western Association of Poultry Veterinarians, Banff, Alberta.

• CIPARS Meeting for Poultry Industry. October 19th 2022 (virtual).

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

3

SISTR (Salmonella In Silico Typing Resource), a whole genome sequencing based Salmonella serotyping method was developed in-house at National Microbiology Laboratory. This method is now on our Scope of Accreditation (ISO 17025) and is being used routinely in our laboratory. Worldwide, SISTR tool has been downloaded 35,394 times. More information is available on these weblinks:

1) https://anaconda.org/bioconda/sistr_cmd
2) https://github.com/phac-nml/sistr_cmd

GitHub - phac-nml/sistr_cmd: SISTR (Salmonella In Silico Typing Resource) command-line tool

**TOR7: SCIENTIFIC AND TECHNICAL TRAINING**

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

No

**TOR8: QUALITY ASSURANCE**

18. Does your laboratory have a Quality Management System?

Yes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 17025</td>
<td>PDF</td>
<td>2022-06-15.NML Guelph ISO 17025</td>
</tr>
<tr>
<td>NML@Guelph ISO 17025</td>
<td>PDF</td>
<td>Scope.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>Serotyping of Salmonella</td>
<td>Standards Council of Canada</td>
</tr>
<tr>
<td>Salmonella in silico Typing Resource (SISTR) using Whole Genome Sequencing</td>
<td>Standards Council of Canada</td>
</tr>
</tbody>
</table>

20. 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)

**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?
Yes

24. Are you a member of a network of WOAH Reference Laboratories designated for the same pathogen?
No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen?
No

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?
No

**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>Region(s) of participating WOAH Member Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-Laboratory QA program regarding Salmonella Serotyping with the Laboratoire d’épidémiologie et d’épidémioprophylaxie animale du Québec, MAPAQ, StHyacinthe, Quebec</td>
<td>Participant and organizer</td>
<td>2</td>
<td>America</td>
</tr>
<tr>
<td>Inter-laboratory QA program regarding Salmonella whole genome sequencing with PulseNet Canada</td>
<td>Participant</td>
<td>10</td>
<td>America</td>
</tr>
</tbody>
</table>

**TOR12: EXPERT CONSULTANTS**

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

<table>
<thead>
<tr>
<th>KIND OF CONSULTANCY</th>
<th>Location</th>
<th>SUBJECT (FACULTATIVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision of the Chapter on Salmonellosis in the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals</td>
<td>EMAIL correspondence among the OIE member countries Expert</td>
<td>To update the Chapter on Salmonellosis with regards to the progress in the fields of diagnostics and vaccines for Salmonella since the last edition of OIE Terrestrial Manual from 2016</td>
</tr>
</tbody>
</table>

29. Additional comments regarding your report:
No