# OIE Reference Laboratory Reports Activities

## *Activities in 2020*

### This report has been submitted : 2021-01-20 23:10:35

| | |
|---|---|
| **Name of disease (or topic) for which you are a designated OIE Reference Laboratory:** | Salmonellosis |
| **Address of laboratory:** | 110 Stone Road West Guelph, Ontario N1G 3W4 CANADA |
| **Tel.:** | +1-519 826.26.40 |
| **Fax:** | |
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| **Website:** | |
| **Name (including Title) of Head of Laboratory (Responsible Official):** | Dr. Gitanjali Arya, Head, Guelph Reference Services Unit and OIE Salmonella Reference Laboratory, National Microbiology Laboratory at Guelph, Public Health Agency of Canada |
| **Name (including Title and Position) of OIE Reference Expert:** | Dr. Gitanjali Arya, Head, Guelph Reference Services Unit and OIE Salmonella Reference Laboratory, National Microbiology Laboratory at Guelph, Public Health Agency of Canada |
| **Which of the following defines your laboratory? Check all that apply:** | Governmental |

### *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 |
| 0 | 0 | 0 | 0 |
| Direct diagnostic tests | | Nationally | Internationally |
| Salmonella Serotyping (total) | yes | 5176 | 64 |
| Salmonella In Silico Typing Resource (SISTR) using Whole Genome Sequencing | | 2287 | 64 |

### *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?

No

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?

Yes

| Name of OIE Member Country seeking assistance | Date (month) | No. samples received for provision of diagnostic support | No. samples received for provision of confirmatory diagnoses |
|---|---|---|---|
| TRINIDAD AND TOBAGO | January | 64 | 64 |

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 |
|---|---|---|
| TRINIDAD AND TOBAGO | To reply to a request to serotype and whole genome sequencing and analyses (wgMLST, virulence gene predictions/identification and heavy metal resistance) of 64 Salmonella isolates | EMAIL correspondence |

## *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?

No

## *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: |
| --- |
| 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. |

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: |
| --- |
| The Data is disseminated in form of publications and conferences |

**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: 9

1. Niu YD, Liu H, Johnson RP, McAllister TA, Standford K. Effect of a bacteriophage T5virus on growth of Shiga toxigenic Escherichia coli and Salmonella strains in individual and mixed cultures. 2020. Virology Journal. 17:3. DOI: 10.1186/s12985-019-1269-7.
2. Sharma RN, Matthew-Belmar V, Nicholas- Thomas R, Arya G, Holtslander B, Hariharan H, Amadi VA. Prevalence of Salmonella spp. in red-footed tortoises (Chelonoidis carbonaria) from Grenada, West Indies. 2020. Int J One Health 6(1): 12-16. https://www.onehealthjournal.org/Vol.6/No.1/3.pdf.
3. Miller EA, Elnekave E, Flores-Figueroa C, Johnson A, Kearney A, Munoz-Aguayo J, Tagg KA, Tschetter L, Weber BP, Nadon CA, Boxrud D, Singer RS, Folster JP, Johnson TJ. 2020. Emergence of a novel Salmonella enterica serotype Reading clonal group is linked to its expansion in commercial turkey production, resulting in unanticipated human illness in North America. mSphere 5:e00056-20. DOI: 10.1128/mSphere.00056-20.
4. Yousfi K, Usongo V, Berry C, Khan RH, Tremblay D, Moineau S, Mulvey MR, Doualla-Bell F, Fournier E, Nadon C, Goodridge L, Bekal S. Source Tracking Based on Core Genome SNV and CRISPR Typing of Salmonella enterica serovar Heidelberg Isolates Involved in Foodborne Outbreaks in Québec, 2012. 2020. Frontiers in Microbiology. 11:1317. DOI: 10.3389/fmicb.2020.01317.
5. Emond-Rheault JG, Hamel J, Jeukens J, Freschi L, Kukavica-Ibrulj I, Boyle B, Tamber S, Malo D, Franz E, Burnett E, Daigle F, Arya G, Sanderson K, Wiedmann M, Slawson RM, Weadge JT, Stephan R, Bekal S, Gruenheid S, Goodridge LD, Levesque RC. The Salmonella enterica Plasmidome as a Reservoir of Antibiotic Resistance. 2020. Microorganisms. 8: 1016. DOI: 10.3390/microorganisms8071016.
6. Laskey A, Ottenbrite M, Devenish J, Kang M, Savic M, Nadin-Davies S, Chmara J, Lin M, Robertson J, Bessonov K, Gurnik S, Liu K, Nash JHE, Scott A, Topp E, Guan J. Mobility of β-lactam Resistance under Bacterial Co-infection and Ampicillin Treatment in a Mouse Model. 2020. Frontiers in Microbiology. 11: 1591. DOI: 10.3389/fmicb.2020.01591.
7. Clark CG, Landgraff C, Robertson J, Pollari F, Parker S, Nadon C, Gannon VPJ, Johnson R, Nash J. Distribution of heavy metal resistance elements in Canadian Salmonella 4,[5],12:i:- populations and association with the monophasic genotypes and phenotype. 2020. PLoS ONE. 15(7) e0236436. DOI: 10.1371/journal.pone.0236436.
8. Robertson J, Bessonov K, Schonfeld J, Nash J. Universal whole-sequence based plasmid typing and its utility to prediction of host-range and epidemiological surveillance. 2020. Microbial Genomics. DOI: 10.1099/mgen.0.000435.
9. Rush EM, Amadi VA, Johnson R, Lonce N, Hariharan H. Salmonella serovars associated with Grenadian tree boa (Corallus grenadensis) and their antimicrobial susceptibility. Vet Med Sci. 2020;6:565–569. 10.1002/vms3.234

b) International conferences: 1
Ma. Rocelle Clavero, Deann Akins-Lewenthal, Sasan Amini, Gitanjali Arya, Christophe Dufour and Thomas Hammack. RT12 NGS Identification as an Alternative for Classic Microbiological Subtyping Techniques: What Do We Need to Make This Happen? 2020. Roundtable Symposium, 2020 IAFP, A Virtual Annual Meeting, October 26-28, 2020.

c) National conferences: 0

d) Other:
(Provide website address or link to appropriate information) 3
Our laboratory provides timely and reliable reference testing of Salmonella from food, water, animals and environment for the Public Health Agency of Canada's national integrated surveillance programs (FoodNet Canada https://www.canada.ca/en/public-health/services/surveillance/foodnet-canada/overview.html and CIPARS https://www.canada.ca/en/public-health/services/surveillance/canadian-integrated-program-antimicrobial-resistance-surveillance-cipars.html) to facilitate source attribution. The data is published in the form of annual reports by FNC and CIPARS. Our laboratory also provides results to PulseNet Canada (https://www.canada.ca/en/public-health/programs/pulsenet-canada.html) for pathogen source information to support outbreak investigation and source attribution.

## *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?

No

## *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) |
|---|---|
| ISO 17025 | Certi Accred 2020.pdf |

16. Is your quality management system accredited?

Yes

| Test for which your laboratory is accredited | Accreditation body |
|---|---|
| Serotyping of Salmonella | Standards Council of Canada |
| Salmonella in silico Typing Resource (SISTR) using Whole Genome | Standards Council of Canada |

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?

No

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?

No

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?

No

## *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 |
|---|---|---|
| External Quality Assurance System (EQAS) for serotyping and determination of antimicrobial susceptibility of Salmonella strains, with other WHO Global Food-borne Infectious Network member laboratories | Laboratories participating in the EQAS of the WHO | ☒Africa<br>☒Americas<br>☒Asia and Pacific<br>☒Europe<br>☒Middle East |
| Inter-Laboratory QA program regarding Salmonella serotyping with the Laboratoire d'epidemiosurveillance animale du Quebec, MAPAQ, StHyacinthe, Quebec | 2 | ☐Africa<br>☒Americas<br>☐Asia and Pacific<br>☐Europe<br>☐Middle East |
| Inter-laboratory QA program regarding Salmonella whole genome sequencing with PulseNet Canada | 2 | ☐Africa<br>☒Americas<br>☐Asia and Pacific<br>☐Europe<br>☐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:

ToR 11: For inter-laboratory proficiency testing (PT) our lab annually participates in the External Quality Assurance System (EQAS) for serotyping and determination of antimicrobial susceptibility of Salmonella strains,with other WHO Global Food-borne Infectious Network member laboratories. However, for the year 2019 PT, the panels were delayed and we received the panel in 2020. The proficiency testing panels were cancelled for the year 2020. We conducted inter-laboratory proficiency testing with other laboratory (MAPAQ, Quebec)for the year 2020.