

OIE Reference Laboratory Reports Activities

Activities in 2019

This report has been submitted : 2020-01-15 19:37:39

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:	
E-mail address:	gitanjali.arya@canada.ca
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	
		Nationally	Internationally
Indirect diagnostic tests		Nationally	Internationally
Not applicable	Not Applicable	Not Applicable	Not Applicable
Direct diagnostic tests		Nationally	Internationally
Serotyping (total)	yes	6090	90
Salmonella In Silico Typing Resource using Whole Genome Sequencing		1928	
Salmonella GenoSerotyping		147	

**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
ETHIOPIA	December	42	42
TRINIDAD AND TOBAGO	February	35	35
ETHIOPIA	December	13	13

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
ETHIOPIA	To reply to a request to serotype 13 Salmonella isolates and procedure to ship isolates. Provided this submitter with Transfer of Dangerous Goods supplies.	EMAIL correspondence
TRINIDAD AND TOBAGO	To reply to a request to serotype 35 Salmonella isolates	EMAIL correspondence
THE NETHERLANDS	To respond to a query regarding confirmatory diagnostic test for Salmonella Abortusequi	EMAIL correspondence
SUDAN	To reply to a request to serotype Salmonella isolates	EMAIL correspondence
ETHIOPIA	To reply to a request to serotype 42 Salmonella isolates	EMAIL correspondence
TRINIDAD AND TOBAGO	To reply to a request for training in serotyping and whole genome sequencing.	EMAIL correspondence. The logistics of this visit are being worked out.

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: 8

1. Labbé G, Rankin MA, Robertson J, Moffat J, Giang E, Lee LK, Ziebell K, MacKinnon J, Laing CR, Parmley EJ, Agunos A, Daignault D, Bekal S, Chui L, MacDonald KA, Hoang L, Slavic D, Ramsay D, Pollari F, Nash JHE, Johnson RP. Targeting discriminatory SNPs in *Salmonella enterica* serovar Heidelberg genomes using RNase H2-dependent PCR. *J Microbiol Methods*. 2019. 157:81-87. doi: 10.1016/j.mimet.2018.12.021.
2. Bondo KJ, Pearl DL, Janecko N, Reid-Smith RJ, Parmley EJ, Weese JS, Rousseau J, Taboada E, Mutschall S, Jardine CM. *Salmonella*, *Campylobacter*, *Clostridium difficile*, and anti-microbial resistant *Escherichia coli* in the faeces of sympatric meso-mammals in southern Ontario, Canada. *Zoonoses and Public Health*. 2019:1-11. DOI: 10.1111/zph.12576.
3. Morton VK, Kearney A, Coleman S, Viswanathan M, Chau K, Orr A, Hexemer A. Outbreaks of *Salmonella* illness associated with frozen raw breaded chicken products in Canada, 2015-2019. *Epidemiology and Infection*. 2019. 147, e254:1-3. DOI: 10.1017/S0950268819001432.
4. Robertson J, Lin J, Wren-Hedegus A, Arya G, Carrillo C, Nash JHE. Development of a multi-locus typing scheme for an Enterobacteriaceae linear plasmid that mediates inter-species transfer of flagella. *PLoS One*. 2019. 14(11):e0218638. DOI: 10.1371/journal.pone.0218638.
5. Collineau L, Boerlin P, Carson CA, Chapman B, Fazil A, Hetman B, McEwen SA, Parmley EJ, Reid-Smith RJ, Taboada EN, Smith BA. Integrating Whole-Genome Sequencing Data Into Quantitative Risk Assessment of Foodborne Antimicrobial Resistance: A Review of Opportunities and Challenges. 2019. *Frontiers in Microbiology*. 10:1107. DOI: 10.3389/fmicb.2019.01107.
6. Mangat CS, Bekal S, Avery BP, Côté G, Daignault D, Doualla-Bell F, Finley R, Lefebvre B, Bharat A, Parmley EJ, Reid-Smith RJ, Longtin J, Irwin RJ, Mulvey MR; Canadian Integrated Program for Antimicrobial Resistance Surveillance Public Health Partnership. Genomic Investigation of the Emergence of Invasive Multidrug-Resistant *Salmonella enterica* Serovar Dublin in Humans and Animals in Canada. *Antimicrob Agents Chemother*. 2019 May 24;63(6). pii: e00108-19. doi: 10.1128/AAC.00108-19.
7. Vogt NA, Pearl DL, Taboada EN, Mutschall SK, Janecko N, Reid-Smith RJ, Jardine CM. Carriage of *Campylobacter*, *Salmonella*, and Antimicrobial-Resistant, Nonspecific *Escherichia coli* by Waterfowl Species Collected from Three Sources in Southern Ontario, Canada. *Journal of Wildlife Diseases*: 2019, Vol. 55, No. 4, pp. 917-922.
8. Varga, C., Guerin, M.T., Brash, M.L. et al. Antimicrobial resistance in fecal *Escherichia coli* and *Salmonella enterica* isolates: a two-year prospective study of small poultry flocks in Ontario, Canada. *BMC Vet Res* 15, 464 (2019) doi:10.1186/s12917-019-2187-z

b) International conferences: 3

1. James Robertson, Janet Lin, Amie Wren-Hedegus, Gitanjali Arya, Catherine D. Carrillo, John H.E. Nash. (2019) Development of a multi-locus typing scheme for a linear plasmid found in Enterobacteriaceae that mediates inter-species transfer of flagella. *Applied Bioinformatics and Public Health Microbiology*. June 2019, Cambridge UK. Oral Presentation by John HE Nash.
2. Hetman B, Pearl DL, Reid-Smith R, Taboada EN. (2019) Genomics-based risk factor analysis: identification of drivers associated with the spread of antimicrobial resistance in *Salmonella enterica* subsp. *enterica* serovar Heidelberg in Ontario, Canada. 12th International Meeting on Microbial Epidemiological Markers (IMMEM XII). Dubrovnik, Croatia. September 2019. Oral Presentation by Taboada EN.
3. James Robertson, Kyrilo Bessonov, Eduardo Taboada, John Nash. Global *Salmonella* plasmid population dynamics and associations with known antimicrobial resistance determinants. 12th International Meeting on Microbial Epidemiological Markers (IMMEM XII). Dubrovnik Croatia. September 2019. Oral Presentation by James Robertson.

c) National conferences: 3

1. K. A. Macdonald, R. Azana, S. Man, T. Lee, A. Paccagnella, M. Taylor, E. Galanis, G. Arya, M. A. Croxson, E. Zabek, E. Fraser, N. DeWith, C. Botkin, T. Redford, M. Walker, S. Parker, E. J. Parmley, L. Tschetter, L. Hoang, N. Prystajeky (2019). Integrated genomic wgMLST surveillance of *Salmonella* Enteritidis in Humans and Agriculture

- in BC in 2016 – A pilot study. British Columbia Centre for Disease Control (BCCDC) 12th Annual Research Symposium in Vancouver, British Columbia, Canada. Poster presentation by K. Macdonald.
2. Ziebell K. 2019. Travel Related Clusters in Salmonella using FoodNet Canada 2017 whole genome sequencing data. 2019 PULSENET Canada, Laboratory and Epidemiology Experts Meeting. November 26-28, 2019 Guelph, Canada. Oral Presentation
3. Reid-Smith R. and Ziebell K. 2019. Salmonella Reading: Highlighting a One Health Approach to Laboratory Data Using the CIPARS and FoodNet Canada Surveillance Systems. Oral Presentation.

d) Other:

(Provide website address or link to appropriate information) 2

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.

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 2019.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 Genoserotyping Array (SGSA V2) for molecular serotyping of Salmonella	Standards Council of Canada
Salmonella in silico Typing Resource (SISTR) using Whole Genome Sequencing for in silico serotyping of Salmonella	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?

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?

Yes

Kind of consultancy	Location	Subject (facultative)
Member of an expert panel for evaluation of a diagnostic kit for the OIE Procedure of Registration of diagnostic kits	Europe	Salmonella diagnostic kit

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 we have not received the PT panels from EQAS yet as it delayed by a month. We hope to receive the PT panel by end of January 2020. We will also be conducting inter-laboratory proficiency testing for the year 2020 as well.