

OIE Reference Laboratory Reports Activities

Activities in 2020

This report has been submitted : 2021-01-20 13:42:18

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Trichinellosis
Address of laboratory:	Canadian Food Inspection Agency 116 Veterinary Road Saskatoon Saskatchewan S7N 2R3 CANADA
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Name (including Title) of Head of Laboratory (Responsible Official):	David McKinnon, Director, CFIA Saskatoon Laboratory
Name (including Title and Position) of OIE Reference Expert:	Dr. Brad Scandrett, Section Head, Centre for Food-borne and Animal Parasitology, CFIA Saskatoon Laboratory
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
Indirect E/S ELISA	Yes	1000	0
Western Blot	Yes	212	0
Direct diagnostic tests		Nationally	Internationally
Artificial Digestion	Yes	431	0
T. spiralis-specific qPCR (Atterby et al., 2009)	No	15	0
Trichinella 18S rRNA Deep Amplicon Next Generation Sequencing	No	15	0

**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?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient OIE Member Countries	Region of recipients
Trichinella spiralis proficiency samples	Artificial Digestion	Produced	320	8	2	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East

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?

Yes

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

Name of the new test or diagnostic method or vaccine developed	Description and References (Publication, website, etc.)
Indirect E/S ELISA for the detection of Trichinella in pigs	Optimization and validation of this assay was completed March 31, 2020. 100% diagnostic sensitivity and 99.8% diagnostic specificity were demonstrated using sets of 88 Trichinella-infected pig sera and 5,427 sera from the Canadian commercial swine population, respectively.
Use of freeze-tolerant sylvatic Trichinella spp. with low infectivity to domestic swine in proficiency samples for digestion assay	Pilot study completed to assess performance of proficiency samples for digestion assay using T. nativa as a substitute for T. spiralis

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?

No

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
CANADA	Ongoing training and/or proficiency assessment of industry analysts to perform the artificial digestion assay for <i>Trichinella</i> and to facilitate effective oversight of industry labs performing this testing on horse meat or pork to meet requirements for export and domestic food safety (i.e. ready-to-eat products)	On-site and remote (e-mail/phone)
CANADA	Ongoing provision of scientific advice and proficiency assessment of analysts performing the artificial digestion assay for <i>Trichinella</i> in Walrus meat, a food safety concern in the Arctic.	Remote (e-mail)
FRANCE	Ongoing assessment of <i>Trichinella</i> artificial digestion assay proficiency sample testing results.	Remote (e-mail)

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?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
Polar Bear Disease Exposure Rates: Serology of Adult Females of Western Hudson Bay	2018-2020	Our laboratory's contribution entailed serological testing for Trichinella (by indirect and c-ELISA) of polar bear serum samples collected over a 30 year period	Institute for Conservation Research, San Diego Zoo Global, USA; Dept. of Veterinary Microbiology, University of Saskatchewan, Saskatoon, Canada; Wildlife Research Division, Environment and Climate Change Canada, Edmonton, Canada	UNITED STATES OF AMERICA

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:
Data on prevalence of <i>Trichinella nativa</i> and <i>Trichinella T6</i> in arctic foxes from northern Canada, and of <i>Trichinella</i> spp. in wolverines in northwestern Canada, were collected via collaborative study. Data on prevalence of <i>Trichinella spiralis</i> in the national swine herd were collected via digestion testing of approximately 20,000 samples annually at our laboratory under the CFIA National Microbiological Monitoring Program.

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:
Data on prevalence of <i>Trichinella nativa</i> and <i>Trichinella T6</i> in arctic foxes from northern Canada, and of <i>Trichinella</i> spp. in wolverines in northwestern Canada have been published in the International Journal of Parasitology and International Journal of Parasitology: Parasites and Wildlife, respectively. Data from the CFIA <i>T. spiralis</i> monitoring program for hogs and captive wild boar at slaughter are published in the National Microbiological Monitoring Program and Food Safety Oversight Program annual reports.

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: 5
 Sharma R., Thompson P., Hoberg E.P., Scandrett W.B., Konecni K., Harms J.N., Kukka P.M., Jung T.S., Elkin B., Mulders R., Larter N.C., Branigan M., Pongracz J., Wagner B., Kafle P., Lobanov V.A., Rosenthal B.M., Jenkins E.J. 2020. Hiding in plain sight: discovery and phylogeography of a cryptic species of *Trichinella* (Nematoda):

Trichinellidae) in wolverine (*Gulo gulo*). *Int J Parasitol*, 50(4):277-287.

Owsiacki R., Buhler K.J., Sharma R., Branigan M., Fenton H., Tomaselli M., Kafle P., Lobanov V.A., Bouchard E., Jenkins E. 2020. *Trichinella nativa* and *Trichinella T6* in arctic foxes (*Vulpes lagopus*) from northern Canada. *Int J Parasitol Parasites Wildl* 13:269-274.

Dupouy-Camet J., Kapel C.M.O., Gołab E., Scandrett B., Zarlenga D. 2020. Early days of the International Commission on Trichinellosis (1958-1972). *Annals of Parasitology*, 66(2):259-263.

Harms N.J., Larivee M, Scandrett B., Russell D. High prevalence and intensity of *Trichinella* infection in Yukon black (*Ursus americanus*) and grizzly (*Ursus arctos*) bears. Accepted for publication in *Journal of Wildlife Diseases* November 18, 2020.

Pilfold N.W., Richardson E.S., Ellis J., Jenkins E., Scandrett W.B., Hernandez-Ortiz A., Buhler K., McGeachy D., Al-Adhami B., Konecsni K., Lobanov V., Owen M.A., Rideout B., Lunn N.J. Long-term increases in pathogen seroprevalence in polar bears (*Ursus maritimus*) influenced by climate change. Accepted for publication in *Global Change Biology* December 28, 2020.

b) International conferences: 0

c) National conferences: 0

d) Other:

(Provide website address or link to appropriate information) 1

Scandrett B., Lobanov V. *Trichinella* diagnostic, research and related activities at the CFIA Centre for Food-borne and Animal Parasitology. CFIA Animal Health Science Webinar Series, January 22, 2020.

**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/IEC 17025:2017	CFIA SCC certificate 2019.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
The double separatory funnel digestion procedure for the detection of Trichinella larvae in pork	ILAC Signatory SCC (Standards Council of Canada)
The double separatory funnel digestion procedure for the detection of Trichinella larvae in horse meat	ILAC Signatory SCC (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?

Yes

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?

Yes

Title of the project or contract	Scope	Name(s) of relevant OIE Reference Laboratories
Voucher specimens (L1s) of new species (T13/T. chanchalensis) stored in 95% ethanol deposited and accessioned in International Trichinella Reference Centre (ITRC), ISS, Italy	Global repository of Trichinella reference isolates	Istituto Superiore di Sanita (ISS), Laboratorio di Parasitologia, Rome, Italy

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
Ongoing validation/verification of respective magnetic stirrer artificial digestion assays for Trichinella and analyst competence at participating laboratories	7	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> 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: