

# OIE Reference Laboratory Reports Activities

## *Activities in 2020*

**This report has been submitted : 2021-01-19 13:54:06**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Swine influenza
<b>Address of laboratory:</b>	Animal and Plant Health Agency - Weybridge, Addlestone, Surrey KT15 3NB UNITED KINGDOM
<b>Tel.:</b>	+44 208 026 9680
<b>Fax:</b>	+44-1932 35 72 39
<b>E-mail address:</b>	ian.brown@apha.gov.uk
<b>Website:</b>	<a href="https://www.gov.uk/government/organisations/animal-and-plant-health-agency">https://www.gov.uk/government/organisations/animal-and-plant-health-agency</a>
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Mr Christopher Hadkiss, Chief Executive
<b>Name (including Title and Position) of OIE Reference Expert:</b>	Professor Ian Brown Director of OIE/FAO International Reference Laboratory for Avian Influenza, Newcastle Disease and Swine Influenza
<b>Which of the following defines your laboratory? Check all that apply:</b>	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
0	0	0	0
Direct diagnostic tests		Nationally	Internationally
Real-time RT-PCR M gene	Yes	1690	0
Real-time RT-PCR pH1N1 2009	Yes	83	0
Next Generation Sequencing	Yes	21	43
HI	Yes	889	0
Egg inoculation/HA	Yes	0	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?

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?

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.)
A universal RT-qPCR assay for "One Health" detection of influenza A viruses.	A fully validated influenza A screening assay based on a real time PCR matrix gene was developed and assessed as suitable for sensitive detection of swine influenza viruses. Nagy, A., L. Černíková, K. Kunteová, Z. Dirbáková, S. S. Thomas, M. J. Slomka, Á. Dán, T. Varga, M. Máté, H. Jiřincová, I. H. Brown (2020). A universal RT-qPCR assay for "One Health" detection of influenza A viruses; submitted bioRxiv 2020.06.29.171306. doi: <a href="https://doi.org/10.1101/2020.06.29.171306">https://doi.org/10.1101/2020.06.29.171306</a> . PLOS ONE (accepted)

***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
KOREA (REP. OF)	Swine influenza data for OFFLU contribution to WHO vaccine.	Email
CHINA (PEOPLE'S REP. OF)	G4 swine H1N1 virus request.	Email
SPAIN	Swine influenza data for OFFLU contribution to WHO vaccine.	Email
ITALY	Swine influenza data for OFFLU contribution to WHO vaccine.	Email
BELGIUM	Swine influenza data for OFFLU contribution to WHO vaccine meeting.	Email
SWITZERLAND	Advice to WHO: Consultation via teleconference and email and additional analyses on 1C viruses in Europe including variant strains and information on surveillance from pigs in Brazil. Drafting of a tripartite statement including OFFLU.	Email, teleconference

***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
Characterization of the Evolution of Influenza A Viruses (IAV) in Swine.	2018-2021	Evaluation of swine isolates through a pipeline of activities from sampling in the field through to both genetic and antigenic characterisation using cartographical methods.	Funder: National Institute of Allergy and Infectious Diseases Centers of Excellence for Influenza Research and Surveillance (CEIRS) Program 9258-9553-4699/ HHSN27229149999 through a US Department of Agriculture award 59-5030-9-001F	GEORGIA
Population Immunity assessed by Antibody Landscaping as defined by antigenic evolution of Influenza A Viruses (IAV) in swine.	2016-2020	Mapping virus changes.	Funder: US Department of Agriculture 58-5030-8-071F	UNITED STATES OF AMERICA
OFFLU VCM	Ongoing annual	Swine viruses and antisera have been added to the WHO VCM activities and as such we have characterised isolates both using genetic and antigenic tools and contributed this to the biannual VCM activities.	OFFLU swine subgroup plus miscellaneous institutes	

***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:

Laboratory Reports and OFFLU outputs

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:
Laboratory Reports and OFFLU outputs

**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: 6

1. Helen E. Everett, Bethany Nash, Brandon Z. Londt, Michael J. Kelly, Vivien Coward, Alejandro Nunez, Pauline van Diemen, Ian H. Brown and Sharon M. Brookes (2020) Interspecies Transmission of Reassortant Swine Influenza A Virus Containing Genes from Swine Influenza A(H1N1)pdm09 and A(H1N2) Viruses. *Emerging Infectious Diseases*, 26(2), 273-281. <https://dx.doi.org/10.3201/eid2602.190486>

2. Henritzi D; Petric PP; Lewis NS; Graaf A; Pessia A; Starick E; Breithaupt A; Strebelow G; Lettermann C; Mareike L; Parker K; Schroder C; Hammerschmidt B; Herrler G; grosse Beilage E; Stadlbauer D; Simon V; Krammer F; Wacheck S; Pesch S; Schwemmle M; Beer M; Harder TC (2020) Surveillance of European domestic pig populations identifies an emerging reservoir of potentially zoonotic swine influenza A viruses. *Cell Host & Microbe* 28 (4) 614-627.e6.

3. Vidaña, B., Brookes, S. M., Everett, H. E., Garcon, F., Nuñez, A., Engelhardt, O., Major, D., Hoschler, K., Brown, I.H., Zambon, M (2020) Inactivated Pandemic 2009 H1N1 Influenza A Virus Human Vaccines Have Different Efficacy After Homologous Challenge in the Ferret Model; *Influenza and Other Respiratory Viruses*,15:142-153. doi:10.1111/irv.12784

4. Everett HE, van Diemen PM, Aramouni M, Ramsay A, Coward VJ, Pavot V, Canini L, Holzer B, Morgan S, Woolhouse MEJ, Tchilian E, Brookes SM, Brown IH, Charleston B, Gilbert S. 2020. Vaccines That Reduce Viral Shedding Do Not Prevent Transmission of H1N1 Pandemic 2009 Swine Influenza a Virus Infection to Unvaccinated Pigs. *J Virol* doi:10.1128/jvi.01787-20.

5. Joshua D.Powella1Eugenio J.Abentea12JenniferChangaCarine K.SouzaaDaniela S.Rajaoa3Tavis K.AndersonaMichael A.ZellerbPhillip C.GaugerbNicola S.LewisAmy L.Vincenta (Nov 2020) Characterization of contemporary 2010.1 H3N2 swine influenza A viruses circulating in United States pigs. *Virology* Volume 553, 15 January 2021, Pages 94-101. <https://doi.org/10.1016/j.virol.2020.11.006>

6. Nagy, A., L. Černíková, K. Kunteová, Z. Dirbáková, S. S. Thomas, M. J. Slomka, Á. Dán, T. Varga, M. Máté, H. Jiřincová, I. H. Brown (2020). A universal RT-qPCR assay for "One Health" detection of influenza A viruses; submitted bioRxiv 2020.06.29.171306. doi: <https://doi.org/10.1101/2020.06.29.171306>. PLOS ONE (accepted)

b) International conferences: 2

Brookes, Sharon; Johnson, Nick; Choudhury, Bhudipa; Steinbach, Falko; McElhinney, Lorraine; Banyard, Ashley; Fooks, Tony; Brown, Ian (2020). Zoonotic viral diseases at the animal-human-ecosystem interface - threats and responsiveness to viral pathogens. 6th World One Health Congress One Health Science

Helen Everett, Benjamin Mollett, Alexander Byrne, Dominic Byrne, James Seekings, Elliot Whittard, Sharon Brookes, Scott Reid, Ashley Banyard, Ian Brown (2020). Application of Whole-Genome Sequencing and Novel Molecular Tools to Understand Swine Influenza in the United Kingdom. *Neglected Influenza Conference*

c) National conferences: 0

d) Other:

(Provide website address or link to appropriate information) 6

Nicola Lewis: (led OFFLU VCM programme)

1. VCM report February. Antigenic and genetic characteristics of zoonotic influenza A viruses and development of candidate vaccine viruses for pandemic preparedness.

[https://www.who.int/influenza/vaccines/virus/202002\\_zoonotic\\_vaccinevirusupdate.pdf?ua=1](https://www.who.int/influenza/vaccines/virus/202002_zoonotic_vaccinevirusupdate.pdf?ua=1)

2. WHO ad-hoc teleconference on swine risk. Led to tripartite statement below.  
[https://www.who.int/influenza/gip/FAO-OIE-WHO\\_RiskSwineFlu\\_082020.pdf?ua=1](https://www.who.int/influenza/gip/FAO-OIE-WHO_RiskSwineFlu_082020.pdf?ua=1)
3. <https://science.vla.gov.uk/fluglobalnet/>
4. WHO consultations for WHO VCM and zoonotic teleconferences (Feb and September)
5. WHO ad hoc expert consultation on emerging swine viruses (July-Sept 2020)
6. As OIE reference laboratory: ad hoc meetings with The World Influenza Centre at the Crick on emergent swine viruses (April and June 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)
ISO17025	ISO17025 certificate.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Haemagglutination Inhibition test	UKAS
Matrix (M)-gene PCR	UKAS
H1-118 (pdm09) real-time PCR	UKAS
Virus isolation in SPF eggs	UKAS
Next Generation Sequencing	UKAS

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?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
CEVA meeting	11/20	Online	Participant	SIV EU network meeting led by CEVA.
OFFLU swine group meeting	12/20	Online	Presenter	Detailed antigenetic characterisation - update on global antigenic diversity and WHO VCM.

### **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
OFFLU WHO VCM characterisation.	Antigenic and genetic evolution of current strains. We have had a close working relationship with the OIE reference laboratory in Brescia to map the epidemiology of SI in Europe and ensure collaboratively we fully characterise these viruses at the genetic level which supports the OFFLU data-package/advice to WHO VCM.	ISZVE Chiara Chiapponi at Brescia.

***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)
Ian Brown coordinated amongst all SI OIE reference laboratories review and revisions to the SI chapter in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. Work on-going to respond to Member Country comments.	Virtual	SI chapter in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.

25. Additional comments regarding your report:

N/A