

# OIE Reference Laboratory Reports Activities

## *Activities in 2021*

**This report has been submitted : 2022-01-19 12:48:16**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Swine influenza
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<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Mr Ian Hewett , Acting 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
HI	Yes	663	478
Direct diagnostic tests		Nationally	Internationally
Real-time RT-PCR M gene	Yes	1516	0
Real-time RT-PCR pH1N1 2009	Yes	111	0
Next Generation Sequencing	Yes	5	0
Egg inoculation/HA	Yes	1	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 new SIV hemagglutinin (HA) and neuraminidase (NA) subtype- and lineage-specific multiplex real-time RT-PCRs (RT-qPCR) have been assessed and are undergoing validation for sensitive subtype determination of swine influenza viruses with reference virus isolates and clinical samples	Based on: Henritzi, Dinah & Starick, Elke & Simon, Gaelle & Krog, Jesper & Larsen, Lars & Reid, Scott & Brown, I.H. & Chiapponi, Chiara & Foni, Emanuela & Wacheck, Silke & Schmid, Peter & Beer, Martin & Hoffmann, Bernd & Harder, Timm. (2016). Rapid detection and subtyping of European swine influenza viruses in porcine clinical samples by hemagglutinin- and neuraminidase-specific tetra- and triplex real-time RT-PCRs. Influenza and Other Respiratory Viruses. 10.1011/irv.12407.
The pWHO PCR for determination of lineage 1A (pandemic 09) HA	has also undergone internal validation and has been accepted as a validated assay for the detection of H1

**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
BELGIUM	Swine influenza data for OFFLU contribution to WHO vaccine meeting	Email

**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
PIGIE	2021-2024	Define genetic and antigenic traits of swine influenza viruses circulating in European pig herds and identify potential control strategies	ANSES, FLI, University of Copenhagen, University of Barcelona, IZSLER (Parma) Includes linkages with CEVA who are part of the PIGIE consortium.	SPAIN
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	UNITED STATES OF AMERICA
Centres of Excellence for Influenza Research and response (CEIRR)	2021-2029	Development of pipelines for evaluation of the emergence of swine influenza viruses of pre-pandemic or pandemic risk.	NIAID funded programme. APHA supported via interactions with RVC and Penn-CEIRR. CEIRR Network (ceirr-network.org)	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	
Influenza D virus	Ongoing annual	Exchange of influenza D virus-specific antisera	IZSLER	

**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:

Genetic sequencing and characterisation of viruses circulating in a range of countries requesting assistance.

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:

Genetic sequencing and characterisation of viruses circulating in a range of countries requesting assistance.

**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: 7

Joshua D.Powella1Eugenio J.Abentea12JenniferChangaCarine K.SouzaaDaniela S.Rajaoa3Tavis K.AndersonaMichael A.ZellerbPhillip C.GaugerbNicola S.LewiscAmy L.Vincenta 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>  
Powell, J. D. et al. (2021) 'Characterization of contemporary 2010.1 H3N2 swine influenza A viruses circulating in United States pigs.', Virology, 553, pp. 94-101. doi: 10.1016/j.virol.2020.11.006.

Martini V; Paudyal B; Chrun T; McNee A; Edmans M; Maze EA; Clark B; NUNEZ A; Dolton G; Sewell A; Beverley P; MacLoughlin R; Townsend A; Tchilian E (2021)  
Simultaneous aerosol and intramuscular immunization with influenza vaccine induces powerful protective local T cell and systemic antibody immune responses in pigs.  
Journal of Immunology 206 (3) 652-663.  
<https://doi.org/10.4049/jimmunol.2001086>

VIDANA B; BROOKES SM; EVERETT HE; GARCON F; NUNEZ A; Engelhardt O; Major D; Hoschler K; BROWN IH; Zambon M (2021)  
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 (1) 142-153.  
<https://doi.org/10.1111/irv.12784>

EVERETT HE; VAN DIEMEN PM; Aramouni M; RAMSEY A; COWARD VJ; Pavot V; Canini L; Holzer B; Morgan S; The Dynamics sLoLa Consortium; Woolhouse MEJ; Tchilian E; BROOKES SM; BROWN IH; Charleston B; Gilbert S (2021)  
Vaccines that reduce viral shedding do not prevent transmission of H1N1 pandemic 2009 swine influenza a virus infection to unvaccinated pigs.  
Journal of Virology 95 (4) e01787-20.  
<https://doi.org/10.1128/JVI.01787-20>

Vatzia E; Allen ER; Manjegowda T; Morris S; McNee A; Martini V; Kaliath R; Ulaszewska M; Boyd A; Paudyal B; Carr VB; Chrun T; Maze E; MacLoughlin R; VAN DIEMEN PM; EVERETT HE; Lambe T; Gilbert SC; Tchilian E (2021) Respiratory and intramuscular immunization with ChAdOx2-NPM1-NA induces distinct immune responses in H1N1pdm09 pre-exposed pigs.  
Frontiers in Immunology 12, Article number: 763912.  
<https://doi.org/10.3389/fimmu.2021.763912>

Thapsigargin Is a Broad-Spectrum Inhibitor of Major Human Respiratory Viruses: Coronavirus, Respiratory Syncytial Virus and Influenza A Virus  
Viruses as part of the Special Issue State-of-the-Art Emerging Respiratory Viruses in Europe Sarah Al-Beltagi, Cristian Alexandru Preda, Leah V. Goulding, Joe James, Juan Pu, Paul Skinner, Zhimin Jiang, Belinda Lei Wang, Jiayun Yang, Ashley C. Banyard, Kenneth H. Mellits, Pavel Gershkovich, Christopher J. Hayes, Jonathan Nguyen-Van-Tam, Ian H. Brown, Jinhua Liu, and Kin-Chow Chang.  
Manuscript ID: viruses-1093523  
doi: 10.3390/v13020234  
<https://www.mdpi.com/1999-4915/13/2/234>

b) International conferences: 0

c) National conferences: 0

d) Other:

(Provide website address or link to appropriate information) 10

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

N Lewis- WHO consultations for WHO VCM and zoonotic teleconferences (Feb and September 2021)

N Lewis- WHO ad hoc expert consultation on emerging swine viruses (July-Sept 2021)

N Lewis- As OIE reference laboratory: ad hoc meetings with The World Influenza Centre at the Crick on emergent swine viruses (April and June 2021)

H Everett/A Banyard- PhD update to USDA on UK swine influenza virus surveillance annual findings (22 Sept 2021).

N Lewis- September 2021:WHO Influenza Virus Vaccine Composition Meeting, Geneva

N Lewis- De Welt: media engagement - questions on pandemic risk of influenza viruses in pigs

N Lewis- Engagement with CEVA on swine influenza viruses, extending to wider specialist interest group on European swine influenza network, where CEVA is also a partner

N Lewis- PHE advisory call on diversity of influenza in pigs

N Lewis- Drafting of tripartite (WHO/OIE/FAO) position piece on emerging influenza viruses of pandemic potential in pigs

**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	ISO-IEC 17025-2017.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
Whole Genome 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
OFFLU swine group meeting	1/21	virtual	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
epidemiology of SI in Europe	We have had a close working relationship with the OIE reference laboratory in Italy 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.	OIE reference laboratory in Italy
Centres of Excellence for Influenza Research and response (CEIRR)	We are also working closely with collaborators as part of the CEIRR consortium where APHA is a part of a pandemic and pre-pandemic risk pipeline for swine influenza virus.	OIE reference laboratory in USA

***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?

No

25. Additional comments regarding your report: