



OFFLU Annual Report 2023

In 2023, OFFLU conducted the following activities pertaining to avian influenza (AI), swine influenza (SI) and equine influenza (EI).

Avian influenza technical activity

High Pathogenicity Avian Influenza virus (HPAIV) continued to threaten animal and human health worldwide. Over the course of the year detections of the clade 2.3.4.4b H5N1 remained high causing devastation to the poultry sector, and wild bird populations across a broad geographical spread, including the first incursions of HPAI into the Antarctic Region. These reports were coupled with occasional reports of spillover into humans and significant mortality in some marine mammals (mostly pinnipeds), and outbreaks in farmed mammals and domestic pets.

Other H5 subtypes and clades were also detected, though in geographically restricted areas. There was emergence of a novel HPAI H7N6 influenza virus causing outbreaks in South African poultry. Detections of low pathogenic H3 and H9 viruses continued in poultry, reminding us of the continued threat avian influenza viruses pose to the poultry sector, wildlife and human health.

In response to these persistent threats, OFFLU network experts remained engaged with the scientific and policy making community, proactively held a number of teleconferences throughout the year, contributed to tripartite risk assessments and situation updates as well as updating communications materials and sharing information through the network. In May 2023 OFFLU network experts led and provided technical input to the Food and Agricultural Organisation (FAO) [global consultation on HPAI](#) in Rome, Italy and took part in the [Animal Health Forum on Avian influenza](#) conducted during WOAHA General Session in Paris. OFFLU experts, FAO, World Organisation for Animal Health (WOAH) and the World Health Organisation (WHO) are in regular communication to share public and animal health data and to improve communications between the organisations under a One Health framework.

In addition to these events, in February, OFFLU network experts presented virtually for the [GF-TADs Americas Technical meeting on HPAI vaccination](#), including approaches, tools, knowledge and experiences for the Americas. In April, OFFLU network experts presented its activities for the [GF-TAD's Standing Group of Experts on Avian Influenza \(SGE-AI\) meeting held in Mexico City, Mexico](#). In May OFFLU network experts attended the Southeast Asia Avian Influenza Workshop organised by CDC and presented OFFLU activities and sequencing data resources in Bangkok, Thailand. In August, OFFLU network experts presented the OFFLU Avian Influenza Matching for poultry vaccines project at the [Regional Workshop for Avian Disease Prevention and Control in Asia and the Pacific in Qingdao](#), People's Republic of China. In October, OFFLU network experts presented the Avian Influenza Matching project at the [Annual meeting of European Reference Laboratories for Avian Influenza and Newcastle Disease](#) at the EFSA headquarters in Parma, Italy.

The H9 nomenclature activity led by IZSVE, Italy co-joined with a Chinese led group of experts finalised a unified H9 nomenclature/ classification scheme and constructed a manuscript and submitted it for peer-reviewed publication. The core group of experts had broad geographical representation and were routinely involved in H9 activities. This group found solutions to merge different nomenclature proposals from different regions into a unified global nomenclature system for publication.

The OFFLU avian influenza technical activity, in conjunction with the wildlife technical activity held several calls with experts throughout the globe, in March to discuss AI events in mammals and in November to discuss AI situation in Latin America and the Caribbean region. In March OFFLU also published statements on HPAI caused by the H5N1 subtype highlighting knowledge gaps in current understanding. In June OFFLU published a statement on its monitoring of the situation of H5N1 in cats in Poland.

[OFFLU statement on HPAI caused by H5N1 subtype](#)
[OFFLU statement on infections with AIV in cats in Poland](#)
[Public health resource pack for countries experiencing influenzas in animals](#)

[OFFLU call to discuss AI in the Latin America and Caribbean region](#)
[Preliminary FAO/WHO/WOAH Joint Rapid Risk Assessment – Human infection with influenza A\(H5N1\), Cambodia \(2023\)](#)

WHO Vaccine Composition Meeting (VCM) Technical Activity

Two new OFFLU experts were recommended to replace the outgoing expert in leading the OFFLU avian and swine influenza VCM technical activities. The experts and the OFFLU scientist attended the two week-long VCMs, held in February and September in Geneva, Switzerland where the need to update pre pandemic candidate vaccine viruses for human vaccines against zoonotic influenza viruses was considered. In February a new H5N1 candidate vaccine virus (CVV) was proposed. In September a new H9N2 CVV and a swine H3N2 CVV were proposed. The Swine and Avian VCM technical groups coordinated and presented data with inputs from WOAHA and FAO Reference Centers, research programs and national veterinary laboratories, providing contextual information on animal influenza virus genetic, antigenic, and epidemiological data for consideration during the meeting.

An unprecedented number of contributions of data were provided through the OFFLU network, collected from Reference Laboratories/Centres, national veterinary laboratories and research networks in Europe, Asia, Africa, Oceania and the Americas. We are grateful to ACDP (Australia), ANSES (France), AHRI (Egypt), APHA (UK), APQA (Rep. Korea), ARRIAH (Russia), BLRI (Bangladesh), CFIAN (Canada), CVASU (Bangladesh), DIC wates (Indonesia), ENVT (France), FLI (Germany), HVRI (China), IAEA (Vienna), ICA (Colombia), NIHSAD, ICAR (India), ISU (Georgia), IZSVE and IZSVL (Italy),

Ghent University (Belgium), NIAH and Hokkaido University (Japan), NIVR and NVL (Viet Nam), IPC (Cambodia), LFDA (Brazil), SENSICA (Mexico), SSI (Denmark), USDA-APHIS NVSL, USDA-ARS-NADC and USDA-ARS-SEPRL (USA), RVC (UK), WUR (Netherlands) as well as GenBank and GISAID contributors for providing sequence and epidemiological data. The work of OFFLU is entirely dependent on free and open sharing of data and we are grateful to those who have contributed in this way. We have continued to support and encourage others to do so.

Antigenic data were generated by OFFLU network experts from laboratories at IZSVE, (Italy), ACDP, (Australia), APHA, (UK), USDA-ARS-SEPRL and USDA-ARS-NADC, (USA). Analyses and reports were generated and compiled by NADC, RVC, IZSVE and FAO. The OFFLU VCM teams would like to specifically acknowledge the involved contributing laboratories within the OFFLU network for their significant contribution of animal influenza virus data to help inform decisions impacting public health during the year 2023.

A summary and links to the OFFLU and WHO VCM reports from 2023 can be found here:

[OFFLU summary report for the WHO vaccine composition meeting, February 2023](#)

[OFFLU summary report from the WHO vaccine composition meeting, September 2023](#)

OFFLU proficiency testing

The OFFLU proficiency testing panel for the year 2023 was received by WOAHA/FAO Reference Centers and was designed to assess the capability of the laboratories to detect and characterize representative widely circulating lineage of H5, H7 and H9 subtype avian influenza viruses. The round was coordinated by the Australian Centre for Disease Preparedness (ACDP) and conducted under their ISO/IEC 17043:2010 accreditation.

OFFLU conducts these proficiency testing rounds in support of the laboratories to facilitate international harmonization of testing proficiency and the proficiency test panels are designed to be challenging to allow laboratories the opportunity to fine tune their diagnostic capability. Laboratories with results divergent from the expected will investigate the causes as required under their quality assurance system accreditation.

OFFLU Avian Influenza Matching (AIM) activities

The OFFLU initiative to provide information on the real time antigenic characteristics of contemporary avian influenza viruses started in 2022. A preliminary pilot project has been taking place involving APHA and RVC (UK) and IZSve, (Italy) and OFFLU experts. In October 2023, the report was released presenting the results of this project and providing information to stakeholders on the antigenic characteristics of Gs/Gd lineage viruses to support stakeholders and countries in their decisions regarding vaccine strain selection and vaccine match. A standardised panel of reagents has been generated and shared with other laboratories including ACDP

(Australia) and SEPRL (USA) to expand the geographical reach of this initiative. This expansion of expertise produces a continuous and real time standardized global assessment of antigenic evolution of avian influenza viruses with the application to vaccine matching in poultry. OFFLU encourages experts and countries to share virus material and genetic data to achieve this goal and OFFLU will continue to work expanding linkages and partnerships within this project.

[OFFLU AIM Report](#)

OFFLU applied epidemiological technical activity

Members of the OFFLU applied epidemiological group experts gave technical input to the [FAO global consultation on avian influenza in May 2023](#).

OFFLU experts also collaborated with STAR-IDAZ by participating in three workshops on influenza research roadmaps development, held online in January and February 2023.

The workshops focused respectively on research roadmaps for control strategies, diagnostics and vaccine development for influenza, highlighting the steps necessary to address research efforts where it is most needed to improve efficiency in response to future outbreaks.

[Star_idaz_influenza_research_roadmaps_report_Mar23-1.pdf \(star-idaz.net\)](#)

[Final research roadmaps](#)

[Executive summary](#)

Wildlife influenza technical activity

In response to the extensive and large-scale outbreaks of HPAI in wildlife including wild birds and mammals, the OFFLU wildlife experts analysed and discussed the situation and issued various risk assessment and situational update statements.

[OFFLU call to discuss Avian Influenza events in mammals](#)

[Southward expansion of high pathogenicity avian influenza H5 in wildlife in South America: estimated impact on wildlife populations, and risk of incursion into Antarctica](#)

[Continued expansion of high pathogenicity avian influenza H5 in wildlife in South America and incursion into the Antarctic region](#)

OFFLU swine influenza virus technical activity

The experts contributed swine influenza virus data for consideration during the WHO Vaccine Composition Meetings (VCM) in February and September 2023. These data are needed to update pre-pandemic candidate vaccine viruses for human vaccines against zoonotic viruses of concern and contribute to the WHO biannual report of “Antigenic and genetic characteristics of zoonotic influenza viruses and development of candidate vaccine viruses for pandemic preparedness.” During 2023 260 unpublished H1 sequences were submitted through the OFFLU network; 120 1A lineage (8 antigenically characterised); 25 1B lineage (4 antigenically characterised); 115 1C lineage (13 antigenically characterised). 56 unpublished H3 sequences were submitted through the OFFLU network (4 antigenically characterised). The OFFLU experts from the swine influenza group provided valuable context and collaboration with public health partners for risk and response to human variant cases detected in 2023.

ESFLU (A swine flu EU funded network) is a four-year project launched in November 2022 and operates as an open network for innovation, career development and research, with a multidisciplinary approach. The primary goal of ESFLU is to establish an interdisciplinary European network for swine influenza A virus to enhance information exchange, raise awareness, and improve pandemic preparedness. The OFFLU Steering committee endorsed the collaboration with ESFLU, as the European working partner in the OFFLU activities for the area of swine influenza, fostering a partnership between the two networks.

[OFFLU swine Influenza data package, February 2023](#)

[OFFLU swine Influenza data package, September 2023](#)

Equine influenza surveillance panel

The Expert Surveillance Panel of Equine Influenza comprising OFFLU and WHO influenza experts met virtually in July 2023 and reviewed the Equine Influenza virus activity, characteristics of the viruses isolated and vaccine performance.

The panel recommended that vaccines for the international market should contain both clade 1 and clade 2 viruses of the Florida sub-lineage. The recommendations remain unchanged from previous years.

OFFLU Steering and Executive Committee meetings

OFFLU Steering and Executive Committee meetings were held in February and June 2023 to review the outputs of various ongoing technical activities, provide recommendations for follow ups and approve new technical activities. Membership changes of the committees were discussed and effected as per the OFFLU modus operandi.

FAO and WOAHA recruited a number of consultants to contribute ad hoc to support OFFLU technical activities and communications.

[OFFLU Steering & Executive Committee Meetings: February, June 2023](#)

[OFFLU Steering and Executive Committee Members](#)

Acknowledgements

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