

WHO Collaborating Centre for Reference and Research on Influenza, Melbourne, Australia

 @WHOCFluMelb

www.influenzacentre.org

The WHO Collaborating Centre for Reference and Research on Influenza in Melbourne is one of five centres in the world that conduct human influenza surveillance for the World Health Organisation (WHO). The Centre is designated by the Director-General of WHO to perform activities as part of the WHO Global Influenza Surveillance and Response System (GISRS).

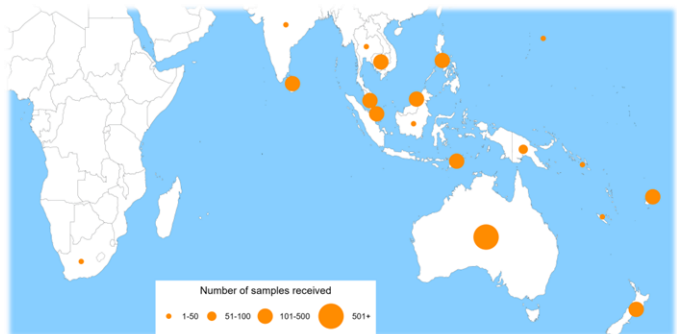
Surveillance

The Centre analyses influenza specimens and isolates forwarded by WHO National Influenza Centres and reference laboratories in different countries. Most samples received by the Centre come from the Asia-Pacific region. Samples are analysed for their antigenic, genetic and antiviral drug sensitivity properties. The Centre also produces candidate vaccine viruses which are made available for vaccine production if recommended by WHO.



We also work with national and international sentinel surveillance networks to monitor influenza circulation both within Australia and around the world.

Twice a year a WHO committee meets to consider data from all five WHO Collaborating Centres and recommend suitable strains to be included in the next seasonal influenza vaccine.



Geographic spread of influenza laboratories sending viruses to the Centre during 2024.

Location and facilities



The Centre is located at the Peter Doherty Institute for Infection and Immunity, in Melbourne, Australia, with purpose-built dedicated BSL2 and BSL3 facilities.

These facilities enable the Centre to maintain a high level of surveillance for seasonal, animal and zoonotic influenza, and remain ready to handle influenza viruses with pandemic potential from within or outside Australia.



WHO Collaborating Centre
for Reference and
Research on Influenza
VIDRL



A joint venture between The University of Melbourne and The Royal Melbourne Hospital



Technical Capabilities

The Centre boasts a suite of state of the art technical capabilities for detailed analysis and characterization of influenza viruses, as well as epidemiological analysis of virus circulation:

Serological and antigenic analysis:

- Determination of type and subtype/lineage
- Cell culture propagation and influenza virus isolation
- Antigenic characterisation by haemagglutination inhibition (HI) assay and/or Focus Reduction microneutralisation assay (FRA)

Genetic analysis:

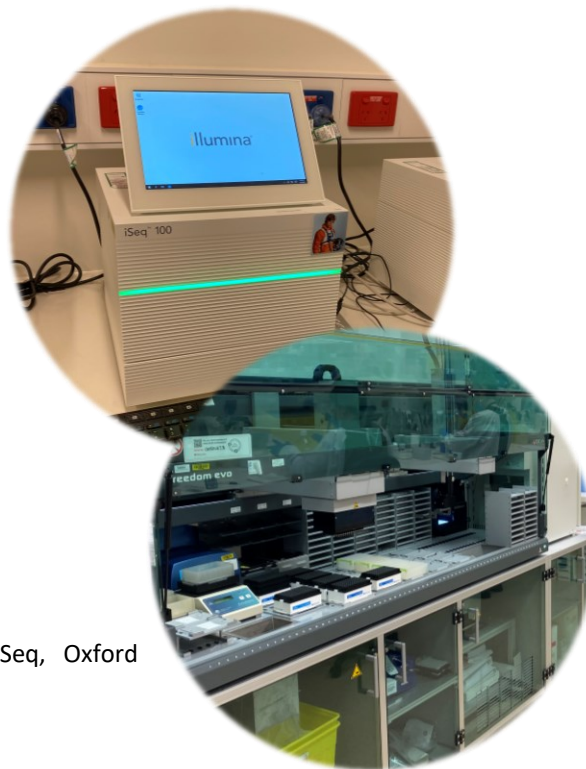
- Determination of type and subtype/lineage
- Routine sequencing of selected genes
- Whole genome sequencing
- Next generation sequencing (NGS) (e.g. Illumina iSeq, Oxford Nanopore)
- Phylogenetic analysis of influenza viruses

Monitoring sensitivity to antiviral drugs:

- Phenotypic assays
- genetic characterisation of mutations associated with reduced sensitivity to antiviral drugs

Epidemiology:

- biostatistics and data analysis
- study design and implementation



Zoonotic and potential pandemic influenzas



Through WHO and other linkages, the Centre monitors international developments relevant to detecting and responding to influenza viruses with pandemic potential, particularly highly pathogenic avian A(H5N1), newly emerging avian A(H5Nx), and low and highly pathogenic avian A(H7N9) viruses. We engage with National Influenza Centres and other laboratories in the region and maintain an up-to-date set of molecular and other reagents to enable the rapid subtyping and sequencing of novel influenza viruses, including A(H5N1), A(H5Nx) and A(H7N9).

The Centre maintains longstanding collaborative links with the Australian Centre for Disease Preparedness (ACDP, formerly known as the Australian Animal Health Laboratory or AAHL) in Geelong, Victoria, for animal studies on influenza viruses requiring BSL3 containment. We also undertake routine surveillance of influenza viruses in wild birds in Australia in collaboration with Deakin University and the University of Sydney.

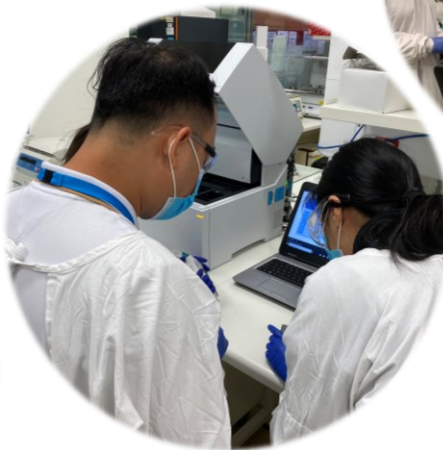


Training

The Centre provides support and training opportunities to laboratories and health care workers in the Asia-Pacific region that contribute to GISRS. Expertise offered by the Centre includes methods for laboratory based detection of influenza virus, as well as techniques in epidemiology and data management.

Training can take several different forms:

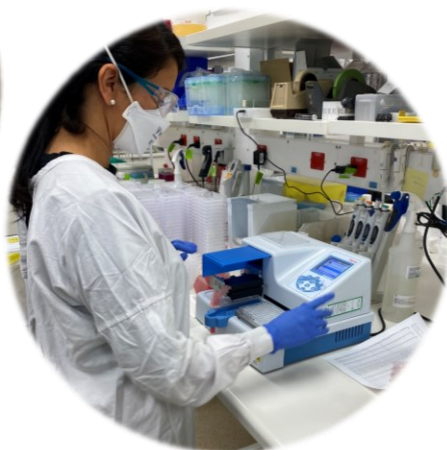
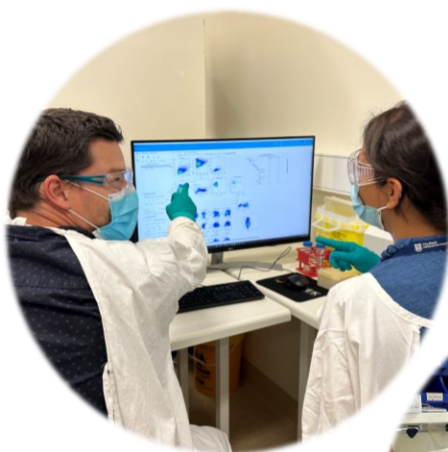
- On-site training at regional laboratories and public health institutes with a visit by a specialist staff member from the Centre
- Regional multi-day workshops
- In-house training at the Centre.



Research

Centre staff are involved in a broad range of research projects related to influenza, including virology, immunology, antivirals and viral fitness, epidemiology, and animal influenzas. Recently, our research scope has widened to include other respiratory viruses, such as SARS-CoV-2 and RSV.

Methods used include molecular biology, serology, animal models and population studies. Centre staff are involved in numerous collaborations with researchers from academic, public health and health care sectors, both within Australia and internationally. The Centre also offers projects for Honours, Masters and PhD students.





Leadership and Senior Staff



Patrick Reading
Centre Director

The Centre is led by Professor Kanta Subbarao, a virologist and a physician with specialty training in pediatrics and pediatric infectious diseases. Prior to her arrival in Melbourne in 2016, she was Chief of the Emerging Respiratory Viruses Section of the Laboratory of Infectious Diseases, NIAID, National Institutes of Health (NIH) in the USA. Kanta brings her deep knowledge of influenza viruses and extensive experience working in infectious diseases and public health to the Centre's critical work in influenza surveillance and research.



Ian Barr
Deputy Director



Michelle Wille
Centre Educator/
Senior Research Scientist



Jessica Miller
Senior Epidemiologist



Annette Fox
Senior Research Scientist



Yi-Mo Deng
Head, Genetic Analysis



Heidi Peck
Head, Serology



Saira Hussain
Head, Antiviral Drug
Sensitivity



Clyde Dapat
Head, Bioinformatics

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