

Australian Respiratory Council Research Support Grants 2024/2025 Funding

Project Title: Understanding the impacts of maternal exposure to environmental factors during pregnancy on respiratory viral infections in offspring.

Researchers: Distinguished Professor Brian Oliver (Woolcock Institute of Medical Research) and Dr Richard Kim (University of Technology Sydney).

Respiratory infections in early life can disrupt lung development and increase the risk of chronic respiratory diseases in later life. Respiratory syncytial virus (RSV) and influenza A (flu) infections are the most common viral infections in children under 5, with prevalence rising in recent years. Infants are increasingly likely to experience severe RSV and flu infections requiring hospitalisation, potentially leading to conditions like bronchiolitis, wheezing, and asthma. Critically, there are no treatments to prevent lung disease development following early life RSV or flu infection.



Professor Brian Oliver

Increasing evidence suggests that *in utero* exposures, such as air pollution, increase the risk and severity of early life respiratory infections and affect lung health and immune function in offspring. However, the relationship between maternal environmental exposures during pregnancy, severity of early life infections, and development of chronic respiratory diseases remains unclear.

We developed models of maternal environmental exposures (pollution and pollen) and found that offspring have increased asthma severity in later life. This project aims to:

1. Assess whether these offspring are more susceptible to RSV and flu infections by measuring viral load and immune responses.



Dr Richard Kim

2. Investigate how maternal environmental exposures affect the severity of these infections in offspring by performing RNAseq on lung samples collected in Aim 1, and use our drug discovery pipeline to identify new immune-modifying drugs to inhibit the development of chronic lung disease in later life.