Research award:

Effect of female sex hormones on the antiviral response of the bronchial epithelium

Awarded to: Dr Cornelia Blume Amount: £10,000

Lay summary

The aim of this project was to identify how female hormones influence the way we fight off the common cold virus. In women with asthma, a common cold can worsen symptoms. Changes in the levels of female sex hormones, e.g. during the menstrual cycle, have been linked to asthma attacks. But it is unclear how female sex hormones change the way how the common cold virus is fought off. The common cold virus infects the cells that line our lung, called respiratory epithelial cells. We have grown these cells from female volunteers in the lab and infected them with the common cold virus in the presence of female sex hormones. We then analysed how female hormones change the way these cells work by looking at what genes have been turned on or turned off. Using computational data analysis methods, we compared the patterns of genes turned on or off between women with and without asthma. We showed that female hormones supported the clearance of the virus in cells from women without asthma. But cells from women with asthma showed a delay in the clearance. The results from this project give novel insights into how female hormones influence the response to infection in the respiratory epithelium.

Publications

Results from this project have been presented at the ERS Lung Science Conference in March 2025.