

Characterizing Pre-Existing Humoral Immunity to Emerging Influenza A Viruses

Inhalt

The Influenza A virus causes up to 1 billion infections and up to 500.000 deaths per year, representing a persistent global threat. Even though the virus evades the human immune system through antigenic drift and shift of the surface proteins hemagglutinin and neuraminidase, vaccination is still the best way to protect individuals from a severe outcome. Nevertheless, individual vulnerability to the virus is shaped by immunological imprinting, influencing the pool of long-lived plasma cells that secrete neutralizing antibodies to provide immediate protection upon reinfection.

This project aims to investigate potential cross-reactivity of these neutralizing antibodies imprinted by circulating subtypes, which is essential for modeling pandemic preparedness against novel subtypes and guiding future vaccination strategies. Utilizing a cross-sectional cohort with diverse immunological experience, including infection and vaccination, enables us to assess the pre-pandemic status. Moreover, we want to determine how changes in the nutritional state modulate humoral immunity towards different subtypes, potentially enhancing vaccine responsiveness.

To address this, we established a cell-based assay, where we express respiratory viral surface proteins and acquire serum IgG and IgA levels via flow cytometry. The analysis of our cohort will allow us to assess further if factors like sex, age or body-mass-index have an impact on respiratory virus specific antibody secretion.

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PhD student

Junior scientist status

Yes, I am a junior scientist.

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