“Antibody Fc effector functions & plasma IgA in viral pandemics (COVID edition)”

Sam Davis
Chung Lab

Abstract:
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of the COVID-19 pandemic, has resulted in over 6 million deaths globally. Following infection or vaccination, we generate functional antibodies to the envelope Spike glycoprotein of SARS-CoV-2. In addition to neutralising SARS-CoV-2, Spike binding antibodies can activate Fc effector functions to control and clear viremia. However, the Fc functional antibody response to SARS-CoV-2 and emerging variants of concern has been poorly characterised, especially for IgA antibodies found in the plasma.

To investigate SARS-CoV-2 Fc functional antibody responses, we developed 3 in vitro cell based assays and applied them to a range of COVID infected and vaccinated plasma samples. Using these novel assays, we demonstrated that SARS-CoV-2 Fc functional antibodies are more durable than neutralizing antibodies, thus protecting the body longer from infection. We also characterized the functional contributions of two different antibody types: IgA and IgG in plasma. Both IgA and IgG have similar capacities to neutralize the virus, however IgG induces more potent Fc effector responses. Finally, we compared the functional antibody responses of vaccinated and COVID infected and clearly illustrate vaccination induces significantly stronger neutralization and Fc functional responses to SARS-CoV-2 variants. Understanding the functional antibody response to SARS-CoV-2 will further illuminate what constitutes a protective immune response and help inform second generation vaccines and antibody therapies, to prevent and treat SARS-CoV-2 infection.

Friday 29th July 2022 at 4.00pm

In-person attendance: Auditorium, Doherty Institute
or join us via Zoom Webinar: 858 6695 9190 Password: 381008
Followed by a Q&A at the end of presentation.