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An investigation of the T cell response against viruses through a structural lens

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T cells are a critical part of the immune response, that would determine the fate of an infection and disease outcome. Our Lab is focused on understanding how T cell engage with viral particles, called peptide antigens, that are presented by highly polymorphic molecules called Human Leukocyte Antigens (HLA). T cells have receptors on their surface called T cell receptor (TCR) that allow them to recognise the composite surface of the peptide-HLA complex.

Using X-ray crystallography we are seeking to understand both peptide antigens presentation as well as TCR recognition, both important to determine the quality of the subsequent immune response. This allow us to understand the response towards influenza and HIV viruses, and more recently SARS-cov-2 virus. The molecular and biophysical features of the peptide antigens help us map the regions of the virus that are recognised by T cells, as well as determining the most stable and potent antigens that represent attractive target for therapeutics.

Primary author(s) : Prof. GRAS, Stephanie (Monash University)

Presenter(s) : Prof. GRAS, Stephanie (Monash University)

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