Understanding how immune cells go rogue in human autoimmune disease

Dr Manu Singh and Associate Professor Fabio Luciani

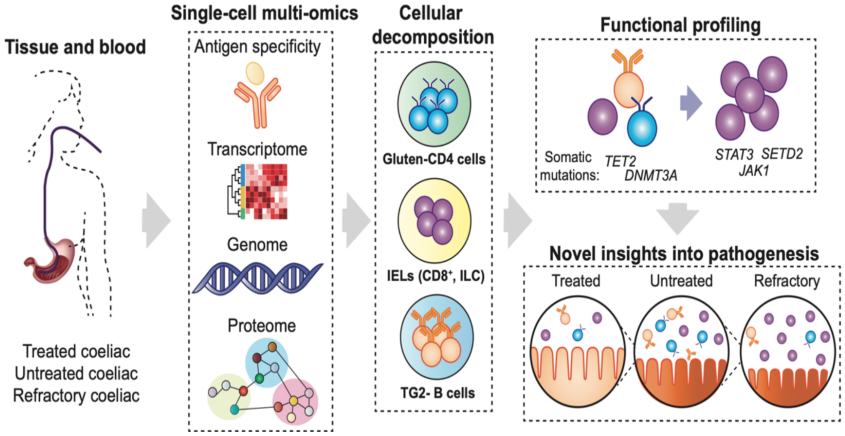
Our research

- There are over 80 different autoimmune diseases which collectively affect up to 10% of the population. Despite this, the underlying cause of human autoimmune disease is not know.

- Our team studies how immune cells go “rogue” in human clinical samples from a range of autoimmune diseases diseases including celiac disease, multiple sclerosis, lupus and Sjogren’s syndrome.

-We use cutting edge single cell genomic technologies and bioinformatic tools to characterise how these cells escape checkpoints

Single cell genomics applied to celiac disease



This schema outlines the experimental approach to identify and characterise rogue lymphocytes that drive pathogenesis in celiac disease. We use single cell mult-omics to measure multiple modalities such as transcriptomics, proteomics and immune recetptor sequences to profile these cells.

Our team

Manu Singh (Garvan)

Fabio Luciani (Kirby)

- Our collaborative team covers two labs across the Garvan Institute and the Kirby Institute.

- You will work in a diverse team of researchers with expertise in immunology, genomics and bioinformatics

Project opportunities

- You will undertake a project that will rogue immune cells in a human autoimmune disease based at either the Garvan Institute or the Kirby Institute

- Projects can involve both wet-lab based experimental work and/or bioinformatics

- Wet-lab based projects include applying single-cell genomic technologies such as single-cell RNA sequencing, single-cell DNA sequencing, flow cytometry to human clinical samples

- Bioinformatic projects include analysing single-cell sequencing data and assiting in the development of bioinformatic pipelines with senior members of the group

Selected publications from the lab: 1. Singh et al. Cell. 2020. 2. Rizzetto et al. Bioinformatics. 2018. Singh et al. Nature Communications. 2019