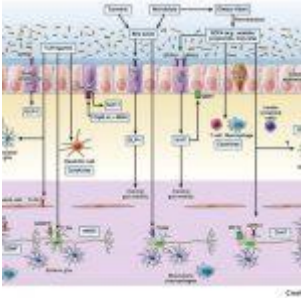


Immune memory in the intestine: new insights into “innate memory”



Regulation of the host-microbe interactions is essential to maintain a well-balanced microbiome. The innate immune system is essential for this maintenance and also plays a crucial role in providing protection against pathogens which invade the mucosa. In a recent paper, Serafinain, et al., have made us of an intestinal infection model to discover that group 3 innate lymphoid cells (cells of the innate immune system) may also develop an innate form of immunological memory needed for immunisation of the host against reinfection.

It is known that enteropathogenic and enterohemorrhagic *Escherichia coli* infections account for up to 9% of child deaths each year worldwide. It is essential to understand how the immune system works in order to combat this disease causing bacteria.

Within the gut mucosa, a complex immune defence system is present, allowing for the protection against pathogenic infection all while maintain an intricate balance and tolerance to host-microbiota which are crucial for our physiological function. The innate immune system provides the first line of defence within the first hours of infections whilst the adaptive immune system develops a memory for invading pathogens, offering protection in the long term.

In this present study, researchers exposed the immune system to enterobacteria (*Citrobacter rodentium*) at specific times. They reported that activated ILC3s were present for several months following infection using *C. rodentium*. The second infection highlighted the “memory,” of the ILC3s as they showed enhanced control of infection through production of interleukin-22 and increased proliferation.

The study presents a new antibacterial mechanism of immune defence.

Journal article: Serafini, N., et al., 2022. [Trained ILC3 responses promote intestinal defense](#). *Science*.

Summary by Stefan Botha