Every Picture Tells A Story – The Immune System

By Chuck Dinerstein, MD, MBA — July 21, 2020

“You can think of the human immune system as an orchestra playing together and needing a co-ordinated performance from all the musicians and their instruments. It doesn’t make scientific sense to talk about antibodies or T-cells on their own.”

The quote was from Tom Evans, chief scientist at Oxford university’s vaccines spinout company Vaccitech The Image from the Financial Times, T-cells: the missing link in coronavirus immunity?
Defence in depth: The layers of the immune system

The innate immune system
System in place that can act immediately

Physical barriers Attempt to bar initial incursion

Innate leukocytes such as
Natural killer cells Attempt to neutralise various germ or tumour cells

Phagocytes Bind to antigens, then engulf and destroy the pathogen

Dendritic cells Link between innate and adaptive immune systems, capturing antigens from invading bodies and presenting them to adaptive immune cells

The adaptive immune system
System takes longer to develop and act but targets specific pathogens as needed

B cells Attack specific viruses using antigen information from the dendritic cells to make antibodies, protein molecules that attach to virus antigens, neutralising them and alerting other cells

Killer T cells Attack cells that are infected by specific virus

Helper T cells Pass chemical messages to other immune cells to replicate where needed

Plasma cells B cells that produce and release many copies of an antibody

Memory cells T cells and B cells that retain the antigen information past the initial infection, ready to fight the virus as soon as it returns