



Haematopoietic

Dendritic Cells



The intelligence of dendritic cells of the immune system, found in every part of the body, including our skin, gut and immune organs (thymus and bone marrow), where our immune cells develop.

Dendritic cells 'collect' parts of pathogens from around the body and take them to the lymph nodes, where many immune system cells can be found.

The dendritic cells show T cells and B cells the pathogen parts and stimulate them to multiply and attack the pathogen. Dendritic cells are also essential in the development of T and B cells.

This image shows dendritic cells (red) with blood vessels (green) in the lymph node.



T Cells

T_H 1 and **T_H 2**:

Helper T_H 1 and **Helper T_H 2** produce chemical messages called cytokines which boost antibody production by B cells and activate macrophages. Special Helper T cells in the spleen and lymph nodes help control the responses of B cells. Here they test and help those B cells trying to make their antibodies more efficient.

Killer T_H 1 patrol the body checking our own cells for invaders such as viruses. Viruses are hidden within our cells and so cannot be directly detected by our immune system. Killer T cells look for indicators on the surface of our cells which show they are infected by viruses and can then directly kill those cells.

Regulatory T_H 1 suppress other T cells. By doing this they control the immune system and help make sure that it does not respond to self-antigens. Regulatory T cells are an important self-check which prevent excessive immune reactions and reduce autoimmune disease.



B Cells

B cells are the ninjas of the immune system, as one of their main jobs is to make antibodies. Antibodies are 'Y' shaped proteins; each one is slightly different so that many germs - or pathogens - can be identified.

Antibodies can also be made in various forms depending on where in the body they need to be, for example in our blood or on our skin. When B cells first develop they produce simple antibodies which respond initially to invading pathogens, but later these antibodies can be improved.

When a virus or bacteria attacks our body, the simple stock of antibodies produced by B cells respond. Then special command units are formed called T cells, here a defence attack is planned and co-ordinated. From here improved and more specific antibodies and immune cells are sent out to join the battle.

Using a powerful microscope we can see B cells (blue) in the lymph node.

