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Life History and Features

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Life history and features

Dendritic cells exist throughout the body. As seen in the tissues of skin, airway, and lymphoid organs, the cells are shaped like stars. When isolated and spun onto slides, they display numerous fine branches. When looked at with an electron microscope, these branches are long and thin and can appear spiny or sheet-like. When alive and viewed by phase-contrast microscopy, dendritic cells extend large, delicate, sheet-like processes that can drape around the cell bodies of lymphocytes, which can bind to dendritic cells in large numbers. The processes of dendritic cells continually form, bend, and retract. The tentacular shape and constant movement of dendritic cells fit precisely with their functions: to snatch invaders, embrace other cells of the immune system, and deliver the antigens and other signals that are needed to initiate vigorous responses.

Dendritic cells arise from proliferating progenitors, primarily in the bone marrow, a process driven by chemical messengers, to become precursors such as the monocytes in blood, and these in turn give rise to immature dendritic cells. The cells develop further or mature as they capture, process antigens, and migrate under the influence of other chemical messengers to tissues such as spleen and lymph nodes. There they attract and stimulate T and B cells to produce strong immune responses. The dendritic cells die unless they receive signals from the activated T cells to prolong their life span.