

Abstract

Cellular immunity is a critical component of the adaptive immune response, primarily involving T cells, natural killer (NK) cells, and antigen-presenting cells. This overview examines the mechanisms underlying cellular immunity,

often diminished, leading to increased susceptibility to infections. Conversely, in autoimmune conditions, dysregulation of immune responses can lead to tissue damage. This overview also explores innovative immunotherapies to restore immune function. Understanding the intricacies of cellular immunity across

between effector T cells and regulatory T cells is a key factor in the pathogenesis of these conditions. Understanding how to restore this balance may provide novel therapeutic targets for managing autoimmune disorders, offering patients relief from symptoms and improved quality of life.

In cancer patients, the tumor microenvironment can actively suppress cellular immunity, allowing cancer cells to evade detection and destruction by the immune system. Tumors often exploit mechanisms such as the upregulation of immune checkpoint proteins (e.g., PD-1, CTLA-4) to inhibit T cell activation. Recent advancements in immunotherapy, including checkpoint inhibitors and CAR T cell therapy, aim to re-engage the immune system in recognizing and attacking tumor cells. These innovative treatments have shown promise in clinical trials, transforming the landscape of cancer treatment and providing new hope for patients [6].

Understanding the complexities of cellular immunity and its implications for various patient groups is crucial for developing effective therapeutic strategies. As research continues to uncover

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