

Review on Adaptive Immune System

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Abstract

The adaptive immune system is a remarkable defense mechanism that protects our bodies against a wide array of pathogens, ranging from bacteria and viruses to parasites and fungi. Unlike the innate immune system, which

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and testosterone have been shown to affect antibody production and immune cell function. Stress hormones, such as cortisol, can suppress immune responses, including the activity of T cells and antibody production. Hormonal fluctuations during menstrual cycles and pregnancy can also influence immune responses.

Distribution and Vaccination: The administration of vaccines can stimulate and enhance the adaptive immune response. Vaccines introduce specific antigens to the immune system, triggering the production of memory cells and long-lasting immunity. The effectiveness of vaccination can be influenced by factors such as age, underlying health conditions, immune status, and vaccine formulation.

Chronic diseases and immune disorders: Chronic diseases, such as autoimmune disorders, cancer, and immunodeficiency conditions, can significantly impact the adaptive immune system. Autoimmune disorders involve the immune system mistakenly attacking the body's own tissues, leading to chronic inflammation and immune dysregulation. Cancer can affect immune cell function and evade immune surveillance. Immunodeficiency conditions can impair the adaptive immune response, leading to increased susceptibility to infections.

These factors collectively contribute to the dynamic nature of the adaptive immune system. Understanding their influence helps in comprehending individual variations in immune responses, susceptibility to diseases, and the development of targeted therapeutic interventions and vaccination strategies.

The adaptive immune system consists of two primary types of responses: humoral immunity and cellular immunity. These two types work together to provide a comprehensive defense against pathogens.

Humoral immunity: Humoral immunity is mediated by B cells and involves the production of antibodies. When B cells encounter an antigen, they undergo activation and differentiation. Some B

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