
Executive Certificate in Psychoneuroimmunology

Cytokines and Inflammation

Cytokines and Inflammation Glossary

Adaptive Immunity: A specific immune response that adapts to a particular pathogen based on previous exposure, involving T and B lymphocytes.

Allergy: An exaggerated immune response to a harmless substance, such as pollen or certain foods, resulting in inflammation and symptoms like itching, sneezing, or hives.

Antibody: Proteins produced by B cells in response to specific antigens, which can neutralize pathogens or mark them for destruction by other immune cells.

Antigen: Molecules that trigger an immune response by binding to specific receptors on immune cells, leading to the production of antibodies or activation of T cells.

Autoimmune Disease: Conditions where the immune system mistakenly attacks healthy tissues, such as in rheumatoid arthritis or multiple sclerosis, leading to chronic inflammation.

B Cell: Lymphocytes responsible for producing antibodies in response to antigens, playing a key role in the adaptive immune response.

Chemokines: Small proteins that attract immune cells to sites of infection or inflammation, helping to coordinate the immune response.

Chronic Inflammation: Prolonged inflammation lasting weeks, months, or even years, which can contribute to various diseases like arthritis, diabetes, or cardiovascular conditions.

Cytokines: Signaling molecules produced by immune cells to regulate inflammation, immune responses, and communication between cells.

Immune Response: The body's reaction to foreign invaders, involving various immune cells, proteins, and signaling molecules to eliminate pathogens and maintain health.

Inflammation: A complex biological response to infection, injury, or harmful stimuli, involving immune cells, blood vessels, and molecular mediators to repair and protect tissues.

Inflammatory Bowel Disease (IBD): Chronic disorders like Crohn's disease and ulcerative colitis characterized by inflammation in the digestive tract, leading to symptoms like abdominal pain and diarrhea.

Innate Immunity: The body's first line of defense against pathogens, involving barriers like skin, as well as

immune cells like macrophages and natural killer cells.

Interferons: Proteins produced in response to viral infections, helping to inhibit viral replication and activate immune responses against infected cells.

Interleukins: Cytokines produced by various immune cells to regulate inflammation, cell growth, and differentiation, playing crucial roles in immune responses.

Leukocytes: White blood cells involved in immune responses, including neutrophils, monocytes, lymphocytes, and eosinophils, which help fight infections and maintain health.

Lymphocytes: White blood cells critical for adaptive immunity, including T cells, B cells, and natural killer cells, which play key roles in immune responses.

Macrophage: Immune cells that engulf and digest pathogens, dead cells, and debris, as well as produce cytokines to regulate inflammation and immune responses.

Monocytes: Precursor cells that circulate in the blood and can differentiate into macrophages or dendritic cells, playing key roles in immune responses and inflammation.

Natural Killer (NK) Cells: Lymphocytes that can directly kill infected or cancerous cells without prior sensitization, playing a crucial role in immune surveillance.

Neutrophils: Most abundant type of white blood cells, involved in the initial response to infections, by engulfing pathogens, releasing cytokines, and forming pus.

Phagocytosis: Process by which immune cells, like macrophages or neutrophils, engulf and digest pathogens, dead cells, or debris to eliminate them from the body.

Proinflammatory: Molecules, such as cytokines or chemokines, that promote inflammation, recruit immune cells, and amplify immune responses to infections or injuries.

Reactive Oxygen Species (ROS): Highly reactive molecules produced by immune cells during inflammation, which can help kill pathogens but also damage healthy tissues if overproduced.

Regulatory T Cells (Tregs): Specialized T cells that suppress excessive immune responses, prevent autoimmune reactions, and maintain immune tolerance to self-antigens.

Rheumatoid Arthritis (RA): Autoimmune disease characterized by chronic inflammation in the joints, causing pain, swelling, stiffness, and potentially joint damage over time.

Th1 Cells: Subtype of T helper cells that produce cytokines promoting cell-mediated immunity, such as interferon-gamma, which helps fight intracellular pathogens.

Th2 Cells: Subtype of T helper cells that produce cytokines promoting antibody-mediated immunity, such as interleukins, which help combat extracellular pathogens.

Tumor Necrosis Factor (TNF): Cytokine produced by immune cells that plays a central role in inflammation, immune responses, and diseases like rheumatoid arthritis or inflammatory bowel disease.

Vasodilation: Widening of blood vessels in response to inflammatory mediators, increasing blood flow to affected tissues, leading to redness, heat, and swelling at the site of inflammation.