

ICAM1 Human, Sf9

Intercellular Adhesion Molecule-1 Human Recombinant, SF9

RCP1099

Product Overview

Name	ICAM1 Human, Sf9
Accession(Primary)	P05362
Description	Intercellular Adhesion Molecule-1 Human Recombinant, SF9

Target information (P05362)

Gene Name

About Gene Symbol

Background

Intercellular adhesion molecule-1 (ICAM-1) is a cell surface glycoprotein that plays a pivotal role in immune responses and inflammatory processes. This research aims to investigate the function and significance of ICAM-1 protein in various physiological and pathological conditions. Understanding the molecular mechanisms and regulatory roles of ICAM-1 can provide valuable insights into its potential as a therapeutic target for immune-related disorders.

Structure and Expression of ICAM-1 Protein: ICAM-1 belongs to the immunoglobulin superfamily and is composed of five immunoglobulin-like domains. It is primarily expressed on the surfaces of endothelial cells, leukocytes, and other immune cells. ICAM-1 expression can be induced by pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF- α) and interleukin-1 (IL-1), during immune responses and inflammatory conditions.

ICAM-1 and Leukocyte Adhesion: One of the critical functions of ICAM-1 is its involvement in leukocyte adhesion and migration. ICAM-1 interacts with its primary receptor, lymphocyte function-associated antigen-1 (LFA-1), expressed on leukocytes. This interaction facilitates the firm adhesion of leukocytes to endothelial cells, leading to their transmigration into inflamed tissues. The ICAM-1/LFA-1 axis plays a crucial role in immune

surveillance, inflammation, and host defense against pathogens. Implications of ICAM-1 in Inflammatory Disorders: ICAM-1 has been implicated in various inflammatory diseases, including rheumatoid arthritis, inflammatory bowel disease, and multiple sclerosis. Enhanced expression of ICAM-1 on endothelial cells promotes leukocyte recruitment and contributes to the perpetuation of chronic inflammation. Therefore, targeting ICAM-1-mediated leukocyte adhesion has emerged as a potential therapeutic strategy to alleviate inflammation and attenuate disease progression. ICAM-1 in Viral Infections: ICAM-1 also plays a role in viral infections, as several viruses exploit ICAM-1 to facilitate their entry into host cells. For instance, rhinoviruses, which cause the common cold, utilize ICAM-1 as a receptor for attachment and entry into respiratory epithelial cells. The interaction between ICAM-1 and viral proteins promotes viral internalization and subsequent infection. Understanding the mechanisms of ICAM-1-mediated viral entry can aid in the development of antiviral strategies. Therapeutic Targeting of ICAM-1: Given its crucial involvement in immune responses and disease pathogenesis, ICAM-1 has emerged as a potential therapeutic target. Strategies aimed at blocking ICAM-1/LFA-1 interactions have shown promise in preclinical and clinical studies. Monoclonal antibodies targeting ICAM-1 or LFA-1 have been developed to prevent leukocyte adhesion and reduce inflammation. Additionally, small molecule inhibitors and gene therapies targeting ICAM-1 expression are being explored as potential therapeutic interventions. Challenges and Future Directions: Although therapeutic targeting of ICAM-1 shows promise, several challenges need to be addressed. Specific targeting of ICAM-1 without affecting its physiological functions and potential off-target effects are important considerations. Additionally, the complex and dynamic nature of ICAM-1 expression and regulation require further investigation to optimize therapeutic strategies. Conclusion: The investigation of ICAM-1 protein provides insights into its pivotal role in immune responses, leukocyte adhesion, and inflammatory processes. Understanding the molecular mechanisms and functional implications of ICAM-1 opens avenues for the development of targeted therapies for inflammatory disorders and viral infections. Further research on ICAM-1 protein