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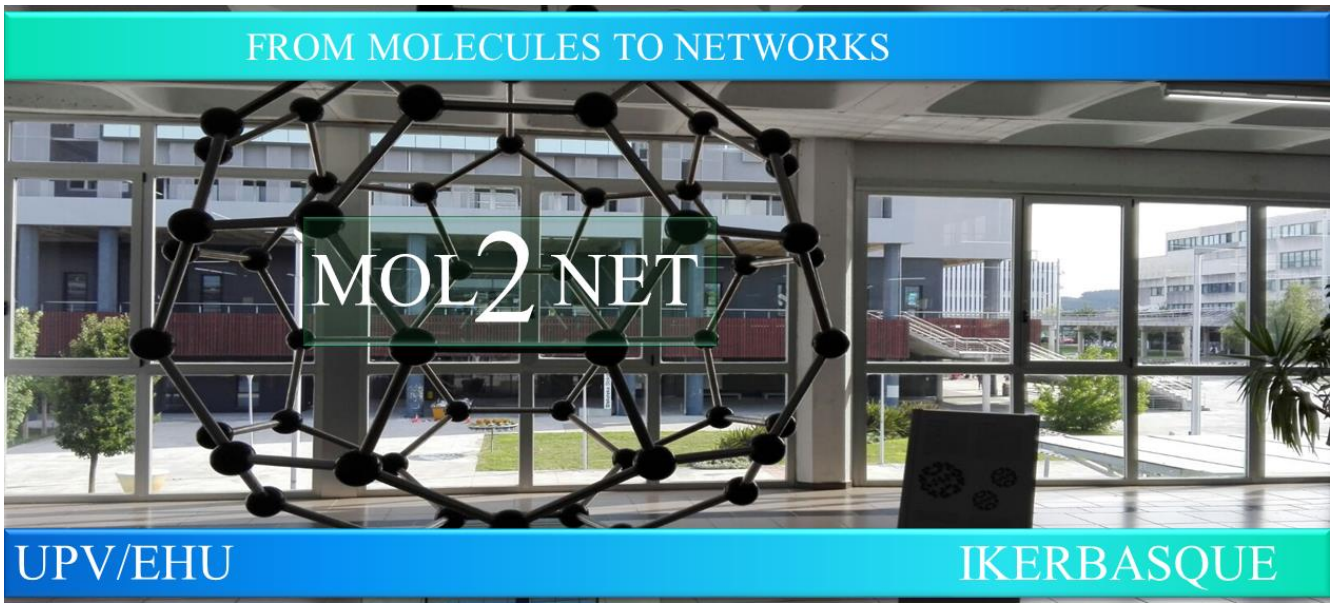

LAG-3 Role in Cardiovascular Diseases

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Abstract.

Lymphocyte activation gene 3 (LAG-3) is a cell surface inhibitory receptor with multiple biological activities over T cell activation and effector functions. LAG-3 plays a regulatory role in immunity and emerged some time ago as an inhibitory immune checkpoint molecule. A systematic research was performed using PubMed and ClinicalTrial.gov databases. Up-to-date published articles meeting the inclusion criteria were investigated. LAG-3 expression has been linked to increased pathology in cardiovascular diseases. LAG-3 protein expression has been shown to correlate with increased coronary heart disease and increased myocardial infarction. LAG-3 accumulates in cardiac allografts undergoing rejection episodes to fully vascularized, heterotopic, allogeneic heart transplantation (Haudebourg et al, Transplant 2007; Chocarro et al, Int J Mol Sci 2021). LAG-3 deficiency has also been associated in clinical studies with increased risk of coronary artery disease due to Tr1 dysfunction (Zhu et al, Hum. Immunol. 2018; Chocarro et al, Int J Mol Sci 2021). Here, we will discuss the impaired control of cell-mediated immunity associated with high accumulation of LAG-3 in cardiovascular diseases (Chocarro et al, Int J Mol Sci 2021). Interestingly, in vitro blockade of PD-1/LAG-3 interactions enhances cytokine production in response to cancer and infections, and it is showing promising results in several clinical trials for the treatment of various cancers, suggesting it could have a similar effect in cardiovascular disorders (Chocarro et al, IOTECH 2022). A deeper understanding on the basic mechanisms underlying LAG-3 intracellular signaling will provide insight for further development of novel strategies for cardiovascular disorders (Chocarro et al, Int J Mol Sci 2021).

Keywords: *LAG-3; Cardiovascular Diseases; Coronary Heart Disease; Myocardial Infarction*

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