LGALS2

LGALS2 (Lectin, galactoside-binding, soluble, 2), also known as galectin-2, is a protein encoded by the LGALS2 gene in humans. This protein is a member of the galectin family, which plays key roles in cell-cell interactions, apoptosis, and immune responses through binding to specific carbohydrate molecules. Galectin-2 is involved in various biological processes, including inflammation and vascular development.

Researchers have been particularly interested in LGALS2 due to its implications in cardiovascular diseases. Certain polymorphisms in the LGALS2 gene have been associated with susceptibility to conditions like myocardial infarction (heart attack) and other cardiovascular issues.

Li et al. performed an integrated analysis of bulk transcriptome data from over 6000 breast cancer samples using biological network-based computational strategies and machine learning (ML) methods, and identified LGALS2 as a key marker within TLSs. Single-cell sequencing and spatial transcriptomics uncover the role of LGALS2 in TLS-associated dendritic cells (DCs) stimulation and reveal the complexity of the tumor microenvironment (TME) at both the macro and micro levels. Elevated LGALS2 expression correlates with prolonged survival, which is associated with a robust immune response marked by diverse immune cell infiltration and active anti-tumor pathways leading to a 'hot' tumor microenvironment. The colocalization of LGALS2 with TLS-associated DCs and its role in immune activation in BRCA were confirmed by hematoxylin-eosin (HE), immunohistochemistry (IHC), and in vivo validation analyses. The identification of LGALS2 as a key factor in BRCA not only highlights its therapeutic potential in novel TLS-directed immunotherapy but also opens new avenues in patient stratification and treatment selection, ultimately improving clinical management [1].

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Li S, Zhang N, Zhang H, Yang Z, Cheng Q, Wei K, Zhou M, Huang C. Deciphering the role of LGALS2: insights into tertiary lymphoid structure-associated dendritic cell activation and immunotherapeutic potential in breast cancer patients. Mol Cancer. 2024 Sep 30;23(1):216. doi: 10.1186/s12943-024-02126-4. PMID: 39350165.