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LAG-3 in Cancer Immunotherapy: A Comprehensive Review

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Abstract: *LAG-3 (CD223) is a cell surface protein that is present on activated T cells, NK cells, B cells, and plasmacytoid dendritic cells. It plays a crucial but not yet fully understood role in the activity of these immune cells. LAG-3 primarily interacts with Class II MHC molecules, and this interaction is believed to influence dendritic cell function. Recent research has highlighted LAG-3's involvement in the exhaustion of CD8+ T cells, a state that impairs their effectiveness against tumors. Therapeutic approaches that block the interaction between LAG-3 and Class II MHC, such as the use of a LAG-3 Ig fusion protein, are currently being explored in clinical trials for cancer treatment. This review will provide an overview of the structural and functional aspects of LAG-3, followed by a discussion of preclinical and clinical findings relevant to its role in cancer immunotherapy.*

Keywords: Immune anergy; CD4 T cells; CD8 T cells; Immune checkpoint; Immune tolerance; Regulatory T cells (Tregs); Tumor immunity; Lymphocyte-activation gene 3 (LAG-3)

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