Cancer research

In cancer research, biotyping can be used to identify subtypes of tumors based on their genetic mutations or other biomarkers. This can help to guide treatment decisions and improve outcomes for individuals with cancer.

Recent advances in cancer research have highlighted the pivotal role of tertiary lymphoid structures (TLSs) in modulating immune responses, particularly in breast cancer (BRCA).

Li et al. performed an integrated analysis of bulk transcriptome data from over 6000 BRCA 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.