WHITEPAPER

Meet the Marker: CD247

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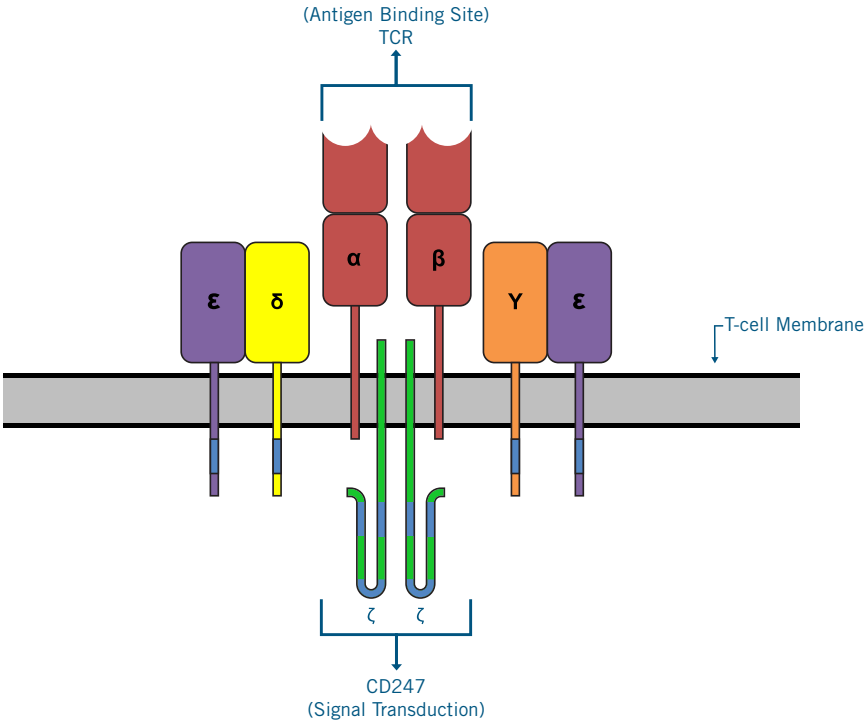
CD247, also known as CD3 zeta-chain (CD3ζ) or T-cell antigen receptor zeta (TCR-Z), constitutes part of the T-cell Receptor (TCR) complex and is a crucial component in the structure, expression, and function of TCR and natural killer cell-activating receptors.[4] In more specific terms, CD247 recruits tyrosine kinases to trigger several downstream signaling cascades that result in T-cell activation.[1] When CD247 is downregulated, T-cell responsiveness and proliferation are impaired.[4] Therefore, CD247 plays a significant role in immune system signal transduction and may be an indicator of immune system status.[2,3]

One of the most challenging aspects of cancer and its treatment is the ability of cancer cells to evade the action of the immune system. Accordingly, reduced expression of CD247 is associated with many forms of cancer, including gastric carcinoma, melanoma, breast cancer, pancreatic cancer, cervical cancer, ovarian cancer, head and neck cancer, B-cell lymphoma, and renal carcinoma.[2,4] This difference in CD247 expression between healthy and cancerous tissues creates the potential for it to be a target for targeted cancer therapy in some forms of cancer.[4]

As part of its essential role in immune system signaling and response, CD247 is implicated in the activity of tumor-infiltrating lymphocytes (TILs) and peripheral blood lymphocytes (PBLs). TILs are a type of white blood cell that have moved from the blood into a tumor. This is in contrast with PBLs, which are white blood cells that continue to circulate in the blood. The presence of TILs is associated with a better prognosis in cancer patients as it indicates the patient's immune system is active and responding to the cancer antigens.[4]

Studies of ovarian cancer have found that CD247 levels in PBLs are significantly reduced in ovarian cancer patients versus ovarian cyst patients, and CD247 levels are lower in TILs in cancer tissue compared to adjacent normal tissues.[4] Since reduced CD247 expression, and therefore impaired immune function, seems to be a differentiating factor in cancerous versus benign tissue in cases of ovarian cancer, research indicates that it may be a potential target for targeted cancer therapies.[4]

CD247 in the T-cell Receptor Complex



Since targeted cancer therapy continues to be a growing force in cancer treatment, Biocare is excited to offer a CD247 marker. To learn more about product offerings for CD247, visit us at biocare.net or call 1-800-799-9499.

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