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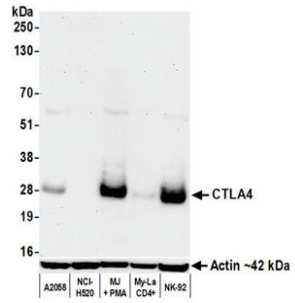
CTLA4

Product: CTLA4 (A700-257)
Reactivity: Human
Validated Applications: IHC, WB
Full Name: Cytotoxic T-lymphocyte protein 4
Gene ID: 1493
Uniprot ID: P16410
Alternative Names: CTLA-4, CD152, GSE

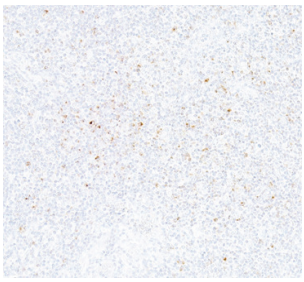
Background Information

CTLA4 plays a critical role in regulating peripheral immune responses and has become a target for cancer immunotherapy. CTLA4 is expressed on activated T cells and regulatory T cells, where it functions primarily to inhibit T cell responses through interactions with CD80 and CD86[1,2]. CTLA4 is part of the T cell checkpoint pathways that dampen inappropriate or sustained immune activation. Tumors and pathogens can exploit this pathway as a way to evade the immune system. In 2011, CTLA4 became the first immune checkpoint receptor to have a targeted immunotherapy approved by the FDA. CTLA4 blockade immunotherapy has improved the survival rates of patients with melanoma, renal cell carcinoma, head and neck squamous cell cancer, and non-small cell lung cancer.[2–4]

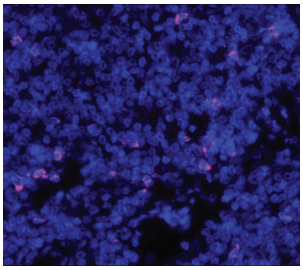
Featured Applications



Detection of human CTLA4 by western blot. Antibody: A700-257 used at 1:1000.



Detection of human CTLA4 by immunohistochemistry. Sample: FFPE section of human tonsil. Antibody: A700-257.



Detection of human CTLA4 (magenta) by immunofluorescence. Sample: FFPE section of metastatic lymph node. Antibody: A700-257) used at 1:20. Counterstain: DAPI (blue).

References:
1. Bateman A, Martin MJ, Orchard S, et al. UniProt: the Universal Protein Knowledgebase in 2023. Nucleic Acids Res. 2023;51(D1):D523-D531. doi:10.1093/nar/gkac1052
2. Masteller EL, Chuang E, Mullen AC, Reiner SL, Thompson CB. Structural Analysis of CTLA-4 Function In Vivo. The Journal of Immunology. 2000;164(10):5319-5327. doi:10.4049/jimmunol.164.10.5319
3. Atkins MB, Clark JI, Quinn DI. Immune checkpoint inhibitors in advanced renal cell carcinoma: experience to date and future directions. Annals of Oncology. 2017;28(7):1484-1494. doi:10.1093/annonc/mdx151
4. Sobhani N, Tardiel-Cyril DR, Davtyan A, Generali D, Roudi R, Li Y. CTLA-4 in Regulatory T Cells for Cancer Immunotherapy. Cancers (Basel). 2021;13(6):1440. doi:10.3390/cancers13061440

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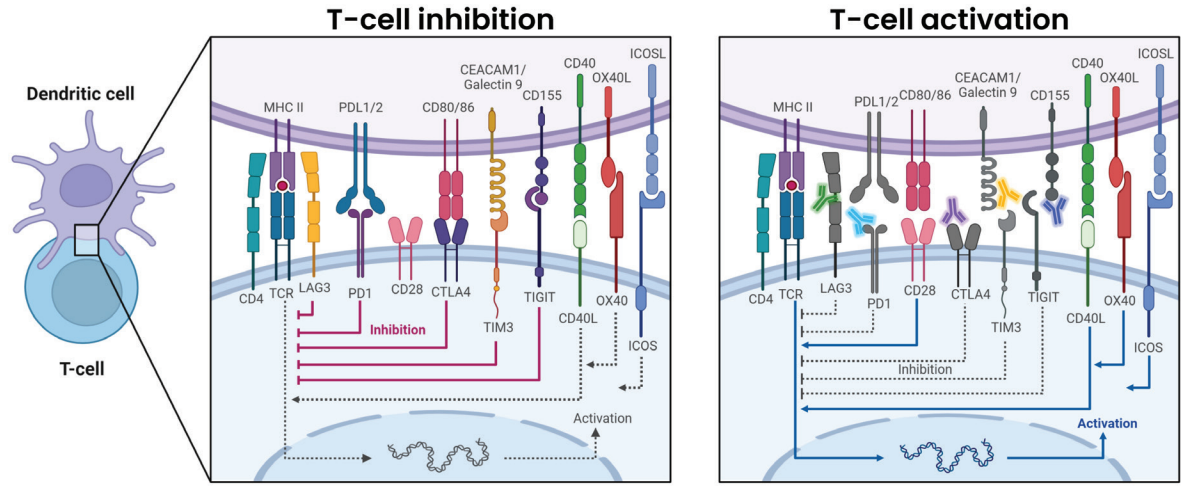
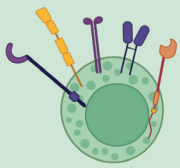
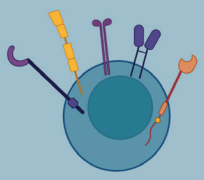


Cytotoxic T Cells



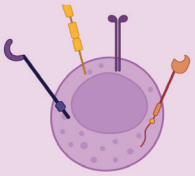
Engagement of immune checkpoints like CTLA4, LAG3, PD1, TIM3, and TIGIT on cytotoxic T cells can result in decreased cell killing, cytotoxic T cell exhaustion, and a pro-tumorigenic environment.

Regulatory T Cells



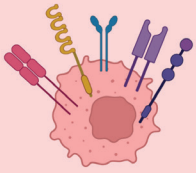
Engagement of immune checkpoints like CTLA4, LAG3, PD1, TIM3, and TIGIT on regulatory T cells can lead to increased suppressive activity, blocked APC maturation, dampened inflammation, and a pro-tumorigenic environment.

Natural Killer Cells



Engagement of immune checkpoints like LAG3, PD1, TIM3, and TIGIT on natural killer cells can lead to decreased NK cell activation, cell killing, and a pro-tumorigenic environment.

Cancer Cells



Engagement of immune checkpoints like CTLA4, LAG3, PD1, TIM3, and TIGIT through ligand expression on cancer cells can lead to decreased cell killing and increased immune suppression culminating in a pro-tumorigenic environment.

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