Revision 1

Store at -20C

#44689

Human T Cell Co-inhibitory and Co-stimulatory Receptor IHC Antibody Sampler Kit

1 Kit (9 x 20 microliters)

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
PD-1 (Intracellular Domain) (D4W2J) XP® Rabbit mAb	86163	20 µl	52-65 kDa	Rabbit IgG
TIM-3 (D5D5R™) XP® Rabbit mAb	45208	20 µl	45-70 kDa	Rabbit IgG
LAG3 (D2G4O) XP® Rabbit mAb	15372	20 µl	60-80 kDa	Rabbit IgG
VISTA (D1L2G™) XP® Rabbit mAb	64953	20 µl	45-65 kDa	Rabbit IgG
B7-H3 (D9M2L) XP® Rabbit mAb	14058	20 µl	90 kDa	Rabbit IgG
4-1BB/CD137/TNFRSF9 (D2Z4Y) Rabbit mAb	34594	20 µl	32, 40 kDa	Rabbit IgG
OX40 (E9U7O) XP® Rabbit mAb	61637	20 µl	35-50 kDa	Rabbit IgG
GITR (D9I9D) Rabbit mAb	68014	20 µl	25 kDa	Rabbit IgG
CD40 Ligand (D5J9Y) Rabbit mAb	15094	20 µl	25-30 (membrane bound); 17 (soluble) kDa	Rabbit IgG

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Human T Cell Co-inhibitory and Co-stimulatory Receptor IHC Antibody Sampler Kit provides an economical means of detecting expression of receptors that modulate T cell activity in formalin-fixed, paraffin-embedded tissue samples.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Background

PD-1 (PDCD1, CD279), TIM-3 (HAVCR2), LAG3 (CD223), VISTA (PD-H1), and B7-H3 (CD276) are immune cell co-inhibitory receptors (also known as immune checkpoints) that negatively regulate T cell function, and dampen the immune response to pathogens and cancer. In addition to activated T cells, PD-1 is expressed by activated B-cells and monocytes. TIM-3 is expressed by exhausted T cells in the settings of chronic infection and cancer. Tumor-infiltrating macrophages and dendritic cells also express TIM-3. LAG3 is primarily expressed by activated CD4+ T cells, CD8+ T cells, FoxP3+ T regulatory cells (Tregs) and natural killer (NK) cells. Although primarily expressed by myeloid cells, VISTA is also expressed by CD4+, CD8+, and Treg cells. Research examining the biological function of B7-H3 suggested that B7-H3 can be both a positive and negative regulator of T cell response. B7-H3 is expressed by antigen presenting cells, activated T cells, and a few normal tissues, including placenta and prostate. Expression of B7-H3 is seen in several cancer types, including prostate, breast, colon, lung, and gastric cancers, and in endothelial cells from tumor associated vasculature. Therapeutic blockade of these immune checkpoint receptors is a promising strategy for neoplastic intervention by enabling anti-tumor immune responses (1-3).

4-1BB (TNFRSF9, CD137), GITR (TNFRSF18), OX40 (TNFRSF4, CD134), and CD40 ligand (CD40L, CD154, TRAP, gp39) are immune cell co-stimulatory receptors that promote effector T cell survival and activation, and enable optimal immune responses to pathogens. 4-1BB is expressed in activated CD4+ and CD8+ T cells, natural killer cells and dendritic cells. GITR is expressed constitutively at high levels on Tregs, at low levels on naive and memory T cells, and is induced upon T cell activation. Studies show GITR can also be induced on NK cells, macrophages, and DCs. GITR ligation has been shown to induce $CD8^+$ T cell activation, cytoxicity, and memory T cell survival, and conversely inhibit Treg suppressive function while promoting effector T cell resistance to Treg suppression. OX40 is primarily expressed on activated CD4+ and CD8+ T cells, while CD40L is primarily expressed on the surface of T cells, but has also been reported in blood platelets, mast cells, basophils, NK cells, and B cells. Research studies show that agonists of these co-stimulatory receptors augment anti-tumor immunity in several cancer types. Due to the combined effects on both Treg suppression and effector cell activation, GITR represents a unique opportunity for immunotherapeutic intervention in cancer. These pathways are an important area of interest in the study of cancer, vascular diseases, and inflammatory disorders (4-7).

Background References

1. Schildberg, F.A. et al. (2016) *Immunity* 44, 955-72.
2. Anderson, A.C. et al. (2016) *Immunity* 44, 989-1004.
3. Callahan, M.K. et al. (2016) *Immunity* 44, 1069-78.
4. Ward-Kavanagh, L.K. et al. (2016) *Immunity* 44, 1005-19.
5. Ara, A. et al. (2018) *Immunotargets Ther* 7, 55-61.

6. Knee, D.A. et al. (2016) *Eur J Cancer* 67, 1-10.
7. Chester, C. et al. (2018) *Blood* 131, 49-57.

Trademarks and Patents

Limited Uses