Revision 1

Store at -20C

#81490

Human Exhausted T Cell Antibody Sampler Kit

1 Kit (9 x 20 microliters)

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355) orders@cellsignal.com

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Web: info@cellsignal.com cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Tox/Tox2 (E6G5O) Rabbit mAb	36778	20 µl	60-80 kDa	Rabbit IgG
TCF1/TCF7 (C63D9) Rabbit mAb	2203	20 µl	48, 50 kDa	Rabbit IgG
EOMES (D8D1R) Rabbit mAb	81493	20 µl	75, 85 kDa	Rabbit IgG
PD-1 (Intracellular Domain) (D4W2J) XP® Rabbit mAb	86163	20 µl	52-65 kDa	Rabbit IgG
CTLA-4 (E1V6T) Rabbit mAb	96399	20 µl	25-30 kDa	Rabbit IgG
TIGIT (E5Y1W) XP® Rabbit mAb	99567	20 µl	18, 30-40 kDa	Rabbit IgG
LAG3 (D2G4O) XP® Rabbit mAb	15372	20 µl	60-80 kDa	Rabbit IgG
TIM-3 (D5D5R™) XP® Rabbit mAb	45208	20 µl	45-70 kDa	Rabbit IgG
2B4/SLAMF4/CD244 (D5J9D) Rabbit mAb	54560	20 µl	70-120 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

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

Description

The Human Exhausted T Cell Antibody Sampler Kit provides an economical means of characterizing the extent of exhaustion in T cells. This kit includes enough antibodies to perform two western blot experiments with each primary antibody.

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 antibodies.*

Background

Tox, TCF1/TCF7, and EOMES play key roles in T cell development. Tox is also induced by high antigen stimulation during chronic viral infection or cancer, regulating T cell persistence and exhaustion. TCF1/TCF7 preserves the effector function of exhausted T cells during viral infection or cancer. EOMES is a key transcription factor for memory T cells and for full effector differentiation of CD8+ T cells. Expression of EOMES is induced in CD8+ T cells following viral infection and bacterial infection, and high levels of EOMES promotes T cell exhaustion. The dynamic expression of these transcription factors help characterize the extent to which a T cell is exhausted and will respond to antigen stimulation (1-5)

PD-1 (PDCD1, CD279), CTLA-4 (CD152), TIGIT (VSIG9, VSTM3), TIM-3 (HAVCR2), LAG3 (CD223), and 2B4 (SLAMF4, CD244) 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. Following interaction with its ligands, PD-L1 and PD-L2, PD-1 is phosphorylated at ITIM and ITSM motifs leading to recruitment of protein tyrosine phosphatases SHP-1 and SHP-2 and suppression of TCR signaling. CTLA-4 protein is primarily expressed on T cells, including CD8+ cytotoxic T cells, CD4+ helper T cells, and CD4+/FoxP3+ regulatory T cells. CTLA-4 protein competes with CD28 for B7.1 (CD80) and B7.2 (CD86) binding at the cell surface, resulting in downregulation of T cell activity. TIGIT is expressed at low levels on subsets of T cells and natural killer (NK) cells, and is upregulated at the protein level following activation of these cells. TIGIT marks exhausted T cells in the tumor microenvironment and during human immunodeficiency virus (HIV) infection. 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 NK cells. 2B4 is a heterophilic cell surface receptor expressed on a variety of immune cells, including NK cells, T cells, eosinophils, mast cells, and dendritic cells. 2B4 has been shown to have both immune stimulatory and inhibitory effects on cells. Co-expression of multiple immune checkpoints help characterize the extent to which a T cell is exhausted and will respond to antigen stimulation. Therapeutic blockade of several of these immune checkpoint receptors is a promising strategy for neoplastic intervention by enabling anti-tumor immune responses (6-13).

Background References

1. Aliahmad, P. et al. (2012) *Curr Opin Immunol* 24, 173-7.
2. Yao, C. et al. (2019) *Nat Immunol* 20, 890-901.

3. Alfei, F. et al. (2019) *Nature* 571, 265-269.
4. Wang, Y. et al. (2019) *Front Immunol* 10, 169.
5. Li, J. et al. (2018) *Front Immunol* 9, 2981.
6. Schildberg, F.A. et al. (2016) *Immunity* 44, 955-72.
7. Anderson, A.C. et al. (2016) *Immunity* 44, 989-1004.
8. Callahan, M.K. et al. (2016) *Immunity* 44, 1069-78.
9. Ward-Kavanagh, L.K. et al. (2016) *Immunity* 44, 1005-19.
10. Chen, L. and Flies, D.B. (2013) *Nat Rev Immunol* 13, 227-42.
11. Sivori, S. et al. (2002) *Proc Natl Acad Sci U S A* 99, 4526-31.
12. Chauvin, J.M. et al. (2015) *J Clin Invest* 125, 2046-58.
13. Chew, G.M. et al. (2016) *PLoS Pathog* 12, e1005349.

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