Revision 1

Store at -20C

#62714

# Human Immune Cell Phenotyping IHC Antibody Sampler Kit

1 Kit (9 x 20 microliters)

Cell Signaling TECHNOLOGY®

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

**Support:** 877-678-TECH (8324)

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

| Product Includes | Product # | Quantity | Mol. Wt | Isotype/Source |
|---|---|---|---|---|
| CD3ε (D7A6E™) XP® Rabbit mAb | 85061 | 20 µl | 23 kDa | Rabbit IgG |
| CD8α (C8/144B) Mouse mAb | 70306 | 20 µl | | Mouse IgG1 |
| FoxP3 (D2W8E) Rabbit mAb | 98377 | 20 µl | 45 kDa | Rabbit IgG |
| CD11b/ITGAM (D6X1N) Rabbit mAb | 49420 | 20 µl | 170 kDa | Rabbit IgG |
| CD68 (D4B9C) XP® Rabbit mAb | 76437 | 20 µl | | Rabbit IgG |
| CD11c (D3V1E) XP® Rabbit mAb | 45581 | 20 µl | 145 kDa | Rabbit IgG |
| CD19 (Intracellular Domain) (D4V4B) XP® Rabbit mAb | 90176 | 20 µl | 95 kDa | Rabbit IgG |
| Pan-Keratin (C11) Mouse mAb | 4545 | 20 µl | 46-58 kDa | Mouse IgG1 |
| NCAM1 (CD56) (E7X9M) XP® Rabbit mAb | 99746 | 20 µl | 120 to 220 kDa | Rabbit IgG |

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

## Description

The Human Immune Cell Phenotyping IHC Antibody Sampler Kit provides an economical means of detecting the accumulation of immune cell types 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

Cluster of Differentiation 3 (CD3) is a multiunit protein complex expressed on the surface of T cells that directly associates with the T cell receptor (TCR). CD3 is composed of four polypeptides: ζ, γ, ε and δ. Engagement of the TCR complex with antigens presented in Major Histocompatibility Complexes (MHC) induces tyrosine phosphorylation in the immunoreceptor tyrosine-based activation motif (ITAM) of CD3 proteins. CD3 phosphorylation is required for downstream signaling through ZAP-70 and p85 subunit of PI-3 kinase, leading to T cell activation, proliferation, and effector functions (1). CD8 is a transmembrane glycoprotein expressed primarily on cytotoxic T cells, but has also been described on a subset of dendritic cells in mice (2,3). On T cells, CD8 is a co-receptor for the TCR, and these two distinct structures are required to recognize antigen bound to MHC Class I. CD8 ensures specificity of the TCR–antigen interaction, prolongs the contact between the T cell and the antigen presenting cell, and recruits the tyrosine kinase Lck, which is essential for T cell activation (2). Forkhead box P3 (FoxP3) is crucial for the development of T cells with immunosuppressive regulatory properties and is a well-established marker for $CD4^+$ T regulatory cells (Tregs) (4). Cluster of differentiation molecule 11b (CD11b)/Integrin alpha M (ITGAM) is a transmembrane protein forming heterodimers that are composed of α and β subunits (5). CD11b is expressed by, and commonly used as a marker for, myeloid lineage cells, including neutrophils, monocytes, macrophages, and microglia (6). CD68 (macrosialin) is a heavily glycosylated transmembrane protein that is expressed by and commonly used as a marker for monocytes and macrophages (7,8). It is found on the plasma membrane, as well as endosomal and lysosomal membranes (7-9). CD11c (integrin αX, ITGAX) is a transmembrane glycoprotein highly expressed by dendritic cells, and has also been observed on activated NK cells, subsets of B and T cells, monocytes, granulocytes, and some B cell malignancies including hairy cell leukemia (10,11). CD19 is a co-receptor expressed on B cells that amplifies the signaling cascade initiated by the B cell receptor (BCR) to induce activation. It is a biomarker of B lymphocyte development, lymphoma diagnosis, and can be utilized as a target for leukemia immunotherapies (12,13). NCAM (neural cell adhesion molecule, CD56) is an adhesion glycoprotein with five extracellular immunoglobulin-like domains followed by two fibronectin type III repeats (14). CD56 and CD16 are commonly used to identify NK cells although some cells with the T cell markers CD3 and CD4 also express CD56 (15). Keratins (cytokeratins) are intermediate filament proteins that are mainly expressed in epithelial cells. Keratin heterodimers composed of an acidic keratin (or type I keratin, keratins 9 to 23) and a basic keratin (or type II keratin, keratins 1 to 8) assemble to form filaments (16,17). Keratin isoforms demonstrate tissue- and differentiation-specific profiles that make them useful as research biomarkers (16).

## Background References

1. Kuhns, M.S. et al. (2006) *Immunity* 24, 133-9.
2. Zamoyska, R. (1994) *Immunity* 1, 243-6.

3. Shortman, K. and Heath, W.R. (2010) *Immunol Rev* 234, 18-31.
4. Ochs, H.D. et al. (2007) *Immunol Res* 38, 112-21.
5. Solovjov, D.A. et al. (2005) *J Biol Chem* 280, 1336-45.
6. Murray, P.J. and Wynn, T.A. (2011) *Nat Rev Immunol* 11, 723-37.
7. Rabinowitz, S.S. and Gordon, S. (1991) *J Exp Med* 174, 827-36.
8. Holness, C.L. and Simmons, D.L. (1993) *Blood* 81, 1607-13.
9. Ramprasad, M.P. et al. (1995) *Proc Natl Acad Sci U S A* 92, 9580-4.
10. Kohrgruber, N. et al. (1999) *J Immunol* 163, 3250-9.
11. Qualai, J. et al. (2016) *PLoS One* 11, e0154253.
12. Tedder, T.F. et al. (1997) *Immunity* 6, 107-18.
13. Scheuermann, R.H. and Racila, E. (1995) *Leuk Lymphoma* 18, 385-97.
14. Cunningham, B.A. et al. (1987) *Science* 236, 799-806.
15. Robertson, M.J. and Ritz, J. (1990) *Blood* 76, 2421-38.
16. Moll, R. et al. (1982) *Cell* 31, 11-24.
17. Chang, L. and Goldman, R.D. (2004) *Nat Rev Mol Cell Biol* 5, 601-13.

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