

#15119 Store at -20°C

**CTLA-4 (D4E9I) Rabbit mAb****Cell Signaling**  
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**For Research Use Only. Not for Use in Diagnostic Procedures.**

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
FC-FP, FC-L	H	Endogenous	30	Rabbit IgG	#P16410	1493

**Product Usage Information****Application**Flow Cytometry (Fixed/Permeabilized)  
Flow Cytometry (Live)**Dilution**1:200  
1:200**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.

**Specificity / Sensitivity**

CTLA-4 (D4E9I) Rabbit mAb recognizes endogenous levels of total CTLA-4 protein.

**Source / Purification**

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Asp100 of human CTLA-4 protein.

**Background**

Cytotoxic T-lymphocyte protein 4 (CTLA-4, CD152) is an Ig superfamily member that negatively regulates early T cell activation (1-4). The CTLA-4 protein is primarily expressed on T cells, including CD8<sup>+</sup> cytotoxic T cells, CD4<sup>+</sup> helper T cells, and CD4<sup>+</sup>/FoxP3<sup>+</sup> regulatory T cells (1,2). CTLA-4 protein competes with CD28 for B7.1 (CD80) and B7.2 (CD86) binding at the cell surface, which results in the downregulation of T cell activity (5). The activation of SHP-2 and PP2A downstream of CTLA-4 attenuates TCR signaling (6). Research studies indicate that *CTLA4* knockout mice display lymphoproliferative disorders leading to early death, confirming the role of CTLA-4 as a negative regulator of T cells (7). Mutations in the corresponding *CTLA4* gene are associated with multiple disorders, including insulin-dependent diabetes mellitus, Graves' disease, Hashimoto thyroiditis, celiac disease, systemic lupus erythematosus, and type V autoimmune lymphoproliferative syndrome (8,9). Additional studies demonstrate that CTLA-4 blockade is an effective strategy for tumor immunotherapy (10-12).

**Background References**

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4. Linsley, P.S. (1995) *J Exp Med* 182, 289-92.
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6. Rudd, C.E. et al. (2009) *Immunol Rev* 229, 12-26.
7. Waterhouse, P. et al. (1995) *Science* 270, 985-8.
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**Species Reactivity**

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

**Applications Key****FC-FP:** Flow Cytometry (Fixed/Permeabilized) **FC-L:** Flow Cytometry (Live)**Cross-Reactivity Key**

**H:** human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster  
**X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse  
**GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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