

**#15162** Store at +4°C

## CTLA-4 (D4E9I) Rabbit mAb (Alexa Fluor® 488 Conjugate)


**Cell Signaling**  
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<b>Applications:</b> FC-FP, FC-L	<b>Reactivity:</b> H	<b>Sensitivity:</b> Endogenous	<b>Source/Isotype:</b> Rabbit IgG	<b>UniProt ID:</b> #P16410	<b>Entrez-Gene Id:</b> 1493
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<b>Product Usage Information</b>	<b>Application</b> Flow Cytometry (Fixed/Permeabilized) Flow Cytometry (Live)	<b>Dilution</b> 1:50 1:50
<b>Storage</b>	Supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2 mg/ml BSA. Store at 4°C. Do not aliquot the antibody. Protect from light. Do not freeze.	
<b>Specificity / Sensitivity</b>	CTLA-4 (D4E9I) Rabbit mAb (Alexa Fluor® 488 Conjugate) recognizes endogenous levels of total CTLA-4 protein.	
<b>Source / Purification</b>	Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Asp100 of human CTLA-4 protein.	
<b>Product Description</b>	This Cell Signaling Technology antibody is conjugated to Alexa Fluor® 488 fluorescent dye and tested in-house for direct flow cytometric analysis in human cells. This antibody is expected to exhibit the same species cross-reactivity as the unconjugated CTLA-4 (D4E9I) Rabbit mAb #15119.	
<b>Background</b>	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 <i>CTLA4</i> 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 <i>CTLA4</i> 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).	
<b>Background References</b>	1. Brunet, J.F. et al. (1987) <i>Nature</i> 328, 267-70. 2. Brunet, J.F. et al. (1988) <i>Immunol Rev</i> 103, 21-36. 3. Dariavach, P. et al. (1988) <i>Eur J Immunol</i> 18, 1901-5. 4. Linsley, P.S. (1995) <i>J Exp Med</i> 182, 289-92. 5. Collins, A.V. et al. (2002) <i>Immunity</i> 17, 201-10. 6. Rudd, C.E. et al. (2009) <i>Immunol Rev</i> 229, 12-26. 7. Waterhouse, P. et al. (1995) <i>Science</i> 270, 985-8. 8. Romo-Tena, J. et al. (2013) <i>Autoimmun Rev</i> 12, 1171-6. 9. Wang, J. et al. (2014) <i>PLoS One</i> 9, e85982. 10. Egen, J.G. et al. (2002) <i>Nat Immunol</i> 3, 611-8. 11. Hodi, F.S. et al. (2003) <i>Proc Natl Acad Sci U S A</i> 100, 4712-7. 12. Pardoll, D.M. (2012) <i>Nat Rev Cancer</i> 12, 252-64.	

<b>Species Reactivity</b>	Species reactivity is determined by testing in at least one approved application (e.g., western blot).
<b>Applications Key</b>	<b>FC-FP:</b> Flow Cytometry (Fixed/Permeabilized) <b>FC-L:</b> Flow Cytometry (Live)
<b>Cross-Reactivity Key</b>	<b>H:</b> human <b>M:</b> mouse <b>R:</b> rat <b>Hm:</b> hamster <b>Mk:</b> monkey <b>Vir:</b> virus <b>Mi:</b> mink <b>C:</b> chicken <b>Dm:</b> D. melanogaster <b>X:</b> Xenopus <b>Z:</b> zebrafish <b>B:</b> bovine <b>Dg:</b> dog <b>Pg:</b> pig <b>Sc:</b> S. cerevisiae <b>Ce:</b> C. elegans <b>Hr:</b> horse <b>GP:</b> Guinea Pig <b>Rab:</b> rabbit <b>All:</b> all species expected

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