

#15162  
Store at +4°C**CTLA-4 (D4E9I) Rabbit mAb (Alexa Fluor®  
488 Conjugate)****Orders:** 877-616-CELL (2355)  
orders@cellsignal.com**Support:** 877-678-TECH (8324)**Web:** info@cellsignal.com  
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

<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
-------------------------------------	-------------------------	-----------------------------------	--------------------------------------	-------------------------------	--------------------------------

<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>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>	<ol style="list-style-type: none"> <li>1. Brunet, J.F. et al. (1987) <i>Nature</i> 328, 267-70.</li> <li>2. Brunet, J.F. et al. (1988) <i>Immunol Rev</i> 103, 21-36.</li> <li>3. Dariavach, P. et al. (1988) <i>Eur J Immunol</i> 18, 1901-5.</li> <li>4. Linsley, P.S. (1995) <i>J Exp Med</i> 182, 289-92.</li> <li>5. Collins, A.V. et al. (2002) <i>Immunity</i> 17, 201-10.</li> <li>6. Rudd, C.E. et al. (2009) <i>Immunol Rev</i> 229, 12-26.</li> <li>7. Waterhouse, P. et al. (1995) <i>Science</i> 270, 985-8.</li> <li>8. Romo-Tena, J. et al. (2013) <i>Autoimmun Rev</i> 12, 1171-6.</li> <li>9. Wang, J. et al. (2014) <i>PLoS One</i> 9, e85982.</li> <li>10. Egen, J.G. et al. (2002) <i>Nat Immunol</i> 3, 611-8.</li> <li>11. Hodi, F.S. et al. (2003) <i>Proc Natl Acad Sci U S A</i> 100, 4712-7.</li> <li>12. Pardoll, D.M. (2012) <i>Nat Rev Cancer</i> 12, 252-64.</li> </ol>	
<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>Trademarks and Patents</b>	Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc. Alexa Fluor is a registered trademark of Life Technologies Corporation.	

This product is provided under an intellectual property license from Life Technologies Corporation. The transfer of this product is conditioned on the buyer using the purchased product solely in research conducted by the buyer, excluding contract research or any fee for service research, and the buyer must not (1) use this product or its components for (a) diagnostic, therapeutic or prophylactic purposes; (b) testing, analysis or screening services, or information in return for compensation on a per-test basis; or (c) manufacturing or quality assurance or quality control, and/or (2) sell or transfer this product or its components for resale, whether or not resold for use in research. For information on purchasing a license to this product for purposes other than as described above, contact Life Technologies Corporation, 5791 Van Allen Way, Carlsbad, CA 92008 USA or [outlicensing@lifetech.com](mailto:outlicensing@lifetech.com).

All other trademarks are the property of their respective owners. Visit [cellsignal.com/trademarks](http://cellsignal.com/trademarks) for more information.

## Limited Uses

Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.

Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.