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## CTLA-4 (D4E9I) Rabbit mAb (PE Conjugate)

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

|                                     |                         |                                   |                                      |                               |                                |
|-------------------------------------|-------------------------|-----------------------------------|--------------------------------------|-------------------------------|--------------------------------|
| <b>Applications:</b><br>FC-FP, FC-L | <b>Reactivity:</b><br>H | <b>Sensitivity:</b><br>Endogenous | <b>Source/Isotype:</b><br>Rabbit IgG | <b>UniProt ID:</b><br>#P16410 | <b>Entrez-Gene Id:</b><br>1493 |
|-------------------------------------|-------------------------|-----------------------------------|--------------------------------------|-------------------------------|--------------------------------|

### Product Usage Information

#### Application

Flow Cytometry (Fixed/Permeabilized)  
Flow Cytometry (Live)

#### Dilution

1:50  
1:50

### Storage

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 antibodies. Protect from light. Do not freeze.

### Specificity/Sensitivity

CTLA-4 (D4E9I) (PE Conjugate) 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.

### Description

This Cell Signaling Technology antibody is conjugated to phycoerythrin (PE) and tested in-house for direct flow cytometry analysis in human cells. The antibody is expected to exhibit the same species cross-reactivity as the unconjugated CTLA-4 (D4E9I) Rabbit mAb #15119.

### 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

- Brunet, J.F. et al. (1987) *Nature* 328, 267-70.
- Brunet, J.F. et al. (1988) *Immunol Rev* 103, 21-36.
- Dariavach, P. et al. (1988) *Eur J Immunol* 18, 1901-5.
- Linsley, P.S. (1995) *J Exp Med* 182, 289-92.
- Collins, A.V. et al. (2002) *Immunity* 17, 201-10.
- Rudd, C.E. et al. (2009) *Immunol Rev* 229, 12-26.
- Waterhouse, P. et al. (1995) *Science* 270, 985-8.
- Romo-Tena, J. et al. (2013) *Autoimmun Rev* 12, 1171-6.
- Wang, J. et al. (2014) *PLoS One* 9, e85982.
- Egen, J.G. et al. (2002) *Nat Immunol* 3, 611-8.
- Hodi, F.S. et al. (2003) *Proc Natl Acad Sci U S A* 100, 4712-7.
- Pardoll, D.M. (2012) *Nat Rev Cancer* 12, 252-64.

### 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

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