Revision 1

Store at -20C

#14693

PTPN22 (D6D1H) Rabbit mAb

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP	H M	Endogenous	98	Rabbit IgG	#Q9Y2R2	26191

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:100

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

PTPN22 (D6D1H) Rabbit mAb recognizes endogenous levels of total PTPN22 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Pro451 of human PTPN22 protein.

Background

PTPN22 (Lyp/PEP) is a cytoplasmic phosphatase expressed by hematopoietic cells (1,2). PTPN22 associates with the tyrosine kinase Csk to inhibit T cell receptor signaling through inactivation of Src kinases (3,4). Csk phosphorylates Src kinases on an inhibitory tyrosine, while PTPN22 dephosphorylates an activating site (4). PTPN22$^{(-/-)}$ mice have higher levels of activated Lck than wild-type, resulting in greater T cell expansion and increased serum antibody levels (5). Research studies have shown that a single-nucleotide polymorphism, 1858T of the PTPN22 gene which encodes the amino acid substitution R620W, confers increased risk for multiple autoimmune diseases including type I diabetes, rheumatoid arthritis, systemic lupus erythematosus, and Graves disease (6-9). Interestingly, although the R620W substitution disrupts the interaction between Csk and PTPN22, it is actually a gain-of-function mutation resulting in increased phosphatase activity (6,10,11). Recent evidence suggests that the autoimmune phenotype associated with the R620W variant is the result of increased calpain-mediated degradation and decreased protein levels of PTPN22 (12).

Background References

1. Cohen, S. et al. (1999) *Blood* 93, 2013-24.
2. Matthews, R.J. et al. (1992) *Mol Cell Biol* 12, 2396-405.
3. Cloutier, J.F. and Veillette, A. (1996) *EMBO J* 15, 4909-18.
4. Cloutier, J.F. and Veillette, A. (1999) *J Exp Med* 189, 111-21.
5. Hasegawa, K. et al. (2004) *Science* 303, 685-9.
6. Bottini, N. et al. (2004) *Nat Genet* 36, 337-8.
7. Begovich, A.B. et al. (2004) *Am J Hum Genet* 75, 330-7.
8. Kyogoku, C. et al. (2004) *Am J Hum Genet* 75, 504-7.
9. Velaga, M.R. et al. (2004) *J Clin Endocrinol Metab* 89, 5862-5.
10. Vang, T. et al. (2005) *Nat Genet* 37, 1317-9.
11. Rieck, M. et al. (2007) *J Immunol* 179, 4704-10.
12. Zhang, J. et al. (2011) *Nat Genet* 43, 902-7.

Species Reactivity

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

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: Human **M:** Mouse

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