Revision 1

Store at -20C

#53641

MLL3 (D1S1V) Rabbit mAb

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H	Endogenous	540	Rabbit IgG	#Q8NEZ4	58508

Product Usage Information

Application	Dilution
Western Blotting	1:1000

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

MLL3 (D1S1V) Rabbit mAb recognizes endogenous levels of total MLL3 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ala2110 of human MLL3 protein.

Background

The Set1 histone methyltransferase protein was first identified in yeast as part of the Set1/COMPASS histone methyltransferase complex, which methylates histone H3 at Lys4 and functions as a transcriptional co-activator (1). While yeast contain only one known Set1 protein, mammals contain six Set1-related proteins: SET1A, SET1B, MLL1, MLL2, MLL3, and MLL4, all of which assemble into COMPASS-like complexes and methylate histone H3 at Lys4 (2,3). These Set1-related proteins are each found in distinct protein complexes, all of which share the common subunits WDR5, RBBP5, ASH2L, CXXC1 and DPY30, which are required for proper complex assembly and modulation of histone methyltransferase activity (2-6). MLL1 and MLL2 complexes contain the additional protein subunit, menin (6).

MLL3, also known as histone-lysine N-methyltransferase 2C (KMT2C), is a large 540 kDa protein that functions as part of the MLL3/COMPASS-like complex to activate gene expression by mediating mono-methylation of histone H3 lysine 4 at gene enhancers (7). Enhancer-specific H3 lysine 4 mono-methylation (H3K4me1) correlates with increased levels of chromatin interactions between gene enhancers and promoters, while loss of this modification results in a reduction of enhancer-promoter interactions (8). Furthermore, H3K4me1 facilitates recruitment of the Cohesin complex, which may function to promote the interactions between gene enhancers and promoters (8). MLL3 is found to be mutated or have altered expression in a number of different cancers (9).

Background References

1. Miller, T. et al. (2001) *Proc Natl Acad Sci U S A* 98, 12902-7.
2. Shilatifard, A. (2008) *Curr Opin Cell Biol* 20, 341-8.
3. Tenney, K. and Shilatifard, A. (2005) *J Cell Biochem* 95, 429-36.
4. Lee, J.H. and Skalnik, D.G. (2005) *J Biol Chem* 280, 41725-31.
5. Lee, J.H. et al. (2007) *J Biol Chem* 282, 13419-28.
6. Hughes, C.M. et al. (2004) *Mol Cell* 13, 587-97.
7. Hu, D. et al. (2013) *Mol Cell Biol* 33, 4745-54.
8. Yan, J. et al. (2018) *Cell Res* , .
9. Sze, C.C. and Shilatifard, A. (2016) *Cold Spring Harb Perspect Med* 6, .

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

Cross-Reactivity Key

H: Human

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