Revision 4

Store at -20C

#63735

MLL2/KMT2B (D6X2E) Rabbit mAb (Carboxy-terminal Antigen)

Cell Signaling TECHNOLOGY®

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP, IF-IC, C&R	H	Endogenous	80	Rabbit IgG	#Q9UMN6	9757

Product Usage Information

The CUT&RUN dilution was determined using CUT&RUN Assay Kit #86652.

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Immunofluorescence (Immunocytochemistry)	1:1000
CUT&RUN	1:50

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

MLL2/KMT2B (D6X2E) Rabbit mAb (Carboxy-terminal Antigen) recognizes endogenous levels of total MLL2 protein. This antibody detects the Taspase 1-cleaved 80 kDa C-terminal MLL2/KMT2B protein (MLL2/KMT2B-C) and the full-length 400 kDa MLL2/KMT2B protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human MLL2/KMT2B 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).MLL2, also known as histone-lysine N-methyltransferase 2B (KMT2B), functions to activate gene expression by mediating tri-methylation of histone H3 lysine 4 at the promoters of genes involved in embryogenesis and hematopoiesis, and is required for histone H3 lysine 4 tri-methylation at bivalent promoters in embryonic stem cells (7). Like MLL1, MLL2 is a large protein made up of approximately 2,700 amino acids that is cleaved by the Taspase 1 threonine endopeptidase to form N-terminal (MLL2-N) and C-terminal (MLL2-C) fragments, both of which are subunits of the functional MLL2/COMPASS complex. MLL2-N, MLL2-C, WDR5, RBBP5, and ASH2L define the core catalytic component of the MLL2/COMPASS complex, which is recruited to target genes to regulate transcription. *MLL1* gene translocations are often associated with various hematological malignancies and thought to be a driving component of these types of leukemia. MLL2 is required for memory formation, proper glucose homeostasis, and cardiac lineage differentiation of mouse embryonic stem cells (8-11). A recent study has shown that MLL2 is required for survival of MLL-AF9-transformed cells, implicating MLL2 as a potential modulator of MLL1-rearranged leukemias (12). Mutations in MLL2 cause complex early-onset dystonia, and overexpression of MLL2 is associated with gastrointestinal diffuse large B-cell lymphoma (13,14).

Background References

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7. Denissov, S. et al. (2014) *Development* 141, 526-37.
8. Kerimoglu, C. et al. (2017) *Cell Rep* 20, 538-48.
9. Kerimoglu, C. et al. (2013) *J Neurosci* 33, 3452-64.
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11. Wan, X. et al. (2014) *Stem Cell Rev* 10, 643-52.
12. Chen, Y. et al. (2017) *Cancer Cell* 31, 755-770.e6.
13. Meyer, E. et al. (2017) *Nat Genet* 49, 223-37.

14. Ye, H. et al. (2015) *Int J Clin Exp Pathol* 8, 13043-50.

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 **IF-IC:** Immunofluorescence (Immunocytochemistry) **C&R:** CUT&RUN

Cross-Reactivity Key

H: Human

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Limited Uses