Revision 6

Store at -20C

#14689

# MLL1 (D2M7U) Rabbit mAb (Amino-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, C&R, C&T | H M R Mk | Endogenous | 300 | Rabbit IgG | #Q03164 | 4297 |

## Product Usage Information

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

The CUT&Tag dilution was determined using CUT&Tag Assay Kit #77552.

| Application | Dilution |
|---|---|
| Western Blotting | 1:1000 |
| Immunoprecipitation | 1:50 |
| CUT&RUN | 1:50 |
| CUT&Tag | 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

MLL1 (D2M7U) Rabbit mAb (Amino-terminal Antigen) recognizes endogenous levels of total MLL1 protein.

## Source / Purification

Monoclonal antibody is produced by immunizing animals with recombinant protein specific to the amino terminus of human MLL1 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).

MLL1 functions as a master regulator of both embryogenesis and hematopoiesis, and is required for proper expression of Hox genes (7,8). MLL1 is a large, approximately 4000 amino acid, protein that is cleaved by the taspase 1 threonine endopeptidase to form N-terminal (MLL1-N) and C-terminal MLL1 (MLL1-C) fragments, both of which are subunits of the functional MLL1/COMPASS complex (9,10). MLL1-N, MLL1-C, WDR5, RBBP5, and ASH2L define the core catalytic component of the MLL1/COMPASS complex, which is recruited to target genes and methylates histone H3 lysine 4 to regulate transcriptional initiation (11). At least 60 different MLL1 translocation partners have been molecularly characterized and associated with various hematological malignancies. The most common translocation partners include AF4, AF9, ENL, AF10, ELL, and AF6 (8,12,13). With the exception of AF6, all of these partners are nuclear proteins that function to positively regulate transcriptional elongation. AF4, AF9, and ENL are all components of the super elongation complex (SEC), while AF4, AF9, AF10, and ENL all interact with the histone H3 lysine 79 methyltransferase DOT1L. Many MLL1 target genes are normally regulated by promoter-proximal pausing, with the release of RNA polymerase and transcriptional elongation occurring in response to proper stimuli (14). The association of MLL1 translocation partners with SEC and DOT1L suggest that MLL1-fusion proteins may function to sustain specific gene expression programs by constitutively activating transcriptional elongation.

## Background References

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**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 **C&R:** CUT&RUN **C&T:** CUT&Tag

**Cross-Reactivity Key**

**H:** Human **M:** Mouse **R:** Rat **Mk:** Monkey

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**Limited Uses**