Revision 4

Store at -20C

#13105

WDR5 (D9E1I) Rabbit mAb

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, ChIP, ChIP-seq, C&R	H M R Mk	Endogenous	37	Rabbit IgG	#P61964	11091

Product Usage Information

For optimal ChIP results, use 10 µl of antibody and 10 µg of chromatin (approximately 4 x 10^6 cells) per IP. This antibody has been validated using SimpleChIP® Enzymatic Chromatin IP Kits.

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

Application	Dilution
Western Blotting	1:1000
Chromatin IP	1:50
Chromatin IP-seq	1:50
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

WDR5 (D9E1I) Rabbit mAb recognizes endogenous levels of total WDR5 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a recombinant protein specific to full-length human WDR5 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, six Set1-related proteins exist in mammals: 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. These subunits 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). Like yeast Set1, all six Set1-related mammalian proteins methylate histone H3 at Lys4 (2-6). MLL translocations are found in a large number of hematological malignancies, suggesting that Set1/COMPASS histone methyltransferase complexes play a critical role in leukemogenesis (6).

WDR5 is a core subunit of all SET1/MLL histone methyltransferase complexes and is required for proper complex assembly and histone methyltransferase activity (7). It functions as an effector of histone H3 Lys4 methylation by recruiting SET1/MLL complexes to target loci and presenting the histone H3 amino-terminal tail for methylation (8). WDR5 contains a classical seven-bladed WD40 propeller domain with a central cavity that binds to histone H3 Arg2 when symmetrically di-methylated (H3Arg2Me2-S) by arginine methyltransferases PRMT5 and PRMT7 (8). WDR5 binding to H3Arg2Me2-S results in increased recruitment of SET1/MLL complexes and methylation of histone H3 Lys4 at gene promoters and distal regulatory sites. In contrast, asymmetric di-methylation of histone H3 Arg2 (H3Arg2Me2-A) by PRMT6 reduces WDR5 binding and results in decreased recruitment of SET1/MLL complexes and reduced histone H3 Lys4 methylation (8). Interestingly, the H3Arg2Me2-S binding pocket of WDR5 also interacts with the SET domains of SET1/MLL proteins with comparable affinity, setting up a potential competition for WDR5 binding that may act to regulate SET1/MLL recruitment and subsequent H3 Lys4 methylation (9-11). WDR5 is also a core subunit of the ATAC and MOF-NSL histone acetyltransferase complexes and the CHD8 chromatin-remodeling complex (12-14).

Background References

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6. Hughes, C.M. et al. (2004) *Mol Cell* 13, 587-97.
7. Migliori, V. et al. (2012) *Epigenetics* 7, 815-22.
8. Migliori, V. et al. (2012) *Nat Struct Mol Biol* 19, 136-44.

9. Song, J.J. and Kingston, R.E. (2008) *J Biol Chem* 283, 35258-64.
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13. Cai, Y. et al. (2010) *J Biol Chem* 285, 4268-72.
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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 nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **ChIP:** Chromatin IP **ChIP-seq:** Chromatin IP-seq **C&R:** CUT&RUN

Cross-Reactivity Key

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

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Limited Uses