Revision 1

Store at -20C

#78087

Histone H3 (K9M Mutant Specific) Antibody

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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	H M	Endogenous	17	Rabbit	#P84243	3020

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 and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Histone H3 (K9M Mutant Specific) Antibody recognizes endogenous levels of K9M mutant histone H3.1, H3.2, and H3.3 proteins. The antibody does not cross-react with wild-type histone H3.1, 3.2, or 3.3.

Species predicted to react based on 100% sequence homology

Rat

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to K9M mutant sequence of human histone H3.3 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Multiple exome sequencing analyses have uncovered a high frequency of histone H3 driver mutations in a number of different cancers, including diffuse intrinsic pontine glioma (DIPG), chondroblastoma, sarcomas, and HPV-negative head and neck squamous cell carcinoma. Previous studies have shown that lysine to methionine histone mutations in these cancers act as potent inhibitors of their respective lysine methyltransferases, resulting in gross alterations to the histone methylation landscape and deregulation of gene expression. In DIPG for example, the histone H3 K27M mutation is accompanied by a dramatic reduction in the levels of polycomb repressive complex 2 (PRC2)-mediated tri-methylation of histone H3 lysine 27, changes in the distribution of PRC2 on the genome, and altered expression of genes associated with various cancer pathways (1-3). In chondrocytomas, the histone H3 K36M mutation functions to inhibit the WHSC1 (MMSET) and SETD2 histone methyltransferases, resulting in a reduction in the levels of histone H3 lysine 36 tri-methylation and deregulation of a number of cancer-associated genes (4). Similar to the H3K27M and H3K36M mutations, the histone H3 K9M mutation has been shown to inhibit the H3K9-directed histone methyltransferase G9a, resulting in reduced levels of histone H3 lysine 9 trimethylation (5). Given the widespread role of G9a in the regulation of gene expression, it is likely that this K9M mutation also plays a role in cancer.

Background References

1. Chan, K.M. et al. (2013) *Genes Dev* 27, 985-90.
2. Lewis, P.W. et al. (2013) *Science* 340, 857-61.
3. Piunti, A. et al. (2017) *Nat Med* 23, 493-500.
4. Fang, D. et al. (2016) *Science* 352, 1344-8.
5. Jayaram, H. et al. (2016) *Proc Natl Acad Sci U S A* 113, 6182-7.

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

Cross-Reactivity Key

H: Human **M:** Mouse

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