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Product Information

Anti-methyl-Histone H3 [Me-Lys^4]
produced in rabbit, affinity isolated antibody

Catalog Number **M4819**

Product Description

Anti-methyl-Histone H3 [Me-Lys^4] is produced in rabbit using as immunogen a synthetic methylated peptide corresponding to amino acids 1-8 [Me-Lys^4] at the N-terminus of human histone H3, conjugated to KLH. This sequence is identical in many species including mouse, rat, bovine, chicken, frog, *Drosophila*, *C. elegans*, tetrahymena, and *Arabidopsis thaliana* histone H3. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-methyl-Histone H3 [Me-Lys^4] recognizes histone H3 methylated on Lys^4. Applications include the detection of [Me-Lys^4] histone H3 by immunoblotting (17 kDa). Staining of the [Me-Lys^4] histone H3 band in immunoblotting is specifically inhibited with the immunizing peptide [Me-Lys^4] histone H3 (human, amino acids 1-8). Partial or no inhibition is observed with the di-methylated histone H3 [diMe-Lys^4] peptide (human, amino acids 1-8) and the non-methylated histone H3 peptide (human, amino acids 1-8).

This antibody is ChIP validated.

The relatively unstructured and highly charged N-terminal tail domains of histones are central to the processes that modulate chromatin structure. A diverse and elaborate array of post-translational modifications including acetylation, phosphorylation, and methylation occur on the N-terminal tail domains of histones, particularly of H3 and H4.[1, 2] These modifications may alter chromatin structure and recruit downstream chromatin-associated proteins involved in transcription regulation. These in turn, may dictate dynamic transitions between transcriptionally active or silent chromatin states. Histones H3 and H4 are the predominant histones modified by methylation and are highly methylated in mammalian cells.[3, 4]

Histone methylation like acetylation is a complex dynamic process involved in a number of processes including transcriptional regulation, chromatin condensation, mitosis, and heterochromatin assembly. Moreover, lysine residues can be mono-, di-, and tri-methylated at different heterochromatic subdomains adding further complexity to the regulation of chromatin structure. Conserved lysine residues in the N- terminal tail domains of histone H3 (Lys^4, Lys^9, and Lys^{27}) are the preferred sites of methylation.[1, 4-6] Histone H3 mono-, di-, and trimethylation at Lys^4 and Lys^9 are carried out both *in vitro* and *in vivo* by SET domain-, site-specific histone methyltransferases (HMTases), including Suv39h1, Suv39h2, and G9a.[7, 8] Di- and trimethylation of histone H3 at Lys^4 in coding regions correlates with transcriptional activity of many genes.[9, 10] Dimethylation of Histone H3 at Lys^4 occurs at both active and inactive euchromatic regions, but not in silent heterochromatic sites, whereas trimethylation at Lys^4 is present exclusively at active genes. Mono- and dimethylation of H3 at Lys^9 are intrinsically linked to epigenetic silencing and heterochromatin assembly. In contrast, trimethylated H3 at Lys^9 is enriched at pericentric heterochromatin domain.

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: ~1 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in “frost-free” freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working antibody concentration of 0.5-1 μg/mL is recommended using a whole cell extract of the human epitheloid carcinoma HeLa cell line, human acute T cell leukemia Jurkat cell line, and mouse fibroblast NIH3T3 cell line.

ChIP validated

Note: In order to obtain best results in various techniques and preparations, we recommend determining optimal working dilutions by titration.

References

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