Histone H3K4me2 antibody (mAb)

Catalog Nos: 39679, 39079
RRID: AB_2793302
Clone: MABI 0303
Application(s): ChIP, ChIP-Seq, DB, ICC, IF, WB
Reactivity: Human, Mouse, Wide Range Predicted

Quantities: 100 µg, 50 µg
Purification: Protein G Chromatography
Host: Mouse
Isotype: IgG1
Molecular Weight: 17 kDa

Background: Histone H3 is one of the core components of the nucleosome. The nucleosome is the smallest subunit of chromatin and consists of 147 base pairs of DNA wrapped around an octamer of core histone proteins (two each of Histone H2A, Histone H2B, Histone H3 and Histone H4). Histone H1 is a linker histone, present at the interface between the nucleosome core and DNA entry/exit points. Histone H1 is responsible for establishing higher-order chromatin structure.

Chromatin is subject to a variety of chemical modifications, including post-translational modifications of the histone proteins and the methylation of cytosine residues in the DNA. Reported histone modifications include acetylation, methylation, phosphorylation, ubiquitylation, glycosylation, ADP-ribosylation, carbonylation and SUMOylation; these modifications play a major role in regulating gene expression.

The methylation of histones can occur on two different residues: arginine or lysine. Histone methylation can be associated with transcriptional activation or repression, depending on the methylated residue. Lysine 4 of histone H3 can be mono-, di- or trimethylated by different histone methyltransferases (HMTs) such as SET1 or ASH1. Methylation of Lys4 is often associated with transcriptional activation. The demethylase LSD1 is able to demethylate histone H3 Lys4.

Immunogen: This Histone H3 dimethyl Lys4 antibody was raised against a synthetic peptide containing dimethyl Lys4 of human histone H3.

Buffer: PBS pH 7.5 containing 30% glycerol, 0.3 M NaCl, and 0.035% sodium azide. Sodium azide is highly toxic.

Application Notes:
Applications Validated by Active Motif:
ChIP: 5 - 10 µg per ChIP
ChIP-Seq: 5 - 10 µg each
ICC/IF: 1 - 2 µl/ml dilution
WB: 2 - 5 µg/ml dilution
DB: 1 µg/ml dilution

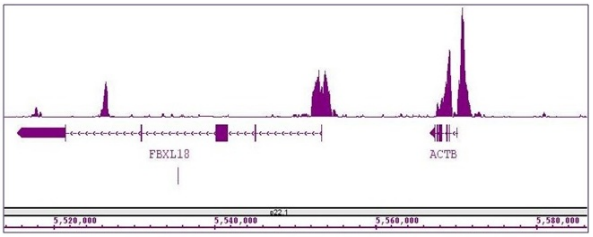
ChIP-Seq validation was performed by Active Motif's Epigenetics Services; the complete data set is available in the UCSC Genome Browser by clicking here.

For Histone H3K4me2, we also offer AbFlex® Histone H3K4me2 Recombinant Antibody (rAb). For details, see Catalog No. 91321.

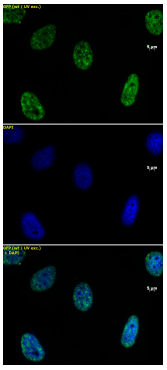
Storage and Guarantee: Some products may be shipped at room temperature. This will not affect their stability or performance. Avoid repeated freeze/thaw cycles by aliquoting items into single-use fractions for storage at -20°C for up to 2 years. Keep all reagents on ice when not in storage. This product is guaranteed for 12 months from date of receipt.

This product is for research use only and is not for use in diagnostic procedures.

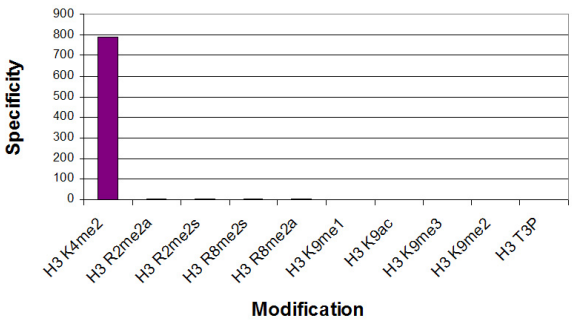
This antibody is manufactured by MAB Institute, Inc.



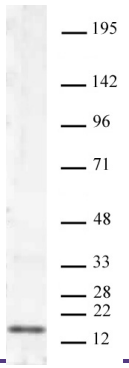
Histone H3K4me2 antibody (mAb) tested by ChIP-Seq.
ChIP was performed using the ChIP-IT® High Sensitivity Kit (Cat. No. 53040) with 15 ug of chromatin from a human medulloblastoma cell line and 4 µg of antibody. ChIP DNA was sequenced on the Illumina HiSeq and 12 million sequence tags were mapped to identify Histone H3K4me2 binding sites. The image shows binding across a region of chromosome 7. You can view the complete data set in the UCSC Genome Browser, starting at this specific location, here.



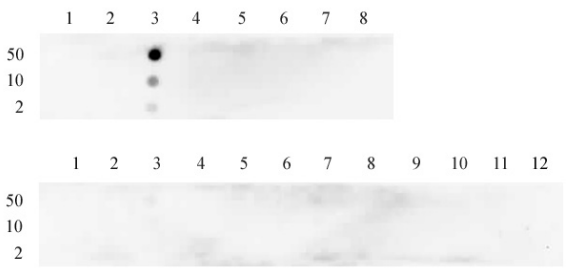
Histone H3K4me2 antibody (mAb) tested by immunofluorescence.
Staining of HeLa cells with Histone H3 dimethyl Lys4 antibody (mAb) (1 µg/ml, top panel) and DAPI (middle panel), and a merge of both images (bottom panel).



Histone H3K4me2 antibody (mAb) specificity tested by peptide array analysis.
Peptide array analysis was used to confirm the specificity of this antibody for its intended modification. Histone H3 dimethyl Lys4 antibody was applied at a dilution of 1:2,000 to Active Motif's MODified™ Histone Peptide Array (Catalog No. 13001). The arrays were scanned with ArrayAnalysis Software 7 and the results plotted. Specificity data is shown for the most reactive peptides and those related to the immunogen. Recognition of the H3 dimethyl Lys4 peptide is inhibited by Thr3 phosphorylation and blocked by a citrulline at position 2.
Array Data File



Histone H3K4me2 antibody (mAb) tested by Western blot.
HeLa acid extract (20 µg) probed with Histone H3 dimethyl Lys4 antibody (mAb) (2 µg/ml dilution).



Histone H3K4me2 antibody (mAb) tested by dot blot analysis.
Dot blot analysis was used to confirm the specificity of Histone H3 dimethyl Lys4 antibody (mAb) for dimethyl-Lys4 histone H3. Methylated peptides corresponding to the immunogen and related peptides were spotted onto PVDF and probed with the antibody at 1 µg/ml. The amount of peptide (picomoles) spotted is indicated next to each row.
Top panel: Lane 1: Unmod H3 aa 2-9 peptide lysine 4. Lane 2: Monomethyl lysine 4. Lane 3: Dimethyl lysine 4. Lane 4: Trimethyl lysine 4. Lane 5: Unmod H3 5-22 peptide. Lane 6: Monomethyl lysine 9. Lane 7: Dimethyl lysine 9. Lane 8: Trimethyl lysine 9. Bottom panel: Lane 1: dimethyl lysine 14. Lane 2: monomethyl lysine 18. Lane 3: dimethyl lysine 18. Lane 4: trimethyl lysine 18. Lane 5: unmod H3 aa 18-27 peptide. Lane 6: monomethyl lysine 23. Lane 7: dimethyl lysine 23. Lane 8: trimethyl lysine 23. Lane 9: unmod H3 aa 22-32 peptide. Lane 10: monomethyl lysine 27. Lane 11: dimethyl lysine 27. Lane 12: trimethyl lysine 27.