

Description: Histone H3 acetyl lysine 4 antibody

Species: Human, mouse, rat, C. elegans

Applications: Westerns, dot blots, ChIP

Modification: K4Acetyl

Immunogen: Synthetic peptide containing acetylated lysine 4 of histone H3

Gene Symbol: HIST2H3C Entrez: 126961 (hu), 260423 (mu) Swiss Prot: Q71DI3 (hu), P84228 (mu)

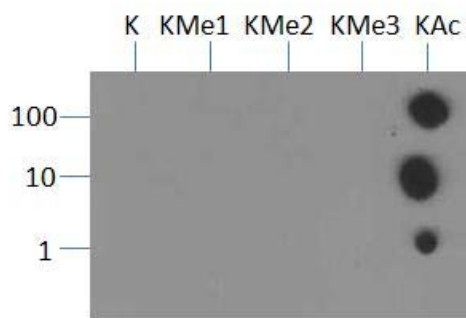
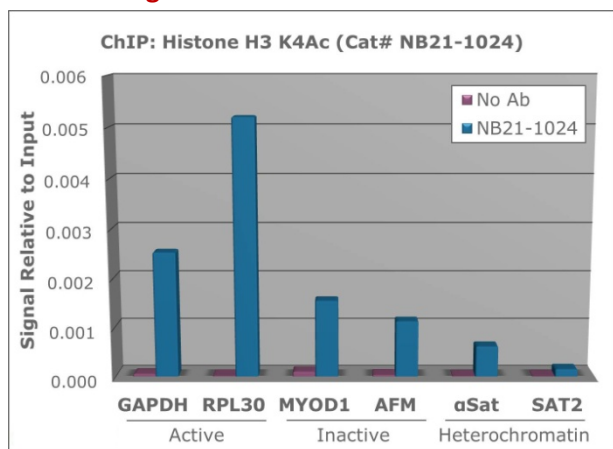
Cat#: NB21-1024

Gene: HIST2H3C

Ab Type: Rabbit affinity purified pAb

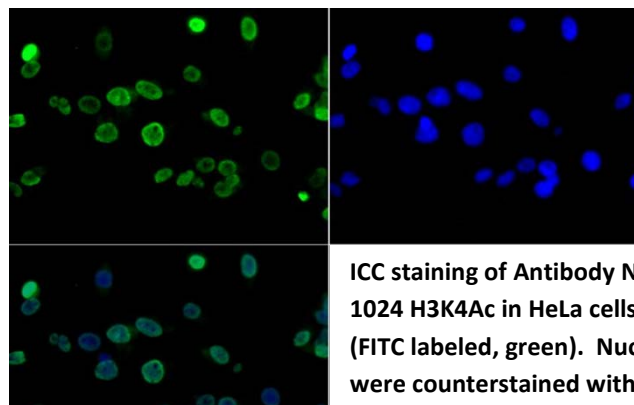
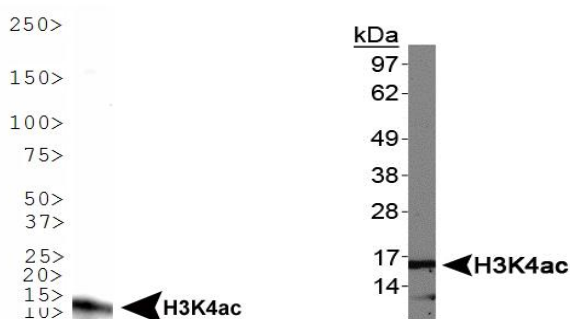
Marker: H3K4Ac

Images:



Dot blot of NB21-1024 against H3 peptide containing the modifications: Lane 1 – no modifications; Lane 2 – K4Me1; Lane 3 – K4Me2; Lane 4 – K4Me3; Lane 5 – K4Ac

Western blot - C. elegans embryo lysate (left) and HeLa cell nuclear extract (right)



ICC staining of Antibody NB21-1024 H3K4Ac in HeLa cells (FITC labeled, green). Nuclei were counterstained with Dapi (blue).

Background:

The nucleosome is comprised of 146 bp of DNA wrapped around a series of histone proteins arranged as an octamer consisting of 2 copies of histone H2A, H2B, H3 and H4 (1). Within the nucleosome core the histone proteins are covalent

modified at specific residues predominantly within the N-terminal tail including lysine (acetylation, methylation, SUMOylation, and ubiquitylation), arginine methylation and citrullination, serine and threonine phosphorylation, as well as proline isomerization (2,3). The lysine side chains can carry up to three methyl groups (mono-, di- and trimethylated forms) and the arginine side chain can be monomethylated or can be dimethylated as the symmetric or asymmetric forms. The modifications show temporal, disease-specific, and other types of cell-specific regulation and there are specific families of enzymes that regulate the methylation, demethylation, acetylation, deacetylation and other modifications (4-8). Research has indicated that whereas the histone mark H3K4Me3 (tri-methyl lysine 4 of histone H3) localizes to gene promoter regions (it is associated with transcriptional activation) other modifications at H3K4 such as monomethyl is present predominantly at enhancer sequences (5). Specific marks have been shown to be associated with the activation (H3K9Me1, H3K27Me1, and H4K20Me1) or repression (H3K9Me2 and Me3, H3K27Me2 and Me3, and H4K20Me2 and Me3) of genes. Monomethylation of H4 at K20, catalyzed by SET8, is essential to genome replication and stability. Multiple DNA breaks are associated with demethylation at this site, resulting in activation of p53 to avoid mitosis and aberrant chromosomal activity. In mammalian stem cells, Xist expression blocks the formation of H4K20me1, which is one of the first examples of a direct connection between chromatin and stem cell differentiation.

1. Hayes JJ and Hansen JC. Nucleosomes and the chromatin fiber. *Curr Opin Genet Dev.* [2001] 11(2):124-9.
2. Berger SL. The complex language of chromatin regulation during transcription. *Nature.* [2007] 447(7143):407-12.
3. Zee, BM, Levin, RS, DiMaggio, PA and Garcia, BA. Global Turnover of histone post-translational modifications and variants in human cells. *Epigenetics and Chromatin.* [2010] 3:22.
4. Couture JF, Trievel RC. Histone-modifying enzymes: encrypting an enigmatic epigenetic code. *Curr Opin Struct Biol.* [2006] 16(6):753–60.
5. Heintzman ND, Stuart RK, Hon G, Fu Y, Ching CW, Hawkins RD, Barrera LO, Van Calcar S, Qu C, Ching KA, Wang W, Weng Z, Green RD, Crawford GE, Ren B. Distinct and predictive chromatin signatures of transcriptional promoters and enhancers in the human genome. *Nat Genet.* [2007] 39(3):311–8.
6. Barski A, Cuddapah S, Cui K, Roh TY, Schones DE, Wang Z, Wei G, Chepelev I, Zhao K. High-resolution profiling of histone methylations in the human genome. *Cell.* [2007] 129(4):823–37.
7. Bernstein BE, Meissner A, Lander ES. The mammalian epigenome. *Cell.* [2007] 128(4):669–81.
8. Rando OJ. Global patterns of histone modifications. *Curr Opin Genet Dev.* [2007] 17(2):94–9.

Dilutions: WB, DB – 1:1,000 to 1:2,500; ChIP 2-5 micrograms per 10⁶ cells.

Unit Size: 50 micrograms (0.05mg)

Storage: Short term storage at 4°C, long term storage at -20°C. Avoid unnecessary freeze-thaw.

Buffer: PBS, pH 7.4 with 30% glycerol

Preservative: 0.05% sodium azide

Limitations: This product is for research purposes only and is not approved for use in clinical diagnostics or for use in humans.

[Ask a question](#)

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