



Product Information

Monoclonal Anti-Acetyl Histone H3 (Ac-Lys⁹)

Clone AH3-120

Purified Mouse Immunoglobulin

Product Number **H 0913**

Product Description

Monoclonal Anti-Acetyl Histone H3 (Ac-Lys⁹) (mouse IgG1 isotype) is derived from the AH3-120 hybridoma produced by the fusion of mouse myeloma cells (NS1) and splenocytes from BALB/c mice immunized with a synthetic, acetylated histone H3 peptide (amino acids 7-20, Ac-Lys⁹) corresponding to the N-terminus of human histone H3, conjugated to KLH. This histone H3 sequence is identical in many species including mouse, rat, bovine, chicken, frog, *Drosophila*, and *C. elegans*, and is highly conserved (single amino acid substitution) in *Tetrahymena* histone H3. The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-Acetyl-Histone H3 (Ac-Lys⁹) recognizes human histone H3 when acetylated on Lys⁹. The antibody may be used in various applications including ELISA, immunoblotting (approx. 17 kDa), and immunocytochemistry. Staining of the histone H3-Ac-Lys⁹ band in immunoblotting is specifically inhibited with the acetylated histone H3 immunizing peptide but not with the non-acetylated one.

Histone proteins H3, H4, H2A and H2B function as building blocks to package eukaryotic DNA into repeating nucleosome units that are folded in higher-order chromatin fibers.^{1,2} The nucleosome is composed of an octamer containing a H3/H4 tetramer and two H2A/H2B dimers, surrounded by approximately 146 base pairs of DNA. 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, methylation, ubiquitination and ADP-ribosylation occurs on the N-terminal tail domains of histones.^{3,4} In addition, ATP-driven remodeling complexes, such as SWI/SNF, alter chromatin conformation.^{5,6} These modifications alter chromatin structure by influencing histone-DNA and histone-histone interactions and provide an exposed surface for the potential interaction of the tail domain with other proteins involved in transcription regulation. Acetylation of lysine residues

within these N-terminal domains by histone acetyl-transferase (HATs), including Gcn5p, P/CAF, p300/CBP and

TAFII250 is associated with transcriptional activation.^{2,7} This modification results in remodeling of the nucleosome structure into an open conformation more accessible to transcription complexes. Conversely, histone deacetylation by histone deacetylase (HDACs) is associated with transcription repression reversing the chromatin remodeling process. In most species, histone H3 is primarily acetylated at lysine 9, 14, 18, and 23.^{3,8-11} Acetylation at lysine 9 appears to have a dominant role in histone deposition and chromatin assembly in some organisms.^{8,12,13} Acetylation of specific lysines in histone H3 is also associated with processes apart from transcription. During DNA replication, new histones are rapidly synthesized and assembled into replicated DNA. Histones H3 and H4 are brought to replicating chromatin in a pre-acetylated state that turns into a de-acetylated state after replication is completed and the newly assembled chromatin matures.

Monoclonal antibodies specific for Histone H3 acetylated at Lys⁹ are an important tool for studying the role of histone acetylation in transcription processes and in gene regulation.

Reagent

Monoclonal Anti-Acetyl Histone H3 (Ac-Lys⁹) is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: Approx. 2 mg/ml.

Precautions and Disclaimer

Due to the sodium azide content a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous 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 is not recommended. 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

For immunoblotting, a working antibody dilution of 1-2 µg/ml is recommended using a whole cell extract of mouse fibroblasts 3T3 cell line treated with sodium butyrate.

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

References

1. Luger, K., and Richmond, T.J., *Curr. Opin. Genet. Dev.*, **8**, 140-146 (1998).
2. Kornberg, R.D., and Lorch, Y., *Cell*, **98**, 285-294 (1999).
3. Strhal, B.D., and Allis, C.D., *Nature*, **403**, 41-45 (2000).
4. Cheung, P., et al., *Cell*, **103**, 263-271 (2000).
5. Krebs, J.E. et al., *Cell*, **102**, 587-598 (2000).
6. Fry, C.J., and Peterson, C.L., *Science*, **295**, 1847-1848 (2002).
7. Struhl, K., *Genes Dev.*, **12**, 599-606 (1998).
8. Turner, B.M. and O'Neill, L.P., *Semin. Cell. Biol.*, **6**, 229-236 (1995).
9. Throne, A.W., et al., *Eur. J. Biochem.*, **193**, 701-713 (1990).
10. Grant, P.A., et al., *J. Biol. Chem.*, **274**, 5895-5900 (1999).
11. Zhang, W., et al., *EMBO J.*, **17**, 3155-3167 (1998).
12. Kuo, M.H., et al., *Nature*, **383**, 269-272 (1996).
13. Sobel, R.E., et al., *Proc. Natl. Acad. Sci. USA*, **92**, 1237-1241 (1995).

KA/EK 01/04

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.