SANTA CRUZ BIOTECHNOLOGY, INC.

p-Ac-Histone H3 (APH3-64): sc-56739

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The Power to Question

BACKGROUND

In eukaryotes, DNA is wrapped around histone octamers to form the basic unit of chromatin structure. The octamer is composed of Histone H2A, H2B, H3 and H4, and it associates with approximately 200 base pairs of DNA to form the nucleosome. The association of DNA with histones results in dense packing of chromatin, which restricts proteins involved in gene transcription from binding to DNA. p300 preferentially acetylates Histone H3 at Lysine 14 and 18 and Histone H4 at Lysine 5 and 8. Histone H4 may also be acetylated at Lysine 12 and 16, and the involvement of acetylated H4 with Histone H2A, H2B and H3 suggests that acetylated histones may be involved in dynamic chromatin remodeling. Phosphorylation of Histone H3 is involved in chromosome condensation during mitosis. Histone H3 phosphorylation correlates to the expression of immediate-early genes such as c-Jun, c-Fos and c-Myc. Research indicates that MSK1, a growth and stress activated kinase, also phosphorylates Histone H3 *in vitro*.

REFERENCES

1. Doenecke, D., et al. 1988. The H1 and core histone subtypes: differential gene expression and varied primary structures. Adv. Enzyme Regul. 27: 107-120.
2. Lewin, B. 1990. GENES IV. Oxford: Oxford University Press, 411-412.
3. Mahadevan, L.C., et al. 1991. Rapid Histone H3 phosphorylation in response to growth factors, phorbol esters, okadaic acid, and protein synthesis inhibitors. Cell 65: 775-783.
4. Jeppesen, P., et al. 1992. Antibodies to defined histone epitopes reveal variations in chromatin conformation and underacetylation of centric heterochromatin in human metaphase chromosomes. Chromosoma 101: 322-332.
5. Perry, C.A., et al. 1993. Analysis of nucleosome assembly and histone exchange using antibodies specific for acetylated H4. Biochemistry 32: 13605-13614.
6. Worrad, D.M., et al. 1995. Temporally restricted spatial localization of acetylated isoforms of Histone H4 and RNA polymerase II in the 2-cell mouse embryo. Development 121: 2949-2959.
7. Wolffe, A.P. 1997. Histone H1. Int. J. Biochem. Cell Biol. 29: 1463-1466.
8. Schiltz, R.L., et al. 1999. Overlapping but distinct patterns of histone acetylation by the human coactivators p300 and PCAF within nucleosomal substrates. J. Biol. Chem. 274: 1189-1192.

CHROMOSOMAL LOCATION

Genetic locus: HIST1H3D (human) mapping to 6p21.3; Hist1h3d (mouse) mapping to 13.

SOURCE

p-Ac-Histone H3 (APH3-64) is a mouse monoclonal antibody raised against an acetylated and phosphorylated Histone H3 peptide (amino acids 7-20, acetylated Lys 9 and phosphorylated Ser 10) corresponding to the N-terminus of Histone H3 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

p-Ac-Histone H3 (APH3-64) is recommended for detection of Ser 10 phosphorylated and Lys 9 acetylated Histone H3 of mouse, rat, human, *Drosophila, Xenopus, C. elegans* and bovine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Molecular Weight of p-Ac-Histone H3: 15 kDa.

Positive Controls: NTERA-2 cl.D1 whole cell lysate: sc-364181, HeLa whole cell lysate: sc-2200 or NIH/3T3 whole cell lysate: sc-2210.

Santa Cruz Biotechnology offers several chemical inducers of acetylation, including: Apicidin (sc-202061), Panobinostat (sc-208148), Suberoylanilide Hydroxamic Acid (sc-220139), Oxamflatin (sc-205960), Ms-275 (sc-279455), M 344 (sc-203124), Scriptaid (sc-202807), Trapoxin A (sc-253730) and Trichostatin A (sc-3511).

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Lambda Phosphatase: sc-200312A and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

SELECT PRODUCT CITATIONS

1. Tsankova, A., et al. 2017. Cell polarity regulates biased myosin activity and dynamics during asymmetric cell division via *Drosophila* Rho kinase and protein kinase N. Dev. Cell 42: 143-155.
2. Roubinet, C., et al. 2017. Spatio-temporally separated cortical flows and spindle geometry establish physical asymmetry in fly neural stem cells. Nat. Commun. 8: 1383.
3. Semenov, A.L., et al. 2023. Effects of isoflavone-rich NADES extract of *Pueraria lobata* roots and astaxanthin-rich *Phaffia rhodozyma* extract on prostate carcinogenesis in rats. Plants 12: 564.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.