H3K18ac Recombinant Nucleosome, Biotinylated

Catalog No	16-0372	**Species**	Human
Lot No	24284004-01	**Source**	*E. coli* & synthetic DNA
Pack Size	50 µg	**Tag**	Biotinylated
Concentration	5.0 µM	**MW**	199,730 Da

DESCRIPTION

Histone acetylation is a post-translational modification (PTM) wherein an acetyl group is added to a lysine residue of a histone protein. In combination with other PTMs, histone acetylation constitutes the "histone code," acting as a language read by proteins to regulate chromatin structure and gene expression. Histone acetylation is associated with gene activation and binds reader proteins such as SWI/SNF (BAF) chromatin remodeling complexes, BRD4, and TAF1 [1]. Recombinant nucleosomes containing acetylated histones are useful to study the biological functions of histone acetylation.

H3K18ac (histone H3 lysine 18 acetylation) Recombinant Nucleosome, Biotinylated consists of 147 base pairs of 601 sequence DNA [2] wrapped around an octamer of core histone proteins (two each of H2A, H2B, H3.2, and H4) to form a nucleosome, the basic repeating unit of chromatin. The DNA contains a 5' biotin-TEG group. H3K18ac nucleosome contains H3.2 with acetylated lysine at position 18. Histone H3.2 also contains a Cys to Ala substitution at position 110. H3K18 is acetylated by lysine acetyltransferases (KATs) such as KAT3A (CBP) and KAT3B (p300), and H3K18ac is deacetylated by lysine deacetylases (KDACs) such as SIRT7 and HDAC1 [1].

TECHNICAL INFORMATION

Storage	Stable for six months at -80°C from date of receipt. For best results, aliquot and avoid freeze/thaws.
Formulation	1.0 mg/mL mononucleosome in 50 µL 10 mM Tris HCl pH 7.5, 25 mM NaCl, 1 mM EDTA, 2 mM DTT, 20% glycerol (27.2 µg protein, 50 µg DNA + protein).

APPLICATION NOTES

H3K18ac nucleosome is highly purified and suitable for a variety of applications, including use as a substrate in enzyme assays, high-throughput screening and inhibitor testing, chromatin binding studies, protein-protein interaction assays, structural studies, and in effector protein binding experiments. For a corresponding unmodified control, we recommend EpiCypher 16-0006.

GENE & PROTEIN INFORMATION

UniProt ID	H2A - P04908 (alt. names: H2A type 1-B/E, H2A.2, H2A/a, H2A/m) H2B - O60814 (alt. names: H2B K, HIRA-interacting protein 1) H3.2 - Q71DI3 H4 - P62805

REFERENCES

[1] Shvedunova & Akhtar *Nat. Rev. Mol. Cell. Biol.* (2022). PMID: 35042977
[2] Lowary & Widom *J. Mol. Biol.* (1998). PMID: 9514715

VALIDATION DATA

FIGURE 1 Western blot data. Western Analysis of H3K18ac nucleosome. **Top Panel:** Unmodified (EpiCypher 16-0006; Lane 1) and H3K18ac (Lane 2) nucleosomes were probed with an anti-H3K18ac antibody and analyzed via enhanced chemiluminescence (ECL) readout. Only the H3K18ac sample produced a detectable signal. **Bottom Panel:** Detail from Coomassie stained gel showing unmodified (Lane 1) and H3K18ac (Lane 2) nucleosomes.

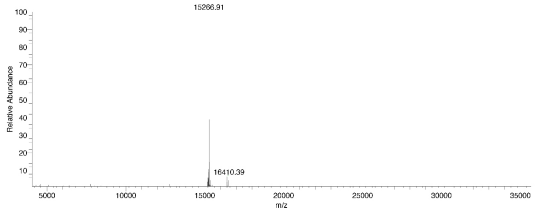

FIGURE 2 Mass spec data. Synthetic H3K18ac histone analyzed by high resolution mass spectrometry. Expected mass = 15,266.8 Da. Determined mass = 15,266.91 Da.

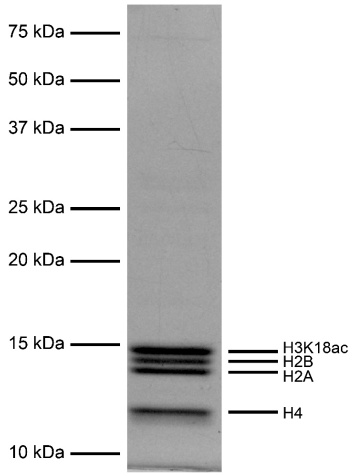

FIGURE 3 Protein gel data. Coomassie stained SDS-PAGE gel of proteins in H3K18ac nucleosome (1 µg) demonstrates the purity of histones in the preparation. Sizes of molecular weight markers and positions of the core histones (H2A, H2B, H3K18ac, and H4) are indicated.

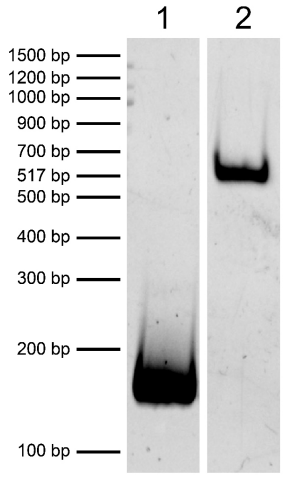

FIGURE 4 DNA gel data. H3K18ac nucleosome resolved via native PAGE and stained with ethidium bromide to visualize DNA. Both lanes are from the same gel. **Lane 1:** Free DNA (EpiCypher 18-0005; 100 ng). **Lane 2:** Intact H3K18ac nucleosomes (400 ng).