Nucleosome, Recombinant Human, H4 Tetraacetyl (H4K5,8,12,16ac) dNuc, Biotinylated

Catalog No	16-0313	**Species**	Human
Lot No	24282008-01	**Source**	*E. coli* & synthetic DNA
Pack Size	50 µg	**Tag**	Biotinylated
Concentration	4.27 µM	**MW**	200,162 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.

Nucleosome, Recombinant Human, H4 Tetraacetyl (H4K5,8,12,16ac) dNuc, Biotinylated consists of 147 base pairs of 601 sequence DNA [2] wrapped around an octamer of core histone proteins (two each of H2A, H2B, H3.1, and H4) to form a nucleosome, the basic repeating unit of chromatin. The DNA contains a 5' biotin-TEG group. H4 Tetraacetyl nucleosome contains histone H4 with N-terminal α-acetylation and acetylated lysine at positions 5, 8, 12 and 16.

TECHNICAL INFORMATION

Storage	Stable for six months at -80°C from date of receipt. For best results, aliquot and avoid freeze/thaws.
Formulation	0.855 mg/mL mononucleosome in 58.5 uL 10 mM Tris-HCl pH 7.5, 1 mM EDTA, 25 mM NaCl, 2 mM DTT, 20% glycerol (27.3 µg protein, 50 µg DNA + protein).

APPLICATION NOTES

H4 Tetraacetyl 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) H3.1 - P68431 (alt. names: H3, H3/a, H3/b, H3/c, H3/d) 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

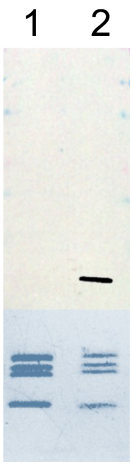

FIGURE 1: Western blot data. Western Analysis of H4 Tetraacetyl nucleosome. **Top Panel:** Unmodified (EpiCypher 16-0006; Lane 1) and H4 Tetraacetyl (Lane 2) nucleosomes were probed with an anti-H4 Tetraacetyl antibody and analyzed via enhanced chemiluminescence (ECL) readout. Only the H4 Tetraacetyl sample produced a detectable signal. **Bottom Panel:** Detail from Coomassie stained gel showing unmodified (Lane 1) and H4 Tetraacetyl (Lane 2) nucleosomes.

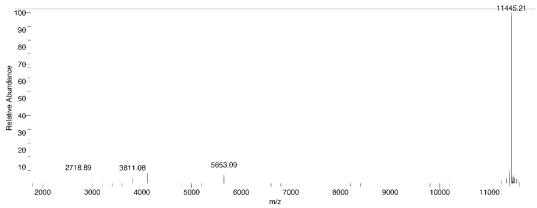

FIGURE 2: Mass spec data. Semi-synthetic H4 Tetraacetyl histone analyzed by high resolution mass spectrometry. Expected mass = 11,446.2 Da. Determined mass = 11,445.21 Da.

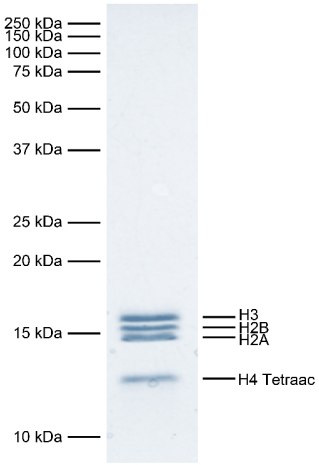

FIGURE 3: Protein gel data. Coomassie stained SDS-PAGE gel of proteins in H4 Tetraacetyl nucleosome (1 µg) demonstrates the purity of histones in the preparation. Sizes of molecular weight markers and positions of the core histones (H2A, H2B, H3, and H4 Tetraacetyl) are indicated.

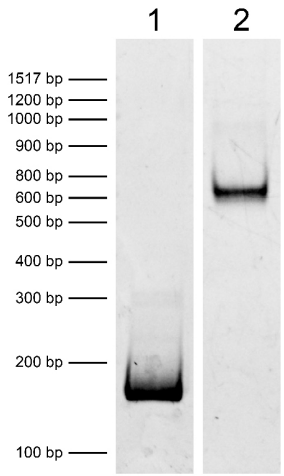

FIGURE 4: DNA gel data. H4 Tetraacetyl nucleosome resolved via native PAGE and stained with ethidium bromide to visualize DNA. Both lanes are from the same gel. **Lane 1:** Free DNA (EpiCypher 18-0005; 100 ng). **Lane 2:** Intact H4 Tetraacetyl nucleosomes (400 ng).