H2AK129ub1 Recombinant Nucleosome, Biotinylated

Catalog No	16-0400	**Species**	Human
Lot No	24198002-01	**Source**	*E. coli* & synthetic DNA
Pack Size	25 µg	**Tag**	Biotinylated
Concentration	4.6 µM	**MW**	216,834 Da

DESCRIPTION

Histone ubiquitination is a post-translational modification (PTM) wherein ubiquitin is added to a lysine residue of a histone protein. In combination with other PTMs, histone ubiquitination constitutes the "histone code," acting as a language read by proteins to regulate chromatin structure and gene expression. Ubiquitin is added through the sequential actions of E1 activating, E2 conjugating, and E3 ligase enzymes and is removed by deubiquitinating enzymes (DUBs). Histone ubiquitination plays an integral role in DNA damage response and has been implicated in transcriptional regulation and DNA replication [1]. Recombinant nucleosomes containing ubiquitinated histones are useful to study the biological functions of histone ubiquitination.

H2AK129ub1 (histone H2A lysine 129 ubiquitination) 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, H3.1, and H4) to form a nucleosome, the basic repeating unit of chromatin. The DNA contains a 5' biotin-TEG group. H2AK129ub1 contains ubiquitinated lysine at position 129 on histone H2A. H2AK129 is ubiquitinated by E3 ligase BRCA1/BARD1, and H2AK129ub1 recruits chromatin remodeler SMARCAD1, which promotes DNA end resection as part of the homologous recombination (HR) DNA repair pathway [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 25 µL 10 mM Tris HCl pH 7.5, 25 mM NaCl, 1 mM EDTA, 2 mM DTT, 20% glycerol (14.5 µg protein, 25 µg DNA + protein).

APPLICATION NOTES

H2AK129ub1 mononucleosome 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] Mattiroli & Penengo *Trends Genet.* (2021). PMID: 33485674
[2] Lowary & Widom *J. Mol. Biol.* (1998). PMID: 9514715

VALIDATION DATA

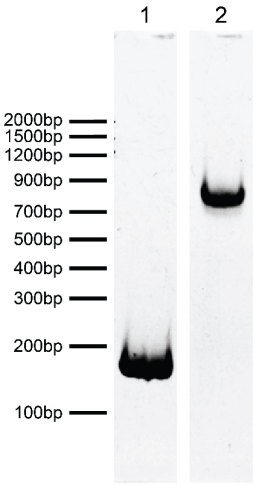

FIGURE 1 DNA gel data. H2AK129ub1 nucleosome resolved via native PAGE and stained with ethidium bromide to visualize DNA. Both lanes are from the same gel. **Lane 1:** Free DNA (EpiCypher 18-0005; 100 ng). **Lane 2:** Intact H2AK129ub1 nucleosomes (400 ng).

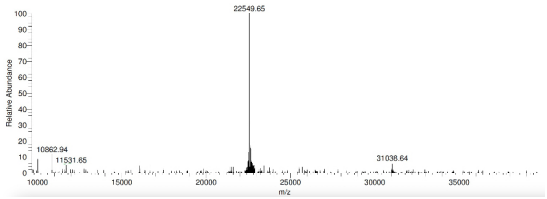

FIGURE 2 Mass spec data. Semi-synthetic H2AK129ub1 histone analyzed by high resolution mass spectrometry. Expected mass = 22,550.3 Da. Determined mass = 22,549.65 Da.

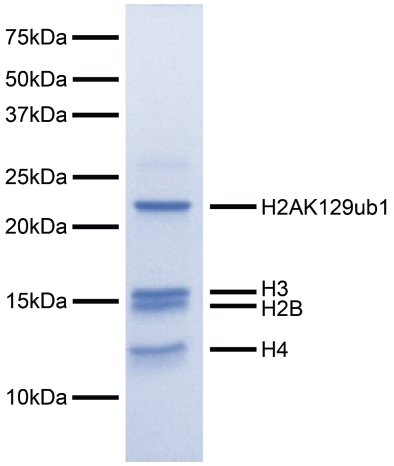

FIGURE 3 Protein gel data. Coomassie stained PAGE gel of proteins in H2AK129ub1 nucleosome (1 µg) demonstrates the purity of histones in the preparation. Sizes of molecular weight markers and positions of the core histones (H2AK129ub1, H2B, H3, and H4) are indicated.