H4S1ar1 Recombinant Nucleosome, Biotinylated

Catalog No	16-0425	**Species**	Human
Lot No	25058001-02	**Source**	*E. coli* & synthetic DNA
Pack Size	25 µg	**Tag**	Biotinylated
Concentration	4.53 µM	**MW**	200,908.5 Da

DESCRIPTION

ADP-ribosylation (ADPr) is a reversible histone modification that regulates chromatin structure, transcription, DNA replication, and DNA damage repair [1]. Occurring as either mono- or poly-ADP-ribose, ADPr supports recruitment of DNA repair proteins and chromatin remodelers [1]. Recombinant ADPr nucleosomes provide a defined platform for studying biological, chromatin-based functions of ADP-ribosylation.

Product Highlights:

- **Physiologically relevant binding** – Nucleosomes provide a physiologically relevant substrate for studying chromatin biology, capturing the multivalent binding environment that many chromatin-associated proteins require.
- **Built for versatility –** Designed for broad biochemical assays, these nucleosome substrates enable robust, quantitative analysis of protein binding, enzymatic activity, and chromatin interactions in a defined relevant format.
- **Research ready performance –** Built on deep nucleosome design expertise: EpiCypher's designer nucleosomes are supported by > 1,000 publications across diverse research applications including immunology, cancer, and molecular biology.

H4S1ar1 (histone H4 serine 1 mono-ADPr) 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 and the N-terminus of the H4 histone is acetylated. H4S1ar1 nucleosome contains H4 with mono-ADP-ribosylated serine at position 1. H4S1ar1 is ADP-ribosylated by poly-ADPr polymerase 1 (PARP1) and PARP2, and ADPr removal is achieved by the glycohydrolase ARH3 [1].

TECHNICAL INFORMATION

Storage	Stable for six months at -80°C from date of receipt. For best results, aliquot and avoid freeze/thaws.
Formulation	0.91 mg/mL mononucleosome in 27.5 µL 10 mM Tris HCl pH 7.5, 25 mM NaCl, 1 mM EDTA, 2 mM DTT, 20% glycerol (13.7 µg protein, 25 µg DNA + protein).

APPLICATION NOTES

H4S1ar1 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/d) H4 - P62805

REFERENCES

[1] Longarini & Matic *DNA Repair.* (2022). PMID: 35963141
[2] Lowary & Widom *J. Mol. Biol.* (1998). PMID: 9514715

VALIDATION DATA

FIGURE 1 Western blot data. Western analysis of H4S1ar1 nucleosome. All lanes were resolved on a single gel. **Top Panel:** Unmodified (EpiCypher 16-0006; Lane 1) and H4S1ar1 (Lane 2) nucleosomes were probed with an anti-Poly/Mono-ADP Ribose antibody and analyzed via enhanced chemiluminescence (ECL). Only the H4S1ar1 sample produced a detectable signal. **Bottom Panel:** Detail from Coomassie stained gel showing unmodified (Lane 1) and H4S1ar1 (Lane 2) nucleosomes.

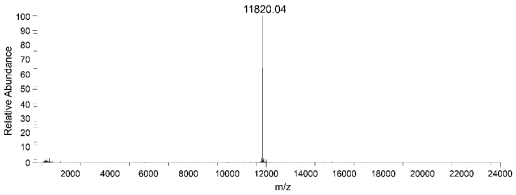

FIGURE 2 Mass spec data. H4S1ar1 histone analyzed by high resolution mass spectrometry. Expected mass = 11819.3 Da. Determined mass = 11820.04 Da.

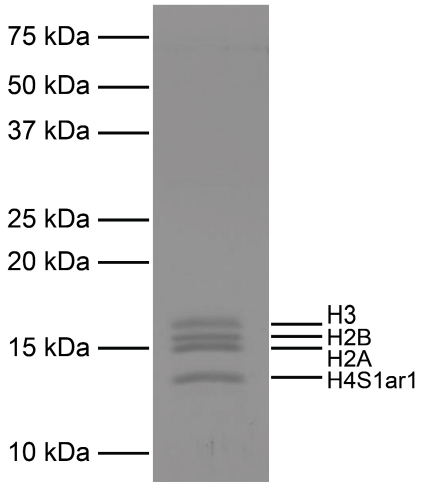

FIGURE 3 Protein gel data. Coomassie stained SDS-PAGE gel of proteins in H4S1ar1 nucleosome (2 µg) demonstrates the purity of histones in the preparation. Sizes of molecular weight markers and positions of the core histones (H2A, H2B, H3.1, and H4S1ar1) are indicated.

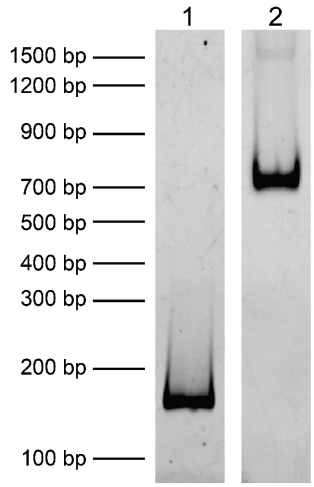

FIGURE 4 DNA gel data. H4S1ar1 nucleosome resolved via native PAGE and stained with ethidium bromide to visualize DNA. All lanes were resolved on a single gel. **Lane 1**: Free DNA (EpiCypher 18-0005; 100 ng). **Lane 2**: Intact H4S1ar1 nucleosomes (400 ng).