

Technical Datasheet

rNuQ H3K4Me2 Recombinant Mononucleosome

Part number: NUC0021

Species: *Human*

Source: *E. coli* and synthetic DNA

Description:

Recombinant nucleosomes were assembled *in vitro* using a 147 bp of 601 [1] positioning sequence DNA and four core histones (H2A, H2B and H4) purified from *E. coli* inclusion bodies, and histone H3.1 chemically synthesized as H3K4Me2. This histone contains dimethylation at lysine 4 and a 3 amino acid substitution in the histone core [A47C-C96S-C110A], which is located within the nucleosome core and does not affect nucleosome functionality.

Buffer composition:

Triethanolamine hydrochloride - NaCl - EDTA - Azide.

Applications:

Human recombinant mononucleosomes are suitable for chromatin remodeling and accessibility studies, post-translational modifications (PTM)-specific antibody validation [2], chromatin research [3], as well as nucleosome binding assays in drug discovery and high-throughput screening (HTS) applications [4,5].

For a corresponding unmodified control, we recommend NUC0001 - rNuQ H3.1.

Validation data:

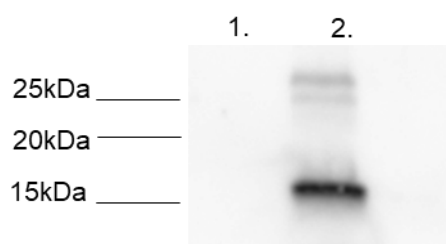


Figure 1: Western blot analysis of rNuQ H3K4Me2 mononucleosome versus unmodified H3.1 mononucleosome. Lane 1 contains unmodified rNuQ H3.1 recombinant mononucleosomes (200ng; Volition, NUC0001), and Lane 2 contains rNuQ H3K4Me2 (200ng; Volition, NUC0021). Probing with an anti-H3K4Me2 antibody followed by enhanced chemiluminescence (ECL) detection reveals a signal only in the rNuQ H3K4Me2 recombinant mononucleosome.

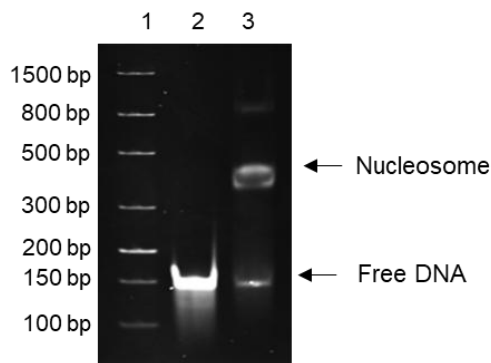


Figure 2: Native PAGE analysis of rNuQ H3K4Me2 mononucleosomes. Lane 1 contains the DNA ladder, lane 2 shows free 147 bp 601 DNA, and lane 3 shows intact rNuQ H3K4Me2 nucleosomes (500 ng). Samples were resolved on a native PAGE gel and stained with Midori Green to visualize the DNA. Intact nucleosomes, in lane 3, display reduced mobility relative to free DNA, consistent with correct nucleosome assembly.

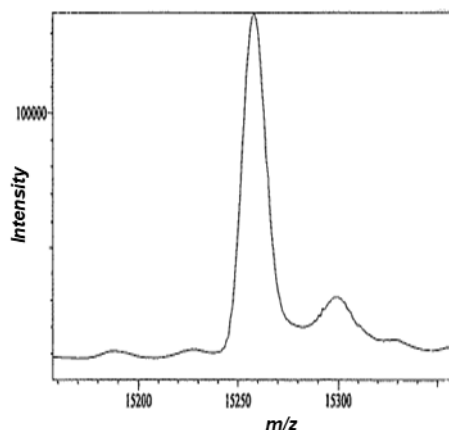


Figure 3: Mass spectrometry analysis of Synthetic H3K4Me2 histone. Confirming the expected mass (15,285 Da) matches the observed mass (15,286.5 Da).

Storage and stability:

This product must be stored at 2-8°C and is stable for 6 months from date of receipt. Do not freeze. Use surface optimized tubes (e.g. low bind tubes) and tips for handling and storage.

Precautions:

This product is for research use only. Not for use in diagnostic procedures. Not intended for use in humans or animals.

Gene and protein information:

UniProt ID:

H2A - P04908

H2B - O60814

H3.1 - P68431

H4 - P62805

References:

- [1] Lowary & Widom, 1998, J. Mol. Biol., 276:19–42.
- [2] Van den Ackerveken et al., 2025, J. Biol. Chem., 301:110352
- [3] Van den Ackerveken et al., 2021, Sci. Rep., 11:7256.
- [4] Kepert et al. (2003), Biophys. J., 85:4012–4022.
- [5] Maluchenko et al., 2022, Cells, 11(21):3343