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Datasheet for 000-006-K75

Histone H4 (1-15) Biotin Conjugated

Overview

Description:	Histone H4 Biotin Conjugated Peptide - 000-006-K75
Item No.:	000-006-K75
Size:	1 mg
Applications:	Biochemical Assay

Product Details

Background:	The nucleosome is comprised of 146 bp of DNA wrapped around a series of histone proteins arranged as an octamer consisting of 2 copies of histone H2A, H2B, H3 and H4. Within the nucleosome core the histone proteins are covalent modified at specific residues predominantly within the N-terminal tail including lysine (acetylation, methylation, SUMOylation, and ubiquitinylation), arginine methylation and citrullination, serine and threonine phosphorylation, as well as proline isomerization. The lysine side chains can carry up to three methyl groups (mono-, di- and tri- methylated forms) and the arginine side chain can be monomethylated or can be dimethylated as the symmetric or asymmetric forms. The modifications show temporal, disease-specific, and other types of cell-specific regulation and there are specific families of enzymes that regulate the methylation, demethylation, acetylation, deacetylation and other modifications. Research has indicated that whereas the histone mark H3K4Me3 (tri-methyl lysine 4 of histone H3) localizes to gene promoter regions (it is associated with transcriptional activation) other modifications at H3K4 such as monomethyl is present predominantly at enhancer sequences. Specific marks have been associated with activation (H3K9Me1, H3K27Me1, and H4K20Me1) or repression (H3K9Me2 and Me3, H3K27Me2 and Me3, and H4K20Me2 and Me3) of genes. Monomethylation of H4 at K20, catalyzed by SET8, is essential to genome replication and stability. Multiple DNA breaks are associated with demethylation at this site, resulting in activation of p53 to avoid mitosis and aberrant chromosomal activity. In mammalian stem cells, Xist expression blocks the formation of H4K20me1, which is one of the first examples of a direct connection between chromatin and stem cell differentiation. Histone H4 are ideal for researchers interested in Chromatin Research, DNA replication Transcription Translation and Splicing, Epigenetics, Chromatin Modifiers, Histones and Modified Histones, DNA Repair, and HA Epitope Tags research.
Synonyms:	H4/A, HIST2H4, HIST2H4A, HIST1H4A, histone cluster 4, H4, histone 4, Histone H4 peptide, histone H4, MGC24116, control peptide, blocking peptide
Conjugate:	Biotin
Type:	Peptide

Target Details

Purity/Specificity:	Greater than 95% specific peptide.

Application Details

Suggested Applications:	Biochemical Assay (Based on references)
Application Note:	Histone H4 Control Peptide is suitable for use in ELISA, Western Blot, Dot blot, PCA, and other assays. Control peptide should be used at 1.0 µg per 1.0 µl of antiserum in per assay. Specific conditions for reactivity should be optimized by the end user.
Assay Dilutions:	All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.

Formulation

Physical State:	Lyophilized
Concentration:	1.0 mg/mL by dry weight
Buffer:	None
Reconstitution Volume:	1.0 mL
Reconstitution Buffer:	Restore with deionized water (or equivalent)

Shipping & Handling

Shipping Condition:	Ambient
Storage Condition:	Store vial at 2 - 8 ° C prior to opening. Aliquot contents and freeze at -20° C or below for extended storage. Avoid cycles of freezing and thawing. Centrifuge product if not completely clear after standing at room temperature. Dilute only prior to immediate use.
Expiration:	Expiration date is one (1) year from date of receipt.

Images

C

Assay			MRTX1719 IC_{50} (nmol/L)	GSK3326595 IC_{50} (nmol/L)	JNJ-64619178 IC_{50} (nmol/L)
Biochemical	PRMT5•MTA		3.6	ND	ND
	PRMT5		20.4	ND	ND
Cellular activity HCT116 Isogenic cell lines	SDMA In-Cell Western	***MTAP* del**	8	25	2
		MTAP WT	653	27	3
	10-Day viability	***MTAP* del**	12	164	5
		MTAP WT	890	200	5

Figure

C. MRTX1719 was evaluated in biochemical assays that measure the inhibition of the PRMT5/MEP50 complex methyltransferase activity using Biotin-Histone H4 (1–15) peptide (p/n 000-006-K75). The assay was performed with and without MTA to determine the IC50 in conditions intended to model elevated MTA levels present in MTAP del tumor cells compared with MTAP WT cells. MRTX1719 was run in a PRMT5/MEP50 biochemical assay that measures the activity of the complex in the absence and presence of MTA at an approximate IC50 concentration of MTA in the assay (2 µmol/L). MRTX1719, GSK3326595, and JNJ-64619178 were run in SDMA In-Cell Western (SYM11 antibody) and 10-day viability assays in MTAP del and WT HCT116 cell lines. ND, not determined.
Fig1C. PMID: 37552839.

References

- Engstrom LD et al. MRTX1719 Is an MTA-Cooperative PRMT5 Inhibitor That Exhibits Synthetic Lethality in Preclinical Models and Patients with MTAP-Deleted Cancer. *Cancer Discov.* (2023)

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