

Product datasheet

Human Histone H3 (mono methyl K4) peptide ab1340

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Overview

Product name Human Histone H3 (mono methyl K4) peptide

Description

Nature Synthetic

Amino Acid Sequence

Species Human

Modifications mono methyl K4

Specifications

Our [Abpromise guarantee](#) covers the use of **ab1340** in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Applications Blocking - Blocking peptide for Anti-Histone H3 (mono methyl K4) antibody - ChIP Grade ([ab8895](#))

Dot blot

Form Liquid

Additional notes

- First try to dissolve a small amount of peptide in either water or buffer. The more charged residues on a peptide, the more soluble it is in aqueous solutions.
- If the peptide doesn't dissolve try an organic solvent e.g. DMSO, then dilute using water or buffer.
- Consider that any solvent used must be compatible with your assay. If a peptide does not dissolve and you need to recover it, lyophilise to remove the solvent.
- Gentle warming and sonication can effectively aid peptide solubilisation. If the solution is cloudy or has gelled the peptide may be in suspension rather than solubilised.
- Peptides containing cysteine are easily oxidised, so should be prepared in solution just prior to use.

Preparation and Storage

Stability and Storage Store at -80°C.
Information available upon request.

General Info

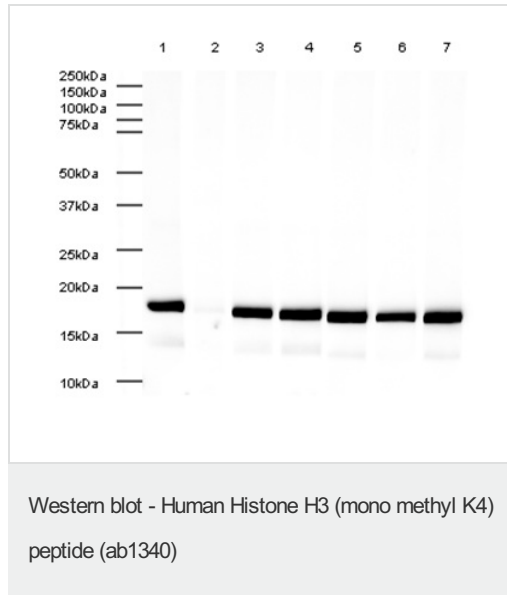
Function	Core component of nucleosome. Nucleosomes wrap and compact DNA into chromatin, limiting DNA accessibility to the cellular machineries which require DNA as a template. Histones thereby play a central role in transcription regulation, DNA repair, DNA replication and chromosomal stability. DNA accessibility is regulated via a complex set of post-translational modifications of histones, also called histone code, and nucleosome remodeling.
Sequence similarities	Belongs to the histone H3 family.
Developmental stage	Expressed during S phase, then expression strongly decreases as cell division slows down during the process of differentiation.
Post-translational modifications	<p>Acetylation is generally linked to gene activation. Acetylation on Lys-10 (H3K9ac) impairs methylation at Arg-9 (H3R8me2s). Acetylation on Lys-19 (H3K18ac) and Lys-24 (H3K24ac) favors methylation at Arg-18 (H3R17me).</p> <p>Citrullination at Arg-9 (H3R8ci) and/or Arg-18 (H3R17ci) by PADI4 impairs methylation and represses transcription.</p> <p>Asymmetric dimethylation at Arg-18 (H3R17me2a) by CARM1 is linked to gene activation. Symmetric dimethylation at Arg-9 (H3R8me2s) by PRMT5 is linked to gene repression. Asymmetric dimethylation at Arg-3 (H3R2me2a) by PRMT6 is linked to gene repression and is mutually exclusive with H3 Lys-5 methylation (H3K4me2 and H3K4me3). H3R2me2a is present at the 3' of genes regardless of their transcription state and is enriched on inactive promoters, while it is absent on active promoters.</p> <p>Methylation at Lys-5 (H3K4me), Lys-37 (H3K36me) and Lys-80 (H3K79me) are linked to gene activation. Methylation at Lys-5 (H3K4me) facilitates subsequent acetylation of H3 and H4. Methylation at Lys-80 (H3K79me) is associated with DNA double-strand break (DSB) responses and is a specific target for TP53BP1. Methylation at Lys-10 (H3K9me) and Lys-28 (H3K27me) are linked to gene repression. Methylation at Lys-10 (H3K9me) is a specific target for HP1 proteins (CBX1, CBX3 and CBX5) and prevents subsequent phosphorylation at Ser-11 (H3S10ph) and acetylation of H3 and H4. Methylation at Lys-5 (H3K4me) and Lys-80 (H3K79me) require preliminary monoubiquitination of H2B at 'Lys-120'. Methylation at Lys-10 (H3K9me) and Lys-28 (H3K27me) are enriched in inactive X chromosome chromatin.</p> <p>Phosphorylated at Thr-4 (H3T3ph) by GSG2/haspin during prophase and dephosphorylated during anaphase. Phosphorylation at Ser-11 (H3S10ph) by AURKB is crucial for chromosome condensation and cell-cycle progression during mitosis and meiosis. In addition phosphorylation at Ser-11 (H3S10ph) by RPS6KA4 and RPS6KA5 is important during interphase because it enables the transcription of genes following external stimulation, like mitogens, stress, growth factors or UV irradiation and result in the activation of genes, such as c-fos and c-jun.</p> <p>Phosphorylation at Ser-11 (H3S10ph), which is linked to gene activation, prevents methylation at Lys-10 (H3K9me) but facilitates acetylation of H3 and H4. Phosphorylation at Ser-11 (H3S10ph) by AURKB mediates the dissociation of HP1 proteins (CBX1, CBX3 and CBX5) from heterochromatin. Phosphorylation at Ser-11 (H3S10ph) is also an essential regulatory mechanism for neoplastic cell transformation. Phosphorylated at Ser-29 (H3S28ph) by MLTK isoform 1, RPS6KA5 or AURKB during mitosis or upon ultraviolet B irradiation. Phosphorylation at Thr-7 (H3T6ph) by PRKCBB is a specific tag for epigenetic transcriptional activation that prevents demethylation of Lys-5 (H3K4me) by LSD1/KDM1A. At centromeres, specifically phosphorylated at Thr-12 (H3T11ph) from prophase to early anaphase, by DAPK3 and PKN1. Phosphorylation at Thr-12 (H3T11ph) by PKN1 is a specific tag for epigenetic transcriptional activation that promotes demethylation of Lys-10 (H3K9me) by KDM4C/JMJD2C. Phosphorylation at Tyr-42 (H3Y41ph) by JAK2 promotes exclusion of CBX5 (HP1 alpha) from chromatin.</p>

Monoubiquitinated by RAG1 in lymphoid cells, monoubiquitination is required for V(D)J recombination (By similarity). Ubiquitinated by the CUL4-DDB-RBX1 complex in response to ultraviolet irradiation. This may weaken the interaction between histones and DNA and facilitate DNA accessibility to repair proteins.

Cellular localization

Nucleus. Chromosome.

Images



All lanes : Anti-Histone H3 (mono methyl K4) antibody - ChIP Grade ([ab8895](#)) at 1/500 dilution

Lane 1 : Calf thymus histone lysate

Lane 2 : Calf thymus histone lysate with Human Histone H3 (mono methyl K4) peptide ([ab1340](#)) at 1 µg/ml

Lane 3 : Calf thymus histone lysate with Human Histone H3 (di methyl K4) peptide ([ab7768](#)) at 1 µg/ml

Lane 4 : Calf thymus histone lysate with Human Histone H3 (tri methyl K4) peptide ([ab1342](#)) at 1 µg/ml

Lane 5 : Calf thymus histone lysate with Human Histone H3 (mono methyl K9) peptide ([ab1771](#)) at 1 µg/ml

Lane 6 : Calf thymus histone lysate with Human Histone H3 (mono methyl K27) peptide ([ab1780](#)) at 1 µg/ml

Lane 7 : Calf thymus histone lysate with Human Histone H3 (unmodified) peptide ([ab2903](#)) at 1 µg/ml

Secondary

All lanes : Goat Anti-Rabbit IgG H&L (HRP) ([ab6721](#)) at 1/5000 dilution

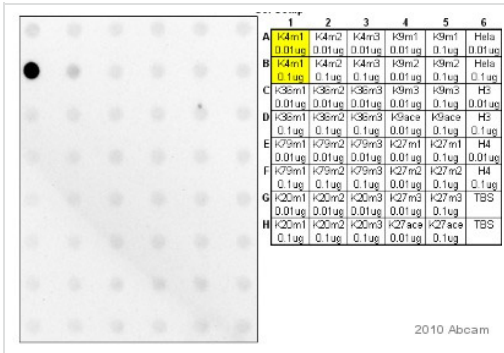
Performed under reducing conditions.

Observed band size: 18 kDa

[why is the actual band size different from the predicted?](#)

Exposure time: 2 minutes

[ab8895](#) is specific for mono-methylated Lysine 4 of histone H3 and does not recognize di- or tri-methyl Lysine 4 nor methylation at Lysine 9. This is shown in lane 2 where the activity of the antibody is specifically blocked by the addition of the immunizing peptide ([ab1340](#)).



ab1340 (at 0.01 and 0.1 µg) used in Dot Blot to test for cross-reactivity of ab8895 (1/2500). An HRP-conjugated Mouse anti-rabbit IgG polyclonal (1/10000) was used as the secondary antibody.

Dot Blot - Human Histone H3 (mono methyl K4) peptide (ab1340)
This image is courtesy of an anonymous Abreview

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