

Product datasheet

Histone H4 (pan-methyl K20) Quantification Kit (Colorimetric) ab115099

Overview

Product name	Histone H4 (pan-methyl K20) Quantification Kit (Colorimetric)
Detection method	Colorimetric
Sample type	Tissue, Adherent cells, Suspension cells
Sensitivity	5 ng/well
Range	20 ng/well - 2000 ng/well
Assay time	2h 30m
Species reactivity	Reacts with: Mouse, Human

Predicted to work with: Mammals 

Product overview

Methylation of histone H4 at lysine 20 is catalyzed by SET9 and SUV4.20h among other methyl transferases in mammalian cells. H4 (mono-methyl K20) is involved in the maintenance of proper higher order structure of DNA and is consequently essential for chromosome condensation, as well as functioning in gene silencing. H4 (di-methyl K20) has been described as another repressive chromatin domain and is involved in the DNA damage response. H4 (tri-methyl K20) acts as a passive feature or structure determinant for chromatin degradation and release, as well as being an epigenetic marker of early apoptosis. H4 (tri-methyl K20) is also considered as a common hallmark of human cancer.

Histone H4 (pan-methyl K20) Quantification Kit (Colorimetric) (ab115099) enables the user to measure global mono-, di- and tri-methylation of histone H4K20. The global H4K20 pan-methylation can also be changed by inhibition or activation of HMTs, making quantitative detection of global pan-methyl histone H4K20 a useful tool for better understanding epigenetic regulation of gene activation/repression. ab115099 is suitable for use with a variety of mammalian cells including fresh and frozen tissues, and cultured adherent and suspension cells.

Platform Microplate reader

Properties

Storage instructions Please refer to protocols.

Components	Identifier	96 tests
10X Wash Buffer		1 x 20ml

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8-Well Sample Strips (with Frame)		1 x 9 units
8-Well Standard Control Strips	Green Ringed	1 x 3 units
Antibody Buffer		1 x 12ml
Color Developer		1 x 10ml
Detecting Antibody, 1 mg/mL		1 x 10µl
Signal Report Solution		1 x 10µl
Signal Report Solution		1 x 240µl
Standard Control, 100 µg/mL		1 x 20µl
Stop Solution		1 x 6ml

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 H4 family.

Post-translational modifications

Acetylation at Lys-6 (H4K5ac), Lys-9 (H4K8ac), Lys-13 (H4K12ac) and Lys-17 (H4K16ac) occurs in coding regions of the genome but not in heterochromatin.

Citrullination at Arg-4 (H4R3ci) by PADI4 impairs methylation.

Monomethylation and asymmetric dimethylation at Arg-4 (H4R3me1 and H4R3me2a, respectively) by PRMT1 favors acetylation at Lys-9 (H4K8ac) and Lys-13 (H4K12ac).

Demethylation is performed by JMJD6. Symmetric dimethylation on Arg-4 (H4R3me2s) by the PRDM1/PRMT5 complex may play a crucial role in the germ-cell lineage.

Monomethylated, dimethylated or trimethylated at Lys-21 (H4K20me1, H4K20me2, H4K20me3).

Monomethylation is performed by SET8. Trimethylation is performed by SUV420H1 and SUV420H2 and induces gene silencing.

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. Monoubiquitinated at Lys-92 of histone H4 (H4K91ub1) in response to DNA damage.

The exact role of H4K91ub1 in DNA damage response is still unclear but it may function as a licensing signal for additional histone H4 post-translational modifications such as H4 Lys-21 methylation (H4K20me).

Sumoylated, which is associated with transcriptional repression.

Cellular localization

Nucleus. Chromosome.

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