

Product Data Sheet

Bovine Histones

□ **Cat# HIST15-N-1** Purified bovine histones (H1, H2a, H2b, H3) for ELISA/Western **Size:** 1 mg

Histones are highly alkaline proteins found in eukaryotic cell nuclei that package and order the DNA into structural units called nucleosomes. They are the chief protein components of chromatin, acting as spools around which DNA winds, and play a role in gene regulation. Without histones, the unwound DNA in chromosomes would be very long. Each human cell has about 1.8 meters of DNA, but wound on the histones it has about 90 micrometers (0.09 mm) of chromatin, which, when duplicated and condensed during mitosis, result in about 120 micrometers of chromosomes. Histones are found in the nuclei of eukaryotic cells, and in certain Archaea, namely Euryarchaea, but not in bacteria. The unicellular algae known as dinoflagellates are the only eukaryotes that are known to completely lack histones. Archaeal histones may well resemble the evolutionary precursors to eukaryotic histones. Histone proteins are among the most highly conserved proteins in eukaryotes, emphasizing their important role in the biology of the nucleus. In contrast mature sperm cells largely use protamines to package their genomic DNA.

Core histones are highly conserved proteins; that is, there are very few differences among the amino acid sequences of the histone proteins of different species. Linker histone usually has more than one form within a species and is also less conserved than the core histones. Five major families of histones exist: H1/H5, H2A, H2B, H3 and H4. Histones H2A, H2B, H3 and H4 are known as the core histones, while histones H1 and H5 are known as the linker histones. Histones undergo posttranslational modifications that alter their interaction with DNA and nuclear proteins. The H3 and H4 histones have long tails protruding from the nucleosome, which can be covalently modified at several places. Modifications of the tail include methylation, acetylation, phosphorylation, ubiquitination, SUMOylation, citrullination, and ADP-ribosylation. Histone modifications act in diverse biological processes such as gene regulation, DNA repair, chromosome condensation (mitosis) and spermatogenesis (meiosis).

Special precautions should be taken when running electrophoresis gels of basic proteins such as histones. Normal SDS-PAGE conditions give anomalous results. An acid-urea-detergent system should be used and the polarity of the poles reversed.

Histone Type	Mol. Wt.	Bradbury	Johns
Lysine Rich	21.5 kda	H1	F1
Slightly Lysine rich	14 kda	H2a	F2a
Slightly Lysine rich	13.8 kda	H2b	F2b
Arginine rich	15.3 kda	H3	F3
Arginine rich	11.3 kda	H4	F2a1

Source and properties of protein

Histones are purified from bovine/calf thymus. Supplied as powder. This preparation is a mixture of all major histone. Histones are soluble in water (10 mg/ml) or 0.5 N HCl (10 mg/ml), yielding a clear to hazy solution depending on the fraction. They are soluble in 6 M urea (4-10 mg/ml), but this will denature the histones. Histones dissolved or suspended in water should be stable for at least 6 months when frozen in single use aliquots.

Storage

Store powder at -20oC for up to 1 year. Store stock solutions at -20oC or below.

References: Johns E (1962) Biochem H 82, 15; Johns EW (1964) Biochem. J. 92, 55-59; Bohm EL (1973) FEBS Lett. 34, 217-221; Oliver D (1972) Biochme. J. 129; 349-353;

For in vitro research use only

Related Material available for ADI

AntibodyType	Catalog#	ProdDescription
HIST11-N-1		Purified bovine histone, H1/F1 (lysine rich, ~21.5 kda) purified
HIST15-AS-1		Purified bovine histones (H1, H2a, H2b, H3)- Agarose affinity support for removing autoantibodies to histones
HIST15-N-1		Purified bovine histones (H1, H2a, H2b, H3) for ELISA/Western
Rat-Poly	HIST16-S	Anti-Bovine Histones (H1, H2a, H2b, H3) antiserum
Mouse-Poly	HIST17-S	Anti-Bovine Histones (H1, H2a, H2b, H3) antiserum
HIST18-C		Purified bovine histones (H1, H2a, H2b, H3) WB +ve control
HIST21-N-1		Purified bovine histone, H2a/F2a2 and H4 (f2a1) (slightly lysine rich, ~14.5/11.3 kda) purified
HIST22-N-1		Purified bovine histone, H2b/F2b (slightly lysine rich, ~13.7 kda) purified
HIST31-N-1		Purified bovine histone, H3/F3 (Arginine rich, ~15.3 kda) purified
Recombinant		purified human, porcine, bovine insulin and antibodies

HIST15-N-1 131212

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