ASH1L (Ash1-Like Protein)

**CATALOG NO.:** HMT-11-131

**DESCRIPTION:** Human recombinant ASH1L (residues 2022-2302; Genbank Accession # NM_018489; MW = 59.5 kDa) expressed in *E. coli* with an N-terminal GST-tag. Catalyzes the transfer of methyl groups from S-adenosyl-L-methionine (SAM) to the ε-amino function of protein L-lysine residues, specifically lysine-36 of histone H3 (H3K36)\(^1\), a mark associated with active transcription. Activity has also been reported at H3K4\(^4\). A large, multi-domain protein associated with actively transcribed regions of chromatin, ASH1L is the human homolog of *Drosophila* Ash1, a Trithorax group protein. Like its counterpart in *Drosophila*, ASH1L contains a SET histone methyltransferase domain and has been found to play a role in the regulation of Hox gene expression\(^3\). Although the ASH1L SET domain has been shown *in vitro* to methylate histone peptides on lysine-4 of histone H3 (H3K4)\(^3\), *in vivo* or *in vitro* with nucleosomes as substrate, ASH1L is an H3K36 methyltransferase\(^1,2,6\). Recruitment of ASH1L by the ncRNA DBE-T to the chromosome 4q35 locus associated with FSHD (facioscapulohumeral muscular dystrophy) leads to increased H3K36me2 and inappropriate gene derepression at the FSHD locus\(^6\). In a possible positive feedback loop, ASH1L increases expression of DBE-T itself\(^6\), suggesting ASH1L’s methyltransferase activity or its interaction with DBE-T as potential therapeutic targets for FSHD. RBC’s ASH1L comprises the catalytic domain (AWS/SET/Post-SET) fused to GST.

**PURITY:** >80% by SDS-PAGE

**ASSAY CONDITIONS:** RBC’s ASH1L displays histone methyltransferase activity at concentrations of 62.5 nM-1 µM, 60 min. reactions, 30°C, as TCA-precipitated counts in a scintillation/filter plate assay (Multiscreen FB, Topcount), with HeLa oligo or mono/di-nucleosomes (0.05 mg/mL as [DNA])). Reaction conditions are: 50 mM Tris-HCl, pH 8.5, 50 mM NaCl, 5 mM MgCl\(_2\), 1 mM DTT, 1 mM PMSF, substrates at concentrations indicated above.

**SUPPLIED AS:** _µg/µL_ in 50 mM Tris/HCl, pH 7.5, 150 mM NaCl, 1 mM TCEP, 10% (v/v) glycerol

**STORAGE:** -70°C. Thaw quickly and store on ice before use. The remaining, unused, undiluted enzyme should be snap frozen, for example in a dry/ice ethanol bath or liquid nitrogen. Minimize freeze/thaws if possible, but very low volume aliquots (<5 µl) or storage of diluted enzyme is not recommended.


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**Methylation Activity of ASH1L with HeLa Oligonucleosomes.** Assays were performed with a scintillation/filter plate assay. Incubations were 60 min., 30°C with HeLa Oligonucleosomes (RBC Cat. # HMT-35-130; 0.05 mg/mL as [DNA]) and 1 µM [\(^3\)H]-SAM.

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**This product is NOT intended for therapeutic or diagnostic use in animals or in humans.**