PRODUCT DATASHEET

SUV39H1 (Su(var)3-9 homolog 1; Histone H3-K9 methyltransferase 1)

CATALOG NO.: HMT-11-111 **LOT NO.:**

DESCRIPTION: Human recombinant SUV39H1 (residues 44-412; Genbank Accession # NM_003173) expressed as an N-terminal fusion protein, with a C-terminal His-tag in *E. coli.* MW = 99.5 kDa. Catalyzes the transfer of methyl groups from S-adenosyl-L-methionine (SAM) to the ε-amino function of protein L-lysine residues, especially to the mono- and dimethylated forms of lysine-9 of histone H3 (H3K9me1, H3K9me2)[1,2]. A SET-domain lysine-methyltransfersase, SUV39H1's activity is the major source of the transcriptionally repressive modification, H3K9me3, in heterochromatin[1,3]. SUV39H1's role in facultative heterochromatin formation is regulated by SIRT1, both via recruitment and due to an activating deacetylation[4]. DBC1 (deleted in breast cancer 1) disrupts the SUV39H1-SIRT1 complex and also directly inhibits SUV39H1 methyltransferase activity[5]. SIRT1 also regulates global levels of SUV39H1 by inhibiting its polyubiquitination by MDM2[6]. SUV39H1 and SIRT1 are components of the eNoSC complex, which silences rRNA transcription in response to lowered cellular energy status[7]. A multimeric H3K9 methylation complex containing SUV39H1 along with other HMTs (SETDB1, G9a/GLP) has been described[8]. The oncoprotein Evi1, which is inappropriately expressed in AML (acute myeloid leukemia) and MDS (myelodysplastic syndrome), recruits SUV39H1, thus enhancing its transcription repressing activity[9,10]. Depletion of SUV39H1 by shRNA or inhibition with chaetocin induced reexpression of silenced AML tumour suppressor genes, consistent with its potential as a therapeutic target[11].

PURITY: >90% by SDS-PAGE.

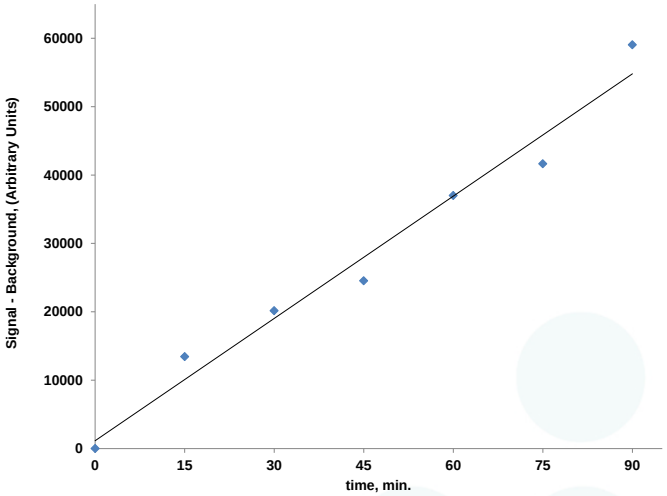
ASSAY CONDITIONS: RBC's SUV39H1 displays histone methyltransferase activity at enzyme concentrations of 100 nM and above, 30°C, with H3K9-containing substrates, chicken core histones calf thymus histone H3 and H3(1-21) peptide in the HMT HotSpot^{SM} Assay format. Reaction conditions are: 50 mM Tris-HCl, pH 8.5, 50 mM NaCl, 5 mM $MgCl_2$, 1 mM DTT, 1 mM PMSF, 0.05 mg/mL chicken core histones (0.05 mg/mL), calf thymus histone H3 (5 µM), or H3(1-21) peptide (5 µM) and [^{3}H]-SAM.

SUPPLIED AS: __ µg/µl in 50 mM Tris/HCl, pH 8.0, 137 mM NaCl, 5 mM $MgCl_2$, 4 mM DTT, 20% (v/v) glycerol as determined by OD_{280}

STORAGE: -70°C. Thaw quickly and store on ice before use. The remaining, unused, undiluted enzyme should be refrozen quickly by, for example, snap freezing in a dry/ice ethanol bath or liquid nitrogen. Freezing and storage of diluted enzyme is not recommended.

REFERENCES: 1) S. Rea *et al. Nature* 2000 **406** 593; 2) A.H. Peters *et al. Mol. Cell* 2003 **12** 1577; 3) A.H. Peters *et al. Cell* 2001 **107** 323; 4) A. Vaquero *Nature* 2007 **450** 440; Z. Li *et al. J. Biol. Chem.* 2009 **284** 10361; 6) L. Bosch-Presegue *et al. Mol. Cell* 2011 **42** 210; 7) A. Muruyama *et al. Cell* 2008 133 627; 8) L. Fritsch *et al. Mol. Cell* 2010 **37** 46; 9) D. Spensberger & R. Delwel *FEBS Lett.* 2008 **582** 2761; 10) F. Cattaneo & G. Nucifora *J. Cell. Biochem.* 2008 **105** 344; 11) A. Lakshmikuttyamma *et al. Oncogene* 2010 **29** 576

Coomassie blue stained SDS-PAGE (4-20% acrylamide) of 2 µg of purified RBC SUV39H1. Lines to left indicate the positions of MW markers at, from top, 220, 160, 120, 100, 80, 70, 60, 50, 40, 30, 20, 15, 10 kDa.



Time course of SUV39H1 methyltransferase reaction in the HotSpot^{SM} assay format. SUV39H1, at 356 nM, was assayed with 5 µM H3(1-21) peptide and 1 µM [^{3}H]-SAM.

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