

## NSD3 (WHSC1L1)

**CATALOG NO.:** HMT-11-132

**LOT NO.:**

**DESCRIPTION:** Human recombinant, NSD3 (residues 1021-1322; Genbank Accession # NM\_023034) expressed as an N-terminal GST-fusion protein in *E. coli*. MW = 66.7 kDa. Catalyzes the transfer of methyl groups from S-adenosyl-L-methionine (SAM) to the  $\epsilon$ -amino function of protein L-lysine residues, specifically histone H3 lysine-36 (H3K36)<sup>1</sup>, although activities at H3K4 and H3K27 have also been reported<sup>2</sup>. NSD3 forms a complex with bromodomain protein 4 (Brd4) where it functions in transcriptional activation<sup>3</sup>. Both proteins are required for H3K36 trimethylation (H3K36me3) in the gene bodies of Brd4 targets. NSD3 is overexpressed in significant subsets of human lung<sup>4</sup> and breast<sup>5</sup> cancers and is considered a promising target for the development of anti-cancer therapies<sup>6,7</sup>. RBC's NSD3 comprises the catalytic domain (Pre-SET/SET/Post-SET) fused to GST.

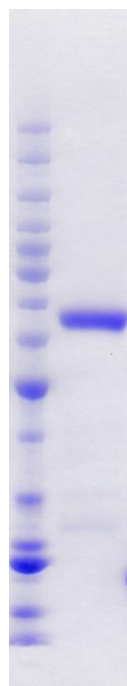
**PURITY:** >90% by SDS-PAGE.

**ASSAY CONDITIONS:** RBC's NSD3 displays histone methyltransferase activity with HeLa or chicken nucleosomes as substrate (See Figure below). Reaction conditions are: 40 mM Tris-HCl, pH 8.8, 4 mM TCEP, 0.01% Triton X-100, 0.05 mg/mL HeLa or chicken nucleosomes (as [DNA]), 1  $\mu$ M [<sup>3</sup>H]-SAM.

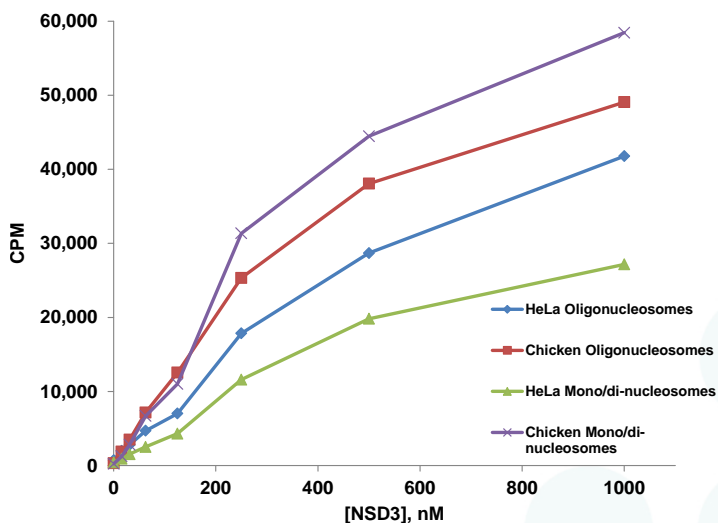
**SUPPLIED AS:** \_\_\_ $\mu$ g/ $\mu$ l total protein in 50 mM Tris/HCl pH 8.0, 125 mM NaCl, 3 mM DTT, 10% glycerol (v/v) as determined by OD<sub>280</sub>

**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) Y Li *et al.* *J. Biol. Chem.* 2009 **284** 34283; 2) S.M. Kim *et al.* *Biochem. Biophys. Res. Commun.* 2006 **345** 318; 3) S. Rahman *et al.* *Mol. Cell. Biol.* 2011 **31** 2641; 4) A. Dutt *et al.* *PLOS One* 2011 **6** e20351; 5) P.O. Angrand *et al.* *Genomics* 2001 **74** 79; 6) A.K. Lucio-Eterovic & P.B. Carpenter *Transcription* 2011 **2** 158; 7) M. Morishita & E. di Luccio *Biochim. Biophys. Acta* 2011 **1816** 158



**Coomassie blue stained SDS-PAGE (4-12% acrylamide) of 4  $\mu$ g of purified NSD3.** MW (kDa) of markers (left lane) are: 220, 150, 120, 100, 90, 80, 70, 60, 50, 40, 30, 25, 20, 15 & 10 kDa.



**Methyltransferase Activity of NSD3.** Methylation determined as TCA-precipitable counts in a scintillation/filter plate assay. Reactions were 25  $\mu$ L, 60 min., 30°C, with 1  $\mu$ M [<sup>3</sup>H]-SAM and 0.05 mg/mL of HeLa Mono/di or oligonucleosomes (RBC Cat.#'s HMT-35-123, HMT-35-130) or Chicken Mono/di or oligonucleosomes (RBC Cat.# HMT-35-179, HMT-35-177) as substrates.

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

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