REACTION BIOLOGY

PRODUCT DATASHEET

BRD3-1 (His) (Bromodomain containing protein 3 (RING3L), bromodomain 1)

CATALOG NO.: RD-11-143 **LOT NO.:**

DESCRIPTION: Human recombinant BRD3, bromodomain-1 (residues 24-144; Genbank Accession # NM_007371; MW = 17.0 kDa) expressed in *E. coli* with an N-terminal His-tag. BRD3, like other human members of the BET family of chromatin-binding proteins (BRD2, BRD4, BRDT), comprises two bromodomains (see reviews[1,2]), protein modules that bind ε-*N*-acetyllysine residues[3,4]. Recent results suggest an important role for BRD3 in linking acetylation of both histones and non-histone proteins to gene transcription. When overexpressed in 293 cells, BRD3, along with BRD2, binds the hyperacetylated chromatin of transcribed genes, regions enriched in acetylated histone H4 lysine-5 (H4K5Ac), H4K12Ac, H3K14Ac, but deficient in H4K16Ac and H3K9me[5]. In an *in vitro* RNA polymerase II transcription system, binding of either BRD3 or BRD2 to a chromatin template assembled with hyperacetylated histones enabled transcription through the nucleosomes[5]. In addition to acetylated histones, BRD3-1 has been found to bind the hematopoietic transcription factor GATA1 and to enhance its chromatin binding and activation of target genes[6]. Like the binding of the bromodomains-1 of BRDT and BRD4 to H4K5Ac/K8Ac, interaction of BRD3-1 with GATA1 occurs via the simultaneous binding of K312Ac and K315Ac[7]. The BET family inhibitor, I-BET151, has shown efficacy in mouse models of MLL-fusion leukemias, displacing BRD3 and BRD4 from chromatin and inhibiting transcription of genes, e.g. *BCL2*, upregulated by the MLL-fusions[8].

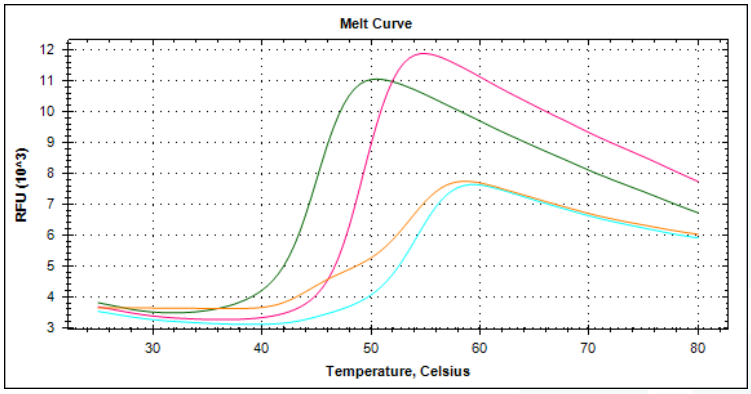
PURITY: >95% by SDS-PAGE

SUPPLIED AS: _ µg/µL in 20 mM Tris-HCl, pH 7.5, 150 mM NaCl, 1 mM TCEP, 10% glycerol (w/v) as determined by OD_{280}

STORAGE: -70°C. Thaw quickly and store on ice before use. The remaining, unused, undiluted protein 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.

REFERENCES: 1) B. Florence & D.V. Faller *Front. Biosci.* 2001 **6** D1008; 2) S.-Y. Wu & C.-M. Chiang *J. Biol. Chem.* 2007 **282** 13141; 3) D.J. Owen *et al. EMBO J.* 2000 **19** 6141; 4)) L. Zeng & M.-M. Zhou *FEBS Lett.* 2002 **513** 124; 5) G. LeRoy *et al. Mol. Cell* 2008 **30** 51; 6) J.M. Lamonica *et al. Proc. Natl. Acad. Sci. USA* 2011 **108** E159; 7) R. Gamsjaeger *et al. Mol. Cell. Biol.* 2011 **31** 2632; 8) M.A. Dawson *et al. Nature* 2011 **478** 529

Coomassie blue stained SDS-PAGE (4-12% acrylamide) of 4 µg of RBC BRD3-1 (His). MW markers (left lane) are, from top, 220, 160, 120, 100, 90, 80, 70, 60, 50, 40, 30, 25, 20, 15, 10 kDa.



Differential Scanning Fluorimetry of RBC BRD3-1 (His) in the presence or absence of bromodomain ligands. Thermal denaturation of BRD3-1 (His) is detected (CFX384 TMTouch thermal cycler, 'FRET' channel; BioRad) by increased binding and fluorescence of the dye SYPRO®Orange (Life Technologies). Addition of 25 µM JQ1 (orange), PFI1 (pink), or BET151 (light blue) stabilizes the protein folding and shifts the Tm (inflection point) from 45°C to 53.5°C, 49.5°C, or 54°C, respectively.

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