WD-repeat Protein 5 with Histone H3

Human, WDR5
Expressed in *E.Coli*
Cat. No. CBCRY09
Lot. No. (See product label)

BACKGROUND

The WD40 repeat protein WDR5 specifically associates with the K4-methylated histone H3 in human cells. The structure of WDR5 in complex with a dimethylated H3-K4 peptide was deterimined. Unlike the chromodomain that recognizes the methylated H3-K4 through a hydrophobic cage, the specificity of WDR5 for methylated H3-K4 is conferred by the nonconventional hydrogen bonds between the two zeta-methyl groups of the dimethylated Lys4 and the carboxylate oxygen of Glu322 in WDR5. The three amino acids Ala-Arg-Thr preceding Lys4 form most of the specific contacts with WDR5, with Ala1 forming intermolecular hydrogen bonds and salt bridges, and the side chain of Arg2 inserting into the central channel of WDR5.

MOLECULAR DESCRIPTION

Protein classification: Structural protein and DNA binding protein
Structure Weight: 35306.44 Da
Polymer: 1
Molecule: WD-repeat protein 5
Chains: A
Type: polypeptide (L)
Chain Length: 311 amino acids
Polymer: 2
Molecule: Histone H3
Chains: B
Type: polypeptide (L)
Chain Length: 18 amino acids

CRYSTAL INFORMATION

PDB ID: 2G9A
MMDB ID: 41532
Source: E.Coli
Method: X-Ray Diffraction
Resolution: 2.7 Å
Modified residues: N-dimethyl-lysine (parent: LYS)

CRYSTAL STRUCTURE

GENE INFORMATION

Gene Name: WDR5
Synonyms: BIG-3; BIG3; BMP2-induced 3-kb gene protein; SWD3, Set1c WD40 repeat protein, homolog; WD-repeat protein 5; WD repeat domain 5
UniProt ID: P61964
GeneID: 11091
Chromosome Location: 9q34
Function: protein binding

PRIMARY CITATION

Han Z, Guo L, Wang H, Shen Y, Deng XW, Chai J. Structural basis for the specific recognition of methylated histone H3 lysine 4 by the WD-40 protein WDR5. Mol. Cell 2006, 22(1):137-44.

FOR RESEARCH USE ONLY

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