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Antibodies to Histone Demethylases

Anti-Jumonji 2D (Jumonji domain-containing protein 2D) antibodies. Catalog # Jmj2D-201AP.

Alternate Nomenclature: JmjC domain-containing histone demethylation protein 3D.

Jumonji, AT-rich interactive domain 1C (JARID1C) protein belongs to the highly conserved ARID protein family, which is involved in chromatin remodeling and transcriptional regulation during cell growth, differentiation, and development. In human this gene plays an important role in normal brain development. The bioinformatic prediction indicated several conserved domains including an ARID domain, a JmjC domain a C5HC2 zinc finger domain and a JmJ domain. The epigenetic information encoded as methylated CpG di-nucleotides to the transcriptional machinery is transferred by a multifunction methylated DNA binding protein called Methylated CpG binding protein 2.

Jumonji domain containing 2D protein (Jmj2D) is a histone demethylase that specifically demethylates 'Lys-9' of histone H3, thereby playing a central role in histone code. Jmj2D does not demethylate histone H3 at 'Lys-4', H3 at 'Lys-27', H3 at 'Lys-36' nor H4 at 'Lys-20'. Jmj2D demethylates both di- and trimethylated H3 'Lys-9' residue, while it has no activity on monomethylated residues. Demethylation of Lys residue generates formaldehyde and succinate. Differential expression of various genes has been studied in esophageal squamous cell carcinomas (ESCs) using genomic hybridization studies. Frequent amplification of DNA copy number has been reported at chromosome 9p23-24 in ESCs that is rich in oncogenes and other tumor-associated genes. One of the novel gene over-expressed in ESCs was cloned and designated as GASC1 or JmjC. The protein contains 2 PD-finger motifs and a P domain. The PHD domains are characteristics of nuclear proteins that participate in chromatin-mediated transcriptional regulation and are present in number of oncogenes (1). Jumonji domain containing protein 2D is a amino acid protein abundantly expressed in brain in gonads suggesting its role in brain and gonads functions. Jumonji3C is a histone demethylase and it demethylates Lys-9 and Lys-36 residues on histone H3 and thus play an important and central role in histone code. Interestingly, the Jumonji3C does not demethylates histone H3 at position Lys-4, H3 lys-27 nor does it catalyze H4 Lys-20. Jmj3C demethylates trimethylated H3 Lys-9 and Lys-36 residues while it has no activity on mono and dimethylated residues. The enzymatic demethylation of lysine residues generated formaldehyde and succinate. The enzyme also binds to 1 mole of iron as a cofactor, JmjC domain belongs to the cupin superfamily that possess protein hydroxylases that catalyze novel histone modifications (2). Jmj3C protein also contains 2 Tudor domains that recognizes and binds methylated histones, the double Tudor domain has in terdigitated structure and an unusual fold that is required for its ability to bind methylated histones by tails.

The Jmj3C-selective antibodies were generated against unique antigenic peptide sequences from Jmj3C protein, this peptide sequence was not found in any other protein in the gene bank. The Jmj3C antibodies were affinity purified over immobilized antigen based chromatography, and the purified immunoglobulins are stabilized in antibody stabilization buffer. FabGennix Int. Inc., will also provide limited quantities of antigenic blocking peptide for Jmj3C. Antibodies to several other targets involved in epigenetic research area are available from FabGennix International Inc. For a complete list of antibodies please visit <http://www.fabgennix.com>. FabGennix Inc. will conjugate antibodies with secondary enzymes (alk-Pase or HRP) or fluorescent probes upon request at a nominal cost. FabGennix Int. Inc., will also provide western blot positive controls for its antibodies in ready-to-use buffer. Limited quantities of antigenic blocking peptide is available (Please inquire before placing orders).

Catalog #	Host Species	Nature	Cross reactivity	Quantity	Volume
Jmj2D-201AP	Rabbit	Affinity purified Jumonji2D antibodies	H, monkey	100 mg	200ul
P-Jmj2D	n/a	Antigenic blocking peptide for Jmj2D-101AP	n/a	250 ug	100ul
PC-Jmj2D	n/a	Western blotting positive control for Jmj2D	n/a	For 5 appl	inquire

R = rat; M = mouse; H = human; C = chicken; monk = monkey ; * not all variants are labeled equally

Immunogen: Synthetic peptides corresponding to positions: Jmj2D corresponding to position 357-379 (TQK EVQ LPR RAA LGL RQL PSH W) from N-terminal regions of Jmj2D (accession # Q6B0I6) peptide sequence was unique to Jmj3C but common to various Jmj3C variants and in many other species. The peptide was post-synthetically covalently modified to achieve desired antigenicity.

Concentration: Jmj2D-101AP: IgG concentration 0.75-0.90 mg/ml in antibody stabilization buffer.

Applications: Antibody Jmj2D-101AP is ideal for WB and ELISA applications, other applications have not been tested. These antibodies do not cross react to other DNA binding protein. The species cross reactivity for these antibodies have not been examined. The dilutions for this antibody is for reference only, investigators are expected to determine the optimal conditions for specific assay. WB: > 1:500; IMM & i.p pull-down assays: n.d; IHC n.d. ELISA <1:10,000

Reactivity: This antibody detects a single band of approximately 64kDa in PC-Jmj2D samples. The antibody does not cross reacts with other histones or other DNA binding proteins.

Protocols: Standard protocol for various applications (WB; IMM and IHC) of this antibody is provided with the product specification sheet, however, FabGennix Inc., strongly recommends investigators to optimize conditions for use of this antibody in their laboratories.

Form/Storage: The antiserum is supplied in antibody stabilization buffer. The affinity-purified antibodies are isolated on immobilized antigen-affinity column and supplied as stabilized product. Store at -20°C for long-term storage. FabGennix Inc. does not recommend storage of very dilute antibody solutions unless they are prepared in specially formulated multi use antibody dilution buffer (Cat # DiluOBuffer). Working solutions of antibodies in DiluOBuffer should be filtered through 0.45um filter after every use for long-term storage.

Notes: Briefly centrifuge to collect liquid, heat or boil PC-Jmj2D tube for 1-2 minutes to dissolve any precipitate before use. This product is "ready-to-use" for electrophoresis. After thawing store at room temperature, Repeated freezing and thawing may result in appearance of higher MW immunoreactive bands.

New Reagents: Now you can recycle your western blots (nitrocellulose, supported membranes and PVDF membranes) by using our StripOBuffer (Cat FGI-1989). Each stripping is guaranteed to give better signal (up to 8 stripping). No strong pungent smell of reducing agents or heating required. Block in 5X diluOBuffer and you are ready for blotting with a new antibody

References:

1. Mysliwiec MR, Kim TG, Lee Y. Characterization of zinc finger protein 496 that interacts with Jumonji/Jarid2. FEBS Lett. 2007 Jun 12;581(14):2633-40.
2. Gene.Yi L, Hao Z, Yang T, Wang S, Xing B, Xu Y.J cDNA Cloning, Bioinformatic and Tissue-specific Expression Analysis of Porcine JARID1C. Genet Genomics. 2007 Dec;34(12):1088-96.

For users who may require large amounts of Jmj2D-101AP, please inquire about bulk material discounts.
This Product is for Research Use Only and is NOT intended for use in humans or clinical diagnosis.

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