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KO-Validated Anti-FTO Mouse Monoclonal Antibody

Mouse monoclonal antibody
Catalog # AGI2440

Product Information

Application	WB, FC
Primary Accession	Q9C0B1
Reactivity	Rat, Human, Mouse
Clonality	Monoclonal
Isotype	Mouse IgG1
Clone Names	25GB3740
Calculated MW	58282
Gene Name	FTO
Aliases	FTO; FTO Alpha-Ketoglutarate Dependent Dioxygenase; KIAA1752; ALKBH9; U6 Small Nuclear RNA (2'-O-Methyladenosine-N(6)-)-Demethylase FTO; U6 Small Nuclear RNA N(6)-Methyladenosine-Demethylase FTO; MRNA (2'-O-Methyladenosine-N(6)-)-Demethylase FTO; Alpha-Ketoglutarate-Dependent Dioxygenase FTO; Intragenic FTO Exon 9 Containing Transcript; MRNA N(6)-Methyladenosine Demethylase FTO; Fat Mass And Obesity-Associated Protein; TRNA N1-Methyl Adenine Demethylase FTO; Fat Mass And Obesity Associated; M6A(M)-Demethylase FTO; AlkB Homolog 9; MGC5149; IFEX9; FTO, Alpha-Ketoglutarate; Dependent Dioxygenase; Alpha-Ketoglutarate-Dependent Dioxygenase; EC 1.14.11.53; EC 1.14.11.-; BMIQ14; GDFD
Immunogen	Recombinant protein of human FTO

Additional Information

Gene ID	79068
Other Names	Alpha-ketoglutarate-dependent dioxygenase FTO, Fat mass and obesity-associated protein, U6 small nuclear RNA (2'-O-methyladenosine-N(6)-)-demethylase FTO, 1.14.11.-, U6 small nuclear RNA N(6)-methyladenosine-demethylase FTO, 1.14.11.-, mRNA (2'-O-methyladenosine-N(6)-)-demethylase FTO, m6A(m)-demethylase FTO, 1.14.11.-, mRNA N(6)-methyladenosine demethylase FTO, 1.14.11.53, tRNA N1-methyl adenine demethylase FTO, 1.14.11.-, FTO {ECO:0000303|PubMed:17496892, ECO:0000312|HGNC:HGNC:24678}

Protein Information

Name	FTO {ECO:0000303|PubMed:17496892, ECO:0000312|HGNC:HGNC:24678}
Function	RNA demethylase that mediates oxidative demethylation of different RNA species, such as mRNAs, tRNAs and snRNAs, and acts as a regulator of fat mass, adipogenesis and energy homeostasis (PubMed:22002720, PubMed:25452335, PubMed:26457839, PubMed:26458103,

PubMed:28002401, PubMed:30197295). Specifically demethylates N(6)-methyladenosine (m6A) RNA, the most prevalent internal modification of messenger RNA (mRNA) in higher eukaryotes (PubMed:22002720, PubMed:25452335, PubMed:26457839, PubMed:26458103, PubMed:30197295). M6A demethylation by FTO affects mRNA expression and stability (PubMed:30197295). Also able to demethylate m6A in U6 small nuclear RNA (snRNA) (PubMed:30197295). Mediates demethylation of N(6),2'-O- dimethyladenosine cap (m6A(m)), by demethylating the N(6)-methyladenosine at the second transcribed position of mRNAs and U6 snRNA (PubMed:28002401, PubMed:30197295). Demethylation of m6A(m) in the 5'-cap by FTO affects mRNA stability by promoting susceptibility to decapping (PubMed:28002401). Also acts as a tRNA demethylase by removing N(1)-methyladenine from various tRNAs (PubMed:30197295). Has no activity towards 1-methylguanine (PubMed:20376003). Has no detectable activity towards double-stranded DNA (PubMed:20376003). Also able to repair alkylated DNA and RNA by oxidative demethylation: demethylates single-stranded RNA containing 3-methyluracil, single- stranded DNA containing 3-methylthymine and has low demethylase activity towards single-stranded DNA containing 1-methyladenine or 3- methylcytosine (PubMed:18775698, PubMed:20376003). Ability to repair alkylated DNA and RNA is however unsure in vivo (PubMed:18775698, PubMed:20376003). Involved in the regulation of fat mass, adipogenesis and body weight, thereby contributing to the regulation of body size and body fat accumulation (PubMed:18775698, PubMed:20376003). Involved in the regulation of thermogenesis and the control of adipocyte differentiation into brown or white fat cells (PubMed:26287746). Regulates activity of the dopaminergic midbrain circuitry via its ability to demethylate m6A in mRNAs (By similarity). Plays an oncogenic role in a number of acute myeloid leukemias by enhancing leukemic oncogene-mediated cell transformation: acts by mediating m6A demethylation of target transcripts such as MYC, CEBPA, ASB2 and RARA, leading to promote their expression (PubMed:28017614, PubMed:29249359).

Cellular Location

Nucleus. Nucleus speckle. Cytoplasm Note=Localizes mainly in the nucleus, where it is able to demethylate N(6)-methyladenosine (m6A) and N(6),2'-O-dimethyladenosine cap (m6A(m)) in U6 small nuclear RNA (snRNA), N(1)-methyladenine from tRNAs and internal m6A in mRNAs (PubMed:30197295). In the cytoplasm, mediates demethylation of m6A and m6A(m) in mRNAs and N(1)-methyladenine from tRNAs (PubMed:30197295).

Tissue Location

Ubiquitously expressed, with relatively high expression in adrenal glands and brain; especially in hypothalamus and pituitary (PubMed:17434869, PubMed:17496892). Highly expressed in highly expressed in acute myeloid leukemias (AML) with t(11;11)(q23;23) with KMT2A/MLL1 rearrangements, t(15;17)(q21;q21)/PML-RARA, FLT3-ITD, and/or NPM1 mutations (PubMed:28017614).

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