

**FTO Antibody**  
Catalog # ASC10891**Specification****FTO Antibody - Product Information**

Application	WB, IHC, IF
Primary Accession	<a href="#">O9C0B1</a>
Other Accession	<a href="#">O9C0B1</a> , <a href="#">148841515</a>
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Application Notes	FTO antibody can be used for detection of FTO by Western blot at 1 - 2 µg/mL. Antibody can also be used for immunohistochemistry starting at 2.5 µg/mL. For immunofluorescence start at 20 µg/mL.

**FTO Antibody - Additional Information**

Gene ID	79068
Target/Specificity	FTO;

**Reconstitution & Storage**

FTO antibody can be stored at 4°C for three months and -20°C, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.

**Precautions**

FTO Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

**FTO Antibody - 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](http://www.uniprot.org/citations/22002720), PubMed: [25452335](http://www.uniprot.org/citations/25452335), PubMed: [26457839](http://www.uniprot.org/citations/26457839), PubMed: [26458103](http://www.uniprot.org/citations/26458103), PubMed: [28002401](http://www.uniprot.org/citations/28002401), PubMed: [30197295](http://www.uniprot.org/citations/30197295)). Specifically demethylates N(6)- methyladenosine (m6A) RNA, the most prevalent internal modification of messenger RNA (mRNA) in higher eukaryotes (PubMed:

<http://www.uniprot.org/citations/22002720> target="\_blank">22002720</a>, PubMed:<a href="http://www.uniprot.org/citations/25452335" target="\_blank">25452335</a>, PubMed:<a href="http://www.uniprot.org/citations/26457839" target="\_blank">26457839</a>, PubMed:<a href="http://www.uniprot.org/citations/26458103" target="\_blank">26458103</a>, PubMed:<a href="http://www.uniprot.org/citations/30197295" target="\_blank">30197295</a>). M6A demethylation by FTO affects mRNA expression and stability (PubMed:<a href="http://www.uniprot.org/citations/30197295" target="\_blank">30197295</a>). Also able to demethylate m6A in U6 small nuclear RNA (snRNA) (PubMed:<a href="http://www.uniprot.org/citations/30197295" target="\_blank">30197295</a>). 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:<a href="http://www.uniprot.org/citations/28002401" target="\_blank">28002401</a>, PubMed:<a href="http://www.uniprot.org/citations/30197295" target="\_blank">30197295</a>). Demethylation of m6A(m) in the 5'-cap by FTO affects mRNA stability by promoting susceptibility to decapping (PubMed:<a href="http://www.uniprot.org/citations/28002401" target="\_blank">28002401</a>). Also acts as a tRNA demethylase by removing N(1)-methyladenine from various tRNAs (PubMed:<a href="http://www.uniprot.org/citations/30197295" target="\_blank">30197295</a>). Has no activity towards 1-methylguanine (PubMed:<a href="http://www.uniprot.org/citations/20376003" target="\_blank">20376003</a>). Has no detectable activity towards double-stranded DNA (PubMed:<a href="http://www.uniprot.org/citations/20376003" target="\_blank">20376003</a>). 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:<a href="http://www.uniprot.org/citations/18775698" target="\_blank">18775698</a>, PubMed:<a href="http://www.uniprot.org/citations/20376003" target="\_blank">20376003</a>). Ability to repair alkylated DNA and RNA is however unsure in vivo (PubMed:<a href="http://www.uniprot.org/citations/18775698" target="\_blank">18775698</a>, PubMed:<a href="http://www.uniprot.org/citations/20376003" target="\_blank">20376003</a>). Involved in the regulation of fat mass, adipogenesis and body weight, thereby contributing to the regulation of body size and body fat accumulation (PubMed:<a href="http://www.uniprot.org/citations/18775698" target="\_blank">18775698</a>, PubMed:<a href="http://www.uniprot.org/citations/20376003" target="\_blank">20376003</a>). Involved in the regulation of thermogenesis and the control of adipocyte differentiation into brown or white fat cells (PubMed:<a href="http://www.uniprot.org/citations/26287746" target="\_blank">26287746</a>). 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:<a href="http://www.uniprot.org/citations/28017614" target="\_blank">28017614</a>, PubMed:<a href="http://www.uniprot.org/citations/29249359" target="\_blank">29249359</a>).

### 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

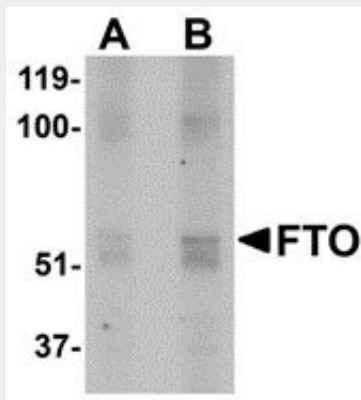
Ubiquitously expressed, with relatively high expression in adrenal glands and brain; especially in hypothalamus and pituitary (PubMed:17434869, PubMed:17496892). Highly expressed in highly expressed in acute myeloid leukemias (AML) with t(11;11)(q23;23) with KMT2A/MLL1 rearrangements, t(15;17)(q21;q21)/PML-RARA,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

## FTO Antibody - Protocols

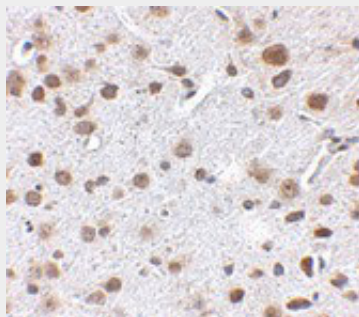
Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

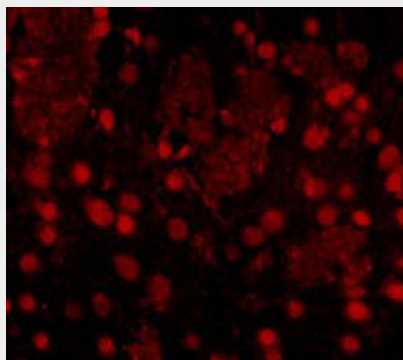
## FTO Antibody - Images



Western blot analysis of FTO in human uterus tissue lysate with FTO antibody at (A) 1 and (B) 2  $\mu\text{g/mL}$ .



Immunohistochemistry of FTO in mouse brain tissue with FTO antibody at 2.5  $\mu\text{g/mL}$ .



Immunofluorescence of FTO in Mouse Brain cells with FTO antibody at 20 µg/mL.

### **FTO Antibody - Background**

FTO Antibody: Rising obesity rates are rapidly becoming a growing health concern in the developing world. The fat mass and obesity associated gene (FTO) is the first gene discovered to contribute to common forms of human obesity. FTO is a member of the non-heme dioxygenase superfamily, encoding a 2-oxoglutarate-dependent nucleic acid demethylase whose mRNA is widely expressed, especially in neurons of feeding-related nuclei of the brain. FTO mRNA in the arcuate nucleus in mice is up-regulated by feeding and down-regulated during fasting, although the opposite pattern has been observed in rats. At least four isoforms of FTO are known to exist.

### **FTO Antibody - References**

Scuteri A, Sanna S, Chen W-M, et al. Genome-wide association scan shows genetic variants in the FTO gene are associated with obesity-related traits. *PLoS Genet.*2007; 3:e115.  
Gerken T, Girard CA, Tung YCL, et al. The obesity-associated FTO gene encodes a 2-oxoglutarate-dependent nucleic acid demethylase. *Science*2007; 318:1469-72.  
Fredriksson R, Hagglund M, Olszewski PK, et al. The obesity gene, FTO, is of ancient origin, upregulated during food deprivation and expressed in neurons of feeding-related nuclei of the brain. *Endocrinology*2008; 149:2062-71.  
Stratigopoulos G, Padilla S, Leduc CA, et al. Regulation of FTO/FTM gene expression in mice and humans. *Am. J. Physiol. Regul. Integr. Comp. Physiol.*2008; 294:R1185-96.