

### FTO Antibody (clone 5-2H10)

Mouse Monoclonal Antibody Catalog # ALS15272

## **Specification**

### FTO Antibody (clone 5-2H10) - Product Information

Application WB, IHC Primary Accession Q9C0B1

Reactivity Human, Mouse, Rat, Sheep, Horse, Bovine,

Host Mouse
Clonality Monoclonal
Calculated MW 58kDa KDa

### FTO Antibody (clone 5-2H10) - Additional Information

### **Gene ID** 79068

#### **Other Names**

Alpha-ketoglutarate-dependent dioxygenase FTO, 1.14.11.-, Fat mass and obesity-associated protein, FTO, KIAA1752

# **Target/Specificity**

Specific for the ~58 kDa Fto protein in Western blots of rat testes lysate. The antibody has also been used for immunocytochemistry with neuronal progenitor cells.

### **Reconstitution & Storage**

Short term 4°C, long term aliquot and store at -20°C, avoid freeze thaw cycles. Store undiluted.

#### **Precautions**

FTO Antibody (clone 5-2H10) is for research use only and not for use in diagnostic or therapeutic procedures.

## FTO Antibody (clone 5-2H10) - 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:<a href="http://www.uniprot.org/citations/22002720" target="\_blank">22002720</a>, PubMed:<a href="http://www.uniprot.org/citations/26458103" target="\_blank">26458103</a>, 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>, PubMed:<a href="http://www.uniprot.org/citations/26457839" target="\_blank">26457839</a>, PubMed:<a href="http://www.uniprot.org/citations/26457839" target="\_blank">26457839</a>, PubMed:<a href="http://www.uniprot.org/citations/25452335" target="\_blank">25452335</a>, PubMed:<a href="http://www.uniprot.org/citations/25452335" target="\_blank">2545



href="http://www.uniprot.org/citations/22002720" target=" blank">22002720</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>, PubMed:<a href="http://www.uniprot.org/citations/26457839" target="\_blank">26457839</a>, PubMed:<a href="http://www.uniprot.org/citations/25452335" target="blank">25452335</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 3methylcytosine (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).

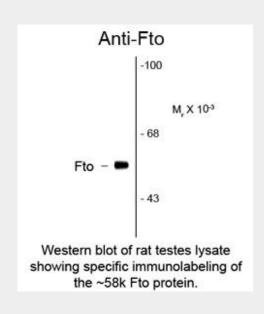


## FTO Antibody (clone 5-2H10) - Protocols

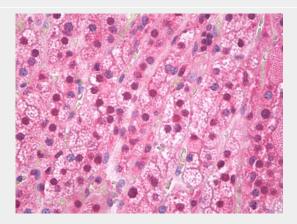
Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- <u>Immunohistochemistry</u>
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

## FTO Antibody (clone 5-2H10) - Images



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Anti-FTO antibody IHC of human adrenal cortex.

### FTO Antibody (clone 5-2H10) - Background

Dioxygenase that repairs alkylated DNA and RNA by oxidative demethylation. Has highest activity towards single- stranded RNA containing 3-methyluracil, followed by single- stranded DNA containing 3-methylthymine. Has low demethylase activity towards single-stranded DNA containing





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1-methyladenine or 3-methylcytosine. Specifically demethylates N(6)-methyladenosine (m6A) RNA, the most prevalent internal modification of messenger RNA (mRNA) in higher eukaryotes. Has no activity towards 1- methylguanine. Has no detectable activity towards double-stranded DNA. Requires molecular oxygen, alpha-ketoglutarate and iron. Contributes to the regulation of the global metabolic rate, energy expenditure and energy homeostasis. Contributes to the regulation of body size and body fat accumulation.

# FTO Antibody (clone 5-2H10) - References

Nagase T., et al. DNA Res. 7:347-355(2000). Martin J., et al. Nature 432:988-994(2004). Dina C., et al. Nat. Genet. 39:724-726(2007). Frayling T.M., et al. Science 316:889-894(2007). Jia G., et al. FEBS Lett. 582:3313-3319(2008).