abcam

ab92821

Anti-FTO antibody [5-2H10]

KO Validated

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	Constituents: 50% Glycerol (glycerin, glycerine), 0.87% Sodium chloride, 0.238% HEPES, 0.01% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Synthetic Peptide within Human FTO conjugated to Keyhole Limpet Haemocyanin. The exact immunogen used to generate this antibody is proprietary information. Database link Q9C0B1
Clone number	5-2H10
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Protein G purified culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells

Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Dog, Primates
Dilution info	-
Notes	-

WB

Tested

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

Predicted

Species	Sheep, Horse, Cow, Dog, Primates
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Rat
Dilution info	1/100
Notes	-

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Dog, Primates
Dilution info	-
Notes	-

Target data

See full target information FTO

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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The FTO protein also referred to as Alpha-Ketoglutarate-Dependent Dioxygenase or Fat Mass and Obesity-Associated protein functions as an enzyme involved in demethylating nucleic acids specifically N6-methyladenosine (m6A) in RNA. This process impacts RNA stability and translation. FTO has a molecular weight of approximately 58 kDa. Higher expression levels of FTO are found in the brain including the hypothalamus which is an area known for regulating energy balance and appetite.
Biological function summary	FTO influences energy homeostasis and adipogenesis. It acts as an important player in metabolic regulation and gene expression by modulating the m6A RNA modification. While FTO operates largely on its own its demethylation activity may interact with other RNA binding proteins that recognize m6A-modified RNAs integrating it into larger regulatory frameworks for RNA metabolism and cellular responses.
Pathways	FTO is an important component in the regulation of energy balance and metabolism. The protein is closely associated with the mTOR signaling pathway which is essential for controlling cell growth proliferation and survival in response to nutrient availability. FTO also interacts with the leptin signaling pathway relating to its role in appetite regulation and energy expenditure.
Associated diseases and disorders	FTO has significant connections to obesity and Type 2 diabetes. Genetic variants within the FTO gene correlate with risk for these conditions linking its enzymatic activity to alterations in energy balance and insulin sensitivity. FTO's role in Type 2

diabetes also highlights its interaction with insulin signaling proteins demonstrating its broader influence on glucose metabolism.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

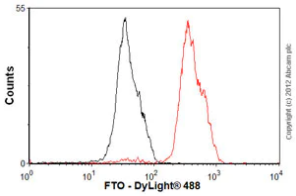
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
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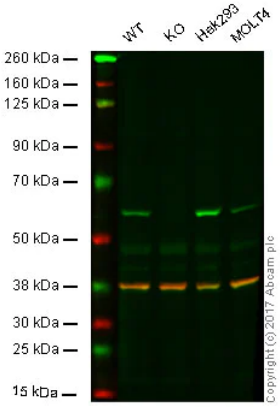
2 product images



Flow Cytometry - Anti-FTO antibody [5-2H10] (ab92821)

FTO Flow Cytometry staining using mouse Anti-FTO antibody

Overlay histogram showing SH-SY5Y cells stained with ab92821 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab92821, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2a [ICIGG2A] (ab91361, 1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in SH-SY5Y cells fixed with 4% paraformaldehyde (10 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.



Western blot - Anti-FTO antibody [5-2H10] (ab92821)

FTO Western blot staining using mouse Anti-FTO antibody

Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: FTO knockout HAP1 whole cell lysate (20 µg)
Lane 3: HEK293 whole cell lysate (20 µg)
Lane 4: MOLT4 whole cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab92821 observed at 58 kDa. Red - loading control, ab181602, observed at 37 kDa.

ab92821 was shown to specifically recognize FTO in wild-type HAP1 cells along with additional cross reactive bands. No band was observed when FTO knockout samples were examined. Wild-type and FTO knockout samples were subjected to SDS-PAGE. ab92821 and ab181602 (Rabbit anti-GAPDH loading control) were incubated overnight at 4°C at a 1/1000 dilution and 1/10,000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed (ab216772) and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed (ab216777) secondary antibodies at 1/10,000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-FTO antibody [5-2H10] (ab92821)

Predicted band size: 58 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.