abcam

ab216839

Anti-ATF-4 antibody

Anti-ATF-4 antibody (ab216839) is a rabbit polyclonal antibody detecting ATF-4 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Over 10 publications

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.4 Preservative: 0.02% Proclin 300 Constituents: 50% Glycerol (glycerin, glycerine), 48.98% TBS, 1X, 1% BSA
Form	Liquid
Clonality	Polyclonal
Immunogen	Synthetic Peptide within Human ATF4 aa 200-300 conjugated to Keyhole Limpet Haemocyanin. The exact immunogen used to generate this antibody is proprietary information. Database link P18848
Purification technique	Affinity purification Protein A
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Mouse
Dilution info	1/100 - 1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/100 - 1/500
Notes	-

Species	Human
Dilution info	1/100 - 1/500
Notes	-

Species	Rat
Dilution info	1/200
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.

Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/50
Notes	-

Expected

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

Target data

See full target information ATF4

Function

Transcription factor that binds the cAMP response element (CRE) (consensus: 5'-GTGACGT[AC][AG]-3') and displays two biological functions, as regulator of metabolic and redox processes under normal cellular conditions, and as master transcription factor during integrated stress response (ISR) (PubMed:16682973, PubMed:17684156, PubMed:31023583, PubMed:31444471, PubMed:32132707). Binds to asymmetric CRE's as a heterodimer and to palindromic CRE's as a homodimer (By similarity). Core effector of the ISR, which is required for adaptation to various stress such as endoplasmic reticulum (ER) stress, amino acid starvation, mitochondrial stress or oxidative stress (PubMed:31023583, PubMed:32132707). During ISR, ATF4 translation is induced via an alternative ribosome translation re-initiation mechanism in response to EIF2S1/eIF-2-alpha phosphorylation, and stress-induced ATF4 acts as a master transcription factor of stress-responsive genes in order to promote cell recovery (PubMed:31023583, PubMed:32132706, PubMed:32132707). Promotes the transcription of genes linked to amino acid sufficiency and resistance to oxidative stress to protect cells against metabolic consequences of ER oxidation (By similarity). Activates the transcription of NLRP1, possibly in concert with other factors in response to ER stress (PubMed:26086088). Activates the transcription of asparagine synthetase (ASNS) in response to amino acid deprivation or ER stress (PubMed:11960987). However, when associated with DDIT3/CHOP, the transcriptional activation of the ASNS gene is inhibited in response to amino acid deprivation (PubMed:18940792). Together with DDIT3/CHOP, mediates programmed cell death by promoting the expression of genes involved in cellular amino acid metabolic processes, mRNA translation and the terminal unfolded protein response (terminal UPR), a cellular response that elicits programmed cell death when ER stress is prolonged and unresolved (By

similarity). Activates the expression of COX7A2L/SCAF1 downstream of the EIF2AK3/PERK-mediated unfolded protein response, thereby promoting formation of respiratory chain supercomplexes and increasing mitochondrial oxidative phosphorylation (PubMed:31023583). Together with DDIT3/CHOP, activates the transcription of the IRS-regulator TRIB3 and promotes ER stress-induced neuronal cell death by regulating the expression of BBC3/PUMA in response to ER stress (PubMed:15775988). May cooperate with the UPR transcriptional regulator QRICH1 to regulate ER protein homeostasis which is critical for cell viability in response to ER stress (PubMed:33384352). In the absence of stress, ATF4 translation is at low levels and it is required for normal metabolic processes such as embryonic lens formation, fetal liver hematopoiesis, bone development and synaptic plasticity (By similarity). Acts as a regulator of osteoblast differentiation in response to phosphorylation by RPS6KA3/RSK2: phosphorylation in osteoblasts enhances transactivation activity and promotes expression of osteoblast-specific genes and post-transcriptionally regulates the synthesis of Type I collagen, the main constituent of the bone matrix (PubMed:15109498). Cooperates with FOXO1 in osteoblasts to regulate glucose homeostasis through suppression of beta-cell production and decrease in insulin production (By similarity). Activates transcription of SIRT4 (By similarity). Regulates the circadian expression of the core clock component PER2 and the serotonin transporter SLC6A4 (By similarity). Binds in a circadian time-dependent manner to the cAMP response elements (CRE) in the SLC6A4 and PER2 promoters and periodically activates the transcription of these genes (By similarity). Mainly acts as a transcriptional activator in cellular stress adaptation, but it can also act as a transcriptional repressor: acts as a regulator of synaptic plasticity by repressing transcription, thereby inhibiting induction and maintenance of long-term memory (By similarity). Regulates synaptic functions via interaction with DISC1 in neurons, which inhibits ATF4 transcription factor activity by disrupting ATF4 dimerization and DNA-binding (PubMed:31444471). (Microbial infection) Binds to a Tax-responsive enhancer element in the long terminal repeat of HTLV-I.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

What is this antibody validated in?
Anti-ATF-4 antibody (ab216839) is a rabbit polyclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Flow Cytometry (Flow Cyt), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of ATF-4?
Anti-ATF-4 (ab216839) specifically detects a band for ATF-4 (UniProt: P18848) at a molecular weight of 38kDa.

Trusted by the scientific community
Anti-ATF-4 (ab216839) was first used in a scientific publication in 2016 and has been cited over 10 times in peer-reviewed journals.

Supplementary info

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

Activity summary	Activating Transcription Factor 4 (ATF-4) also known as CREB-2 is a fundamental protein involved in cellular stress responses. It functions mechanically as a transcription factor that regulates gene expression in reaction to stress signals. The molecular weight of ATF-4 is approximately 38 kDa. ATF-4 gets expressed in various tissues including the brain liver and pancreas reflecting its involvement in diverse cellular processes. Scientists widely use techniques like Western blot to detect and study ATF-4 expression patterns due to its reliable measurement of the ATF-4 molecular weight.
Biological function summary	ATF-4 participates in controlling genes linked to amino acid metabolism redox homeostasis and apoptosis. It does not work alone; ATF-4 often forms part of larger complexes interacting with other transcription factors like C/EBP and ATF-3 to exert its effects. These interactions enable it to respond accurately to different types of cellular stress by adjusting the expression of specific genes ensuring that cells can adapt to changing conditions.
Pathways	ATF-4 plays a significant role in the integrated stress response (ISR) and the unfolded protein response (UPR). Through these pathways it collaborates with proteins such as PERK (protein kinase R-like endoplasmic reticulum kinase) and eIF2α. The ISR and UPR help cells cope with stress by modulating protein synthesis and promoting the expression of protective genes. By interacting with these pathways ATF-4 contributes to maintaining cellular homeostasis and protecting cells from damage.
Associated diseases and disorders	ATF-4 has been linked to conditions such as neurodegenerative diseases and cancer. In neurodegenerative disorders like Alzheimer's disease ATF-4 can regulate genes involved in neuronal survival and apoptosis interacting with proteins like CHOP. In cancer ATF-4 influences tumor cell survival and growth through its role in stress responses. Understanding ATF-4's relationship with diseases highlights its potential as a therapeutic target in the treatment of these complex disorders.

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

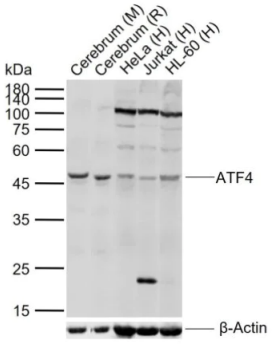
We do not recommend this combination. It is not covered by our product promise.

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:
Terms & Conditions.

8 product images



Western blot - Anti-ATF-4 antibody (ab216839)

All lanes:
Western blot - Anti-ATF-4 antibody (ab216839) at 1/1000 dilution

Lane 1:
Mouse Cerebrum tissue lysates

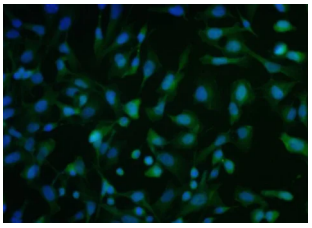
Lane 2:
Rat Cerebrum tissue lysates

Lane 3:
Human HeLa cell lysates

Lane 4:
Human Jurkat cell lysates

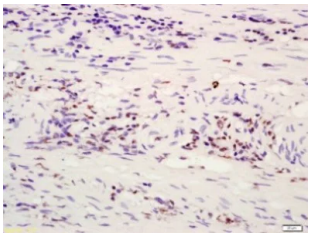
Lane 5:
Human HL-60 cell lysates

Predicted band size: 38 kDa



Immunocytochemistry/ Immunofluorescence - Anti-ATF-4 antibody (ab216839)

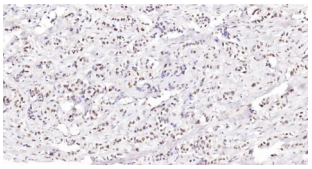
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, TritonX-100 permeabilized Human U2OS cells labelling ATF-4 with ab216839 at 1/100 dilution for 90 minutes at 37°C; followed by a conjugated Goat Anti-Rabbit IgG antibody at 37°C for 90 minutes. DAPI was used to stain the cell nuclei. The Nuclear counterstain was DAPI (Blue)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATF-4 antibody (ab216839)

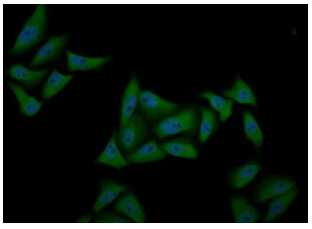
ATF-4 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ATF-4 antibody

Immunohistochemical analysis of Formalin-fixed paraffin-embedded Human rectal carcinoma tissue tissue labeling ATF-4 with ab216839 at 1/200 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATF-4 antibody (ab216839)

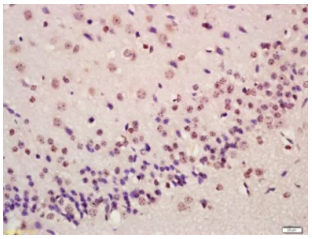
Immunohistochemical analysis of Paraformaldehyde-fixed, paraffin embedded Human breast cancer labeling ATF-4 with ab216839 at 1/200 dilution.



Immunocytochemistry/ Immunofluorescence - Anti-ATF-4 antibody (ab216839)

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, TritonX-100 permeabilized Human Hela cells labelling ATF-4 with ab216839 at 1/100 dilution for 90 minutes at 37°C; followed by a conjugated Goat Anti-Rabbit IgG antibody at 37°C for 90 minutes. DAPI was used to stain the cell nuclei.

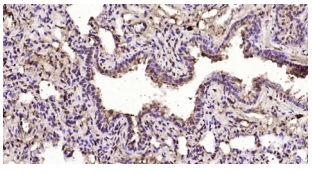
The Nuclear counterstain was DAPI (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATF-4 antibody (ab216839)

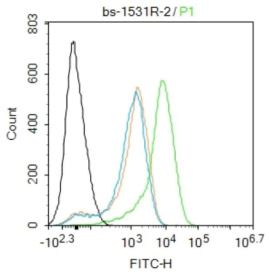
ATF-4 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ATF-4 antibody

Immunohistochemical analysis of Formalin-fixed paraffin-embedded Mouse brain tissue labeling ATF-4 with ab216839 at 1/200 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATF-4 antibody (ab216839)

Immunohistochemical analysis of Paraformaldehyde-fixed, paraffin embedded Rat lung labeling ATF-4 with ab216839 at 1/200 dilution.



Flow Cytometry (Intracellular) - Anti-ATF-4 antibody (ab216839)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized mouse spleen cells labelling ATF-4 with ab216839 at 1/50 dilution (green) compared with an isotype control (orange) and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue).

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