

Goat Anti-ATF4 Antibody
Peptide-affinity purified goat antibody
Catalog # AF1123a

Specification

Goat Anti-ATF4 Antibody - Product Information

Application	WB
Primary Accession	P18848
Other Accession	NP_877962 , 468 , 11911 (mouse) , 79255 (rat)
Reactivity	Human, Mouse
Predicted	Rat, Pig
Host	Goat
Clonality	Polyclonal
Concentration	100ug/200ul
Isotype	IgG
Calculated MW	38590

Goat Anti-ATF4 Antibody - Additional Information

Gene ID 468

Other Names

Cyclic AMP-dependent transcription factor ATF-4, cAMP-dependent transcription factor ATF-4, Activating transcription factor 4, Cyclic AMP-responsive element-binding protein 2, CREB-2, cAMP-responsive element-binding protein 2, DNA-binding protein TAXREB67, Tax-responsive enhancer element-binding protein 67, TaxREB67, ATF4, CREB2, TXREB

Format

0.5 mg IgG/ml in Tris saline (20mM Tris pH7.3, 150mM NaCl), 0.02% sodium azide, with 0.5% bovine serum albumin

Storage

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions

Goat Anti-ATF4 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Goat Anti-ATF4 Antibody - Protein Information

Name ATF4 {ECO:0000303|PubMed:2516827, ECO:0000312|HGNC:HGNC:786}

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](http://www.uniprot.org/citations/16682973)), PubMed: [17684156](http://www.uniprot.org/citations/17684156), PubMed: [31023583](http://www.uniprot.org/citations/31023583), PubMed: [31444471](http://www.uniprot.org/citations/31444471), PubMed: [32132707](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/31023583), PubMed: [32132707](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/31023583), PubMed: [32132706](http://www.uniprot.org/citations/32132706), PubMed: [32132707](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/26086088)). Activates the transcription of asparagine synthetase (ASNS) in response to amino acid deprivation or ER stress (PubMed: [11960987](http://www.uniprot.org/citations/11960987)). However, when associated with DDIT3/CHOP, the transcriptional activation of the ASNS gene is inhibited in response to amino acid deprivation (PubMed: [18940792](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/31444471)).

Cellular Location

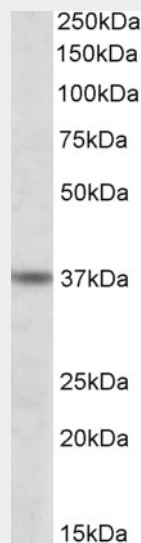
Nucleus. Nucleus speckle. Cytoplasm {ECO:0000250|UniProtKB:Q9ES19}. Cell membrane {ECO:0000250|UniProtKB:Q9ES19}. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome Note=Colocalizes with GABBR1 in hippocampal neuron dendritic membranes (By similarity). Colocalizes with NEK6 at the centrosome (PubMed:20873783). Recruited to nuclear speckles following interaction with EP300/p300 (PubMed:16219772). {ECO:0000250|UniProtKB:Q9ES19, ECO:0000269|PubMed:16219772, ECO:0000269|PubMed:20873783}

Goat Anti-ATF4 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](#)

Goat Anti-ATF4 Antibody - Images



AF1123a (0.3 µg/ml) staining of lysate of cell line K562 (35 µg protein in RIPA buffer). Primary incubation was 1 hour. Detected by chemiluminescence.

Goat Anti-ATF4 Antibody - Background

This gene encodes a transcription factor that was originally identified as a widely expressed mammalian DNA binding protein that could bind a tax-responsive enhancer element in the LTR of HTLV-1. The encoded protein was also isolated and characterized as the cAMP-response element binding protein 2 (CREB-2). The protein encoded by this gene belongs to a family of DNA-binding proteins that includes the AP-1 family of transcription factors, cAMP-response element binding proteins (CREBs) and CREB-like proteins. These transcription factors share a leucine zipper region that is involved in protein-protein interactions, located C-terminal to a stretch of basic amino acids that functions as a DNA binding domain. Two alternative transcripts encoding the same protein

have been described. Two pseudogenes are located on the X chromosome at q28 in a region containing a large inverted duplication.

Goat Anti-ATF4 Antibody - References

The pseudokinase tribbles homolog 3 interacts with ATF4 to negatively regulate insulin exocytosis in human and mouse beta cells. Liew CW, et al. *J Clin Invest*, 2010 Aug 2. PMID 20592469.

How do tumours adapt to nutrient stress? Wek RC, et al. *EMBO J*, 2010 Jun 16. PMID 20551969.

Regulation of autophagy by ATF4 in response to severe hypoxia. Rzymiski T, et al. *Oncogene*, 2010 Aug 5. PMID 20514020.

The GCN2-ATF4 pathway is critical for tumour cell survival and proliferation in response to nutrient deprivation. Ye J, et al. *EMBO J*, 2010 Jun 16. PMID 20473272.

Oxidized phospholipids regulate expression of ATF4 and VEGF in endothelial cells via NRF2-dependent mechanism: novel point of convergence between electrophilic and unfolded protein stress pathways. Afonyushkin T, et al. *Arterioscler Thromb Vasc Biol*, 2010 May. PMID 20185790.