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FOXO1 Antibody

Catalog # ASC11150

Product Information

Application	WB, IF, ICC, E
Primary Accession	Q12778
Other Accession	NP_002006, 9257222
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	69662
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	FOXO1 antibody can be used for detection of FOXO1 by Western blot at 1 g/mL. Antibody can also be used for immunocytochemistry starting at 4 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	2308
Other Names	Forkhead box protein O1, Forkhead box protein O1A, Forkhead in rhabdomyosarcoma, FOXO1, FKHR, FOXO1A
Target/Specificity	FOXO1;
Reconstitution & Storage	FOXO1 antibody can be stored at 4℃ for three months and -20℃, 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	FOXO1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	FOXO1 {ECO:0000303|PubMed:12228231, ECO:0000312|HGNC:HGNC:3819}
Function	Transcription factor that is the main target of insulin signaling and regulates metabolic homeostasis in response to oxidative stress (PubMed:10358076, PubMed:12228231, PubMed:15220471, PubMed:15890677, PubMed:18356527, PubMed:19221179, PubMed:20543840, PubMed:21245099). Binds to the insulin response element (IRE) with consensus sequence 5'-TT[G/A]TTTTG-3' and the related Daf-16 family binding element (DBE) with consensus sequence 5'-TT[G/A]TTTAC-3' (PubMed:10358076). Activity suppressed by insulin (PubMed:10358076). Main regulator of redox balance and osteoblast numbers and controls bone mass

(By similarity). Orchestrates the endocrine function of the skeleton in regulating glucose metabolism (By similarity). Also acts as a key regulator of chondrogenic commitment of skeletal progenitor cells in response to lipid availability: when lipids levels are low, translocates to the nucleus and promotes expression of SOX9, which induces chondrogenic commitment and suppresses fatty acid oxidation (By similarity). Acts synergistically with ATF4 to suppress osteocalcin/BGLAP activity, increasing glucose levels and triggering glucose intolerance and insulin insensitivity (By similarity). Also suppresses the transcriptional activity of RUNX2, an upstream activator of osteocalcin/BGLAP (By similarity). Acts as an inhibitor of glucose sensing in pancreatic beta cells by acting as a transcription repressor and suppressing expression of PDX1 (By similarity). In hepatocytes, promotes gluconeogenesis by acting together with PPARGC1A and CEBPA to activate the expression of genes such as IGFBP1, G6PC1 and PCK1 (By similarity). Also promotes gluconeogenesis by directly promoting expression of PPARGC1A and G6PC1 (PubMed:17024043). Important regulator of cell death acting downstream of CDK1, PKB/AKT1 and STK4/MST1 (PubMed:18356527, PubMed:19221179). Promotes neural cell death (PubMed:18356527). Mediates insulin action on adipose tissue (By similarity). Regulates the expression of adipogenic genes such as PPARG during preadipocyte differentiation and, adipocyte size and adipose tissue-specific gene expression in response to excessive calorie intake (By similarity). Regulates the transcriptional activity of GADD45A and repair of nitric oxide-damaged DNA in beta-cells (By similarity). Required for the autophagic cell death induction in response to starvation or oxidative stress in a transcription-independent manner (PubMed:20543840). Mediates the function of MLIP in cardiomyocytes hypertrophy and cardiac remodeling (By similarity). Positive regulator of apoptosis in cardiac smooth muscle cells as a result of its transcriptional activation of pro-apoptotic genes (PubMed:19483080). Regulates endothelial cell (EC) viability and apoptosis in a PPIA/CYPA- dependent manner via transcription of CCL2 and BCL2L11 which are involved in EC chemotaxis and apoptosis (PubMed:31063815).

Cellular Location

Cytoplasm. Nucleus. Note=Shuttles between the cytoplasm and nucleus. Largely nuclear in unstimulated cells (PubMed:11311120, PubMed:12228231, PubMed:19221179, PubMed:20543840, PubMed:21245099, PubMed:25009184). In osteoblasts, colocalizes with ATF4 and RUNX2 in the nucleus (By similarity). Serum deprivation increases localization to the nucleus, leading to activate expression of SOX9 and subsequent chondrogenesis (By similarity). Insulin-induced phosphorylation at Ser- 256 by PKB/AKT1 leads, via stimulation of Thr-24 phosphorylation, to binding of 14-3-3 proteins and nuclear export to the cytoplasm where it is degraded by the ubiquitin-proteasomal pathway (PubMed:11237865, PubMed:12228231). Phosphorylation at Ser-249 by CDK1 disrupts binding of 14-3-3 proteins and promotes nuclear accumulation (PubMed:18356527) Phosphorylation by NLK results in nuclear export (By similarity) Translocates to the nucleus upon oxidative stress-induced phosphorylation at Ser-212 by STK4/MST1 (PubMed:19221179, PubMed:21245099). SGK1-mediated phosphorylation also results in nuclear translocation (By similarity). Retained in the nucleus under stress stimuli including oxidative stress, nutrient deprivation or nitric oxide (By similarity). Retained in the nucleus on methylation (By similarity). PPIA/CYPA stimulates its nuclear accumulation (PubMed:31063815). Deacetylation by SIRT6, promotes its translocation into the cytoplasm (PubMed:25009184). {ECO:0000250|UniProtKB:Q9R1E0, ECO:0000269|PubMed:11237865, ECO:0000269|PubMed:11311120, ECO:0000269|PubMed:12228231, ECO:0000269|PubMed:18356527, ECO:0000269|PubMed:19221179, ECO:0000269|PubMed:20543840, ECO:0000269|PubMed:21245099, ECO:0000269|PubMed:25009184, ECO:0000269|PubMed:31063815}

Tissue Location

Expressed in umbilical endothelial cells (at protein level) (PubMed:19483080).

Abundantly expressed in skeletal muscle and ovary, with lower expression in the heart, placenta, lung, liver, pancreas, spleen, testis and small intestine (PubMed:9479491) Weakly expressed in the brain, thymus, prostate and mucosal lining of the colon (PubMed:9479491).

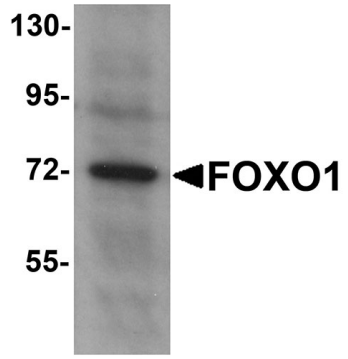
Background

FOXO1 Antibody: FOXO1, also known as FKHR or ForkHead in Rhabdomyosarcoma, is a 70 kDa protein which is a ubiquitously expressed member of a subfamily of the forkhead homeotic gene family of transcription factors and shuttles between the cytoplasm and nucleus. FOXO transcription factors are key players of cell fate decisions, metabolism, stress resistance, tumor suppression and are regulated by growth factors, oxidative stress or nutrient deprivation. In insulin-responsive tissues, stress or nutrient abundance triggers phosphorylation by PKB/AKT, blocking nuclear translocation and activity. Genetic mutations involving FOXO1A are a cause of alveolar rhabdomyosarcoma (RMS2). Recent studies link the anti-tumor activity of FOXO1 and the process of autophagy.

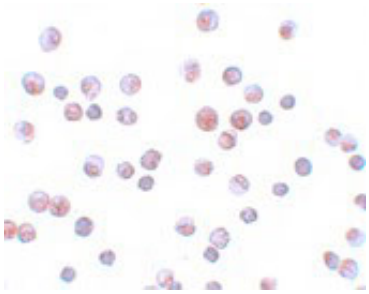
References

Anderson MJ, Viars CS, Czekay S, et al. Cloning and characterization of three human forkhead genes that comprise an FKHR-like gene subfamily. Genomics1998; 47:187-99.
Greer EL and Brunet A. FOXO transcription factors at the interface between longevity and tumor suppression. Oncogene2005; 24:7410-25.
Brunet A, Bonni A, Zigmond MJ, et al. Akt promotes cell survival by phosphorylating and inhibiting a forkhead transcription factor. Cell1999; 96:857-68.
Linardic CM. PAX3-FOXO1 fusion gene in rhabdomyosarcoma. Cancer Lett.2008; 270:10-8.

Images



Western blot analysis of FOXO1 in Hela cell lysate with FOXO1 antibody at 1 µg/mL.



Immunocytochemistry of FOXO1 in HeLa cells with FOXO1 antibody at 4 µg/mL.

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