10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

Anti-FOXO1 (Phospho-S319) Antibody

Catalog # AP59556

Product Information

Application	WB, IHC, IF/IC
Primary Accession	Q12778
Reactivity	Human, Mouse, Rat, Pig, Bovine, Mk
Host	Rabbit
Clonality	Polyclonal
Calculated MW	69662

Additional Information

Gene ID	2308
Other Names	FKHR; FOXO1A; Forkhead box protein O1; Forkhead box protein O1A; Forkhead in rhabdomyosarcoma
Target/Specificity	KLH-conjugated synthetic phosphopeptide corresponding to residues surrounding S319 of human FOXO1 protein. The exact sequence is proprietary.
Dilution	WB~~WB (1/500 - 1/1000), IHC (1/100 - 1/200), IF/IC (1/100 - 1/500) IHC~~WB (1/500 - 1/1000), IHC (1/100 - 1/200), IF/IC (1/100 - 1/500) IF/IC~~N/A
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

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).

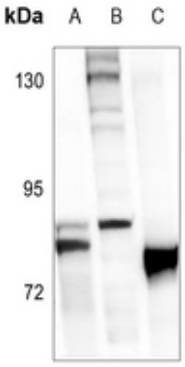
Cellular Location

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}

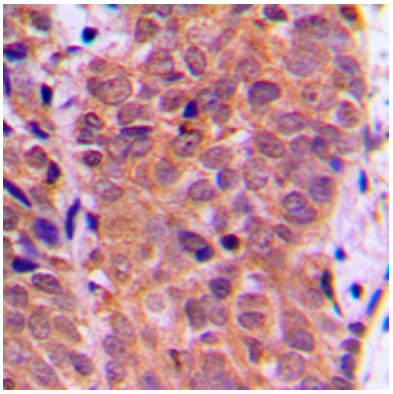
Tissue Location

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).

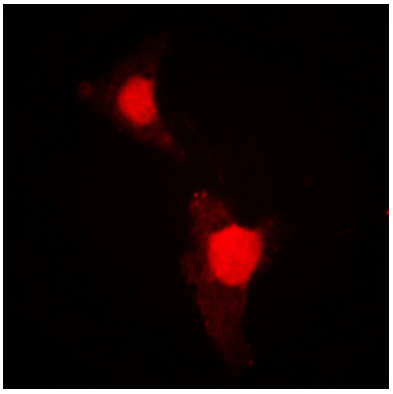
Images



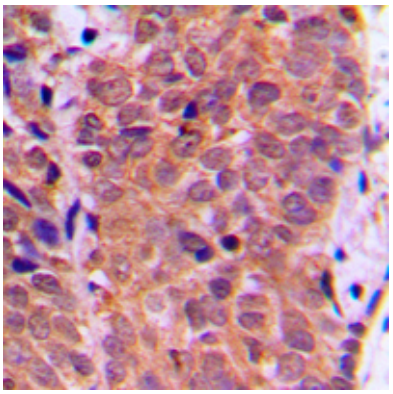
Western blot analysis of FOXO1 (Phospho-S319) expression in Jurkat (A), MCF7 (B), mouse testis (C) whole cell lysates. (Predicted band size: 69 kD; Observed band size: 78; 82 kD)



Immunohistochemical analysis of FOXO1 (Phospho-S319) staining in human breast cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.



Immunofluorescent analysis of FOXO1 (Phospho-S319) staining in HeLa cells. Formalin-fixed cells were permeabilized with 0.1% Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a humidified chamber. Cells were washed with PBST and incubated with a DyLight 594-conjugated secondary antibody (red) in PBS at room temperature in the dark.



Immunohistochemical analysis of FOXO1 (pS319) staining in human breast cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

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