

Rabbit Akt Polyclonal Antibody | anti-AKT1 antibody

Phospho-Akt(Ser473) Antibody

CATALOG #	HOST	REACTIVITY	APPLICATIONS
AAA30920	Rabbit	Human, Mouse, Rat	Western Blot, Immunohistochemistry, Immunofluorescence, Immunocytochemistry, ELISA

PRODUCT SYNONYMS

Akt; Polyclonal Antibody; Phospho-Akt(Ser473) Antibody; AKT 1; AKT; AKT1; AKT1_HUMAN; MGC99656; PKB; PKB-ALPHA; PRKBA; Protein Kinase B Alpha; Protein kinase B; Proto-oncogene c-Akt; RAC Alpha; RAC; RAC-alpha serine/threonine-protein kinase; RAC-PK-alpha; Akt2; AKT2_HUMAN; HIHGHH; murine thymoma viral (v-akt) homolog-2; PKB beta; PKBB; PKBBETA; PRKBB; Protein kinase Akt 2; Protein kinase Akt-2; Protein kinase B beta; rac protein kinase beta; RAC-BETA; RAC-beta serine/threonine-protein kinase; RAC-PK-beta; v akt murine thymoma viral oncogene homolog 2; Akt3; AKT3 kinase; AKT3_HUMAN; DKFZp434N0250; MPPH; PKB gamma; PKBG; PRKBG; Protein kinase Akt-3; Protein Kinase AKT3; Protein kinase B gamma; RAC gamma; RAC gamma serine/threonine protein kinase; RAC-gamma serine/threonine-protein kinase; RAC-PK-gamma; RACPK Gamma; Serine threonine protein kinase Akt 3; Serine threonine protein kinase Akt3; STK 2; STK-2; STK2; V akt murine thymoma viral oncogene homolog 3 (protein kinase B; gamma); V akt murine thymoma viral oncogene homolog 3; V akt murine thymoma viral oncogene homolog 3 protein kinase B gamma; anti-AKT1 antibody

PRODUCT SPECIFICATIONS

Host	Rabbit
Reactivity	Human, Mouse, Rat
Clonality	Polyclonal
Isotype	IgG
Specificity	Phospho-Akt(Ser473) antibody detects endogenous levels of Akt only when phosphorylated at Sersine 473
Purity/Purification	From purified rabbit serum by affinity purification via sequential chromatography on phospho-and non-phospho-peptide affinity columns.
Form/Format	Liquid Phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Concentration	1mg/ml (varies by lot)
Sequence Length	480
Applicable Applications for anti-AKT1 antibody	WB (Western Blot), IHC (Immunohistochemistry), IF (Immunofluorescence), ICC (Immunocytochemistry), ELISA
Application Notes	WB: 1:500-1:2000 IHC: 1:50-1:200 IF/ICC: 1:100-1:500
Immunogen	A synthesized peptide derived from human Akt around the phosphorylation site of Sersine 473
Subcellular Location	Cytoplasm. Nucleus. Cell Membrane. Nucleus after activation by integrin-linked protein kinase 1 (ILK1). Nuclear translocation is enhanced by interaction with TCL1A. Phosphorylation on Tyr-176 by TNK2 results in its localization to the cell membrane where it is targeted for further phosphorylations on Thr-308 and Ser-473 leading to its activation and the activated form translocates to the nucleus.
Tissue Specificity	Expressed in prostate cancer and levels increase from the normal to the malignant state (at protein level). Expressed in all human cell types so far analyzed. The Tyr-176 phosphorylated form shows a significant increase in expression in breast cancers during the progressive stages i.e. normal to hyperplasia (ADH), ductal carcinoma in situ (DCIS), invasive ductal carcinoma (IDC) and lymph node metastatic (LNMM) stages.
Predicted Cross Reactivity	Pig, Bovine, Horse, Sheep, Rabbit, Dog, Chicken
Similarity	Pig (100%), Bovine (100%), Horse (100%), Sheep (100%), Rabbit (100%), Dog (100%), Chicken (100%)

Conjugation	Unconjugated
Epitope	Phospho Ser473
Preparation and Storage	Store at -20 degree C. Stable for 12 months from date of receipt.

IMAGES



IHC (Immunohistochemistry)
 AAA30920 at 1/200 staining human lung cancer tissue sections by IHC-P. The tissue was formaldehyde fixed and a heat mediated antigen retrieval step in citrate buffer was performed. The tissue was then blocked and incubated with the antibody for 1.5 hours at 22 degree C. An HRP conjugated goat anti-rabbit antibody was used as the secondary.



IF (Immunofluorescence)
 AAA30920 staining 293 cells by IF/ICC. The sample were fixed with PFA and permeabilized in 0.1% Triton X-100, then blocked in 10% serum for 45 minutes at 25 degree C. The primary antibody was diluted at 1/200 and incubated with the sample for 1 hour at 37 degree C. An Alexa Fluor 594 conjugated goat anti-rabbit IgG (H+L) antibody, diluted at 1/600, was used as secondary antibody.



IF (Immunofluorescence)
 AAA30920 staining 293 by IF/ICC. The sample were fixed with PFA and permeabilized in 0.1% Triton X-100, then blocked in 10% serum for 45 minutes at 25 degree C. The primary antibody was diluted at 1/200 and incubated with the sample for 1 hour at 37 degree C. An Alexa Fluor 594 conjugated goat anti-rabbit IgG (H+L) Ab, diluted at 1/600, was used as the secondary antibody.



IHC (Immunohistochemistry)
 Phospho-Akt(Ser473) Antibody for IHC in human brain tissue



WB (Western Blot)
 Western blot analysis of Phospho-Akt(Ser473) Antibody expression in Various cells lysates.



IHC (Immunohistochemistry)
 AAA30920 at 1/200 staining human lung cancer tissue sections by IHC-P. The tissue was formaldehyde fixed and a heat mediated antigen retrieval step in citrate buffer was performed. The tissue was then blocked and incubated with the antibody for 1.5 hours at 22 degree C. An HRP conjugated goat anti-rabbit antibody was used as the secondary.

Related Product Information for anti-AKT1 antibody	<p>Description: An AGC kinase that plays a critical role in controlling the balance between survival and APOptosis. Phosphorylated and activated by PDK1 in the PI3 kinase pathway. Mediates survival signals downstream of PI3 kinase and several growth factor receptors by phosphorylating APOptotic proteins. First found in a mouse transforming retrovirus. Tumorigenic in a mouse lymphoma model and activated (by phospho-Akt staining) and/or overexpressed in a number of cancers including breast, prostate, lung, pancreatic, liver, ovarian and colorectal. Inhibitor: RX-0201. Substrates include tuberin, Bad, Forkhead transcription factors, caspase-9, and glycogen synthase kinase-3.</p> <p>Function: AKT1 is one of 3 closely related serine/threonine-protein kinases (AKT1, AKT2 and AKT3) called the AKT kinase, and which regulate many processes including metabolism, proliferation, cell survival, growth and angiogenesis. This is mediated through serine and/or threonine phosphorylation of a range of downstream substrates. Over 100 substrate candidates have been reported so far, but for most of them, no isoform specificity has been reported. AKT is responsible of the regulation of glucose uptake by mediating insulin-induced translocation of the SLC2A4/GLUT4 glucose transporter to the cell surface. Phosphorylation of PTPN1 at 'Ser-50' negatively modulates its phosphatase activity preventing dephosphorylation of the insulin receptor and the attenuation of insulin signaling. Phosphorylation of TBC1D4 triggers the binding of this effector to inhibitory 14-3-3 proteins, which is required for insulin-stimulated glucose transport. AKT regulates also the storage of glucose in the form of glycogen by phosphorylating GSK3A at 'Ser-21' and GSK3B at 'Ser-9', resulting in inhibition of its kinase activity. Phosphorylation of GSK3 isoforms by AKT is also thought to be one mechanism by which cell proliferation is driven. AKT regulates also cell survival via the phosphorylation of MAP3K5 (apoptosis signal-related kinase). Phosphorylation of 'Ser-83' decreases MAP3K5 kinase activity stimulated by oxidative stress and thereby prevents apoptosis. AKT mediates insulin-stimulated protein synthesis by phosphorylating TSC2 at 'Ser-939' and 'Thr-1462', thereby activating mTORC1 signaling and leading to both phosphorylation of 4E-BP1 and in activation of RPS6KB1. AKT is involved in the phosphorylation of members of the FOXO factors (Forkhead family of transcription factors), leading to binding of 14-3-3 proteins and cytoplasmic localization. In particular, FOXO1 is phosphorylated at 'Thr-24', 'Ser-256' and 'Ser-319'. FOXO3 and FOXO4 are phosphorylated on equivalent sites. AKT has an important role in the regulation of NF-kappa-B-dependent gene transcription and positively regulates the activity of CREB1 (cyclic AMP (cAMP)-response element binding protein). The phosphorylation of CREB1 induces the binding of accessory proteins that are necessary for the transcription of pro-survival genes such as BCL2 and MCL1. AKT phosphorylates 'Ser-454' on ATP citrate lyase (ACLY), thereby potentially regulating ACLY activity and fatty acid synthesis. Activates the 3B isoform of cyclic nucleotide phosphodiesterase (PDE3B) via phosphorylation of 'Ser-273', resulting in reduced cyclic AMP levels and inhibition of lipolysis. Phosphorylates PIKFYVE on 'Ser-318', which results in increased PI3P-5 activity. The Rho GTPase-activating protein DLC1 is another substrate and its phosphorylation is implicated in the regulation cell proliferation and cell growth. AKT plays a role as key modulator of the AKT-mTOR signaling pathway controlling the tempo of the process of newborn neurons integration during adult neurogenesis, including correct neuron positioning, dendritic development and synapse formation. Signals downstream of phosphatidylinositol 3-kinase (PI3K) to mediate the effects of various growth factors such as platelet-derived growth factor (PDGF), epidermal growth factor (EGF), insulin and insulin-like growth factor I (IGF-I). AKT mediates the antiapoptotic effects of IGF-I. Essential for the SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly. May be involved in the regulation of the placental development. Phosphorylates STK4/MST1 at 'Thr-120' and 'Thr-387' leading to inhibition of its: kinase activity, nuclear translocation, autophosphorylation and ability to phosphorylate FOXO3. Phosphorylates STK3/MST2 at 'Thr-117' and 'Thr-384' leading to inhibition of its: cleavage, kinase activity, autophosphorylation at Thr-180, binding to RASSF1 and nuclear translocation. Phosphorylates SRPK2 and enhances its kinase activity towards SRSF2 and ACIN1 and promotes its nuclear translocation. Phosphorylates RAF1 at 'Ser-259' and negatively regulates its activity. Phosphorylation of BAD stimulates its pro-apoptotic activity. Phosphorylates KAT6A at 'Thr-369' and this phosphorylation inhibits the interaction of KAT6A with PML and negatively regulates its acetylation activity towards p53/TP53.</p> <p>Subunit Structure: Interacts with BTBD10 (By similarity). Interacts with KCTD20 (By similarity). Interacts (via the C-terminus) with CCDC88A (via its C-terminus). Interacts with GRB10; the interaction leads to GRB10 phosphorylation thus promoting YWHAЕ-binding (By similarity). Interacts with AGAP2 (isoform 2/PIKE-A); the interaction occurs in the presence of guanine nucleotides. Interacts with AKTIP. Interacts (via PH domain) with MTCP1, TCL1A AND TCL1B. Interacts with CDKN1B; the interaction phosphorylates CDKN1B promoting 14-3-3 binding and cell-cycle progression. Interacts with MAP3K5 and TRAF6. Interacts with BAD, PPP2R5B, STK3 and STK4. Interacts (via PH domain) with SIRT1. Interacts with SRPK2 in a phosphorylation-dependent manner. Interacts with RAF1. Interacts with TRIM13; the interaction ubiquitinates AKT1 leading to its proteasomal degradation. Interacts with TNK2 and CLK2. Interacts (via the C-terminus) with THEM4 (via its C-terminus). Interacts with and phosphorylated by PDPK1. Interacts with PA2G4 (By similarity). Interacts with KIF14; the interaction is detected in the plasma membrane upon INS stimulation and promotes AKT1 phosphorylation (PubMed:24784001). Interacts with FAM83B; activates the PI3K/AKT signaling cascade (PubMed:23676467). Interacts with WDFY2 (via WD repeats 1-3) (PubMed:16792529). Forms a complex with WDFY2 and FOXO1 (By similarity). Interacts with FAM168A (PubMed:23251525). Interacts with SYAP1 (via phosphorylated form and BSD domain); this interaction is enhanced in a mTORC2-mediated manner in response to epidermal growth factor (EGF) stimulation and activates AKT1 (PubMed:23300339).</p> <p>Post-translational Modifications: O-GlcNAcylation at Thr-305 and Thr-312 inhibits activating phosphorylation at Thr-308 via disrupting the interaction between AKT1 and PDPK1. O-GlcNAcylation at Ser-473 also probably interferes with phosphorylation at this site. Phosphorylation on Thr-308, Ser-473 and Tyr-474 is required for full activity. Activated TNK2 phosphorylates it on Tyr-176 resulting in its binding to the anionic plasma membrane phospholipid</p>
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References	<p>Li C, Zhao B, Lin C, Gong Z, An X; Journal: Cell Biol Int. TREM2 inhibits inflammatory responses in mouse microglia by suppressing the PI3K/NF-κB signaling. Liu Y, Zheng J, Zhang Y, Wang Z, Yang Y, Bai M, Dai Y; Journal: Neurochem Res. Fucoxanthin Activates Apoptosis via Inhibition of PI3K/Akt/mTOR Pathway and Suppresses Invasion and Migration by Restriction of p38-MMP-2/9 Pathway in Human Glioblastoma Cells. Geng S, Zhu W, Wang S, Xie C, Li X, Wu J, Li Y, Chen Y, Wang X, Meng Y, Zhang Q, Chen J, Zhong C; Journal: Biochem Biophys Res Commun. P53 modulates hepatic insulin sensitivity through NF-κB and p38/ERK MAPK pathways. Su Y, Li X, Ma J, Zhao J, Liu S, Wang G, Edwards H, Taub JW, Lin H, Ge Y; Journal: Biochem Pharmacol. Targeting PI3K, mTOR, ERK, and Bcl-2 signaling network shows superior antileukemic activity against AML ex vivo. Yao J, Jiang M, Zhang Y, Liu X, Du Q, Feng G; Journal: Int Immunopharmacol. Chrysin alleviates allergic inflammation and airway remodeling in a murine model of chronic asthma.</p>
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NCBI AND UNIPROT INFORMATION

NCBI GI #	62241013
NCBI GeneID	207
NCBI Accession #	NP_001014431.1
NCBI GenBank Nucleotide #	NM_001014431.1
UniProt Accession #	P31749; Q9BWB6; B2RAM5; B7Z5R1
Molecular Weight	Observed: 60 kDa Predicted: 56 kDa
NCBI Official Full Name	RAC-alpha serine/threonine-protein kinase
NCBI Official Synonym Full Names	AKT serine/threonine kinase 1
NCBI Official Symbol	AKT1
NCBI Official Synonym Symbols	AKT; PKB; RAC; CWS6; PRKBA; PKB-ALPHA; RAC-ALPHA
NCBI Protein Information	RAC-alpha serine/threonine-protein kinase
UniProt Protein Name	RAC-alpha serine/threonine-protein kinase
UniProt Gene Name	AKT1
UniProt Synonym Gene Names	PKB; RAC; PKB; PKB alpha

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