abcam

Product datasheet

Anti-AKT1 antibody ab235958

15 References 8 Images

Overview

Product name	Anti-AKT1 antibody
Description	Rabbit polyclonal to AKT1
Host species	Rabbit
Tested applications	**Suitable for:** ChIP, IP, IHC-P, WB, ICC/IF
Species reactivity	**Reacts with:** Human **Predicted to work with:** Mouse, Rat, Cow, Xenopus laevis
Immunogen	Recombinant full length protein corresponding to Human AKT1 aa 1 to the C-terminus. Database link: **P31749-1** Run BLAST with Run BLAST with
Positive control	WB: HeLa, A549, HepG2 and MCF7 whole cell lysate. IHC-P: Human prostate, tonsil, cervical cancer and brain tissue. ICC/IF: HeLa cells. IP: HepG2 whole cell lysate.
General notes	The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing. If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&As

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C long term. Avoid freeze / thaw cycle.
Storage buffer	pH: 7.40 Preservative: 0.03% Proclin 300 Constituents: 50% Glycerol (glycerin, glycerine), PBS
Purity	Protein G purified
Purification notes	Purity >95%
Clonality	Polyclonal

Isotype IgG

Applications

The Abpromise guarantee Our **Abpromise guarantee** covers the use of ab235958 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
ChIP		Use 4µg for 10^6 cells.
IP		1/200 - 1/2000.
IHC-P		1/20 - 1/200.
WB		1/500 - 1/5000.
ICC/IF		1/100 - 1/500.

Target

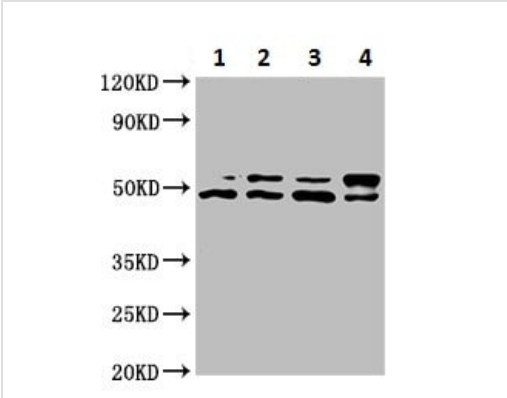
Function Plays a role as a key modulator of the AKT-mTOR signaling pathway controlling the tempo of the process of newborn neurons integration during adult neurogenesis, including correct neuron positioning, dendritic development and synapse formation (By similarity). General protein kinase capable of phosphorylating several known proteins. Phosphorylates TBC1D4. Signals downstream of phosphatidylinositol 3-kinase (PI(3)K) 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). Plays a role in glucose transport by mediating insulin-induced translocation of the GLUT4 glucose transporter to the cell surface. Mediates the antiapoptotic effects of IGF-I. 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. Promotes glycogen synthesis by mediating the insulin-induced activation of glycogen synthase. The activated form can suppress FoxO gene transcription and promote cell cycle progression. Essential for the SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly.

Tissue specificity 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.

Involvement in disease Defects in AKT1 are a cause of susceptibility to breast cancer (BC) [MIM:114480]. A common malignancy originating from breast epithelial tissue. Breast neoplasms can be distinguished by their histologic pattern. Invasive ductal carcinoma is by far the most common type. Breast cancer is etiologically and genetically heterogeneous. Important genetic factors have been indicated by familial occurrence and bilateral involvement. Mutations at more than one locus can be involved in different families or even in the same case.
Defects in AKT1 are associated with colorectal cancer (CRC) [MIM:114500].
Defects in AKT1 are associated with susceptibility to ovarian cancer [MIM:604370]; also called susceptibility to familial breast-ovarian cancer type 1 (BROVCA1).

Sequence similarities	Belongs to the protein kinase superfamily. AGC Ser/Thr protein kinase family. RAC subfamily. Contains 1 AGC-kinase C-terminal domain. Contains 1 PH domain. Contains 1 protein kinase domain.
Domain	Binding of the PH domain to the phosphatidylinositol 3-kinase alpha (PI(3)K) results in its targeting to the plasma membrane. The PH domain mediates interaction with TNK2 and Tyr-176 is also essential for this interaction. The AGC-kinase C-terminal mediates interaction with THEM4.
Post-translational modifications	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 PA. This phosphorylated form localizes to the cell membrane, where it is targeted by PDPK1 and PDPK2 for further phosphorylations on Thr-308 and Ser-473 leading to its activation. Ser-473 phosphorylation by mTORC2 favors Thr-308 phosphorylation by PDPK1. Ser-473 phosphorylation is enhanced by interaction with AGAP2 isoform 2 (PIKE-A). Ser-473 phosphorylation is enhanced in focal cortical dysplasias with Taylor-type balloon cells. Ubiquitinated; undergoes both 'Lys-48'- and 'Lys-63'-linked polyubiquitination. TRAF6-induced 'Lys-63'-linked AKT1 ubiquitination is critical for phosphorylation and activation. When ubiquitinated, it translocates to the plasma membrane, where it becomes phosphorylated. When fully phosphorylated and translocated into the nucleus, undergoes 'Lys-48'-polyubiquitination catalyzed by TTC3, leading to its degradation by the proteasome.
Cellular localization	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.

Images

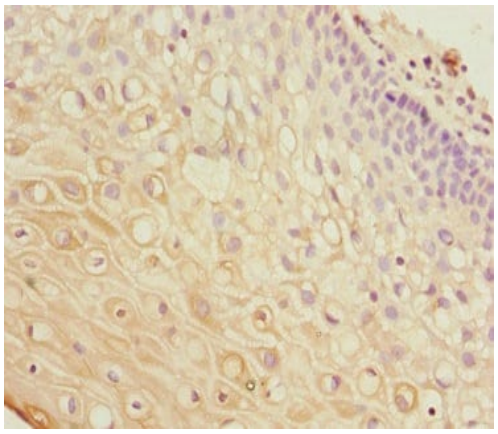


Western blot - Anti-AKT1 antibody (ab235958)

All lanes : Anti-AKT1 antibody (ab235958) at 1/500 dilution

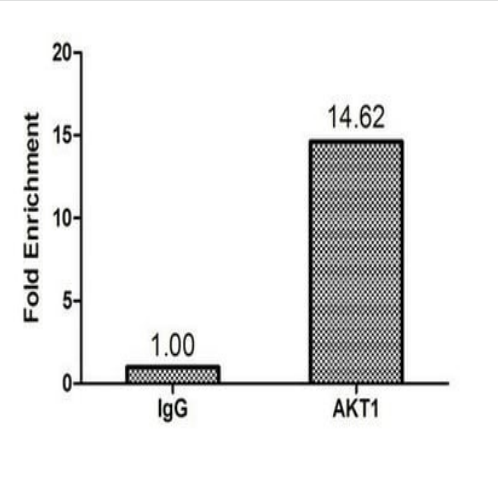
Lane 1 : HeLa (human epithelial cell line from cervix adenocarcinoma) whole cell lysate
Lane 2 : A549 (human lung carcinoma cell line) whole cell lysate
Lane 3 : HepG2 (human liver hepatocellular carcinoma cell line) whole cell lysate
Lane 4 : MCF7 (human breast adenocarcinoma cell line) whole cell lysate

Secondary
All lanes : Goat polyclonal to rabbit IgG at 1/50000 dilution



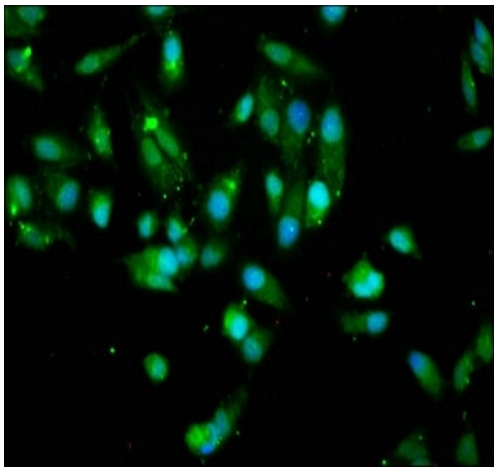
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-AKT1 antibody (ab235958)

Paraffin-embedded human cervical cancer tissue stained for AKT1 using ab235958 at 1/100 dilution in immunohistochemical analysis.



ChIP - Anti-AKT1 antibody (ab235958)

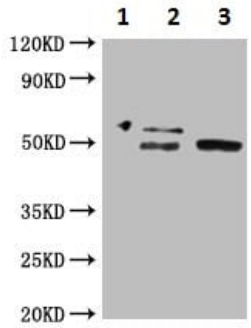
Chromatin Immunoprecipitation HeLa (Human epithelial cell line from cervix adenocarcinoma) ($1.1x10^6$) were cross-linked with formaldehyde, sonicated and immunoprecipitated with 4 µg of ab235958 or a control normal rabbit IgG. The resulting ChIP DNA was quantified tissue using real-time PCR with primers against the exon-1 of Egr1 promoter.



Immunocytochemistry/ Immunofluorescence - Anti-AKT1 antibody (ab235958)

HeLa (Human epithelial cell line from cervix adenocarcinoma) cells stained for AKT1 (Green) using ab235958 at a 1/100 dilution in ICC/IF. Secondary used is an Alexa-Fluor®488-conjugated Goat Anti-Rabbit IgG (H+L). Counterstained with DAPI (Blue).

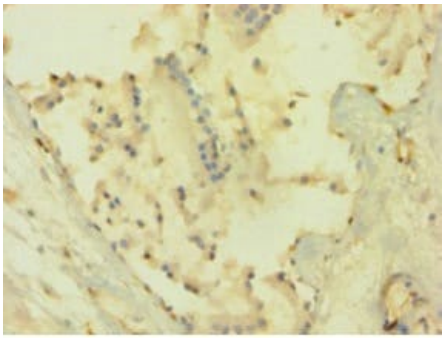
The cells were fixed in 4% formaldehyde, permeabilized using 0.2% Triton X-100 and blocked in 10% normal goat serum. The cells were then incubated with the primary antibody overnight at 4°C.



Immunoprecipitation - Anti-AKT1 antibody (ab235958)

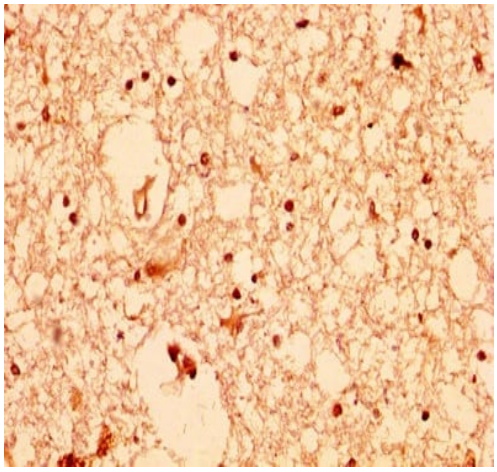
AKT1 was immunoprecipitated from 500 µg of HepG2 (Human liver hepatocellular carcinoma cell line) whole cell lysate. For western blotting, an HRP-conjugated Protein G antibody was used as the secondary antibody at 1/2000 dilution.

Lane 1: Rabbit control IgG instead of ab235958.
Lane 2: ab235958 IP in HepG2 whole cell lysate.
Lane 3: HepG2 whole cell lysate (input).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-AKT1 antibody (ab235958)

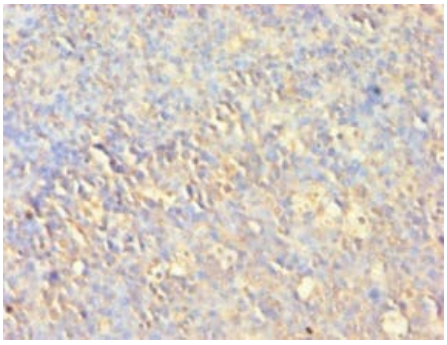
Paraffin-embedded human prostate tissue stained for AKT1 using ab235958 at 1/100 dilution in immunohistochemical analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-AKT1 antibody (ab235958)

Paraffin-embedded human brain tissue stained for AKT1 using ab235958 at 1/200 dilution in immunohistochemical analysis.

After dewaxing and hydration, antigen retrieval was mediated by high pressure in a citrate buffer (pH 6.0). Section was blocked with 10% normal goat serum 30 minutes at RT. Then primary antibody (1% BSA) was incubated at 4°C overnight. The primary is detected by a biotinylated secondary antibody and visualized tissue using an HRP conjugated SP system.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-AKT1 antibody (ab235958)

Paraffin-embedded human tonsil tissue stained for AKT1 using ab235958 at 1/100 dilution in immunohistochemical analysis.

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