

Product datasheet

Anti-AKT1 antibody [1F7E10] ab233755

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Overview

Product name	Anti-AKT1 antibody [1F7E10]
Description	Mouse monoclonal [1F7E10] to AKT1
Host species	Mouse
Tested applications	Suitable for: WB, Flow Cyt, ICC/IF
Species reactivity	Reacts with: Mouse, Rat, Human, African green monkey
Immunogen	Recombinant fragment corresponding to Human AKT1 aa 1-150. Expressed in E.coli. Database link: P31749
Positive control	WB: Recombinant human AKT1 (aa 1-150); MCF7, NIH/3T3, COS-7 and C6 cell lysates; AKT1 (aa 1-150)-hlgGfc transfected HEK-293 whole cell lysate. ICC/IF: HepG2 cells. Flow cyt: HeLa cells.
General notes	<p>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.</p> <p>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</p>

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	Preservative: 0.05% Sodium azide Constituent: PBS
Purity	Protein G purified
Purification notes	Purified from tissue culture supernatant.
Clonality	Monoclonal
Clone number	1F7E10
Isotype	IgG1

Applications

The Abpromise guarantee Our **Abpromise guarantee** covers the use of ab233755 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
WB		1/500 - 1/2000. Predicted molecular weight: 56 kDa.
Flow Cyt		1/200 - 1/400.
ICC/IF		1/200 - 1/1000.

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.

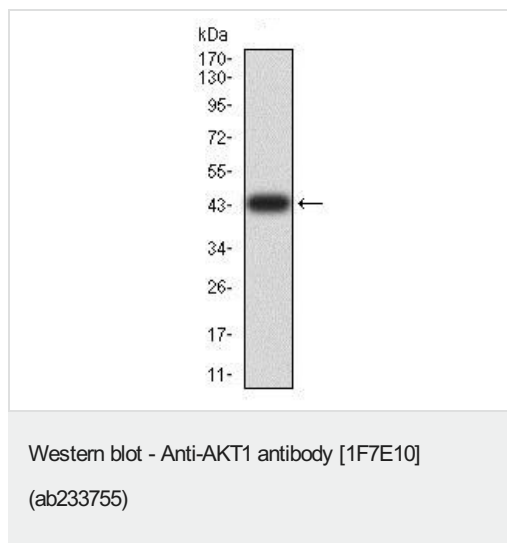
Post-translational modifications

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

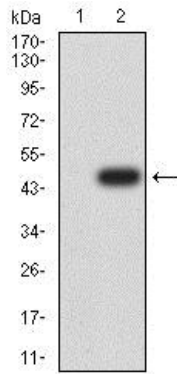


Anti-AKT1 antibody [1F7E10] (ab233755) at 1/500 dilution +
Recombinant human AKT1 (aa 1-150) protein

Developed using the ECL technique.

Predicted band size: 56 kDa

Expected recombinant MW is 44 kDa.



Western blot - Anti-AKT1 antibody [1F7E10]
(ab233755)

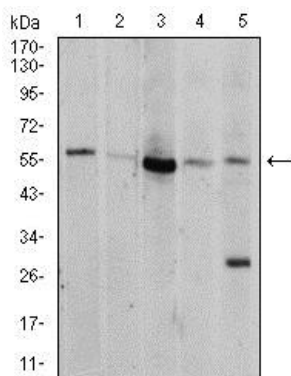
All lanes : Anti-AKT1 antibody [1F7E10] (ab233755) at 1/500 dilution

Lane 1 : HEK-293 (human epithelial cell line from embryonic kidney) whole cell lysate

Lane 2 : AKT1 (aa 1-150)-hlgGFc transfected HEK-293 whole cell lysate

Developed using the ECL technique.

Predicted band size: 56 kDa



Western blot - Anti-AKT1 antibody [1F7E10]
(ab233755)

All lanes : Anti-AKT1 antibody [1F7E10] (ab233755) at 1/500 dilution

Lane 1 : MCF7 (human breast adenocarcinoma cell line) whole cell lysate

Lane 2 : NIH/3T3 (mouse embryo fibroblast cell line) whole cell lysate

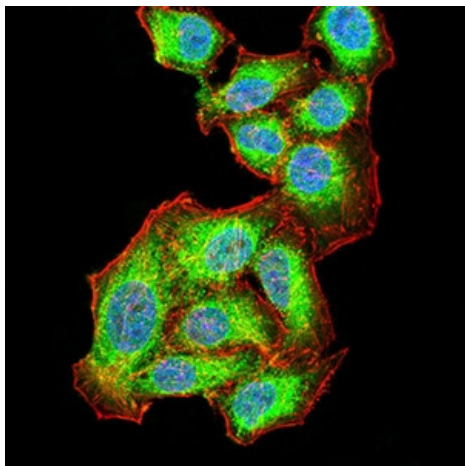
Lane 3 : HeLa (human epithelial cell line from cervix adenocarcinoma) whole cell lysate

Lane 4 : COS-7 (African green monkey kidney fibroblast-like cell line) whole cell lysate

Lane 5 : C6 (rat glial tumor cell line) whole cell lysate

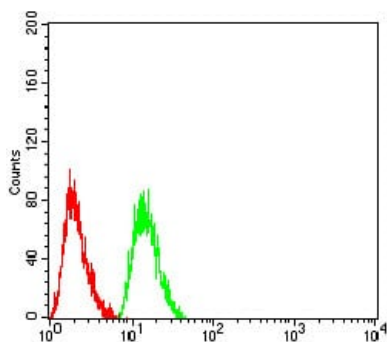
Developed using the ECL technique.

Predicted band size: 56 kDa



HepG2 (human liver hepatocellular carcinoma cell line) cells stained for AKT1 (green) using ab233755 in ICC/IF. Blue: DRAQ5 DNA dye. Red: Actin filaments stained with AlexaFluor[®]-555-Phalloidin.

Immunocytochemistry/ Immunofluorescence - Anti-AKT1 antibody [1F7E10] (ab233755)



Flow cytometric analysis of HeLa (human epithelial cell line from cervix adenocarcinoma) cell line labeling AKT1 with ab233755 at 1/200 dilution (green) compared with a negative control (red).

Flow Cytometry - Anti-AKT1 antibody [1F7E10] (ab233755)

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