

Product datasheet

Anti-AKT1 antibody [9A4] ab89402

★★★★★ [2 Abreviews](#) [7 References](#) [3 Images](#)

Overview

| | |
|----------------------------|---|
| Product name | Anti-AKT1 antibody [9A4] |
| Description | Mouse monoclonal [9A4] to AKT1 |
| Host species | Mouse |
| Tested applications | Suitable for: WB |
| Species reactivity | Reacts with: Mouse, Human |
| Immunogen | Recombinant full length active protein |
| Positive control | HEK-293 cell lysate |
| 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. Upon delivery aliquot and store at -20°C or -80°C. Avoid repeated freeze / thaw cycles. |
| Storage buffer | pH: 7.5 Constituents: 1.21% Tris, 0.75% Glycine |
| Purity | Protein G purified |
| Clonality | Monoclonal |
| Clone number | 9A4 |
| Isotype | IgG1 |

Applications

The Abpromise guarantee Our **Abpromise guarantee** covers the use of ab89402 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 | ★★★★★ (2) | 1/2500. Predicted molecular weight: 56 kDa. |

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

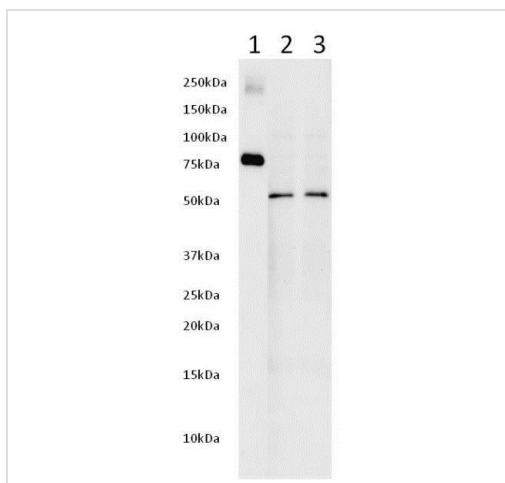
Phosphorylation on Thr-308, Ser-473 and Tyr-474 is required for full activity. Activated TNK2 phosphorylates it on Tyr-176 resulting in its binding to the anionic plasma membrane phospholipid PA. This phosphorylated form localizes to the cell membrane, where it is targeted by PDPK1 and PDPK2 for further 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

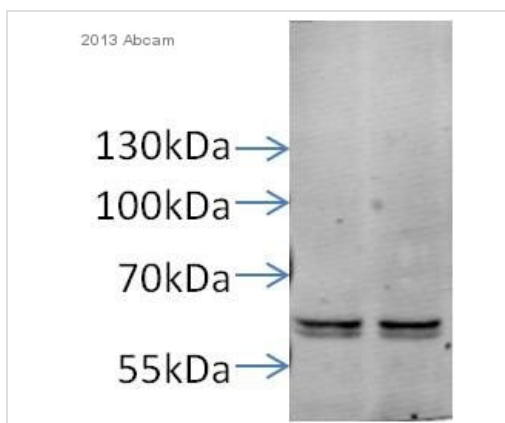
Cytoplasm. Nucleus. Cell membrane. Nucleus after activation by integrin-linked protein kinase 1 (ILK1). Nuclear translocation is enhanced by interaction with TCL1A. Phosphorylation on Tyr-176 by TNK2 results in its localization to the cell membrane where it is targeted for further phosphorylations on Thr-308 and Ser-473 leading to its activation and the activated form translocates to the nucleus.

Images



Western blot - Anti-AKT1 antibody [9A4] (ab89402)

Primary : All Lanes : Anti AKT1 antibody (ab89402) at 1:2500 dilution. Lane 1 = AKT1 (His tag) full length recombinant protein **ab62279** - 50ng. Lane 2 = NIH3T3 serum starved overnight 15ug. Lane 3 = NIH3T3 serum starved overnight and treated with PDGF-AB 50ng/mL for 1 hour 15ug. **Secondary :** Lanes 1-3 : Goat polyclonal to Mouse IgG H&L Pre-Adsorbed (HRP) at 1:5000 developed using the ECL technique. Performed under reducing conditions (50mM DTT Sample heated at 60°C). Predicted band size : 56kDa. Observed band size : 56kDa. Blocking step: 5% Milk in 50mM Tris+0.05% Tween for 1 hour at RT. Primary antibody buffer: 5% BSA in 50mM Tris+0.05% Tween overnight. Secondary antibody buffer: 5% Milk in 50mM Tris+0.05% Tween for 2 hours at RT. Exposure time : 5 minutes



Western blot - Anti-AKT1 antibody [9A4] (ab89402)

This image is courtesy of an anonymous Abreview

All lanes : Anti-AKT1 antibody [9A4] (ab89402) at 1/2000 dilution

All lanes : HEK293 whole cell lysate

Lysates/proteins at 30 µg per lane.

Secondary

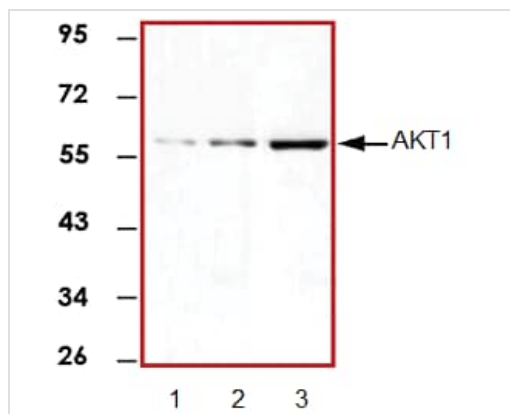
All lanes : IRDye® 800CW Goat anti-mouse IgG polyclonal, undiluted

Performed under reducing conditions.

Predicted band size: 56 kDa

Observed band size: 60 kDa

Exposure time: 5 minutes



All lanes : Anti-AKT1 antibody [9A4] (ab89402) at 1/2500 dilution

Lane 1 : HEK-293 cell lysate at 10 µg

Lane 2 : HEK-293 cell lysate at 20 µg

Lane 3 : HEK-293 cell lysate at 40 µg

Predicted band size: 56 kDa

Western blot - Anti-AKT1 antibody [9A4] (ab89402)

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