

## Product datasheet

# Recombinant human AKT1 protein (Active) ab62279

[2 References](#) [3 Images](#)

### Description

<b>Product name</b>	Recombinant human AKT1 protein (Active)	
<b>Biological activity</b>	124 nmol/min/mg	124 nmol phosphate incorporated into Akt substrate peptide per minute per mg protein at 30°C for 15 minutes using a final concentration of 50 µM ATP and total of 0.83 µCi/µl P-32.
<b>Purity</b>	> 90 % SDS-PAGE. Affinity purified.	
<b>Expression system</b>	Baculovirus infected Sf9 cells	
<b>Accession</b>	<b><u>P31749</u></b>	
<b>Protein length</b>	Full length protein	
<b>Animal free</b>	No	
<b>Nature</b>	Recombinant	
<b>Species</b>	Human	
<b>Sequence</b>	<pre> MSDVAVKEG WLHKRGEYIK TWRPRYFLLK NDGTFIGYKE RPQDVDQREA PLNNFSVAQC QLMKTERPRP NTFIIRCLQW TTVIERTFHV ETPEEREEWT TAIQTVADGL KKQEEEEEMDF RSGSPSDNSG AEEMEVSLAK PKHRV/TMNEF EYLKLLGKGT FGKVILVKEK ATGRYYAMKI LKKEVIVAKD EVAHTLTENR VLQNSRHPFL TALKYSFQTH DRLCFVMEYA NGGELFFHLS RERVFSEDRA RFYGAEMSA LDYLVHSEKNV VYRDLKLENL MLDKDGHIKI TDFGLCKEGI KDGATMKTFC GTPEYLAPEV LEDNDYGRAV DWWGLGVVMY EMMCGRLPFY NQDHEKLFEL ILMEEIRFPR TLGPEAKSLL SGLLKKDPKQ RLGGGSEDAK EIMQHRFFAG IVWQHVEYK LSPPFKPQVT SETDTRYFDE EFTAQMITIT PPDQDDSMEC VDSERRPHFP QFSYSASGTA </pre>	
<b>Predicted molecular weight</b>	85 kDa including tags	
<b>Amino acids</b>	1 to 480	
<b>Tags</b>	GST tag N-Terminus	

### Specifications

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Our **Abpromise guarantee** covers the use of **ab62279** in the following tested applications.

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

<b>Applications</b>	SDS-PAGE Functional Studies
<b>Form</b>	Liquid
<b>Additional notes</b>	This product is manufactured by BioVision, an Abcam company and was previously called 7701 Akt1, Active. 7701-5 is the same size as the 5 µg size of ab62279.

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## Preparation and Storage

<b>Stability and Storage</b>	Shipped on dry ice. Upon delivery aliquot and store at -80°C. Avoid freeze / thaw cycles. pH: 7.50 Constituents: 0.0038% EGTA, 0.00174% PMSF, 0.00385% (R*,R*)-1,4-Dimercaptobutan-2,3-diol, 0.79% Tris HCl, 0.00292% EDTA, 25% Glycerol (glycerin, glycerine), 0.87% Sodium chloride This product is an active protein and may elicit a biological response in vivo, handle with caution.
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## General Info

<b>Function</b>	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.
<b>Tissue specificity</b>	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.
<b>Involvement in disease</b>	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.

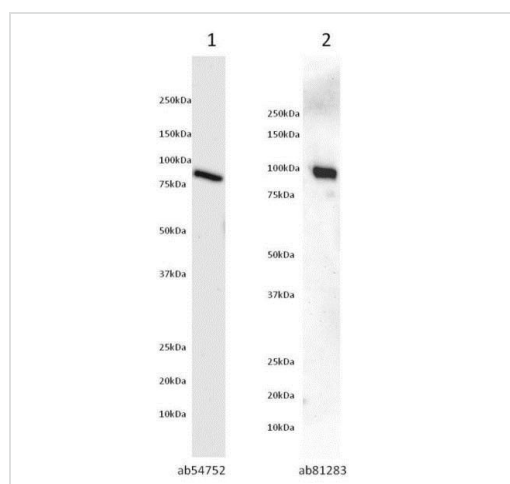
## Post-translational modifications

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

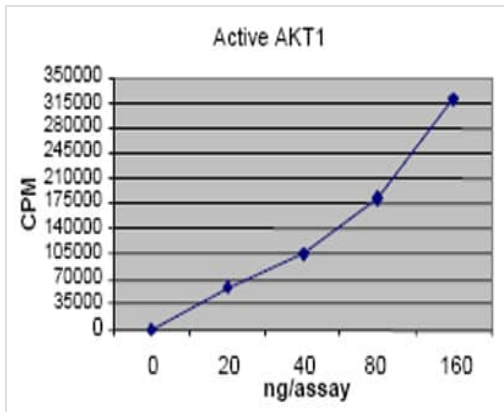
Cytoplasm. Nucleus. Cell membrane. Nucleus after activation by integrin-linked protein kinase 1 (ILK1). Nuclear translocation is enhanced by interaction with TCL1A. Phosphorylation on Tyr-176 by TNK2 results in its localization to the cell membrane where it is targeted for further phosphorylations on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

## Images



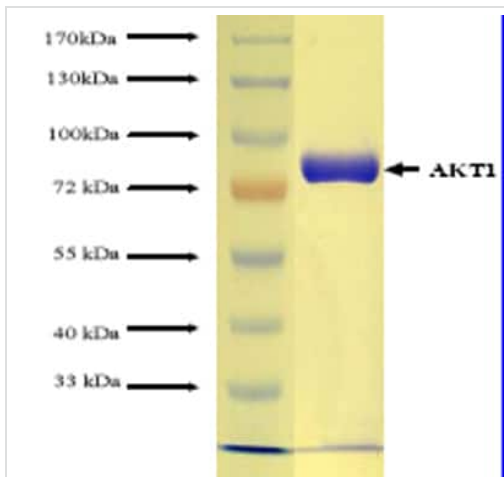
Western blot - Recombinant human AKT1 protein (ab62279)

Primary Antibodies: Lane 1: Anti Akt-1 antibody ([ab54752](#)) at 5µg/mL dilution. Lane 2: Anti Akt-1 antibody ([ab81283](#)) at 1/5000 dilution. Sample: Akt-1 recombinant protein (Tagged)(ab62279) 50ng. Secondary Antibody: Lane 1: Goat polyclonal to Mouse IgG H&L Pre-Adsorbed (HRP) at 1:5000 developed using the ECL technique. Lane 2: Goat polyclonal to Rabbit IgG H&L - Pre-Adsorbed (HRP) at 1:5000 developed using the ECL technique. Performed under reducing conditions. Predicted band size : 80kDa. Observed band size : 80kDa. Blocking step: 5% Milk in 50mM TBS+0.05% Tween for 1 hour at RT. Primary antibody buffer: 5% BSA in 50mM TBS+0.05% Tween overnight at 4°C. Secondary antibody buffer: 10% blocking [ab126587](#) in water for 2 hours at RT. Exposure time : 5 minutes



ab62279 Kinase activity plot.

Functional Studies - Recombinant human AKT1 protein (ab62279)



ab62279 on SDS-PAGE, stained with Coomassie Blue.

Band at ~85kDa.

SDS-PAGE - Recombinant human AKT1 protein (ab62279)

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