

Product datasheet for **RC220361**

AKT1 (NM_001014432) Human Tagged ORF Clone

Product data:

Product Type:	Expression Plasmids
Product Name:	AKT1 (NM_001014432) Human Tagged ORF Clone
Tag:	Myc-DDK
Symbol:	AKT1
Synonyms:	AKT; PKB; PKB-ALPHA; PRKBA; RAC; RAC-ALPHA
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
E. coli Selection:	Kanamycin (25 ug/mL)



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ORF Nucleotide Sequence:

>RC220361 ORF sequence
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC
 GCC**CGGATCGCC**

ATGAGCGACGTGGCTATTGTGAAGGAGGTTGGCTGCACAAACGAGGGGAGTACATCAAGACCTGGCGGC
 CACGCTACTTCCTCCTCAAGAATGATGGCACCTTCATTGGCTACAAGGAGCGGCCGAGGATGTGGACCA
 ACGTGAGGCTCCCTCAACAACCTCTCTGTGGCGCAGTGCCAGCTGATGAAGACGGAGCGGCCCGGCC
 AACACCTTCATCATCCGCTGCCTGCAGTGGACCTGTGATCGAACGCACCTTCCATGTGGAGACTCTG
 AGGAGCGGGAGGAGTGGACAACCGCCATCCAGACTGTGGCTGACGGCCTCAAGAAGCAGGAGGAGGAGGA
 GATGGACTTCCGGTGGGCTCACCCAGTACAACCTCAGGGGCTGAAGAGATGGAGGTGTCCCTGGCCAAG
 CCCAAGCACCGCTGACCATGAACGAGTTTGTGACTACCTGAAGCTGCTGGCAAGGGCAGCTTTCGGCAAGG
 TGATCCTGGTGAAGGAGAAGGCCACAGGCCGCTACTACGCCATGAAGATCCTCAAGAAGGAAGTCATCGT
 GGCCAAGGACGAGGTGGCCACACACTCACCGAGAACCGCTCCTGCAGAACTCCAGGCACCCCTTCTCTC
 ACAGCCCTGAAGTACTCTTCCAGACCCACGACCGCTCTGCTTGTGATGGAGTACGCCAACGGGGGCG
 AGCTGTTCTTCCACCTGTCCCGGAGCGTGTGTTCTCCGAGGACCGGGCCCGCTTCTATGGCGCTGAGAT
 TGTGTCAGCCCTGGACTACCTGCACTCGGAGAAGAAGCTGGTGTACCGGGACCTCAAGCTGGAGAACCTC
 ATGCTGGACAAGGACGGGCACATTAAGATCACAGACTTCGGGCTGTGCAAGGAGGGGATCAAGGACGGTG
 CCACATGAAGACCTTTTGCGCCACCTGAGTACCTGGCCCCGAGGTGCTGGAGGACAATGACTACGG
 CCGTGCAGTGGACTGGTGGGGCTGGGCGTGGTGTACGAGATGATGTGCGGTGCGCTGCCCTTCTAC
 AACCAGGACCATGAGAAGCTTTTGTGCTCATCTCATGGAGGAGATCCGCTTCCCGCCACGCTTGGTC
 CCGAGGCCAAGGATCATGCAGCATCGCTTCTTTGCCGGTATCGTGTGGCAGCAGTGTACGAGAAGAAG
 GGACGCCAAGGATCATGCAGCATCGCTTCTTTGCCGGTATCGTGTGGCAGCAGTGTACGAGAAGAAG
 CTCAGCCACCCCTTCAAGCCCCAGGTACGTCGGAGACTGACACCAGGTATTTTGTGAGGAGTTACGG
 CCCAGATGATCACCATCACACCCTGACCAAGATGACAGCATGGAGTGTGTGGACAGCGAGCGCAGGCC
 CCACTTCCCCAGTTCTCTACTCGGCCAGCGGCACGGCC

ACGCGTACGCGGCCGCTCGAGCAGAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCCTGGATT
 ACAAGGATGACGACGATAAGGTTTAA

Protein Sequence:

>RC220361 protein sequence
 Red=Cloning site Green=Tags(s)

MSDVAIIVKEGWLHKGREYIKTWRPRYFLLKNDGTFIGYKERPQVDVQREAPLNNFSVAQCQLMKTERPRP
 NTFIIRCLQWTTVIERTFHVETPEEREWTTAIQTVADGLKKQEEEEEMDFRSGSPSDNSGAEEMEVSLAK
 PKHRVTMNEFEYLKLLGKGTFGKVIIVKEKATGRYYAMKILKKEVIVAKDEVAHTLTENRVLQNSRHPFL
 TALKYSFQTHDRLCFVMEYANGGELFFHLSRERFVSEDRARFYGAEIVSALDYLHSEKNVYRDLKLENL
 MLDKDGHKIDTDFGLCKEIKDGATMKTFCGTPEYLAPEVLEDNDYGRAVDWGLGVVMYEMMCGRLPFY
 NQDHEKLFELILMEEIRFPRTLGPPEAKSLLSGLLKKDPKQRLGGGSEDAKEIMQHRFFAGIVWQHVEYK
 LSPPFKPQVTSFDTRYFDEEFTAQMITITPPDQDSMECVDSERRPHFPQFSYSASGTA

TRTRPLEQKLISEEDLAANDILDYKDDDDKV

Chromatograms:

https://cdn.origene.com/chromatograms/mk6582_h03.zip

Restriction Sites:

Sgfl-Mlul

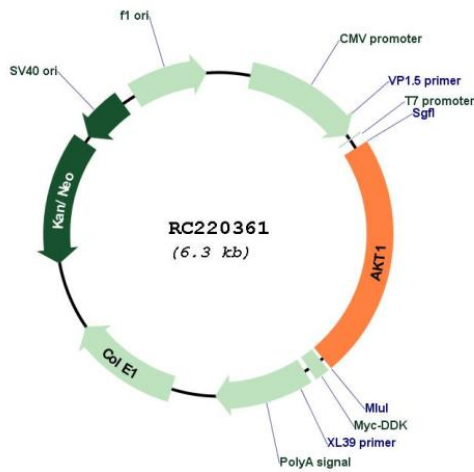
Cloning Scheme:

Cloning sites used for ORF Shutting:



* The last codon before the Stop codon of the ORF

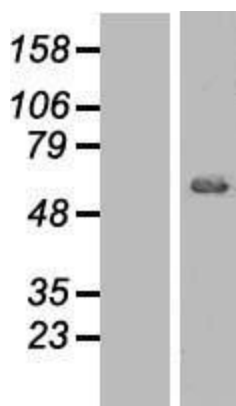
Plasmid Map:



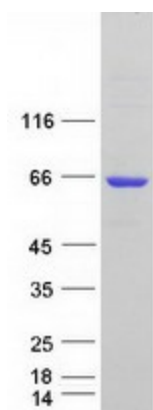
ACCN:	NM_001014432
ORF Size:	1440 bp
OTI Disclaimer:	The molecular sequence of this clone aligns with the gene accession number as a point of reference only. However, individual transcript sequences of the same gene can differ through naturally occurring variations (e.g. polymorphisms), each with its own valid existence. This clone is substantially in agreement with the reference, but a complete review of all prevailing variants is recommended prior to use. More info
OTI Annotation:	This clone was engineered to express the complete ORF with an expression tag. Expression varies depending on the nature of the gene.
Components:	The ORF clone is ion-exchange column purified and shipped in a 2D barcoded Matrix tube containing 10ug of transfection-ready, dried plasmid DNA (reconstitute with 100 ul of water).
Reconstitution Method:	<ol style="list-style-type: none">1. Centrifuge at 5,000xg for 5min.2. Carefully open the tube and add 100ul of sterile water to dissolve the DNA.3. Close the tube and incubate for 10 minutes at room temperature.4. Briefly vortex the tube and then do a quick spin (less than 5000xg) to concentrate the liquid at the bottom.5. Store the suspended plasmid at -20°C. The DNA is stable for at least one year from date of shipping when stored at -20°C.
RefSeq:	NM_001014432.2
RefSeq Size:	2878 bp
RefSeq ORF:	1443 bp
Locus ID:	207
UniProt ID:	P31749
Cytogenetics:	14q32.33
Protein Families:	Druggable Genome, ES Cell Differentiation/IPS, Protein Kinase
Protein Pathways:	Acute myeloid leukemia, Adipocytokine signaling pathway, Apoptosis, B cell receptor signaling pathway, Chemokine signaling pathway, Chronic myeloid leukemia, Colorectal cancer, Endometrial cancer, ErbB signaling pathway, Fc epsilon RI signaling pathway, Fc gamma R-mediated phagocytosis, Focal adhesion, Glioma, Insulin signaling pathway, Jak-STAT signaling pathway, MAPK signaling pathway, Melanoma, mTOR signaling pathway, Neurotrophin signaling pathway, Non-small cell lung cancer, Pancreatic cancer, Pathways in cancer, Progesterone-mediated oocyte maturation, Prostate cancer, Renal cell carcinoma, Small cell lung cancer, T cell receptor signaling pathway, Tight junction, Toll-like receptor signaling pathway, VEGF signaling pathway
MW:	55.7 kDa

Gene Summary:

This gene encodes one of the three members of the human AKT serine-threonine protein kinase family which are often referred to as protein kinase B alpha, beta, and gamma. These highly similar AKT proteins all have an N-terminal pleckstrin homology domain, a serine/threonine-specific kinase domain and a C-terminal regulatory domain. These proteins are phosphorylated by phosphoinositide 3-kinase (PI3K). AKT/PI3K forms a key component of many signalling pathways that involve the binding of membrane-bound ligands such as receptor tyrosine kinases, G-protein coupled receptors, and integrin-linked kinase. These AKT proteins therefore regulate a wide variety of cellular functions including cell proliferation, survival, metabolism, and angiogenesis in both normal and malignant cells. AKT proteins are recruited to the cell membrane by phosphatidylinositol 3,4,5-trisphosphate (PIP3) after phosphorylation of phosphatidylinositol 4,5-bisphosphate (PIP2) by PI3K. Subsequent phosphorylation of both threonine residue 308 and serine residue 473 is required for full activation of the AKT1 protein encoded by this gene. Phosphorylation of additional residues also occurs, for example, in response to insulin growth factor-1 and epidermal growth factor. Protein phosphatases act as negative regulators of AKT proteins by dephosphorylating AKT or PIP3. The PI3K/AKT signalling pathway is crucial for tumor cell survival. Survival factors can suppress apoptosis in a transcription-independent manner by activating AKT1 which then phosphorylates and inactivates components of the apoptotic machinery. AKT proteins also participate in the mammalian target of rapamycin (mTOR) signalling pathway which controls the assembly of the eukaryotic translation initiation factor 4F (eIF4E) complex and this pathway, in addition to responding to extracellular signals from growth factors and cytokines, is dysregulated in many cancers. Mutations in this gene are associated with multiple types of cancer and excessive tissue growth including Proteus syndrome and Cowden syndrome 6, and breast, colorectal, and ovarian cancers. Multiple alternatively spliced transcript variants have been found for this gene. [provided by RefSeq, Jul 2020]

Product images:

Western blot validation of overexpression lysate (Cat# [LY423057]) using anti-DDK antibody (Cat# [TA50011-100]). Left: Cell lysates from untransfected HEK293T cells; Right: Cell lysates from HEK293T cells transfected with RC220361 using transfection reagent MegaTran 2.0 (Cat# [TT210002]).



Coomassie blue staining of purified AKT1 protein (Cat# [TP320361]). The protein was produced from HEK293T cells transfected with AKT1 cDNA clone (Cat# RC220361) using MegaTran 2.0 (Cat# [TT210002]).