

## Product datasheet for **RC400163**

### **AKT1 (NM\_005163) Human Mutant ORF Clone**

#### **Product data:**

Product Type:	Mutant ORF Clones
Product Name:	AKT1 (NM_005163) Human Mutant ORF Clone
Mutation Description:	E17K
Affected Codon#:	17
Affected NT#:	c.49
Nucleotide Mutation:	AKT1 Mutant (E17K), Myc-DDK-tagged ORF clone of Homo sapiens v-akt murine thymoma viral oncogene homolog 1 (AKT1), transcript variant 1 as transfection-ready DNA
Effect:	Missense
Symbol:	AKT1
Synonyms:	AKT; PKB; PKB-ALPHA; PRKBA; RAC; RAC-ALPHA
E. coli Selection:	Kanamycin (25 ug/mL)
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
Tag:	Myc-DDK
ACCN:	NM_005163
ORF Size:	1440 bp
Restriction Sites:	Sgfl-Mlul



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**ORF Nucleotide Sequence:**

>RC400163 representing NM\_005163  
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
 GCC**CGATCGCC**

ATGAGCGACGTGGCTATTGTGAAGGAGGTTGGCTGCACAAACGAGGGAAGTACATCAAGACCTGGCGGC  
 CACGCTACTTCTCCTCAAGAATGATGGCACCTTCATTGGCTACAAGAGCGGCCGAGGATGTGGACCA  
 ACGTGAGGCTCCCTCAACAACCTCTCTGTGGCGCAGTGCCAGCTGATGAAGACGGAGCGCCCGGCC  
 AACACCTTCATCATCCGCTGCCTGCAGTGGACCTGTGATCGAACGCACCTTCCATGTGGAGACTCTG  
 AGGAGCGGGAGGAGTGGACAACCGCCATCCAGACTGTGGCTGACGGCCTCAAGAAGCAGGAGGAGGGA  
 GATGGACTTCCGGTGGGCTCACCCAGTACAACCTCAGGGGCTGAAGAGATGGAGGTGTCCCTGGCCAAG  
 CCCAAGCACCGCTGACCATGAACGAGTTTGTGACTACGAGTGTGGCAAGGGCAGCTTTCGGCAAGG  
 TGATCCTGGTGAAGGAGAAGGCCACAGGCCGCTACTACGCCATGAAGATCCTCAAGAAGGAAGTCATCGT  
 GGCCAAGGACGAGGTGGCCACACACTCACCGAGAACCGGCTCCTGCAGAACTCCAGGCACCCCTTCTCTC  
 ACAGCCCTGAAGTACTTTCCAGACCCACGACCGCTCTGCTTTGTGATGGAGTACGCCAACGGGGGCG  
 AGCTGTTCTTCCACCTGTCCCGGGAGCGTGTGTTCTCCGAGGACCGGGCCCGCTTCTATGGCGCTGAGT  
 TGTGTGACCCCTGGACTACCTGCACTCGGAGAAGAAGTGGTGTACCGGGACCTCAAGCTGGAGAACCTC  
 ATGCTGGACAAGGACGGGCACATTAAGATCACAGACTTCGGGCTGTGCAAGGAGGGGATCAAGGACGGTG  
 CCACATGAAGACCTTTTGGCGCACACCTGAGTACCTGGCCCCGAGGTGCTGGAGGACAATGACTACGG  
 CCGTGCAGTGGACTGGTGGGGCTGGGCGTGGTGTACGAGATGATGTGCGGTGCGCTGCCCTTCTAC  
 AACCAGGACCATGAGAAGCTTTTGTGCTCATCTCATGGAGGAGATCCGCTTCCCGCCACGCTTGGTC  
 CCGAGGCCAAGGATCATGCAGCATCGTTCTTTGCCGGTATCGTGTGGCAGCAGTGTACGAGAAGAAG  
 GGACGCCAAGGAGATCATGCAGCATCGTTCTTTGCCGGTATCGTGTGGCAGCAGTGTACGAGAAGAAG  
 CTCAGCCACCCCTTCAAGCCCCAGGTACGTCGGAGACTGACACCAGGTATTTTGTGAGGAGTTACGG  
 CCCAGATGATCACCATCACACCCTGACCAAGATGACAGCATGGAGTGTGTGGACAGCGAGCGCAGGCC  
 CCACTTCCCCAGTTCTCTACTCGGCCAGCGGCACGGCC

**ACGGTACGCGGCCGCTCGAGCAGAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCTGGATT**  
**ACAAGGATGACGACGATAAGGTTTAA**

**Protein Sequence:**

>RC400163 representing NM\_005163  
 Red=Cloning site Green=Tags(s)

MSDVAVKEGWLHKRGYIKTWRPRYFLLKNDGTFIGYKERPQDQREAPLNNFSVAQCQLMKTERPRP  
 NTFIIRCLQWTTVIERTFHVETPEEREWTTAIQTVADGLKKQEEEEEMDFRSGSPSDNSGAEEMEVSLAK  
 PKHRVTMNEFEYLKLLGKGTFGKVLVKEKATGRYYAMKILKKEVIVAKDEVAHTLTENRVLQNSRHPFL  
 TALKYSFQTHDRLCFVMEYANGGELFFHLSRERFVSEDRARFYGAEIVSALDYLHSEKNVYRDLKLENL  
 MLDKDGHKIDTDFGLCKEIKDGATMKTFCGTPEYLAPEVLEDNDYGRAVDWGLGVVMYEMMCGRLPFY  
 NQDHEKLFELILMEEIRFPRTLGPPEAKSLLSGLLKKDPKQRLGGGSEDAKEIMQHRFFAGIVWQHVEYK  
 LSPPFKPQVTDTRYFDEEFTAQMITITPPDQDSMECVDSERRPHFPQFSYSASGTA

**TRTRPLEQKLISEEDLAANDILDYKDDDDKV**

**Chromatograms:**

/chromatograms/ja1646\_c09.zip

**Restriction Sites:**

Sgfl-MluI

**Cloning Scheme:**

**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).

**Note:**

Plasmids are not sterile. For experiments where strict sterility is required, filtration with 0.22um filter is required.

**RefSeq:**

[NP\\_005154](#)

**RefSeq Size:**

3008 bp

**RefSeq ORF:**

1443 bp

**Locus ID:**

207

**Cytogenetics:**

14q32.33

**Domains:**

pkinese, S\_TK\_X, TyrKc, PH, S\_TKc

**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 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]