

## Product datasheet for **RG220361**

### **AKT1 (NM\_001014432) Human Tagged ORF Clone**

#### **Product data:**

Product Type:	Expression Plasmids
Product Name:	AKT1 (NM_001014432) Human Tagged ORF Clone
Tag:	TurboGFP
Symbol:	AKT1
Synonyms:	AKT; PKB; PKB-ALPHA; PRKBA; RAC; RAC-ALPHA
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-AC-GFP (PS100010)
E. coli Selection:	Ampicillin (100 ug/mL)



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**ORF Nucleotide Sequence:**

>RG220361 representing NM\_001014432  
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
 GCC**CGGATCGCC**

ATGAGCGACGTGGCTATTGTGAAGGAGGTTGGCTGCACAAACGAGGGGAGTACATCAAGACCTGGCGGC  
 CACGCTACTTCCTCCTCAAGAATGATGGCACCTTCATTGGCTACAAGGAGCGGCCGAGGATGTGGACCA  
 ACGTGAGGCTCCCTCAACAACCTCTCTGTGGCGCAGTGCCAGCTGATGAAGACGGAGCGGCCCGGCC  
 AACACCTTCATCATCCGCTGCCTGCAGTGGACCTGTGATCGAACGCACCTTCCATGTGGAGACTCTG  
 AGGAGCGGGAGGAGTGGACAACCGCCATCCAGACTGTGGCTGACGGCCTCAAGAAGCAGGAGGAGGAGGA  
 GATGGACTTCCGGTGGGCTCACCCAGTACAACCTCAGGGGCTGAAGAGATGGAGGTGTCCCTGGCCAAG  
 CCCAAGCACCGCGTGACCATGAACGAGTTTGTGACTACCTGAAGCTGCTGGCAAGGGCACTTTCGGCAAGG  
 TGATCCTGGTGAAGGAGAAGGCCACAGGCCGCTACTACGCCATGAAGATCCTCAAGAAGGAAGTCATCGT  
 GGCCAAGGACGAGGTGGCCACACACTCACCGAGAACCGCGTCTGCAGAACTCCAGGCACCCCTTCTCTC  
 ACAGCCCTGAAGTACTCTTCCAGACCCACGACCCTCTGCTTTGTGATGGAGTACGCCAACGGGGGCG  
 AGCTGTTCTTCCACCTGTCCCGGGAGCGTGTGTTCTCCGAGGACCGGGCCCGCTTCTATGGCGCTGAGT  
 TGTGTGACCCCTGGACTACCTGCACTCGGAGAAGAAGCTGGTGTACCGGGACCTCAAGCTGGAGAACCTC  
 ATGCTGGACAAGGACGGGCACATTAAGATCACAGACTTCGGGCTGTGCAAGGAGGGGATCAAGGACGGTG  
 CCACATGAAGACCTTTTGCGGCACACCTGAGTACCTGGCCCCGAGGTGCTGGAGGACAATGACTACGG  
 CCGTGCAGTGGACTGGTGGGGCTGGGCGTGGTGTACGAGATGATGTGCGGTGCGCTGCCCTTCTAC  
 AACCAGGACCATGAGAAGCTTTTGTGCTCATCCTCATGGAGGAGATCCGCTTCCCGCGCACGCTTGGTC  
 CCGAGGCCAAGTCTTGTCTTTCAGGGCTGCTCAAGAAGGACCCCAAGCAGAGGCTTGGCGGGGCTCCGA  
 GGACGCCAAGGAGATCATGCAGCATCGCTTCTTTGCCGGTATCGTGTGGCAGCACGTGTACGAGAAGAAG  
 CTCAGCCACCCCTCAAGCCCCAGGTACGTCGGAGACTGACACCAGGTATTTTGTGAGGAGTTACCGG  
 CCCAGATGATCACCATCACACCCTGACCAAGATGACAGCATGGAGTGTGTGGACAGCGAGCGCAGGCC  
 CCACTTCCCCAGTTCTCTACTCGGCCAGCGGCACGGCC

**ACGCGTACGCGGCCGCTCGAG** - GFP Tag - GTTTAA

**Protein Sequence:**

>RG220361 representing NM\_001014432  
 Red=Cloning site Green=Tags(s)

MSDVAIVKEGWLHKGREYIKTWRPRYFLLKNDGTFIGYKERPDVDQREAPLNNFSVAQCQLMKTERPRP  
 NTFIIRCLQWTTVIERTFHVETPEEREWTTAIQTVADGLKKQEEEEEMDFRSGSPSDNSGAEEMEVS  
 LAKPKHRVTMNEFEYLKLLGKGTGKVLVKEKATGRYYAMKILKKEVIVAKDEVAHTLTENRVLQNSRHPFL  
 TALKYSFQTHDRLCFVMEYANGGELFFHLSRERVFSEDRARFYGAIEVSALDYHSEKNVYRDLKLENL  
 MLDKDGHIKITDFGLCKEIKDGATMKTFCGTPEYLAPEVLEDNDYGRAVDWWGLGVVYEMMCGRLPFY  
 NQDHEKLFELILMEEIRFPRTLGPPEAKSLLSGLLKKDPKQRLGGGSEDAKEIMQHRFFAGIVWQHVEYK  
 LSPPFKQVTSSETDTRYFDEEFTAQMITITPPDQDSMECVDSERRPHFPQFSYSASGTA

**TRTRPLE** - GFP Tag - V

**Chromatograms:**

[https://cdn.origene.com/chromatograms/ja2732\\_g12.zip](https://cdn.origene.com/chromatograms/ja2732_g12.zip)

**Restriction Sites:**

Sgfl-Mlul

**Cloning Scheme:**


**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:**

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

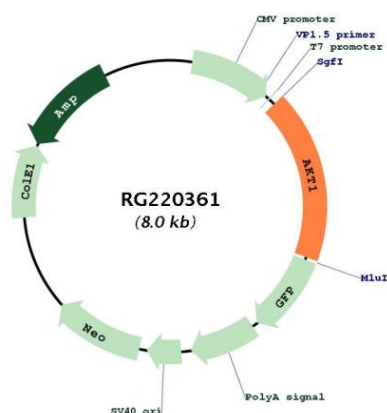
**Locus ID:** 207

**UniProt ID:** [P31749](#)

**Cytogenetics:** 14q32.33

<b>Protein Families:</b>	Druggable Genome, ES Cell Differentiation/IPS, Protein Kinase
<b>Protein Pathways:</b>	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
<b>Gene Summary:</b>	<p>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]</p>

Product images:



Circular map for RG220361