

Product datasheet for **MG226761**

Akt2 (NM_001110208) Mouse Tagged ORF Clone

Product data:

Product Type:	Expression Plasmids
Product Name:	Akt2 (NM_001110208) Mouse Tagged ORF Clone
Tag:	TurboGFP
Symbol:	Akt2
Synonyms:	2410016A19Rik; AW554154; PKB; PKBbeta
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-AC-GFP (PS100010)
E. coli Selection:	Ampicillin (100 ug/mL)



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ORF Nucleotide Sequence:

>MG226761 representing NM_001110208
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC
 GCC**CGGATCGCC**

ATGAATGAGGTATCTGTATCAAAAGAAGGCTGGCTCCACAAACGTGGTGAATACATCAAGACCTGGAGGC
 CACGGTACTTCCCTCTGAAGAGTGATGGATCTTTTCATTGGGTATAAGGAGAGGCCCGAGGCCCTGACCA
 GACCTTACCCCCCTGAACAATTTCTCTGTAGCAGAATGCCAGCTGATGAAGACTGAGAGGCCACGACCC
 AACACCTTTGTACATCGCTGCCTGCAGTGGACCACAGTATCGAGAGGACCTTCCATGTAGACTCTCCAG
 ATGAGAGGGAAGAGTGGATGCGGGCTATCCAGATGGTCCGCAACAGTCTGAAGCAGCGGGGCCAGGTGA
 GGACGCCATGGATTACAAGTGTGGCTCCCCAGTACTTCCACATCTGAGATGATGGAGGTAGCTGTC
 AACAGGCACGGGCCAAAGTGACCATGAATGACTTCGATTATCTCAAACCTCTCGCAAGGGCACCTTCG
 GCAAGGTCATTCTGGTTCGAGAGAAGGCCACTGGCCGCTATTATGCCATGAAGATCTCGCAAGGAGGT
 CATCATTGCAAAGGATGAAGTCGCCACACAGTACAGAGAGCCGGGTTCTGCAGAATACCAGGCACCCC
 TTCTTACAGCCCTCAAGTATGCCTTCCAGACCATGACCGCCTATGCTTTGTGATGGAGTATGCCAACG
 GGGGTGAGCTGTTTTCCACCTCTCTCGGGAGCGAGTCTTACGGAGGATCGGGCGCGCTTTTATGGAGC
 AGAGATTGTGTCAGCTCTGGAGTATTTGCACTCGAGAGATGTGGTGTACCGTGACATCAAGCTGGAAAA
 CTTATGTTGGACAAAGATGGCCACATCAAGTCACTGACTTTGGCTTGTGCAAAGAGGGCATCAGTGATG
 GAGCCACCATGAAAACCTTCTGTGGTACCCCGGAGTACTTGGCGCTGAGGTGCTAGAGGACAATGACTA
 TGGCGGAGCAGTGGACTGGTGGGGCTGGGTGTGGTCAATGATGAGATGATGTGTGGCCGCTGCCATTC
 TACAACAGGACCAGAGCGCCTCTTTGAGTCACTTCTTATGGAGGAGATCCGCTTCCCGGCACACTCG
 GGCCAGAGGCCAAGTCCCTGCTGGCTGGACTGCTGAAGAAGGACCCAAAGCAGAGGCTCGCGGAGTCC
 CAGTGATGCGAAGGAGGTCATGGAGCATAGATTCTTCTCAGCATCAACTGGCAGGACGTGGTACAGAAA
 AAGCTCTGCCACCCTTCAAACCTCAGGTCACTTCAGAAGTGACACAAGGTACTTTGATGACGAGTTCA
 CCGCCAGTCCATCAAAATCACACCCAGACCGATATGACAGCCTGGACCCGCTGGAACCTGGACCAGCG
 GACGCACTTCCCCAGTCTCTACTCAGCCAGCATCCGAGAG

ACGCGTACGCGGCCGCTCGAG - GFP Tag - GTTTAA

Protein Sequence:

>MG226761 representing NM_001110208
 Red=Cloning site Green=Tags(s)

MNEVSVIKGWLHKRGEYIKTWRPRYFLLKSDGSFIGYKERPEAPDQTLPLNFSVAECQLMKTERPRP
 NTFVIRCLQWTTVIERTFHVDSPDEREEMRAIQMVANSLKQRGPGEDAMDYKCGSPSDSSTSEMMEVAV
 NKARAKVTMNDFDYLKLLGKGTGKIVLVREKATGRYYAMKILRKEVIIAKDEVAHTVTESRVLQNRHP
 FLTALKYAFQTHDRLCFVMEYANGGELFFHL SRERVFTEDRARFYGAEIVSALEYLHSRDVVYRDIKLEN
 LMLDKDGHKIDTDFGLCKEGISDGATMKTFCGTPEYLAPEVLEDNDYGRAVDWWGLGVVMEYEMMCGRLPF
 YNQDHERLFELILMEEIRFPRTLGPPEAKSLLAGLLKDPKQRLGGPSDAKEVMEHRFFLSINWQDVVQK
 KLLPPFPKQVTSEVDTRYFDDEFTAQSITITPPDRYDSLDPLELDQRTHFHPQFSYSASIRE

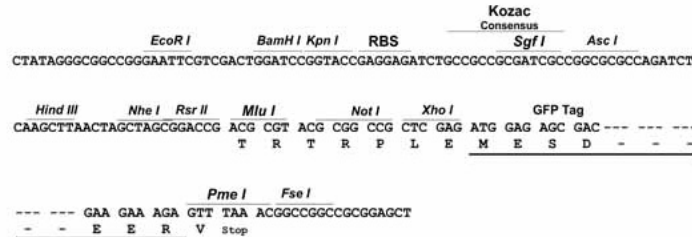
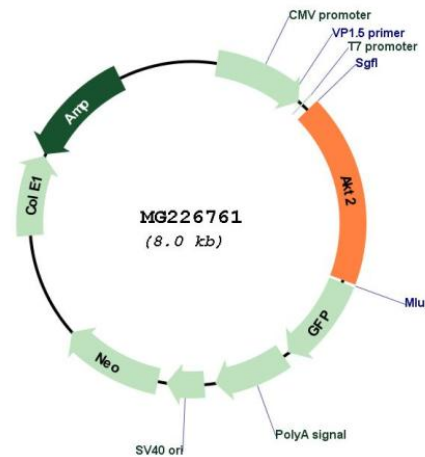
TRTRPLE - GFP Tag - V

Restriction Sites:

Sgfl-MluI

Cloning Scheme:

Cloning sites used for ORF Shutting:


Plasmid Map:

ACCN: NM_001110208

ORF Size: 1443 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_001110208.2](#)

RefSeq Size: 3199 bp

RefSeq ORF: 1446 bp

Locus ID: 11652

UniProt ID: [Q60823](#)

Cytogenetics: 7 15.94 cM

Gene Summary:

AKT2 is one of 3 closely related serine/threonine-protein kinases (AKT1, AKT2 and AKT3) called the AKT kinases, and which regulate many processes including metabolism, proliferation, cell survival, growth and angiogenesis. This is mediated through serine and/or threonine phosphorylation of a range of downstream substrates. Over 100 substrate candidates have been reported so far, but for most of them, no isoform specificity has been reported. AKT is responsible of the regulation of glucose uptake by mediating insulin-induced translocation of the SLC2A4/GLUT4 glucose transporter to the cell surface. Phosphorylation of PTPN1 at 'Ser-50' negatively modulates its phosphatase activity preventing dephosphorylation of the insulin receptor and the attenuation of insulin signaling. Phosphorylation of TBC1D4 triggers the binding of this effector to inhibitory 14-3-3 proteins, which is required for insulin-stimulated glucose transport. AKT regulates also the storage of glucose in the form of glycogen by phosphorylating GSK3A at 'Ser-21' and GSK3B at 'Ser-9', resulting in inhibition of its kinase activity. Phosphorylation of GSK3 isoforms by AKT is also thought to be one mechanism by which cell proliferation is driven. AKT regulates also cell survival via the phosphorylation of MAP3K5 (apoptosis signal-related kinase). Phosphorylation of 'Ser-83' decreases MAP3K5 kinase activity stimulated by oxidative stress and thereby prevents apoptosis. AKT 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. AKT is involved in the phosphorylation of members of the FOXO factors (Forkhead family of transcription factors), leading to binding of 14-3-3 proteins and cytoplasmic localization. In particular, FOXO1 is phosphorylated at 'Thr-24', 'Ser-256' and 'Ser-319'. FOXO3 and FOXO4 are phosphorylated on equivalent sites. AKT has an important role in the regulation of NF-kappa-B-dependent gene transcription and positively regulates the activity of CREB1 (cyclic AMP (cAMP)-response element binding protein). The phosphorylation of CREB1 induces the binding of accessory proteins that are necessary for the transcription of pro-survival genes such as BCL2 and MCL1. AKT phosphorylates 'Ser-454' on ATP citrate lyase (ACLY), thereby potentially regulating ACLY activity and fatty acid synthesis. Activates the 3B isoform of cyclic nucleotide phosphodiesterase (PDE3B) via phosphorylation of 'Ser-273', resulting in reduced cyclic AMP levels and inhibition of lipolysis. Phosphorylates PIKFYVE on 'Ser-318', which results in increased PI(3)P-5 activity. The Rho GTPase-activating protein DLC1 is another substrate and its phosphorylation is implicated in the regulation cell proliferation and cell growth. AKT plays a role as 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. 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). AKT mediates the antiapoptotic effects of IGF-I. Essential for the SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly. May be involved in the regulation of the placental development.[UniProtKB/Swiss-Prot Function]