

Product datasheet for **MR227383**

Prkaa1 (NM_001013367) Mouse Tagged ORF Clone

Product data:

Product Type:	Expression Plasmids
Product Name:	Prkaa1 (NM_001013367) Mouse Tagged ORF Clone
Tag:	Myc-DDK
Symbol:	Prkaa1
Synonyms:	AI194361; AI450832; AL024255; AMPKalpha1; C130083N04Rik
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
E. coli Selection:	Kanamycin (25 ug/mL)



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ORF Nucleotide Sequence:

>MR227383 representing NM_001013367
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC
 GCC**CGCATCGCC**

ATGCGCAGACTCAGTTCCTGGAGAAAGATGGCGACGGCCGAGAAGCAGAAGCACGACGGCGGGTGAAGA
 TCGGCCACTACATCCTGGGGACACGCTTGGTGTGCGCACCTTCGGGAAAGTGAAGGTGGCAAGCACGA
 GTTGACCGGACATAAAGTGGCTGTGAAGATACTCAACCGCAGAAGATTCGGAGCCTTGACGTGGTGGGA
 AAAATCCGCCGGGAGATTGAGAAGCTGAAGCTGTTGAGGCACCTCACATCATCAAAGTGTACCAGGTCA
 TCAGTACACCATCTGATATTTTCATGGTGTGGAATATGTCTCTGGAGGAGAGCTATTTGATTATATCTG
 TAAAAATGGAAGTTGGACGAAAAGGAAAGCCGCCGTCTGTTCCAGCAGATCCTTTCCGGTGTGGATTAT
 TGTACAGGCATATGGTGGTCCACAGAGATTTGAAACCTGAGAAGCTCCTGCTTGTGCACACATGAATG
 CAAAGATAGCCGACTTTGGTCTTTCAAACATGATGTCAGATGGTGAATTTTAAAGAACAAGCTGTGGCTC
 ACCCAATTATGCCGCACCAAGAAGTCATTTAGGAAGATTGTACGCAGGCCCGAGGTGGACATCTGGAGC
 AGCGGGGTCAATCTCTATGCTTTGCTGTGTGGAACCTCCCTTTTGTATGATGACCATGTGCCAACTCTT
 TTAAGAAGATATGTGATGGGATCTTTATACCCCTCAGTACTTAAACCTTCAGTAATCAGCCTTTTGAA
 ACATATGCTGCAGGTGGATCCCATGAAGAGGGCCGAATAAAGATATCAGGGAACACGAGTGGTTAAA
 CAGGACCTTCCGAAGTATCTCTTTCCTGAGGACCCATCTTATAGTTCAACCATGATCGATGACGAAGCCT
 TGAAAGAAGTGTGTGAGAAGTTCGAGTGTTCGGAGGAGGAGTCCCTCAGCTGCCTGTACAACAGAAACCA
 CCAGGACCCACTAGCCGTCGCCTACCACCTCATCATAGACAACAGGAGAATAATGAATGAAGCCAAAGAT
 TTCTACCTAGCAACCAGCCACCTGACTCTTCTGGACGACCACATTTAACTCGGCCTCACCCGTGAAA
 GAGTACCGTTCTTGGTTGCCGAAACACCCAGGCCCGGCACACCTGGATGAATTAACCCACAGAAATC
 CAAACACCAAGGTGTACGGAAGGCAAAATGGCATTGGGAATTCGAAGTCAAAGCCGACCAATGATATC
 ATGGCAGAAGTTGTAGAGCAATCAAGCAGTTGGATTATGAATGGAAGTTGTAACCCCTATTATTTGTC
 GTGTACGAAGGAAGAATCCTGTGACAAGCACATTTTCCAAAATGAGTCTACAGCTATACCAAGTGGATAG
 TAGGACTTACTTGTGGATTTCCGTAGTATTGATGATGAGATTACAGAAGCCAAATCAGGGACTGCTACT
 CCACAGAGATCGGGATCCATCAGCAACTATCGATCTTGCCAAAGGAGTACTCTGATGCCGAAGCTCAAG
 GAAAGCCCTCAGACGTCTCCCTACCTCATCTGTACCTCCCTCGACTCCTCCCTGTGACGATAGCTCC
 AAGACCAGGAAGTCATACAATAGAATTTTTTGAATGTGTGCAAAATCTAATTAATTTCTTGACAG

ACGCGTACGCGGCCGCTCGAGCAGAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCCTGGATT
 ACAAGGATGACGACGATAAGGTTTAA

Protein Sequence:

>MR227383 representing NM_001013367
 Red=Cloning site Green=Tags(s)

MRRLLSSWRKMATAEKQKHDGRVKIGHYILGDTLGVGTFGKVKVKGHELTGHKVAVKILNRQKIRSLDVG
 KIRREIQNLKLFRRPHI IKLYQVISTPSDIFMVMEYVSGGELFDYICKNGRLDEKESRRLFQQILSGVDY
 CHRHMVVHRDLKPENVLLDAHNAKIADFGLSNMMSDGEFLRTSCGSPNYAAPEVISGRLYAGPEVDIWS
 SGVILYALLCGTLPFDDHVPTLFKKICDGI FYTPQYLNPSVISLLKHMLQVDPMKRAAIKDIREHEWFK
 QDLPKYLPEDPSYSSTMIDDEALKEVCEKFECEEEVL SCLYNRNHQDPLAVAYHLIIDNRRIMNEAKD
 FYLATSPDPSFLDDHHLTRPHPERVPFLVAETPRARHTLDELNPQKSKHQGVRKAKWHLGIRSQSRPNDI
 MAEVCRAIKQLDYEWKVNPPYLRVRRKNPVTSTFSKMSLQLYQVDSRTYLLDFRSIDDEITEAKSGTAT
 PQRSGSISNYRSCQRSDSAEAQKPSDVSLTSSVTSLDSSPVDVAPRPGSHTIEFFEMCANLIKILAQ

TRTRPLEQKLI SEEDLAANDILDYKDDDDKV

Chromatograms:

https://cdn.origene.com/chromatograms/mm9010_a08.zip

Restriction Sites:

Sgfl-MluI

Cloning Scheme:


ACCN: NM_001013367

ORF Size: 1677 bp

OTI Disclaimer: Due to the inherent nature of this plasmid, standard methods to replicate additional amounts of DNA in E. coli are highly likely to result in mutations and/or rearrangements. Therefore, OriGene does not guarantee the capability to replicate this plasmid DNA. Additional amounts of DNA can be purchased from OriGene with batch-specific, full-sequence verification at a reduced cost. Please contact our customer care team at custsupport@origene.com or by calling 301.340.3188 option 3 for pricing and delivery.

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_001013367.3](#), [NP_001013385.3](#)

RefSeq Size: 4655 bp

RefSeq ORF: 1680 bp

Locus ID: 105787

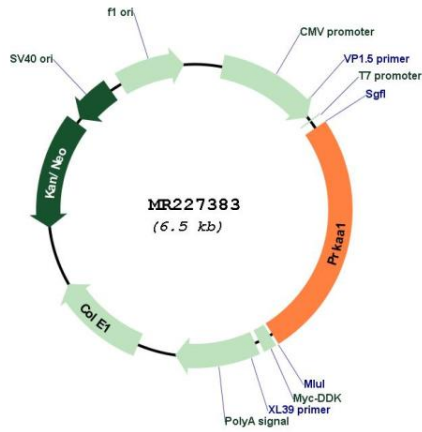
UniProt ID: [Q5EG47](#)

Cytogenetics: 15 A1

MW: 64.4 kDa

Gene Summary: Catalytic subunit of AMP-activated protein kinase (AMPK), an energy sensor protein kinase that plays a key role in regulating cellular energy metabolism. In response to reduction of intracellular ATP levels, AMPK activates energy-producing pathways and inhibits energy-consuming processes: inhibits protein, carbohydrate and lipid biosynthesis, as well as cell growth and proliferation. AMPK acts via direct phosphorylation of metabolic enzymes, and by longer-term effects via phosphorylation of transcription regulators. Also acts as a regulator of cellular polarity by remodeling the actin cytoskeleton; probably by indirectly activating myosin. Regulates lipid synthesis by phosphorylating and inactivating lipid metabolic enzymes such as ACACA, ACACB, GYS1, HMGCR and LIPE; regulates fatty acid and cholesterol synthesis by phosphorylating acetyl-CoA carboxylase (ACACA and ACACB) and hormone-sensitive lipase (LIPE) enzymes, respectively. Regulates insulin-signaling and glycolysis by phosphorylating IRS1, PFKFB2 and PFKFB3. AMPK stimulates glucose uptake in muscle by increasing the translocation of the glucose transporter SLC2A4/GLUT4 to the plasma membrane, possibly by mediating phosphorylation of TBC1D4/AS160. Regulates transcription and chromatin structure by phosphorylating transcription regulators involved in energy metabolism such as CRTC2/TORC2, FOXO3, histone H2B, HDAC5, MEF2C, MLXIPL/ChREBP, EP300, HNF4A, p53/TP53, SREBF1, SREBF2 and PPARGC1A. Acts as a key regulator of glucose homeostasis in liver by phosphorylating CRTC2/TORC2, leading to CRTC2/TORC2 sequestration in the cytoplasm. In response to stress, phosphorylates 'Ser-36' of histone H2B (H2BS36ph), leading to promote transcription. Acts as a key regulator of cell growth and proliferation by phosphorylating TSC2, RPTOR and ATG1/ULK1: in response to nutrient limitation, negatively regulates the mTORC1 complex by phosphorylating RPTOR component of the mTORC1 complex and by phosphorylating and activating TSC2. In response to nutrient limitation, promotes autophagy by phosphorylating and activating ATG1/ULK1. In that process also activates WDR45. In response to nutrient limitation, phosphorylates transcription factor FOXO3 promoting FOXO3 mitochondrial import (PubMed:23283301). AMPK also acts as a regulator of circadian rhythm by mediating phosphorylation of CRY1, leading to destabilize it. May regulate the Wnt signaling pathway by phosphorylating CTNNB1, leading to stabilize it. Also has tau-protein kinase activity: in response to amyloid beta A4 protein (APP) exposure, activated by CAMKK2, leading to phosphorylation of MAPT/TAU; however the relevance of such data remains unclear in vivo. Also phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1.[UniProtKB/Swiss-Prot Function]

Product images:



Circular map for MR227383