

## Product datasheet for **MR219469**

### **Kcna2 (NM\_008417) Mouse Tagged ORF Clone**

#### **Product data:**

Product Type:	Expression Plasmids
Product Name:	Kcna2 (NM_008417) Mouse Tagged ORF Clone
Tag:	Myc-DDK
Symbol:	Kcna2
Synonyms:	Akr6a4; ENSMUSG00000074335; Gm10672; Kca1-2; Kv1.2; Mk-2
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
E. coli Selection:	Kanamycin (25 ug/mL)



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**ORF Nucleotide Sequence:**

>MR219469 representing NM\_008417  
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
 GCC**CGCATCGCC**

ATGACAGTGGCTACCGGAGACCCAGTGGACGAGGCTGCTGCCCTCCCTGGGCACCCACAAGACACCTATG  
 ACCCAGAGGCAGACCATGAATGCTGTGAGAGAGTGGTCATCAACATCTCAGGCCTGCGGTTCCGAACTCA  
 GCTAAAGACCTTAGCCAGTTCCAGAGACCTCTTAGGGGACCCCAAGAAACGGATGAGTACTTCGAT  
 CCCCTCCGAAATGAGTACTTTTTGATCGCAACCGCCCTAGCTTTGATGCCATTTGTACTACTATCAGT  
 CTGGGGGCGAGTTGAGGCGACCTGTGAACGTGCCCTAGATATCTTCTCGGAAGAAATCCGGTTTTATGA  
 GCTAGGAGAAGAAGCAATGGAGATGTTTCGGGAGGATGAAGGCTACATCAAGGAAGAAGAGCGTCTCTG  
 CCTGAAATGAGTTTCAGAGACAGGTGTGGCTTCTTTGAATACCCTGAGAGCTCAGGGCTGCCAGGA  
 TTATAGCCATTGTATCTGTGATGGTCATTCTGATCTCCATCGTCAGCTTCTGTCTGGAACCTTGCCCAT  
 CTTCCGGGATGAGAATGAGGACATGCATGGTGGCGGGTGACCTCCACACCTATTCCAACAGCACCATC  
 GGGTACCAGCAGTCCACCTCCTTACCAGACCTTTCTTATTGTAGAGACTCTCTGCATCATCTGGTTCT  
 CCTTTGAGTTTCTGGTTAGATTCTTGCCTGTCCAGCAAAGCTGGCTTCTTACCAACATCATGAACAT  
 CATTGACATTGTGGCTATCATCCCTTACTTTATCACCTGGGGACAGAGTTAGCTGAGAAGCCAGAGGAC  
 GCCCAGCAAGGCCAGCAGGCCATGTCACTGGCCATTCTCCGTGTCATCCGGTTGGTAAGAGTCTTTAGGA  
 TTTTCAAGTTGTCCAGACACTCCAAAGGTCTACAGATTCTAGGTGAGACCTCAAAGCTAGCATGAGGGA  
 ATTGGGCTCCTGATATTCTTCTTCTTATTGGGGTATCCTCTTCTCTAGTGCTGTCTATTTTGCAGAA  
 GCTGATGAGAGAGATTCCAGTTCCCGAGCATCCCGATGCTTTCTGGTGGGCAGTCGTCTCCATGACAA  
 CTGTAGGCTATGGAGACATGGTTCCAATACCATTGGGGGAAGATAGTGGGTTCTCTGTGTCAATTGC  
 AGGTGTGTTAACCATTGCCTTACCAGTCCCTGTCATAGTGTCTAATTTCAACTACTTCTACCACCGGGAG  
 ACAGAGGGAGAGGAGCAGGCCAGTACTTGCAAGTGACAAGCTGTCCAAAGATCCCGTCTCCCTGACC  
 TAAAGAAAAGTAGAAGTGCCTCTACCATAAGTAAGTCTGATTACATGGAGATACAGGAGGGAGTTAA  
 CAGCAATGAGGACTTTAGAGAGGAGAACTTAAAAACAGCAACTGTACCTTGGCTAACACAACTATGTG  
 AATATTACCAAAATGTTAACTGATGTC

**ACGCGT**ACGCGGCCGCTCGAGCAGAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCTGGATT  
 ACAAGGATGACGACGATAAGGTTTAA

**Protein Sequence:**

>MR219469 representing NM\_008417  
 Red=Cloning site Green=Tags(s)

MTVATGDPVDEAAALPGHPQDITYDEADHECCERVVINISGLRFETQLKTLAQFPETLLGDPKKRMRYFD  
 PLRNEYFFDRNRPSFDAILYQSGGRLRRPVNVPLDIFSEEIRFYELGEEAMEMFREDEGYIKEEERPL  
 PENEFRQVWLLFEYPESGPARIIAIVSVMVILISIVSFCLLETLPFRDENEDMHGGGVTFHTYNSITI  
 GYQSTSFDPFFIVETLCIIWFSFEFLVRFFACPSKAGFFTNIMNIIDIVAIIPYFITLGTLEAKPED  
 AQGGQQAAMSLAILRVIRLVRFIRFKLSRHSKGLQILGQTLKASMRELGLLIFFLFIGVILFSSAVYFAE  
 ADERDSQFPSIPDAFWAVVSMTTVGYGDMVPTTIGGKIVGSLCAIAGVLTIALPVPVIVSNFNFYHRE  
 TEGEEQAQYLQVTSCPKIPSSPDLKKSRSASTISKSDYMEIQEGVNNSNEDFREENLKTANCTLANTNYV  
 NITKMLTDV

**TR**TRPLE**QKL**ISEEDLAANDILDYKDDDDKV

**Chromatograms:**

[https://cdn.origene.com/chromatograms/mm9016\\_d10.zip](https://cdn.origene.com/chromatograms/mm9016_d10.zip)

**Restriction Sites:**

Sgfl-MluI

## Cloning Scheme:



ACCN: NM\_008417

ORF Size: 1497 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.

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

RefSeq: [NM\\_008417.5](#), [NP\\_032443.3](#)

RefSeq Size: 11582 bp

RefSeq ORF: 1500 bp

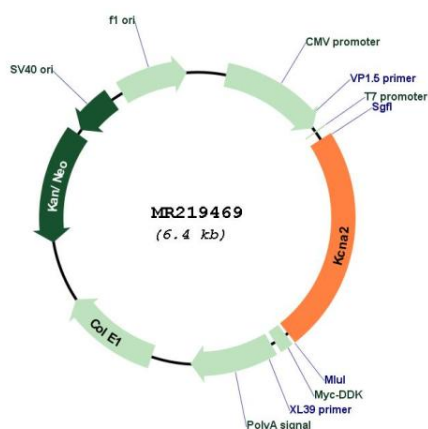
Locus ID: 16490

UniProt ID: P63141  
Cytogenetics: 3 46.61 cM  
MW: 57.2 kDa

**Gene Summary:**

Voltage-gated potassium channel that mediates transmembrane potassium transport in excitable membranes, primarily in the brain and the central nervous system, but also in the cardiovascular system. Prevents aberrant action potential firing and regulates neuronal output. Forms tetrameric potassium-selective channels through which potassium ions pass in accordance with their electrochemical gradient. The channel alternates between opened and closed conformations in response to the voltage difference across the membrane (PubMed:12527813, PubMed:21233214). Can form functional homotetrameric channels and heterotetrameric channels that contain variable proportions of KCNA1, KCNA2, KCNA4, KCNA5, KCNA6, KCNA7, and possibly other family members as well; channel properties depend on the type of alpha subunits that are part of the channel (PubMed:20696761). Channel properties are modulated by cytoplasmic beta subunits that regulate the subcellular location of the alpha subunits and promote rapid inactivation of delayed rectifier potassium channels (By similarity). In vivo, membranes probably contain a mixture of heteromeric potassium channel complexes, making it difficult to assign currents observed in intact tissues to any particular potassium channel family member. Homotetrameric KCNA2 forms a delayed-rectifier potassium channel that opens in response to membrane depolarization, followed by slow spontaneous channel closure (PubMed:23864368). In contrast, a heteromultimer formed by KCNA2 and KCNA4 shows rapid inactivation (PubMed:23864368). Contributes to the regulation of action potentials in neurons (PubMed:12527813, PubMed:17925011). KCNA2-containing channels play a presynaptic role and prevent hyperexcitability and aberrant action potential firing (PubMed:17634333, PubMed:17925011). Response to toxins that are selective for KCNA1, respectively for KCNA2, suggests that heteromeric potassium channels composed of both KCNA1 and KCNA2 play a role in pacemaking and regulate the output of deep cerebellar nuclear neurons (By similarity). Response to toxins that are selective for KCNA2-containing potassium channels suggests that in Purkinje cells, dendritic subthreshold KCNA2-containing potassium channels prevent random spontaneous calcium spikes, suppressing dendritic hyperexcitability without hindering the generation of somatic action potentials, and thereby play an important role in motor coordination (By similarity). KCNA2-containing channels play a role in GABAergic transmission from basket cells to Purkinje cells in the cerebellum, and thereby play an important role in motor coordination (PubMed:20696761). Plays a role in the induction of long-term potentiation of neuron excitability in the CA3 layer of the hippocampus (PubMed:23981714). May function as down-stream effector for G protein-coupled receptors and inhibit GABAergic inputs to basolateral amygdala neurons (By similarity). May contribute to the regulation of neurotransmitter release, such as gamma-aminobutyric acid (GABA) (By similarity). Contributes to the regulation of the axonal release of the neurotransmitter dopamine (PubMed:21233214). Reduced KCNA2 expression plays a role in the perception of neuropathic pain after peripheral nerve injury, but not acute pain (By similarity). Plays a role in the regulation of the time spent in non-rapid eye movement (NREM) sleep (PubMed:17925011).[UniProtKB/Swiss-Prot Function]

## Product images:



Circular map for MR219469