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Product datasheet for MG222106

Kcna1 (NM_010595) Mouse Tagged ORF Clone

Product data:

Product Type:	Expression Plasmids
Product Name:	Kcna1 (NM_010595) Mouse Tagged ORF Clone
Tag:	TurboGFP
Symbol:	Kcna1
Synonyms:	AI840627; Kca1-1; Kv1.1; MBK1; mceph; Mk-1; Shak
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-AC-GFP (PS100010)
E. coli Selection:	Ampicillin (100 ug/mL)

ORF Nucleotide Sequence:

>MG222106 representing NM_010595
Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC
GCCGCGATCGCC

ATGACGGTGATGTCGGGGGAGAATGCGGACGAGGCTTCGACCGCTCCAGGTCACCCCCAGGATGGCAGCT
ACCCGAGGCAGGCGGACCACGACGACCACGAATGCTGCGAGCGCGTAGTAATCAACATCTCCGGGCTGCG
CTTCGAAACGCAGCTCAAGACTCTGGCACAGTTCCCCAACACGCTGCTGGGCAACCCGAAGAAACGCATG
CGCTACTTTGACCCCCTGAGGAACGAGTACTTCTTTGACCGCAACCGGCCCAGCTTCGATGCCATCCTTT
ATTACTACCAGTCCGGGGGCCGCCTGCGCAGGCCGGTCAACGTGCCCCTGGACATGTTCTCCGAGGAGAT
TAAATTTTACGAGTTGGGCGAGGAAGCCATGGAGAAGTTCCGGGAAGATGAGGGCTTCATCAAGGAAGAG
GAGCGCCCCCTACCCGAGAAGGAGTACCAGCGCCAGGTGTGGCTGCTCTTTGAGTATCCGGAGAGCTCAG
GACCTGCCCGGGTTATTGCCATTGTGTCGGTCATGGTCATCCTCATCTCCATAGTCATCTTTTGCCTGGA
GACTCTCCCTGAGCTGAAGGACGACAAGGACTTCACGGGCACCACCCACCGCATCGACAACACCACAGTC
ATCTATACTTCCAACATCTTCACAGACCCTTTCTTCATTGTGGAAACCTTGTGTATCATCTGGTTCTCTT
TTGAGCTGGTGGTGCGCTTCTTCGCCTGCCCCAGCAAGACAGACTTCTTTAAGAACATCATGAACTTCAT
CGACATTGTGGCCATCATCCCTTATTTCATTACCCTGGGCACGGAGATAGCTGAGCAGGAGGGAAATCAG
AAGGGCGAGCAGGCCACTTCCCTGGCCATCCTCAGGGTCATCCGCTTGGTAAGGGTGTTCAGAATCTTCA
AACTCTCCCGCCACTCCAAGGGCCTTCAGATCCTGGGCCAGACCCTCAAAGCTAGTATGAGGGAGTTAGG
GCTGCTCATCTTTTTCCTCTTCATTGGGGTCATACTGTTTTCTAGCGCAGTGTACTTTGCGGAGGCGGAA
GAAGCTGAGTCGCACTTCTCCAGTATCCCCGATGCTTTCTGGTGGGCGGTGGTGTCCATGACCACTGTGG
GATACGGTGACATGTACCCTGTGACAATTGGAGGCAAGATCGTGGGCTCCTTGTGTGCCATCGCTGGTGT
GCTGACAGTTGCCCTGCCCGTACCTGTCATTGTGTCCAATTTCAACTATTTCTACCACCGAGAAACTGAG
GGGGAAGAGCAGGCTCAGTTGCTCCATGTTAGTTCTCCTAACTTAGCCTCTGACAGTGACCTCAGCCGCC
GCAGCTCCTCTACTATCAGCAAGTCTGAGTACATGGAGATCGAAGAGGATATGAACAATAGCATAGCCCA
TTACAGACAGGCTAATATCAGAACTGGTAACTGCACCACAGCTGATCAAAACTGCGTTAATAAGAGCAAG
CTCCTGACCGATGTT

ACGCGTACGCGGCCGCTCGAG - GFP Tag - GTTTAA

Protein Sequence:

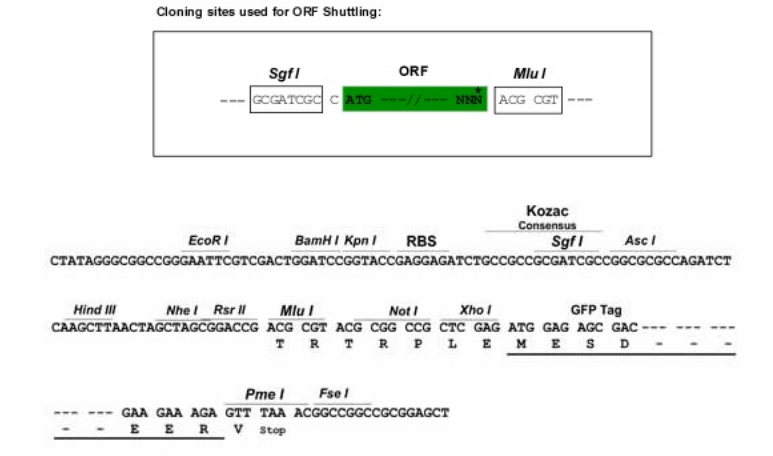
>MG222106 representing NM_010595
Red=Cloning site Green=Tags(s)

MTVMSGENADEASTAPGHPQDGSYPRQADHDDHECCERVVINISGLRFETQLKTLAQFPNTLLGNPKKRM
RYFDPLRNEYFFDRNRPSFDAILYYYQSGGRLRRPVNVPLDMFSEEIKFYELGEEAMEKFREDEGFIKEE
ERPLPEKEYQRQVWLLFEYPESSGPARVIAIVSVMVILISIVIFCLETLPELKDDKDFTGTTHRIDNTTV
IYTSNIFTDPFFIVETLCIIWFSFELVVRFFACPSKTDFFKNIMNFIDIVAIIPYFITLGTEIAEQEGNQ
KGEQATSLAILRVIRLVRVFRIFKLSRHSKGLQILGQTLKASMRELGLLIFFLFIGVILFSSAVYFAEAE
EAESHFSSIPDAFWWAVVSMTTVGYGDMYPVTIGGKIVGSLCAIAGVLTVALPVPVIVSNFNYFYHRETE
GEEQAQLLHVSSPNLASDSDLSRRSSSTISKSEYMEIEEDMNNSIAHYRQANIRTGNCTTADQNCVNKSK
LLTDV

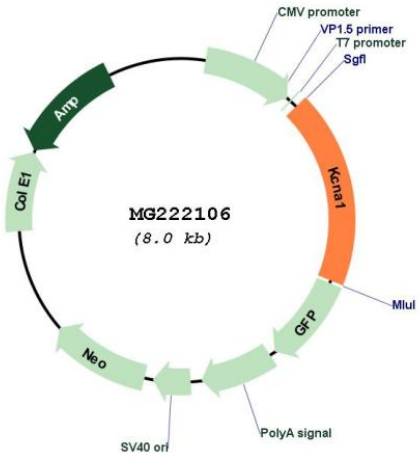
TRTRPLE - GFP Tag - V

Restriction Sites: SgfI-MluI

Cloning Scheme:



Plasmid Map:



ACCN:	NM_010595
ORF Size:	1485 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_010595.3, NP_034725.3
RefSeq Size:	8970 bp
RefSeq ORF:	1488 bp
Locus ID:	16485
UniProt ID:	P16388
Cytogenetics:	6 61.57 cM

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 kidney. Contributes to the regulation of the membrane potential and nerve signaling, and prevents neuronal hyperexcitability (PubMed:9736643, PubMed:9581771 PubMed:10191303, PubMed:12611922, PubMed:21966978, PubMed:22158511, PubMed:23473320). 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:15361858). 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. 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 (PubMed:15361858). 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 KCNA1 forms a delayed-rectifier potassium channel that opens in response to membrane depolarization, followed by slow spontaneous channel closure (PubMed:7517498, PubMed:15361858). In contrast, a heterotetrameric channel formed by KCNA1 and KCNA4 shows rapid inactivation (By similarity). Regulates neuronal excitability in hippocampus, especially in mossy fibers and medial perforant path axons, preventing neuronal hyperexcitability (PubMed:23466697). 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) release (By similarity). Plays a role in regulating the generation of action potentials and preventing hyperexcitability in myelinated axons of the vagus nerve, and thereby contributes to the regulation of heart contraction (PubMed:20392939, PubMed:22641786, PubMed:25377007). Required for normal neuromuscular responses (PubMed:9736643). Regulates the frequency of neuronal action potential firing in response to mechanical stimuli, and plays a role in the perception of pain caused by mechanical stimuli, but does not play a role in the perception of pain due to heat stimuli (PubMed:23473320). Required for normal responses to auditory stimuli and precise location of sound sources, but not for sound perception (PubMed:21966978, PubMed:22396426). The use of toxins that block specific channels suggest that it contributes to the regulation of the axonal release of the neurotransmitter dopamine (PubMed:21233214). Required for normal postnatal brain development and normal proliferation of neuronal precursor cells in the brain (PubMed:8995755, PubMed:17250763, PubMed:17315199, PubMed:22411008). Plays a role in the reabsorption of Mg(2+) in the distal convoluted tubules in the kidney and in magnesium ion homeostasis, probably via its effect on the membrane potential (By similarity). [UniProtKB/Swiss-Prot Function]