

## Product datasheet for **TR501144**

### **Kcna2 Mouse shRNA Plasmid (Locus ID 16490)**

#### **Product data:**

Product Type:	shRNA Plasmids
Product Name:	Kcna2 Mouse shRNA Plasmid (Locus ID 16490)
Locus ID:	16490
Synonyms:	Akr6a4; ENSMUSG00000074335; Gm10672; Kca1-2; Kv1.2; Mk-2
Vector:	pRS (TR20003)
E. coli Selection:	Ampicillin
Mammalian Cell Selection:	Puromycin
Format:	Retroviral plasmids
Components:	Kcna2 - Mouse, 4 unique 29mer shRNA constructs in retroviral untagged vector(Gene ID = 16490). 5µg purified plasmid DNA per construct 29-mer scrambled shRNA cassette in pRS Vector, TR30012, included for free.
RefSeq:	<a href="#">NM_008417</a> , <a href="#">NM_008417.1</a> , <a href="#">NM_008417.2</a> , <a href="#">NM_008417.3</a> , <a href="#">NM_008417.4</a> , <a href="#">NM_008417.5</a> , <a href="#">BC138650</a> , <a href="#">BC138651</a>
UniProt ID:	<a href="#">P63141</a>



[View online »](#)

**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]

- shRNA Design:** These shRNA constructs were designed against multiple splice variants at this gene locus. To be certain that your variant of interest is targeted, please contact [techsupport@origene.com](mailto:techsupport@origene.com). If you need a special design or shRNA sequence, please utilize our [custom shRNA service](#).
- Performance Guaranteed:** OriGene guarantees that the sequences in the shRNA expression cassettes are verified to correspond to the target gene with 100% identity. One of the four constructs at minimum are guaranteed to produce 70% or more gene expression knock-down provided a minimum transfection efficiency of 80% is achieved. Western Blot data is recommended over qPCR to evaluate the silencing effect of the shRNA constructs 72 hrs post transfection. To properly assess knockdown, the gene expression level from the included scramble control vector must be used in comparison with the target-specific shRNA transfected samples.
- For non-conforming shRNA, requests for replacement product must be made within ninety (90) days from the date of delivery of the shRNA kit. To arrange for a free replacement with newly designed constructs, please contact Technical Services at [techsupport@origene.com](mailto:techsupport@origene.com). Please provide your data indicating the transfection efficiency and measurement of gene expression knockdown compared to the scrambled shRNA control (Western Blot data preferred).