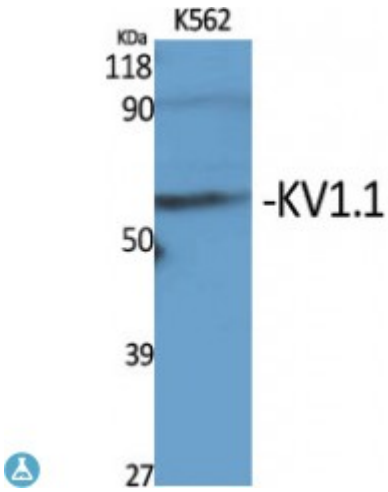
Anti-KV1.1 antibody



Description	Rabbit polyclonal to KV1.1.

Model	STJ93870
Host	Rabbit
Reactivity	Human, Mouse, Rat
Applications	ELISA, WB
Immunogen	Synthesized peptide derived from human KV1.1
Immunogen Region	230-310 aa, Internal
Gene ID	3736
Gene Symbol	KCNA1
Dilution range	WB 1:500-1:2000ELISA 1:10000
Specificity	KV1.1 Polyclonal Antibody detects endogenous levels of KV1.1 protein.
Tissue Specificity	Detected adjacent to nodes of Ranvier in juxtaparanodal zones in spinal cord nerve fibers, but also in paranodal regions in some myelinated spinal cord axons (at protein level) . Detected in the islet of Langerhans .
Purification	The antibody was affinity-purified from rabbit antiserum by affinity-chromatography using epitope-specific immunogen.
Note	For Research Use Only (RUO).
Protein Name	Potassium voltage-gated channel subfamily A member 1 Voltage-gated K + channel HuKI Voltage-gated potassium channel HBK1 Voltage-gated potassium channel subunit Kv1.1

Molecular Weight	57 kDa
Clonality	Polyclonal
Conjugation	Unconjugated
Isotype	IgG
Formulation	Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.02% sodium azide.
Concentration	1 mg/ml
Storage Instruction	Store at -20°C, and avoid repeat freeze-thaw cycles.
Database Links	HGNC:6218OMIM:160120
Alternative Names	Potassium voltage-gated channel subfamily A member 1 Voltage-gated K + channel HuKI Voltage-gated potassium channel HBK1 Voltage-gated potassium channel subunit Kv1.1
Function	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 . 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 . 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 . 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 . In contrast, a heterotetrameric channel formed by KCNA1 and KCNA4 shows rapid inactivation . Regulates neuronal excitability in hippocampus, especially in mossy fibers and medial perforant path axons, preventing neuronal hyperexcitability. 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 . May function as down-stream effector for G protein-coupled receptors and inhibit GABAergic inputs to basolateral amygdala neurons . May contribute to the regulation of neurotransmitter release, such as gamma-aminobutyric acid (GABA) release . 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 . Required for normal neuromuscular responses . 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 . Required for normal responses to auditory stimuli and precise location of sound sources, but not for sound

	perception . The use of toxins that block specific channels suggest that it contributes to the regulation of the axonal release of the neurotransmitter dopamine . Required for normal postnatal brain development and normal proliferation of neuronal precursor cells in the brain . 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 .
Sequence and Domain Family	The cytoplasmic N-terminus is important for tetramerization and for interaction with the beta subunits that promote rapid channel closure. The transmembrane segment S4 functions as voltage-sensor and is characterized by a series of positively charged amino acids at every third position. Channel opening and closing is effected by a conformation change that affects the position and orientation of the voltage-sensor paddle formed by S3 and S4 within the membrane. A transmembrane electric field that is positive inside would push the positively charged S4 segment outwards, thereby opening the pore, while a field that is negative inside would pull the S4 segment inwards and close the pore. Changes in the position and orientation of S4 are then transmitted to the activation gate formed by the inner helix bundle via the S4-S5 linker region.
Cellular Localization	Cell membrane Membrane Cell projection, axon Cytoplasmic vesicle Perikaryon Endoplasmic reticulum Cell projection, dendrite Cell junction Cell junction, synapse Cell junction, synapse, presynaptic cell membrane. Homotetrameric KCNA1 is primarily located in the endoplasmic reticulum. Interaction with KCNA2 and KCNAB2 or with KCNA4 and KCNAB2 promotes expression at the cell membrane . Detected at axon terminals .
Post-translational Modifications	N-glycosylated. Palmitoylated on Cys-243; which may be required for membrane targeting. Phosphorylated on tyrosine residues. Phosphorylation increases in response to NRG1; this inhibits channel activity . Phosphorylation at Ser-446 regulates channel activity by down-regulating expression at the cell membrane .