abcam

ab32374

Anti-SGK1 antibody [Y238]

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	Y238
Purification technique	Affinity purification Protein A
Concentration	0.704 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

ICC/IF

Not recommended

Species	Mouse, Human, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/500
Notes	-

Species	Human
Dilution info	1/500
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/30
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

Target data

See full target information SGK1

Function

Serine/threonine-protein kinase which is involved in the regulation of a wide variety of ion channels, membrane transporters, cellular enzymes, transcription factors, neuronal excitability, cell growth, proliferation, survival, migration and apoptosis. Plays an important role in cellular stress response. Contributes to regulation of renal Na(+) retention, renal K(+) elimination, salt appetite, gastric acid secretion, intestinal Na(+)/H(+) exchange and nutrient transport, insulin-dependent salt sensitivity of blood pressure, salt sensitivity of peripheral glucose uptake, cardiac repolarization and memory consolidation. Up-regulates Na(+) channels: SCNN1A/ENAC, SCN5A and ASIC1/ACCN2, K(+) channels: KCNJ1/ROMK1, KCNA1-5, KCNQ1-5 and KCNE1, epithelial Ca(2+) channels: TRPV5 and TRPV6, chloride channels: BSND, CLCN2 and CFTR, glutamate transporters: SLC1A3/EAAT1, SLC1A2 /EAAT2, SLC1A1/EAAT3, SLC1A6/EAAT4 and SLC1A7/EAAT5, amino acid transporters: SLC1A5/ASCT2, SLC38A1/SN1 and SLC6A19, creatine transporter: SLC6A8, Na(+)/dicarboxylate cotransporter: SLC13A2/NADC1, Na(+)-dependent phosphate cotransporter: SLC34A2/NAPI-2B, glutamate receptor: GRIK2/GLUR6. Up-regulates carriers: SLC9A3/NHE3, SLC12A1/NKCC2, SLC12A3/NCC, SLC5A3/SMIT, SLC2A1/GLUT1, SLC5A1/SGLT1 and SLC15A2/PEPT2. Regulates enzymes: GSK3A/B, PMM2 and Na(+)/K(+) ATPase, and transcription factors: CTNNB1 and nuclear

factor NF-kappa-B. Stimulates sodium transport into epithelial cells by enhancing the stability and expression of SCNN1A/ENAC. This is achieved by phosphorylating the NEDD4L ubiquitin E3 ligase, promoting its interaction with 14-3-3 proteins, thereby preventing it from binding to SCNN1A/ENAC and targeting it for degradation. Regulates store-operated Ca(+2) entry (SOCE) by stimulating ORAI1 and STIM1. Regulates KCNJ1/ROMK1 directly via its phosphorylation or indirectly via increased interaction with SLC9A3R2/NHERF2. Phosphorylates MDM2 and activates MDM2-dependent ubiquitination of p53/TP53. Phosphorylates MAPT/TAU and mediates microtubule depolymerization and neurite formation in hippocampal neurons. Phosphorylates SLC2A4/GLUT4 and up-regulates its activity. Phosphorylates APBB1/FE65 and promotes its localization to the nucleus. Phosphorylates MAPK1/ERK2 and activates it by enhancing its interaction with MAP2K1/MEK1 and MAP2K2/MEK2. Phosphorylates FBXW7 and plays an inhibitory role in the NOTCH1 signaling. Phosphorylates FOXO1 resulting in its relocalization from the nucleus to the cytoplasm. Phosphorylates FOXO3, promoting its exit from the nucleus and interference with FOXO3-dependent transcription. Phosphorylates BRAF and MAP3K3/MEKK3 and inhibits their activity. Phosphorylates SLC9A3/NHE3 in response to dexamethasone, resulting in its activation and increased localization at the cell membrane. Phosphorylates CREB1. Necessary for vascular remodeling during angiogenesis. Sustained high levels and activity may contribute to conditions such as hypertension and diabetic nephropathy. Isoform 2 exhibited a greater effect on cell plasma membrane expression of SCNN1A/ENAC and Na(+) transport than isoform 1.

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply

- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The Serum and Glucocorticoid-Regulated Kinase 1 also known as SGK1 is a protein kinase involved in cellular stress response. It consists of approximately 49 kDa and is encoded by the SGK1 gene. SGK1 is expressed in several tissues including the kidney pancreas and liver. It transfers phosphate groups from ATP to serine or threonine residues on target proteins functioning as an important regulator of ion channels enzymes and other cellular proteins.
Biological function summary	SGK1 regulates ion transport cell proliferation and survival pathways. SGK1 is not usually part of large protein complexes but interacts dynamically with other proteins to exert its effects. It plays a major role in regulating sodium channels in the kidney therefore modulating sodium balance and blood pressure. It also affects various cell survival mechanisms influencing cell growth and apoptosis in response to physiological cues.
Pathways	SGK1 is involved in the PI3K/AKT/mTOR signaling pathway and the WNK/SPAK pathway. These pathways influence cellular growth metabolism and ion transport. SGK1 shares pathway relevance with proteins like AKT1 and mTOR in the PI3K/AKT/mTOR axis impacting various metabolic and growth-related cellular processes. In the WNK/SPAK pathway SGK1 regulates ion channels in collaboration with WNK kinases affecting electrolyte balance.
Associated diseases and disorders	SGK1 has implications in hypertension and cancer. Overactivity of SGK1 can lead to increased sodium retention resulting in hypertension. This connects SGK1 to diseases involving blood pressure regulation where it often interacts with the epithelial sodium channel (ENaC). In cancer SGK1 contributes to tumor progression by supporting cell survival with interactions alongside AKT1 frequently observed in cancerous pathways. Alterations in SGK1 levels or activity may therefore serve as a therapeutic target for managing these conditions.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

We do not recommend this combination. It is not covered by our product promise.

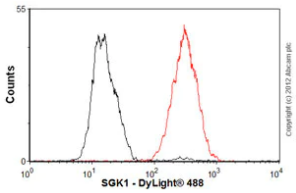
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In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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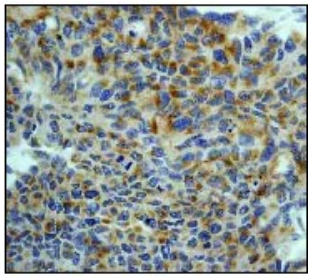
5 product images



Flow Cytometry (Intracellular) - Anti-SGK1 antibody [Y238] (ab32374)

SGK1 Flow Cytometry (Intracellular) staining using rabbit Anti-SGK1 antibody

Overlay histogram showing HEK293 cells stained with ab32374 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab32374, 1/100) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HEK293 cells fixed with 4% paraformaldehyde (10 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.

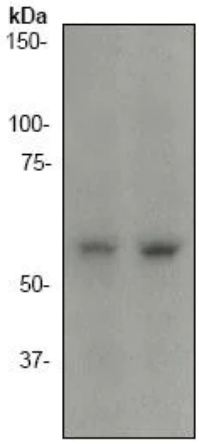


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SGK1 antibody [Y238] (ab32374)

SGK1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SGK1 antibody

ab32374, at a 1/50 dilution, staining SGK1 in paraffin embedded human kidney carcinoma tissue sections by Immunohistochemistry.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Western blot - Anti-SGK1 antibody [Y238] (ab32374)

All lanes:
Western blot - Anti-SGK1 antibody [Y238] (ab32374) at 1/500 dilution

Lane 1:
A431 cell lysate

Lane 2:
NIH3T3 cell lysate

Predicted band size: 48 kDa

Observed band size: 57 kDa

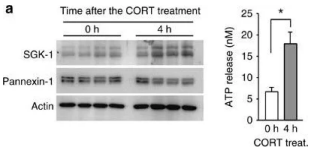


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Western blot - Anti-SGK1 antibody [Y238] (ab32374)

SGK1 Western blot staining using rabbit Anti-SGK1 antibody

Western Blotting using Anti-SGK1 antibody [Y238], ab32374. Publication image from Tsuda, M. et al., 2016, Nat Commun, 27739425. Legend direct from paper.

Induction of SGK-1 by glucocorticoid enhances ATP release from astrocytes via pannexin-1 hemichannels.(a) Negligible effects of CORT (100 ng ml−1) on the expression of pannexin-1 in the membrane fraction of astrocytes (left) and release of ATP (right). Cells are treated with 100 ng ml−1 for 4 h. CORT *P<0.05 significant difference between two groups (n=5, means±s.e.m.; t8=−5.445, unpaired t-test, two-sided). Full-size images are presented in Supplementary Fig. 14. (b) The downregulation of pannexin-1 in the membrane fraction of astrocytes. Cells are transfected with 150 pmol of siRNA against pannexin-1 or scrambled (Control) siRNA. Protein levels were assessed at 72 h after transfection. Full-size images are presented in Supplementary Fig. 15. (c) Effects of the downregulation of pannexin-1 on the CORT-induced release of ATP from astrocytes (means±s.e.m.; n=5 per group). Astrocytic ATP release was assessed 4 h after the CORT treatment. **P<0.01 significant difference between two groups (F3,16=19.130, P<0.001, ANOVA with Tukey–Kramer's PHT). (d) Tracing of the fluo-8 fluorescence intensity during and after Ca2+ depletion in astrocytes treated with 100 ng ml−1 CORT in the presence or absence of 10 μM Cpd5J-4 an Orai1 inhibitor (means±s.e.m.; n=8 per groups). Average fluorescence before the measurement is set to 1. (e) Effects of Cpd5J-4 on the CORT-induced release of ATP from astrocytes (means±s.e.m.; n=5 per group). Cells were treated with 100 ng ml−1 CORT in the presence or absence of Cpd5J-4 (10 μM) for 4 h. **P<0.01; *P<0.05 significant difference between two groups (F3,16=19.323, P<0.001, ANOVA with Tukey–Kramer's PHT). (f) Schematic diagram indicating the glucocorticoid-regulated diurnal oscillations in the threshold of mechanical allodynia in PSL mice. Temporal elevations in glucocorticoid levels induce the expression of SGK-1 in spinal astrocytes, thereby enhancing extracellular ATP release through pannexin-1 hemichannels. ATP released from astrocytes binds to P2Y12 receptors on activated microglia. ATP-stimulated P2Y12 receptors induce downstream events, which result in a decrease in the threshold of mechanical allodynia.

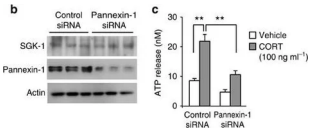


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