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GIT1 Antibody (Y510)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7416a

Product Information

Application	WB, IHC-P, E
Primary Accession	Q9Y2X7
Other Accession	Q9Z272, Q68FF6
Reactivity	Human
Predicted	Mouse, Rat, Bovine, Canine, Rabbit, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB15373
Calculated MW	84341
Antigen Region	487-517

Additional Information

Gene ID	28964
Other Names	ARF GTPase-activating protein GIT1, ARF GAP GIT1, Cool-associated and tyrosine-phosphorylated protein 1, CAT-1, CAT1, G protein-coupled receptor kinase-interactor 1, GRK-interacting protein 1, GIT1
Target/Specificity	This GIT1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 487-517 amino acids from human GIT1.
Dilution	WB~~1:1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	GIT1 Antibody (Y510) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	GIT1
Function	GTPase-activating protein for ADP ribosylation factor family members,

including ARF1. Multidomain scaffold protein that interacts with numerous proteins and therefore participates in many cellular functions, including receptor internalization, focal adhesion remodeling, and signaling by both G protein-coupled receptors and tyrosine kinase receptors (By similarity). Through PAK1 activation, positively regulates microtubule nucleation during interphase (PubMed:27012601). Plays a role in the regulation of cytokinesis; for this function, may act in a pathway also involving ENTR1 and PTPN13 (PubMed:23108400). May promote cell motility both by regulating focal complex dynamics and by local activation of RAC1 (PubMed:10938112, PubMed:11896197). May act as scaffold for MAPK1/3 signal transduction in focal adhesions. Recruits MAPK1/3/ERK1/2 to focal adhesions after EGF stimulation via a Src-dependent pathway, hence stimulating cell migration (PubMed:15923189). Plays a role in brain development and function. Involved in the regulation of spine density and synaptic plasticity that is required for processes involved in learning (By similarity). Plays an important role in dendritic spine morphogenesis and synapse formation (PubMed:12695502, PubMed:15800193). In hippocampal neurons, recruits guanine nucleotide exchange factors (GEFs), such as ARHGEF7/beta-PIX, to the synaptic membrane. These in turn locally activate RAC1, which is an essential step for spine morphogenesis and synapse formation (PubMed:12695502). May contribute to the organization of presynaptic active zones through oligomerization and formation of a Piccolo/PCLO-based protein network, which includes ARHGEF7/beta-PIX and FAK1 (By similarity). In neurons, through its interaction with liprin-alpha family members, may be required for AMPA receptor (GRIA2/3) proper targeting to the cell membrane (By similarity). In complex with GABA(A) receptors and ARHGEF7, plays a crucial role in regulating GABA(A) receptor synaptic stability, maintaining GPHN/gephyrin scaffolds and hence GABAergic inhibitory synaptic transmission, by locally coordinating RAC1 and PAK1 downstream effector activity, leading to F-actin stabilization (PubMed:25284783). May also be important for RAC1 downstream signaling pathway through PAK3 and regulation of neuronal inhibitory transmission at presynaptic input (By similarity). Required for successful bone regeneration during fracture healing (By similarity). The function in intramembranous ossification may, at least partly, exerted by macrophages in which GIT1 is a key negative regulator of redox homeostasis, IL1B production, and glycolysis, acting through the ERK1/2/NRF2/NFE2L2 axis (By similarity). May play a role in angiogenesis during fracture healing (By similarity). In this process, may regulate activation of the canonical NF-kappa-B signal in bone mesenchymal stem cells by enhancing the interaction between NEMO and 'Lys-63'-ubiquitinated RIPK1/RIP1, eventually leading to enhanced production of VEGFA and others angiogenic factors (PubMed:31502302). Essential for VEGF signaling through the activation of phospholipase C-gamma and ERK1/2, hence may control endothelial cell proliferation and angiogenesis (PubMed:19273721).

Cellular Location

Cytoplasm. Synapse. Presynapse {ECO:0000250|UniProtKB:Q9Z272}. Postsynapse {ECO:0000250|UniProtKB:Q9Z272}. Postsynaptic density {ECO:0000250|UniProtKB:Q9Z272}. Cell junction, focal adhesion. Cell projection, lamellipodium. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Cytoplasm, cytoskeleton, spindle pole. Note=Cycles between at least 3 distinct intracellular compartments, including focal adhesions, cytosolic complexes, containing at least PXN/paxillin, ARHGEF7 and PAK1, and membrane protrusions. During cell migration, moves from the disassembling adhesions into the cytosol and towards the leading edge In adherent cells, localizes to adhesions. Recruitment to adhesions may be mediated by RAC and active tyrosine-phosphorylated PXN (PubMed:11896197). May be present in both excitatory and inhibitory synapses. In hippocampal neurons, recruitment of GIT1 to synapses is regulated by ephrinB activation and ephrinB downstream effector GRB4/NCK2. In hippocampal neurons, partially colocalizes with PCLO (By

similarity). Interaction with GRIN3A limits GIT1 synaptic localization (By similarity). Localization to the centrosome does not depend upon the presence of gamma-tubulin (PubMed:27012601) {ECO:0000250|UniProtKB:Q9Z272, ECO:0000269|PubMed:11896197, ECO:0000269|PubMed:27012601}

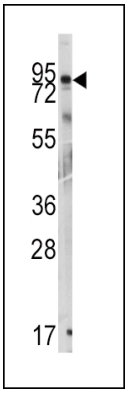
Background

GIT1 is a GTPase-activating protein for the ADP ribosylation factor family. It may serve as a scaffold to bring together molecules to form signaling modules controlling vesicle trafficking, adhesion and cytoskeletal organization. It increases the speed of cell migration, as well as the size and rate of formation of protrusions, possibly by targeting PAK1 to adhesions and the leading edge of lamellipodia.

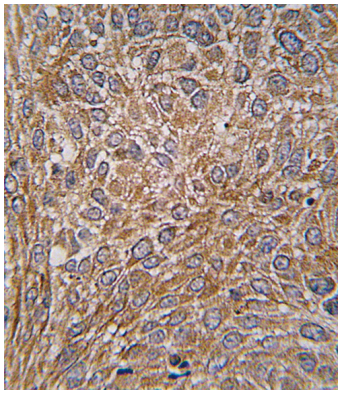
References

Sato,H., Biochem. Biophys. Res. Commun. 368 (1), 157-161 (2008)
Jones,N.P., Mol. Cell. Biol. 27 (16), 5790-5805 (2007)
Schmalzigaug,R., Cell. Signal. 19 (8), 1733-1744 (2007)
Stockton,R., Mol. Biol. Cell 18 (6), 2346-2355 (2007)

Images



Western blot analysis of anti-GIT1 Antibody (Y510) (Cat.#AP7416a) in mouse cerebellum tissue lysates (35ug/lane). GIT1 (arrow) was detected using the purified Pab.



Formalin-fixed and paraffin-embedded human lung carcinoma tissue reacted with GIT1 Antibody (Y510) (Cat.#AP7416a), which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated.

Citations

- The PAK system links Rho GTPase signaling to thrombin-mediated platelet activation.

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