10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

PARK8 (LRRK2) Antibody (L955)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7099h

Product Information

Application	WB, IF, E
Primary Accession	Q5S007
Other Accession	NP_940980
Reactivity	Human, Mouse
Predicted	Rat, Bovine, Canine, Rabbit
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	286103
Antigen Region	930-961

Additional Information

Gene ID	120892
Other Names	Leucine-rich repeat serine/threonine-protein kinase 2, Dardarin, LRRK2, PARK8
Target/Specificity	This PARK8(LRRK2) antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 930-961 amino acids from human PARK8(LRRK2).
Dilution	WB~~1:1000 IF~~1:10~50 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
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	PARK8 (LRRK2) Antibody (L955) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	LRRK2
Synonyms	PARK8
Function	Serine/threonine-protein kinase which phosphorylates a broad range of

proteins involved in multiple processes such as neuronal plasticity, innate immunity, autophagy, and vesicle trafficking (PubMed:17114044, PubMed:20949042, PubMed:21850687, PubMed:22012985, PubMed:23395371, PubMed:24687852, PubMed:25201882, PubMed:26014385, PubMed:26824392, PubMed:27830463, PubMed:28720718, PubMed:29125462, PubMed:29127255, PubMed:29212815, PubMed:30398148, PubMed:30635421). Is a key regulator of RAB GTPases by regulating the GTP/GDP exchange and interaction partners of RABs through phosphorylation (PubMed:26824392, PubMed:28720718, PubMed:29125462, PubMed:29127255, PubMed:29212815, PubMed:30398148, PubMed:30635421). Phosphorylates RAB3A, RAB3B, RAB3C, RAB3D, RAB5A, RAB5B, RAB5C, RAB8A, RAB8B, RAB10, RAB12, RAB29, RAB35, and RAB43 (PubMed:23395371, PubMed:26824392, PubMed:28720718, PubMed:29125462, PubMed:29127255, PubMed:29212815, PubMed:30398148, PubMed:30635421, PubMed:38127736). Regulates the RAB3IP-catalyzed GDP/GTP exchange for RAB8A through the phosphorylation of 'Thr-72' on RAB8A (PubMed:26824392). Inhibits the interaction between RAB8A and GDI1 and/or GDI2 by phosphorylating 'Thr-72' on RAB8A (PubMed:26824392). Regulates primary ciliogenesis through phosphorylation of RAB8A and RAB10, which promotes SHH signaling in the brain (PubMed:29125462, PubMed:30398148). Together with RAB29, plays a role in the retrograde trafficking pathway for recycling proteins, such as mannose-6-phosphate receptor (M6PR), between lysosomes and the Golgi apparatus in a retromer-dependent manner (PubMed:23395371). Regulates neuronal process morphology in the intact central nervous system (CNS) (PubMed:17114044). Plays a role in synaptic vesicle trafficking (PubMed:24687852). Plays an important role in recruiting SEC16A to endoplasmic reticulum exit sites (ERES) and in regulating ER to Golgi vesicle-mediated transport and ERES organization (PubMed:25201882). Positively regulates autophagy through a calcium-dependent activation of the CaMKK/AMPK signaling pathway (PubMed:22012985). The process involves activation of nicotinic acid adenine dinucleotide phosphate (NAADP) receptors, increase in lysosomal pH, and calcium release from lysosomes (PubMed:22012985). Phosphorylates PRDX3 (PubMed:21850687). By phosphorylating APP on 'Thr-743', which promotes the production and the nuclear translocation of the APP intracellular domain (AICD), regulates dopaminergic neuron apoptosis (PubMed:28720718). Acts as a positive regulator of innate immunity by mediating phosphorylation of RIPK2 downstream of NOD1 and NOD2, thereby enhancing RIPK2 activation (PubMed:27830463). Independent of its kinase activity, inhibits the proteasomal degradation of MAPT, thus promoting MAPT oligomerization and secretion (PubMed:26014385). In addition, has GTPase activity via its Roc domain which regulates LRRK2 kinase activity (PubMed:18230735, PubMed:26824392, PubMed:28720718, PubMed:29125462, PubMed:29212815). Recruited by RAB29/RAB7L1 to overloaded lysosomes where it phosphorylates and stabilizes RAB8A and RAB10 which promote lysosomal content release and suppress lysosomal enlargement through the EHBP1 and EHBP1L1 effector proteins (PubMed:30209220, PubMed:38227290).

Cellular Location

Cytoplasmic vesicle. Perikaryon. Golgi apparatus membrane; Peripheral membrane protein. Cell projection, axon. Cell projection, dendrite. Endoplasmic reticulum membrane; Peripheral membrane protein. Cytoplasmic vesicle, secretory vesicle, synaptic vesicle membrane. Endosome {ECO:0000250|UniProtKB:Q5S006}. Lysosome Mitochondrion outer membrane; Peripheral membrane protein. Cytoplasm, cytoskeleton. Cytoplasmic vesicle, phagosome {ECO:0000250|UniProtKB:Q5S006}. Note=Colocalized with RAB29 along tubular structures emerging from Golgi apparatus (PubMed:23395371, PubMed:38127736). Localizes to endoplasmic reticulum exit sites (ERES), also known as transitional endoplasmic reticulum

(tER) (PubMed:25201882). Detected on phagosomes and stressed lysosomes but not detected on autophagosomes induced by starvation (By similarity). Recruitment to stressed lysosomes is dependent on the ATG8 conjugation system composed of ATG5, ATG12 and ATG16L1 and leads to lysosomal stress-induced activation of LRRK2 (By similarity) {ECO:0000250|UniProtKB:Q5S006, ECO:0000269|PubMed:23395371, ECO:0000269|PubMed:25201882, ECO:0000269|PubMed:38127736}

Tissue Location

Expressed in pyramidal neurons in all cortical laminae of the visual cortex, in neurons of the substantia nigra pars compacta and caudate putamen (at protein level). Expressed in neutrophils (at protein level) (PubMed:29127255). Expressed in the brain. Expressed throughout the adult brain, but at a lower level than in heart and liver. Also expressed in placenta, lung, skeletal muscle, kidney and pancreas. In the brain, expressed in the cerebellum, cerebral cortex, medulla, spinal cord occipital pole, frontal lobe, temporal lobe and putamen. Expression is particularly high in brain dopaminoceptive areas.

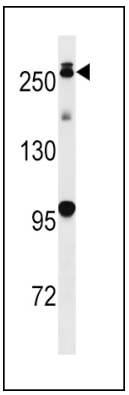
Background

Parkinson is the second most common neurodegenerative disease after Alzheimers. About 1 percent of people over the age of 65 and 3 percent of people over the age of 75 are affected by the disease. The mutation is the most common cause of Parkinson's disease identified to date. LRRK2, a genetic mutation, was recently found linked to about 5 percent of inherited cases of Parkinson's disease. By high-resolution recombination mapping and candidate gene sequencing in 46 families, 6 disease-segregating mutations (5 missense and 1 putative splice site mutation). It may be central to the pathogenesis of several major neurodegenerative disorders associated with parkinsonism. LRRK2 belongs to the ROCO protein family and includes a protein kinase domain of the MAPKKK class and several other major functional domains.

References

Shen J. Neuron. 2004. 44:575.
Paisan-Ruiz C, et al. Neuron. 2004. 44(4):595.
Zimprich A, et al. Neuron. 2004. 44(4):601.
Wszolek ZK, et al. Neurology. 2004. 62(9):1619.
Park YJ, et al. Transplant Proc. 2004. 36(2):353.
Zimprich A, et al. Am J Hum Genet. 2004. 74:11.
Bonifati V. Lancet Neurol. 2002. 1:83.
Funayama M, et al.Ann Neurol. 2002. 51:296.

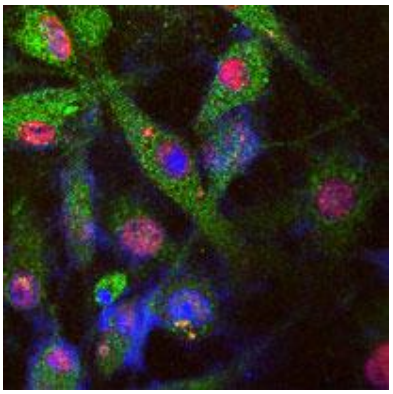
Images



Park8 (LRRK2) Antibody (L955) (Cat. #AP7099h) western blot analysis in mouse lung tissue lysates (35ug/lane).This demonstrates the Park8 (LRRK2) antibody detected the Park8 (LRRK2) protein (arrow).

PARK8 (LRRK2) Antibody (L955)(Cat.#AP7099h) detect over-expressed human LRRK2 protein.





Tau-stable SY5Y cell image stained for endogenous LRRK (green) by Abgent L955a (affinity purified), phosphorylated tau (red, monoclonal AT8) and nuclear staining by DAPI.

Citations

- Dynamic and redundant regulation of LRRK2 and LRRK1 expression.
- LRRK2 and parkin immunoreactivity in multiple system atrophy inclusions.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.