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LRRK2 Blocking Peptide (C-term)

Synthetic peptide
Catalog # BP21200b

Specification

LRRK2 Blocking Peptide (C-term) - Product Information

Primary Accession Q5S007

LRRK2 Blocking Peptide (C-term) - Additional Information

Gene ID 120892

Other Names
Leucine-rich repeat serine/threonine-protein kinase 2, Dardarin, LRRK2, PARK8

Target/Specificity
The synthetic peptide sequence is selected from aa 2171-2187 of HUMAN LRRK2

Format
Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions
This product is for research use only. Not for use in diagnostic or therapeutic procedures.

LRRK2 Blocking Peptide (C-term) - 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, autophagy, and vesicle

LRRK2 Blocking Peptide (C-term) - Background

Positively regulates autophagy through a calcium- dependent activation of the CaMKK/AMPK signaling pathway. The process involves activation of nicotinic acid adenine dinucleotide phosphate (NAADP) receptors, increase in lysosomal pH, and calcium release from lysosomes. 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. Regulates neuronal process morphology in the intact central nervous system (CNS). Phosphorylates PRDX3. May also have GTPase activity. May play a role in the phosphorylation of proteins central to Parkinson disease.

LRRK2 Blocking Peptide (C-term) - References

Zimprich A.,et al.Neuron 44:601-607(2004).
Scherer S.E.,et al.Nature 440:346-351(2006).
Bechtel S.,et al.BMC Genomics 8:399-399(2007).
Adams J.R.,et al.Brain 128:2777-2785(2005).
Gloeckner C.J.,et al.Hum. Mol. Genet. 15:223-232(2006).

trafficking (PubMed:20949042, PubMed:22012985, PubMed:26824392, PubMed:29125462, PubMed:28720718, PubMed:29127255, PubMed:30398148, PubMed:29212815, PubMed:30635421, PubMed:21850687, PubMed:23395371, PubMed:17114044, PubMed:24687852, PubMed:26014385, PubMed:25201882). 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:29127255,

PubMed:30398148, PubMed:29212815, PubMed:29125462, PubMed:30635421). Phosphorylates RAB3A, RAB3B, RAB3C, RAB3D, RAB5A, RAB5B, RAB5C, RAB8A, RAB8B, RAB10, RAB12, RAB35, and RAB43 (PubMed:26824392, PubMed:28720718, PubMed:29127255, PubMed:30398148, PubMed:29212815, PubMed:29125462, PubMed:30635421, PubMed:23395371). 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:<a href="http://www.uniprot.org/ci

tations/30398148"
target="_blank">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:<a href="http://www.uniprot.org/citations/23395371"
target="_blank">23395371). Regulates neuronal process morphology in the intact central nervous system (CNS) (PubMed:<a href="http://www.uniprot.org/citations/17114044"
target="_blank">17114044). Plays a role in synaptic vesicle trafficking (PubMed:<a href="http://www.uniprot.org/citations/24687852"
target="_blank">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:<a href="http://www.uniprot.org/citations/25201882"
target="_blank">25201882). Positively regulates autophagy through a calcium-dependent activation of the CaMKK/AMPK signaling pathway (PubMed:<a href="http://www.uniprot.org/citations/22012985"
target="_blank">22012985). The process involves activation of nicotinic acid adenine dinucleotide phosphate (NAADP) receptors, increase in lysosomal pH, and calcium release from lysosomes (PubMed:<a href="http://www.uniprot.org/citations/22012985"
target="_blank">22012985). Phosphorylates PRDX3 (PubMed:<a href="http://www.uniprot.org/citations/21850687"
target="_blank">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:<a href="http://www.uniprot.org/citations/28720718"
target="_blank">28720718). Independent of its kinase activity, inhibits the proteosomal degradation of MAPT, thus promoting MAPT oligomerization and secretion (PubMed:<a href="http://www.uniprot.org/citations/26014385"
target="_blank">26014385). In addition, has GTPase activity via its Roc domain which regulates LRRK2 kinase

activity (PubMed:18230735, PubMed:26824392, PubMed:29125462, PubMed:28720718, PubMed:29212815).

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 Note=Colocalized with RAB29 along tubular structures emerging from Golgi apparatus (PubMed:23395371). Localizes to endoplasmic reticulum exit sites (ERES), also known as transitional endoplasmic reticulum (tER) (PubMed:25201882).

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.

LRRK2 Blocking Peptide (C-term) - Protocols

Provided below are standard protocols that you

may find useful for product applications.

- Blocking Peptides