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Anti-Parkin Antibody

Rabbit polyclonal antibody to Parkin Catalog # AP60605

Product Information

Application WB, IF/IC, IHC

Primary Accession 060260

Reactivity Human, Mouse, Bovine

HostRabbitClonalityPolyclonalCalculated MW51641

Additional Information

Gene ID 5071

Other Names PRKN; E3 ubiquitin-protein ligase parkin; Parkinson juvenile disease protein 2;

Parkinson disease protein 2

Target/Specificity KLH-conjugated synthetic peptide encompassing a sequence within the center

region of human Parkin. The exact sequence is proprietary.

Dilution WB~~WB (1/500 - 1/1000), IHC (1/100 - 1/200), IF/IC (1/100 - 1/500)

IF/IC~~N/A IHC~~WB (1/500 - 1/1000), IHC (1/100 - 1/200), IF/IC (1/100 -

1/500)

Format Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30%

glycerol, and 0.09% (W/V) sodium azide.

Storage Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name PRKN (HGNC:8607)

Synonyms PARK2

Function Functions within a multiprotein E3 ubiquitin ligase complex, catalyzing the

covalent attachment of ubiquitin moieties onto substrate proteins

(PubMed: 10888878, PubMed: 10973942, PubMed: 11431533, PubMed: 12150907, PubMed: 12628165, PubMed: 15105460, PubMed: 16135753, PubMed: 21376232, PubMed: 21532592, PubMed: 22396657, PubMed: 23620051, PubMed: 23754282, PubMed: 24660806, PubMed: 24751536, PubMed: 29311685,

PubMed:32047033). Substrates include SYT11 and VDAC1 (PubMed:29311685,

PubMed:32047033). Other substrates are BCL2, CCNE1, GPR37,

RHOT1/MIRO1, MFN1, MFN2, STUB1, SNCAIP, SEPTIN5, TOMM20, USP30,

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ZNF746, MIRO1 and AIMP2 (PubMed: 10888878, PubMed: 10973942,
PubMed:11431533, PubMed:12150907, PubMed:12628165,
PubMed: 15105460, PubMed: 16135753, PubMed: 21376232,
PubMed:21532592, PubMed:22396657, PubMed:23620051,
PubMed:23754282, PubMed:24660806, PubMed:24751536). Mediates
monoubiquitination as well as 'Lys-6', 'Lys-11', 'Lys-48'-linked and
'Lys-63'-linked polyubiquitination of substrates depending on the context
(PubMed: <u>19229105</u>, PubMed: <u>20889974</u>, PubMed: <u>25474007</u>,
PubMed: <u>25621951</u>, PubMed: <u>32047033</u>). Participates in the removal and/or
detoxification of abnormally folded or damaged protein by mediating
'Lys-63'-linked polyubiquitination of misfolded proteins such as PARK7:
'Lys-63'-linked polyubiquitinated misfolded proteins are then recognized by
HDAC6, leading to their recruitment to aggresomes, followed by degradation
(PubMed: 17846173, PubMed: 19229105). Mediates 'Lys-63'-linked
polyubiquitination of a 22 kDa O-linked glycosylated isoform of SNCAIP,
possibly playing a role in Lewy-body formation (PubMed: 11431533,
PubMed:11590439, PubMed:15105460, PubMed:15728840,
PubMed: 19229105). Mediates monoubiquitination of BCL2, thereby acting as
a positive regulator of autophagy (PubMed: 20889974). Protects against
mitochondrial dysfunction during cellular stress, by acting downstream of
PINK1 to coordinate mitochondrial quality control mechanisms that remove
and replace dysfunctional mitochondrial components (PubMed:11439185,
PubMed:18957282, PubMed:19029340, PubMed:19966284,
PubMed:21376232, PubMed:22082830, PubMed:22396657,
PubMed: 23620051, PubMed: 23933751, PubMed: 24660806,
PubMed:24784582, PubMed:24896179, PubMed:25474007,
PubMed: 25527291, PubMed: 32047033). Depending on the severity of
mitochondrial damage and/or dysfunction, activity ranges from preventing
apoptosis and stimulating mitochondrial biogenesis to regulating
mitochondrial dynamics and eliminating severely damaged mitochondria via
mitophagy (PubMed: 11439185, PubMed: 19029340, PubMed: 19801972,
PubMed: 19966284, PubMed: 21376232, PubMed: 22082830,
PubMed: 22396657, PubMed: 23620051, PubMed: 23685073,
PubMed:23933751, PubMed:24896179, PubMed:25527291,
PubMed:32047033, PubMed:33499712). Activation and recruitment onto the
outer membrane of damaged/dysfunctional mitochondria (OMM) requires
PINK1-mediated phosphorylation of both PRKN and ubiquitin
(PubMed:24660806, PubMed:24784582, PubMed:25474007,
PubMed: 25527291). After mitochondrial damage, functions with PINK1 to
mediate the decision between mitophagy or preventing apoptosis by inducing
either the poly- or monoubiquitination of VDAC1, respectively;
polyubiquitination of VDAC1 promotes mitophagy, while monoubiquitination
of VDAC1 decreases mitochondrial calcium influx which ultimately inhibits
apoptosis (PubMed: 27534820, PubMed: 32047033). When cellular stress
results in irreversible mitochondrial damage, promotes the autophagic
degradation of dysfunctional depolarized mitochondria (mitophagy) by
promoting the ubiquitination of mitochondrial proteins such as TOMM20,
RHOT1/MIRO1, MFN1 and USP30 (PubMed: 19029340, PubMed: 19966284,
PubMed:21753002, PubMed:22396657, PubMed:23620051,
PubMed: 23685073, PubMed: 23933751, PubMed: 24896179,
PubMed: 25527291). Preferentially assembles 'Lys-6'-, 'Lys-11'- and
'Lys-63'-linked polyubiquitin chains, leading to mitophagy (PubMed: 25621951,
PubMed:32047033). The PINK1-PRKN pathway also promotes fission of
damaged mitochondria by PINK1-mediated phosphorylation which promotes
the PRKN-dependent degradation of mitochondrial proteins involved in
fission such as MFN2 (PubMed: 23620051). This prevents the refusion of
unhealthy mitochondria with the mitochondrial network or initiates
mitochondrial fragmentation facilitating their later engulfment by
autophagosomes (PubMed: 23620051). Regulates motility of damaged
mitochondria via the ubiquitination and subsequent degradation of MIRO1
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and MIRO2; in motor neurons, this likely inhibits mitochondrial intracellular anterograde transport along the axons which probably increases the chance of the mitochondria undergoing mitophagy in the soma (PubMed:22396657). Involved in mitochondrial biogenesis via the 'Lys-48'-linked polyubiquitination of transcriptional repressor ZNF746/PARIS which leads to its subsequent proteasomal degradation and allows activation of the transcription factor PPARGC1A (PubMed:21376232). Limits the production of reactive oxygen species (ROS) (PubMed: 18541373). Regulates cyclin-E during neuronal apoptosis (PubMed: 12628165). In collaboration with CHPF isoform 2, may enhance cell viability and protect cells from oxidative stress (PubMed: 22082830). Independently of its ubiquitin ligase activity, protects from apoptosis by the transcriptional repression of p53/TP53 (PubMed: 19801972). May protect neurons against alpha synuclein toxicity, proteasomal dysfunction, GPR37 accumulation, and kainate-induced excitotoxicity (PubMed: 11439185). May play a role in controlling neurotransmitter trafficking at the presynaptic terminal and in calcium-dependent exocytosis. May represent a tumor suppressor gene (PubMed:12719539).

Cellular Location

Cytoplasm, cytosol. Nucleus. Endoplasmic reticulum. Mitochondrion. Mitochondrion outer membrane {ECO:0000250 | UniProtKB:Q9WVS6}. Cell projection, neuron projection. Postsynaptic density {ECO:0000250 | UniProtKB:Q9WVS6}. Presynapse {ECO:0000250 | UniProtKB:Q9WVS6}. Note=Mainly localizes in the cytosol (PubMed:19029340, PubMed:19229105). Co-localizes with SYT11 in neutrites (PubMed:12925569). Co-localizes with SNCAIP in brainstem Lewy bodies (PubMed:10319893, PubMed:11431533). Translocates to dysfunctional mitochondria that have lost the mitochondrial membrane potential; recruitment to mitochondria is PINK1-dependent (PubMed:18957282, PubMed:19966284, PubMed:23620051, PubMed:24898855) Mitochondrial localization also gradually increases with cellular growth (PubMed:22082830).

Tissue Location

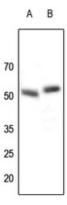
Highly expressed in the brain including the substantia nigra (PubMed:19501131, PubMed:9560156). Expressed in heart, testis and skeletal muscle (PubMed:9560156). Expression is down-regulated or absent in tumor biopsies, and absent in the brain of PARK2 patients (PubMed:12719539, PubMed:14614460). Overexpression protects dopamine neurons from kainate-mediated apoptosis (PubMed:12628165) Found in serum (at protein level) (PubMed:19501131)

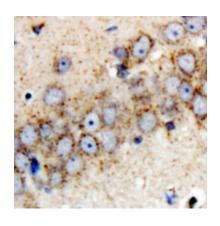
Background

KLH-conjugated synthetic peptide encompassing a sequence within the center region of human Parkin. The exact sequence is proprietary.

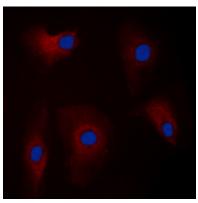
Images

Western blot analysis of Parkin expression in mouse kidney (A), mouse heart (B) whole cell lysates.





Immunohistochemical analysis of Parkin staining in human brain formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.



Immunofluorescent analysis of Parkin staining in U87MG cells. Formalin-fixed cells were permeabilized with 0.1% Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a hidified chamber. Cells were washed with PBST and incubated with a DyLight 594-conjugated secondary antibody (red) in PBS at room temperature in the dark. DAPI was used to stain the cell nuclei (blue).

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