

# Anti-PARK2 / Parkin 2 Antibody

Rabbit Anti Human Polyclonal Antibody

Catalog # ALS18573

## Product Information

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|-------------------|------------------------|
| Application       | WB, IHC-P, IF          |
| Primary Accession | <a href="#">O60260</a> |
| Predicted         | Human, Mouse, Rat      |
| Host              | Rabbit                 |
| Clonality         | Polyclonal             |
| Isotype           | IgG                    |
| Calculated MW     | 51641                  |

## Additional Information

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|--------------------------|------------------------------------------------------------------------------------------------------------------|
| Gene ID                  | 5071                                                                                                             |
| Alias Symbol             | PARK2                                                                                                            |
| Other Names              | PARK2, AR-JP, LPRS2, Parkin, PDJ, Parkinson disease protein 2, PRKN                                              |
| Target/Specificity       | Human PARK2 / Parkin                                                                                             |
| Reconstitution & Storage | Affinity purified                                                                                                |
| Precautions              | Anti-PARK2 / Parkin 2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures. |

## Protein Information

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| Name     | PRKN ( <a href="#">HGNC:8607</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Synonyms | PARK2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Function | Functions within a multiprotein E3 ubiquitin ligase complex, catalyzing the covalent attachment of ubiquitin moieties onto substrate proteins (PubMed: <a href="#">10888878</a> , PubMed: <a href="#">10973942</a> , PubMed: <a href="#">11431533</a> , PubMed: <a href="#">12150907</a> , PubMed: <a href="#">12628165</a> , PubMed: <a href="#">15105460</a> , PubMed: <a href="#">16135753</a> , PubMed: <a href="#">21376232</a> , PubMed: <a href="#">21532592</a> , PubMed: <a href="#">22396657</a> , PubMed: <a href="#">23620051</a> , PubMed: <a href="#">23754282</a> , PubMed: <a href="#">24660806</a> , PubMed: <a href="#">24751536</a> , PubMed: <a href="#">29311685</a> , PubMed: <a href="#">32047033</a> ). Substrates include SYT11 and VDAC1 (PubMed: <a href="#">29311685</a> , PubMed: <a href="#">32047033</a> ). Other substrates are BCL2, CCNE1, GPR37, RHOT1/MIRO1, MFN1, MFN2, STUB1, SNCAIP, SEPTIN5, TOMM20, USP30, ZNF746, MIRO1 and AIMP2 (PubMed: <a href="#">10888878</a> , PubMed: <a href="#">10973942</a> , PubMed: <a href="#">11431533</a> , PubMed: <a href="#">12150907</a> , PubMed: <a href="#">12628165</a> , PubMed: <a href="#">15105460</a> , PubMed: <a href="#">16135753</a> , PubMed: <a href="#">21376232</a> , |

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:[19229105](#), PubMed:[20889974](#), PubMed:[25474007](#), PubMed:[25621951](#), PubMed:[32047033](#)). 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 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 neurites (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)

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