abcam

ab219953

Anti-Cleaved PARP1 antibody [Y34] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	Y34
Purity	IgG fraction
Specificity	This antibody is specific for p85 cleaved form of PARP1.
Concentration	0.948 - 1.038 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Human

Dilution info	-
Notes	-

IP

Tested

Species	Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376- Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information PARP1

Function Poly-ADP-ribosyltransferase that mediates poly-ADP-ribosylation of proteins and plays a key role in DNA repair (PubMed:17177976, PubMed:18055453, PubMed:18172500, PubMed:19344625, PubMed:19661379, PubMed:20388712, PubMed:21680843, PubMed:22582261, PubMed:23230272, PubMed:25043379, PubMed:26344098, PubMed:26626479, PubMed:26626480, PubMed:30104678, PubMed:31796734, PubMed:32028527, PubMed:32241924, PubMed:32358582, PubMed:33186521, PubMed:34465625, PubMed:34737271). Mediates glutamate, aspartate, serine, histidine or tyrosine ADP-ribosylation of proteins: the ADP-D-ribosyl group of NAD(+) is transferred to the acceptor carboxyl group of target

residues and further ADP-ribosyl groups are transferred to the 2'-position of the terminal adenosine moiety, building up a polymer with an average chain length of 20-30 units (PubMed:19764761, PubMed:25043379, PubMed:28190768, PubMed:29954836, PubMed:35393539, PubMed:7852410, PubMed:9315851). Serine ADP-ribosylation of proteins constitutes the primary form of ADP-ribosylation of proteins in response to DNA damage (PubMed:33186521, PubMed:34874266). Specificity for the different amino acids is conferred by interacting factors, such as HPF1 and NMNAT1 (PubMed:28190768, PubMed:29954836, PubMed:32028527, PubMed:33186521, PubMed:33589610, PubMed:34625544, PubMed:34874266). Following interaction with HPF1, catalyzes serine ADP-ribosylation of target proteins; HPF1 confers serine specificity by completing the PARP1 active site (PubMed:28190768, PubMed:29954836, PubMed:32028527, PubMed:33186521, PubMed:33589610, PubMed:34625544, PubMed:34874266). Also catalyzes tyrosine ADP-ribosylation of target proteins following interaction with HPF1 (PubMed:29954836, PubMed:30257210). Following interaction with NMNAT1, catalyzes glutamate and aspartate ADP-ribosylation of target proteins; NMNAT1 confers glutamate and aspartate specificity (By similarity). PARP1 initiates the repair of DNA breaks: recognizes and binds DNA breaks within chromatin and recruits HPF1, licensing serine ADP-ribosylation of target proteins, such as histones (H2BS6ADPr and H3S10ADPr), thereby promoting decompaction of chromatin and the recruitment of repair factors leading to the reparation of DNA strand breaks (PubMed:17177976, PubMed:18172500, PubMed:19344625, PubMed:19661379, PubMed:23230272, PubMed:27067600, PubMed:34465625, PubMed:34874266). HPF1 initiates serine ADP-ribosylation but restricts the polymerase activity of PARP1 in order to limit the length of poly-ADP-ribose chains (PubMed:33683197, PubMed:34732825, PubMed:34795260). In addition to base excision repair (BER) pathway, also involved in double-strand breaks (DSBs) repair: together with TIMELESS, accumulates at DNA damage sites and promotes homologous recombination repair by mediating poly-ADP-ribosylation (PubMed:26344098, PubMed:30356214). Mediates the poly-ADP-ribosylation of a number of proteins, including itself, APLF, CHFR, RPA1 and NFAT5 (PubMed:17396150, PubMed:19764761, PubMed:24906880, PubMed:34049076). In addition to proteins, also able to ADP-ribosylate DNA: catalyzes ADP-ribosylation of DNA strand break termini containing terminal phosphates and a 2'-OH group in single- and double-stranded DNA, respectively (PubMed:27471034). Required for PARP9 and DTX3L recruitment to DNA damage sites (PubMed:23230272). PARP1-dependent PARP9-DTX3L-mediated ubiquitination promotes the rapid and specific recruitment of 53BP1/TP53BP1, UIMC1/RAP80, and BRCA1 to DNA damage sites (PubMed:23230272). PARP1-mediated DNA repair in neurons plays a role in sleep: senses DNA damage in neurons and promotes sleep, facilitating efficient DNA repair (By similarity). In addition to DNA repair, also involved in other processes, such as transcription regulation, programmed cell death, membrane repair, adipogenesis and innate immunity (PubMed:15607977, PubMed:17177976, PubMed:19344625, PubMed:27256882, PubMed:32315358, PubMed:32844745, PubMed:35124853, PubMed:35393539, PubMed:35460603). Acts as a repressor of transcription: binds to nucleosomes and modulates chromatin structure in a manner similar to histone H1, thereby altering RNA polymerase II (PubMed:15607977, PubMed:22464733). Acts both as a positive and negative regulator of transcription elongation, depending on the context (PubMed:27256882, PubMed:35393539). Acts as a positive regulator of transcription elongation by mediating poly-ADP-ribosylation of NELFE, preventing RNA-binding activity of NELFE and relieving transcription pausing (PubMed:27256882). Acts as a negative regulator of transcription elongation in response to DNA damage by catalyzing poly-ADP-ribosylation of CCNT1, disrupting

the phase separation activity of CCNT1 and subsequent activation of CDK9 (PubMed:35393539). Involved in replication fork progression following interaction with CARM1: mediates poly-ADP-ribosylation at replication forks, slowing fork progression (PubMed:33412112). Poly-ADP-ribose chains generated by PARP1 also play a role in poly-ADP-ribose-dependent cell death, a process named parthanatos (By similarity). Also acts as a negative regulator of the cGAS-STING pathway (PubMed:32315358, PubMed:32844745, PubMed:35460603). Acts by mediating poly-ADP-ribosylation of CGAS: PARP1 translocates into the cytosol following phosphorylation by PRKDC and catalyzes poly-ADP-ribosylation and inactivation of CGAS (PubMed:35460603). Acts as a negative regulator of adipogenesis: catalyzes poly-ADP-ribosylation of histone H2B on 'Glu-35' (H2BE35ADPr) following interaction with NMNAT1, inhibiting phosphorylation of H2B at 'Ser-36' (H2BS36ph), thereby blocking expression of pro-adipogenetic genes (By similarity). Involved in the synthesis of ATP in the nucleus, together with NMNAT1, PARG and NUDT5 (PubMed:27257257). Nuclear ATP generation is required for extensive chromatin remodeling events that are energy-consuming (PubMed:27257257). Poly [ADP-ribose] polymerase 1, processed C-terminus. Promotes AIFM1-mediated apoptosis (PubMed:33168626). This form, which translocates into the cytoplasm following cleavage by caspase-3 (CASP3) and caspase-7 (CASP7) in response to apoptosis, is auto-poly-ADP-ribosylated and serves as a poly-ADP-ribose carrier to induce AIFM1-mediated apoptosis (PubMed:33168626). Poly [ADP-ribose] polymerase 1, processed N-terminus. This cleavage form irreversibly binds to DNA breaks and interferes with DNA repair, promoting DNA damage-induced apoptosis.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab219953 is the carrier-free version of ab32561.

Species reactivity

Mouse, Rat: We have preliminary internal testing data to indicate this antibody may not react with these species. Please contact us for more information.

Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?

This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility

- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Cleaved PARP1 also known as cPARP is a fragment of the PARP1 protein an important DNA repair enzyme. The full PARP1 protein has a molecular weight of approximately 116 kDa but after cleavage during apoptosis the cleaved PARP1 fragments typically have a molecular weight of around 89 kDa and 24 kDa. PARP1 is expressed abundantly in the cell nucleus where it plays important roles in maintaining genomic integrity. The cleavage of PARP1 is a common marker for cell apoptosis pointing towards its breakdown in response to cellular stress.
Biological function summary	The enzymatic function of PARP1 involves the transfer of ADP-ribose units from NAD+ to target proteins a process known as ADP-ribosylation. PARP1 operates as a part of the base excision repair complex essential in DNA repair processes. The cleaved form of PARP1 no longer facilitates DNA repair marking a shift towards apoptosis. When PARP1 is cleaved it indicates caspase activity implying cells are undergoing programmed cell death.
Pathways	Cleaved PARP1 is deeply involved in the apoptosis and DNA damage response pathways. In the apoptosis pathway PARP1 interacts with key proteins like caspase-3 which cleaves PARP during apoptosis. In the DNA damage response PARP1 collaborates with proteins such as XRCC1 facilitating the base excision repair pathway important for fixing single-strand DNA breaks. These pathways highlight the dual role of PARP1 in promoting cell survival through repair and cell death via apoptosis.
Associated diseases and disorders	Cleaved PARP1 serves as an important marker in cancer and neurodegenerative diseases. In cancer research elevated levels of cleaved PARP1 suggest increased rates of apoptosis in response to anti-cancer therapies linking it to tumor suppression efforts. In neurodegenerative diseases excessive activation and cleavage of PARP1 can result in cell death exacerbating conditions like Alzheimer's disease. Through these contexts cleaved PARP1 connects to other therapeutic

targets such as caspase proteins in cancer and to potential PARP inhibitors in neurodegenerative disorders.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

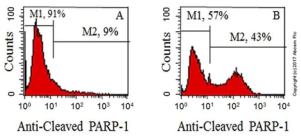
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

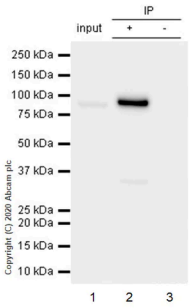
2 product images



Flow Cytometry (Intracellular) - Anti-Cleaved PARP1 antibody [Y34] - BSA and Azide free (ab219953)

Cleaved PARP1 Flow Cytometry (Intracellular) staining using rabbit Anti-Cleaved PARP1 antibody

Primary ab 1/50 dilution (0.5µg / Red). Secondary ab Goat anti rabbit IgG (FITC). Secondary ab concentration 1/150 dilution. Cell line Jurkat (human acute T cell leukemia) treated with (Right) or without (Left) 4µM Camptothecin for 5h. Fixative 4% paraformaldehyde. Datasheet comment Intracellular flow cytometric analysis of apoptotic and non-apoptotic Jurkat cells using anti-cleaved PARP1 RabMAb (ab32561). Jurkat cells were either left untreated (A) or treated with camptothecin (4 uM, 5 hr) to induce apoptosis (B). Cells were fixed and permeabilized , and then stained with anti-cleaved PARP1. The results indicate that 43% of cells were positive for cleaved PARP1 (B, M2) after treatment, compared to 9% positive without treatment (A, M2).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab32561).



Immunoprecipitation - Anti-Cleaved PARP1 antibody [Y34] - BSA and Azide free (ab219953)

This data was developed using ab32561, the same antibody clone in a different buffer formulation.
Purified ab32561 at 1/50 dilution (2µg) immunoprecipitating Cleaved PARP1 in HeLa whole cell lysate.
Lane 1 (input): HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10µg
Lane 2 (+): ab32561 + HeLa whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab32561 in HeLa whole cell lysate.
VeriBlot for IP Detection Reagent (HRP) (ab131366) (1/1000 dilution) was used for Western blotting.
Blocking Buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM/TBST.
Observed band size: 85 kDa
All lanes:
Immunoprecipitation - Anti-Cleaved PARP1 antibody [Y34] (ab32561)

Predicted band size: 113 kDa

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