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PARP1 Blocking Peptide
Synthetic peptide
Catalog # BP22098a

Specification

PARP1 Blocking Peptide - Product Information

Primary Accession P09874

PARP1 Blocking Peptide - Additional Information

Gene ID 142

Other Names
Poly [ADP-ribose] polymerase 1, PARP-1, 2.4.2.30, ADP-ribosyltransferase diphtheria toxin-like 1, ARTD1, NAD(+) ADP-ribosyltransferase 1, ADPRT 1, Poly[ADP-ribose] synthase 1, PARP1, ADPRT, PPOL

Target/Specificity
The synthetic peptide sequence is selected from aa 211-225 of HUMAN PARP1

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.

PARP1 Blocking Peptide - Protein Information

Name PARP1 (HGNC:270)

Function
Poly-ADP-ribosyltransferase that mediates poly-ADP- ribosylation of proteins and plays a key role in DNA repair (PubMed:<a href="
http://www.uniprot.org/citations/17177976"

PARP1 Blocking Peptide - Background

Involved in the base excision repair (BER) pathway, by catalyzing the poly(ADP-ribosyl)ation of a limited number of acceptor proteins involved in chromatin architecture and in DNA metabolism. This modification follows DNA damages and appears as an obligatory step in a detection/signaling pathway leading to the reparation of DNA strand breaks. Mediates the poly(ADP- ribosyl)ation of APLF and CHFR. Positively regulates the transcription of MTUS1 and negatively regulates the transcription of MTUS2/TIP150. With EEF1A1 and TXK, forms a complex that acts as a T-helper 1 (Th1) cell-specific transcription factor and binds the promoter of IFN-gamma to directly regulate its transcription, and is thus involved importantly in Th1 cytokine production. Required for PARP9 and DTX3L recruitment to DNA damage sites. PARP1-dependent PARP9-DTX3L-mediated ubiquitination promotes the rapid and specific recruitment of 53BP1/TP53BP1, UIMC1/RAP80, and BRCA1 to DNA damage sites.

PARP1 Blocking Peptide - References

Uchida K.,et al.Biochem. Biophys. Res. Commun. 148:617-622(1987).
Kurosaki T.,et al.J. Biol. Chem. 262:15990-15997(1987).
Cherney B.W.,et al.Proc. Natl. Acad. Sci. U.S.A. 84:8370-8374(1987).
Auer B.,et al.DNA 8:575-580(1989).
Gregory S.G.,et al.Nature 441:315-321(2006).

target="_blank">17177976,
PubMed:<a href="http://www.uniprot.org/citations/18172500"
target="_blank">18172500,
PubMed:<a href="http://www.uniprot.org/citations/19344625"
target="_blank">19344625,
PubMed:<a href="http://www.uniprot.org/citations/19661379"
target="_blank">19661379,
PubMed:<a href="http://www.uniprot.org/citations/23230272"
target="_blank">23230272,
PubMed:<a href="http://www.uniprot.org/citations/25043379"
target="_blank">25043379,
PubMed:<a href="http://www.uniprot.org/citations/33186521"
target="_blank">33186521,
PubMed:<a href="http://www.uniprot.org/citations/32028527"
target="_blank">32028527,
PubMed:<a href="http://www.uniprot.org/citations/26344098"
target="_blank">26344098). Mediates glutamate, aspartate, serine 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:<a href="http://www.uniprot.org/citations/7852410"
target="_blank">7852410,
PubMed:<a href="http://www.uniprot.org/citations/9315851"
target="_blank">9315851,
PubMed:<a href="http://www.uniprot.org/citations/19764761"
target="_blank">19764761,
PubMed:<a href="http://www.uniprot.org/citations/25043379"
target="_blank">25043379,
PubMed:<a href="http://www.uniprot.org/citations/28190768"
target="_blank">28190768,
PubMed:<a href="http://www.uniprot.org/citations/29954836"
target="_blank">29954836). Serine ADP- ribosylation of proteins constitutes the primary form of ADP- ribosylation of proteins in response to DNA damage (PubMed:<a href="http://www.uniprot.org/citations/33186521"
target="_blank">33186521). Mainly

mediates glutamate and aspartate ADP-ribosylation of target proteins in absence of HPF1 (PubMed:19764761, PubMed:25043379). Following interaction with HPF1, catalyzes serine ADP-ribosylation of target proteins; HPF1 conferring serine specificity by completing the PARP1 active site (PubMed:28190768, PubMed:29954836, PubMed:33186521, PubMed:32028527). Also catalyzes tyrosine ADP-ribosylation of target proteins following interaction with HPF1 (PubMed:30257210, PubMed:29954836). 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, 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:<a href="http://www.uniprot.org/citations/27067600"

target="_blank">27067600). 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-ribosyl)ation of a number of proteins, including itself, APLF and CHFR (PubMed:17396150, PubMed:19764761). 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). Acts as a regulator of transcription: positively regulates the transcription of MTUS1 and negatively regulates the transcription of MTUS2/TIP150 (PubMed:19344625). Plays a role in the positive regulation of IFNG transcription in T-helper 1 cells as part of an IFNG promoter-binding complex with TXK and EEF1A1 (PubMed:17177976). Involved in the synthesis of ATP in the nucleus, together with NMNAT1, PARG and NUDT5 (PubMed:<a href="http://www.uniprot.org/citations/27257257"

target="_blank">27257257). Nuclear ATP generation is required for extensive chromatin remodeling events that are energy-consuming (PubMed:27257257).

Cellular Location
Nucleus. Nucleus, nucleolus. Chromosome Note=Localizes to sites of DNA damage.

PARP1 Blocking Peptide - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Blocking Peptides