

PARP1 Antibody / Poly ADP-ribose polymerase 1 (FY13012)

Catalog No.	Formulation	Size
FY13012	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	P09874
Applications	Western Blot: 0.25-0.5ug/ml Immunocytochemistry: 5ug/ml Immunofluorescence: 5ug/ml Flow Cytometry: 1-3ug/million cells ELISA: 0.1-0.5ug/ml
Limitations	This PARP1 antibody is available for research use only.

Description

PARP1 antibody detects Poly [ADP-ribose] polymerase 1, a nuclear enzyme essential for DNA repair, chromatin remodeling, and transcriptional regulation. The UniProt recommended name is Poly [ADP-ribose] polymerase 1 (PARP1). This enzyme catalyzes the poly-ADP-ribosylation of nuclear proteins in response to DNA strand breaks, recruiting DNA repair machinery and maintaining genomic integrity. PARP1 plays a dual role as both a DNA damage sensor and a regulator of chromatin structure.

Functionally, PARP1 antibody identifies a 1014-amino-acid nuclear protein containing three zinc-finger DNA-binding domains, a BRCT motif, and a catalytic PARP domain. Upon binding to damaged DNA, PARP1 catalyzes the transfer of ADP-ribose units from NAD+ to target proteins, forming long poly-ADP-ribose (PAR) chains. These modifications facilitate the recruitment of DNA repair factors such as XRCC1, DNA ligase III, and DNA polymerase beta. PARP1 activity is a key step in the base excision repair (BER) pathway, ensuring timely resolution of single-strand breaks.

The PARP1 gene is located on chromosome 1q42.12 and is ubiquitously expressed in proliferative and differentiated

tissues. It modulates chromatin relaxation by poly-ADP-ribosylating histones, thereby granting access to repair and transcriptional complexes. Beyond DNA repair, PARP1 regulates transcription by interacting with nuclear receptors and chromatin modifiers, influencing inflammation, cell cycle, and apoptosis. PARP1 activity is tightly regulated by DNA damage signals and cellular NAD+ levels.

In apoptosis, excessive PARP1 activation during oxidative or genotoxic stress leads to NAD+ and ATP depletion, contributing to programmed necrosis (parthanatos). PARP inhibitors, such as olaparib and niraparib, target PARP1 enzymatic activity to enhance the cytotoxicity of DNA-damaging agents, forming the basis for synthetic lethality in BRCA-deficient cancers. Overactivation or dysregulation of PARP1 has been linked to neurodegeneration, ischemic injury, and cancer progression.

PARP1 antibody is widely used in molecular biology, oncology, and DNA repair research. It is suitable for western blotting, immunohistochemistry, and chromatin immunoprecipitation to detect endogenous or modified PARP1. This antibody supports studies of DNA repair, PARP inhibitor mechanisms, and nuclear signaling pathways. In cancer models, PARP1 detection is crucial for assessing DNA damage response and drug sensitivity.

Structurally, PARP1 contains DNA-binding zinc fingers, a WGR domain involved in DNA interaction, and a catalytic domain responsible for NAD+ hydrolysis and ADP-ribose polymerization. Its activity is regulated through automodification, phosphorylation, and proteolytic cleavage during apoptosis. NSJ Bioreagents provides PARP1 antibody reagents validated for use in DNA repair, apoptosis, and chromatin research.

Application Notes

Optimal dilution of the PARP1 antibody should be determined by the researcher.

Immunogen

E.coli-derived human PARP1 recombinant protein (Position: D6-R841) was used as the immunogen for the PARP1 antibody.

Storage

After reconstitution, the PARP1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.