

Proliferating Cell Nuclear Antigen (PCNA), human, functional

10-151 20 µg, # 10-152 100 µg

PCNA (Proliferating cell nuclear antigen) is a homotrimeric protein (261 aa; 29 kDa) known to act as a co-factor for DNA polymerase δ , which is responsible for leading strand DNA replication. PCNA was originally identified as an antigen that is expressed in the nuclei of cells during the DNA synthesis phase of the cell cycle. Crystal structure data suggests that a PCNA homotrimer ring encircles and slides along the DNA double helix. Multiple proteins involved in DNA replication, DNA repair, and cell cycle control bind to PCNA rather than directly associate with DNA, thus facilitating rapid processing of DNA. PCNA is a useful marker for DNA synthesis and some cancers. It is highly conserved among most animals.

This product, Human PCNA was over-expressed in *E. coli* as a recombinant full-size protein without any tag and is highly purified.

Applications

1. Functional studies on DNA replication, recombination and repair. (Ref 2, 3, 5, 6, 7, 8, 9, 10)
2. Identification of proteins interacting with PCNA by using PCNA –conjugated resin. (Ref 1, 5)
3. Ubiquitination targets (Ref 4, 9, 10).
4. SDS-PAGE (Fig. 1)
5. Western blot (Fig. 2)
6. Dot blot
7. ELISA

Not tested for other applications

Specification

Form: 1.0 mg/ml in 25 mM HEPES (pH 7.9), 1 mM EDTA, 0.01% NP40, 1 mM DTT, 2 µg/ml leupeptin, 0.1 mM PMSF, 75 mM NaCl, 50% glycerol.

Storage: Ship at 4°C or -20°C. Upon arrival, aliquot and store at -20°C or 80°C for longer storage.

Purity: Greater than 98% purity as determined by SDS-PAGE (Fig.1).

Data Link: Swiss-Prot [P12004](#) (human), [P04961](#) (rat), [P17918](#) (mouse), [Q9PTP1](#) (Zebrafish).

References: This product has been used in the following References.

1. Ohta S. et al (2002) A proteomics approach to identify proliferating cell nuclear antigen (PCNA)-binding proteins in human cell lysates. Identification of the human CHL12/RFCs2-5 complex as a novel PCNA-binding protein. J Biol Chem 277: 40362-40367 PMID: [12171929](#) .
2. Iida T. et al (2002) "PCNA clamp facilitates action of DNA cytosine methyltransferase 1 on hemimethylated DNA. Genes Cells 7: 997-1007 PMID: [12354094](#) .

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3. Shiomi Y, et al (2004) The reconstituted human Chl12-RFC complex functions as a second PCNA loader. *Genes Cells.* 9:279-90. PMID: [15066120](#).
4. Watanabe K, et al. (2004) Rad18 guides pol eta to replication stalling sites through physical interaction and PCNA monoubiquitination. *EMBO J.* 23:3886-96 PMID: [15359278](#).
5. Tsurimoto T, et al. (2005) Human Werner helicase interacting protein 1 (WRNIP1) functions as a novel modulator for DNA polymerase delta. *Genes Cells.* 10:13-22. PMID [15670210](#)
6. Nishitani H, et al. (2006) Two E3 ubiquitin ligases, SCF-Skp2 and DDB1-Cul4, target human Cdt1 for proteolysis. *EMBO J.* 25:1126-36. PMID: [16482215](#).
7. Shiomi Y, et al. (2007) A second proliferating cell nuclear antigen loader complex, Ctf18-replication factor C, stimulates DNA polymerase eta activity. *J Biol Chem.* 282:20906-14. PMID: [17545166](#).
8. Masuda Y, et al. (2007) Dynamics of human replication factors in the elongation phase of DNA replication. *Nucleic Acids Res.* 35:6904-16. PMID: [17932049](#).
9. Tomida J, et al. (2008) DNA damage-induced ubiquitylation of RFC2 subunit of replication factor C complex. *J Biol Chem.* 283:9071-9. PMID: [18245774](#).
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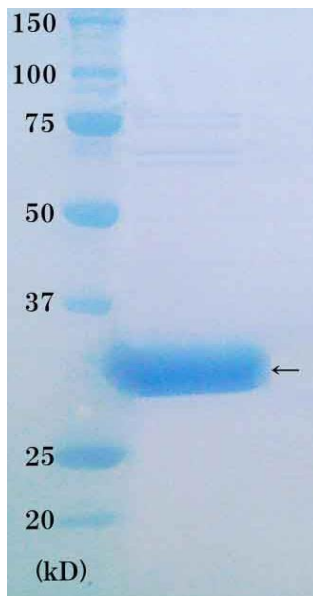


Fig. 1. SDS-PAGE analysis of purified PCNA protein.

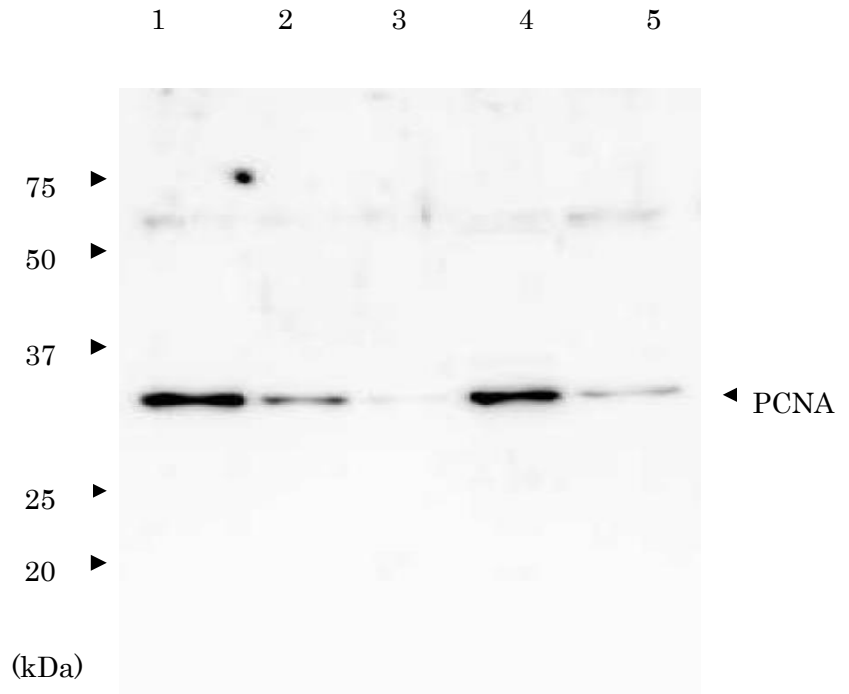


Fig. 2 Western Blot of PCNA. Lane 1; Purified PCNA (3 ng). Lane 2; Purified PCNA (1 ng). Lane 3; Purified PCNA (0.3 ng). Lane 4; Crude extract of HeLa cells (10µg). Lane 5; Crude extract of HeLa cells (2µg) . Primary antibody is anti-PCNA antibody, # 70-080.