

PCNA Protein, Human, Recombinant (His)

General Information

Synonyms:	ATLD2;proliferating cell nuclear antigen
Protein Construction:	A DNA sequence encoding the mature form of human PCNA (P12004) (Met 1-Ser 261) was expressed, with a polyhistidine tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	P12004
Molecular Weight:	31 kDa (predicted); 36 kDa (reducing conditions)

QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 90 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing 50 mM Na ₃ PO ₄ , 300 mM NaCl, 10% glycerol, pH 7.0, 2 mM DTT. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:
It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:
In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Proliferating Cell Nuclear Antigen (PCNA) is a protein only expressed in normal proliferate cells and cancer cells. It is central to both DNA replication and repair. One of the well-established functions for PCNA is its role as the processivity factor for DNA polymerase delta and epsilon. PCNA tethers the polymerase catalytic unit to the DNA template for rapid and processive DNA synthesis. Two forms of PCNA exist in cells: (i) a detergent-insoluble trimeric form stably associated with the replicating forks during S phase and (ii) a soluble form in quiescent cells in

G1 and G2 phases. PCNA forms a toroidal trimer in S phase with replication factor-C (RF-C) and DNA in an ATP-dependent manner and enables the loading of DNA polymerase delta and epsilon onto the complex. The close association of PCNA with kinase complexes involved in cell cycle machinery indicates that PCNA has a regulatory role in cell cycle progression. PCNA also participates in the processing of branched intermediates that arise during the lagging strand DNA synthesis.

Reference

Balajee AS, et al. (2001) Chromatin-bound PCNA complex formation triggered by DNA damage occurs independent of the ATM gene product in human cells. *Nucleic Acids Res.* 29 (6): 1341-51.

Ducoux M, et al. (2001) Mediation of proliferating cell nuclear antigen (PCNA)-dependent DNA replication through a conserved p21(Cip1)-like PCNA-binding motif present in the third subunit of human DNA polymerase delta. *J Biol Chem.* 276 (52): 49258-66.

Tetsuo I, et al. (2002) PCNA clamp facilitates action of DNA cytosine methyltransferase 1 on hemimethylated DNA. *Genes Cells.* 7(10): 997-1007.

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