Recombinant Human PCNA His-tag

Catalog Number: 11805-PC

DESCRIPTION

Source *E. coli*-derived human PCNA protein

Met	HHHHHH	Human PCNA (Phe2-Ser261) Accession # P12004.1
N-terminus		C-terminus

N-terminal Sequence Analysis	Met
Predicted Molecular Mass	30 kDa

SPECIFICATIONS

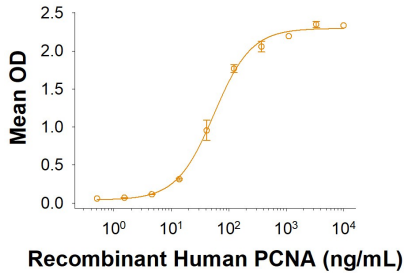
SDS-PAGE	32-37 kDa, under reducing conditions.
Activity	Measured by its binding ability in a functional ELISA. Recombinant Human PCNA His-tag (Catalog # 11805-PC) binds to PCNA Antibody with an ED_{50} of <500 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in Tris, NaCl and TCEP with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 250 µg/mL in water.
Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 6 months from date of receipt, -20 to -70 °C as supplied. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

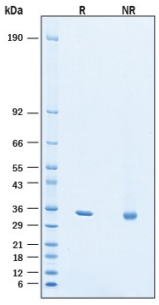
DATA

Binding Activity



Recombinant Human PCNA His-tag Protein Binding Activity. In a functional ELISA, Recombinant Human PCNA His-tag Protein (Catalog # 11805-PC) binds to PCNA Antibody with an ED_{50} of <500 ng/mL.

SDS-Page



Recombinant Human PCNA His-tag Protein SDS-PAGE. 2 µg/lane of Recombinant Human PCNA His-tag Protein (Catalog # 11805-PC) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 32-37 kDa, under reducing conditions.

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BACKGROUND

Proliferating cell nuclear antigen (PCNA) is a highly conserved ~36 kDa nuclear protein that acts as a sliding clamp essential for DNA replication, repair, and cell-cycle progression. In eukaryotic cells, PCNA forms a homotrimeric ring that encircles duplex DNA and functions as a mobile platform to recruit and coordinate a wide range of replication- and repair-associated proteins at the replication fork (1, 2). Due to its tight association with S-phase activity, PCNA is widely used as a marker of cell proliferation in both normal and pathological tissues. During DNA replication, PCNA serves as the primary processivity factor for DNA polymerases δ and ε, ensuring efficient and continuous DNA synthesis. Beyond replication, PCNA integrates DNA metabolic pathways by binding numerous partner proteins involved in nucleotide excision repair, base excision repair, mismatch repair, chromatin assembly, and translesion DNA synthesis (2, 3). Many of these interactions are mediated through conserved PCNA-interacting peptide (PIP) motifs present in client proteins, enabling PCNA to function as a central molecular hub for genome maintenance. PCNA activity is dynamically regulated by post-translational modifications, most notably ubiquitination at Lys164. Monoubiquitination of PCNA promotes recruitment of specialized translesion polymerases that bypass DNA lesions, whereas polyubiquitination directs error-free damage avoidance pathways, thereby preserving genome integrity under replicative stress (4). Proper loading and timely unloading of PCNA from chromatin are also critical for normal DNA metabolism; failure to remove PCNA after replication can interfere with chromatin maturation and repair processes. In addition to its canonical nuclear roles, PCNA participates in cell-cycle control and DNA damage signaling through interactions with regulatory proteins such as the CDK inhibitor p21(Cip1/Waf1). Binding of p21 to PCNA inhibits PCNA-dependent DNA synthesis and links checkpoint activation to suppression of replication following genotoxic stress (5). Through these combined functions, PCNA acts as a coordinator of DNA synthesis, repair pathway choice, and cell-cycle progression. Aberrant PCNA expression or regulation is closely associated with oncogenesis, reflecting the increased proliferative and replicative stress states of cancer cells. Consequently, PCNA has emerged not only as a diagnostic and prognostic marker but also as a potential therapeutic target in cancer and genome-instability–related diseases (2, 6). Recombinant human PCNA is therefore a key research reagent for studies of DNA replication and repair, cell-cycle regulation, genome stability, and cancer biology, as well as for mechanistic analysis of PCNA-dependent protein–protein interactions.

References:

1. Mailand, N. *et al.* (2013) Nat. Rev. Mol. Cell Biol. **14**:269.
2. González-Magaña, A. *et al.* (2020) Biomolecules. **10**:570.
3. Kang, S. *et al.* (2024) Trends Genet. **40**:526.
4. Lee, K.-Y. *et al.* (2008) Mol. Cells **26**:5.
5. Mansilla, S. F. *et al.* (2020) Genes **11**:593.
6. Gera, M. *et al.* (2024) Clin. Transl. Metab. **22**:7.

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