Recombinant DPOG1 protein (His tag)

Catalog Number	537833
Synonyms	3'-5' exodeoxyribonuclease; 5'-deoxyribose-phosphate lyase; Mitochondrial DNA polymerase catalytic subunit; PolG-alpha
Species	Human
Expression System	E. coli
Accession	P54098
Molecular Weight	Predictes a molecular mass of 50.34 kDa. In SDS-PAGE under reducing conditions, it migrates as an approximately 51 kDa band.

Product Information

Sequence Region	70-495
Form	Lyophilized powder
Formulation	Lyophilized from sterile PBS, pH 7.4
Purity	>87%, by SDS-PAGE with Coomassie Brilliant Blue staining.
Endotoxin	Not tested.
Activity	Not tested.
Stability	Samples are stable for up to twelve months from date of receipt at -70℃
Protein Construction	DNA encoding 70-495 aa (P54098) were fused with 6His tag.

Storage & Handling

Reconstitution	Reconstitute at 0.25 µg/µl in sterile water for short-term storage. Reconstitution with 50% glycerol solution is recommended for longer term storage (see Stability and Storage for more details). If a different concentration is needed for your purposes please adjust the reconstitution volume as required (please note: the ion concentration of the final solution will vary according to the volume used). Note: Centrifuge vial before opening. When reconstituting, gently pipet and wash down the sides of the vial to ensure full recovery of the protein into solution.
Storage	Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.
Shipping	In general, recombinant proteins are provided as lyophilized powder which are shipped at ambient temperature. Bulk packages of recombinant proteins are provided as frozen liquid. They are shipped out with blue ice unless customers require otherwise.

Description

Description	Recombinant DNA polymerase subunit gamma-1 (POLG) fragment (residues 70-495), a highly stable and soluble unit derived from human mitochondrial DNA polymerase catalytic subunit. This fragment is engineered for structural and biochemical studies, enabling researchers to investigate key enzymatic activities including DNA replication and proofreading mechanisms in mitochondrial genome maintenance. The full-length DNA polymerase subunit gamma-1 (POLG) serves as the catalytic component of mitochondrial DNA polymerase, exclusively responsible for replicating the entire mitochondrial DNA genome. It demonstrates multifunctional enzymatic activity including 5'→3' DNA polymerase function for strand elongation, 3'→5' exonucleolytic proofreading for replication accuracy, and 5'-deoxyribose-phosphate lyase activity for base-excision repair. Located within the mitochondrial matrix and nucleoid, POLG forms a highly processive replisome with TWNK and SSBP1, enabling continuous replication of both heavy and light strands of circular mtDNA. Its precision in nucleotide selection and error correction makes it critical for mitochondrial genome integrity, with dysfunction linked to various mitochondrial disorders. The protein's ability to transition between replication and editing modes ensures high-fidelity mitochondrial DNA synthesis essential for cellular energy production.