



**LD Biopharma, Inc.**  
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## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human GAPDH Protein  
**Catalog Number:** hRP-1319  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Human GAPDH gene encodes a member of the glyceraldehyde-3-phosphate dehydrogenase protein family. The encoded protein has been identified as a moonlighting protein based on its ability to perform mechanistically distinct functions. The product of this gene catalyzes an important energy-yielding step in carbohydrate metabolism, the reversible oxidative phosphorylation of glyceraldehyde-3-phosphate in the presence of inorganic phosphate and nicotinamide adenine dinucleotide (NAD). GAPDH protein has additionally been identified to have uracil DNA glycosylase activity in the nucleus. Studies of a similar protein in mouse have assigned a variety of additional functions including nitrosylation of nuclear proteins, the regulation of mRNA stability, and acting as a transferrin receptor on the cell surface of macrophage.

Full-length human GAPDH cDNA ( 2 – 335 aa, Isoform-I ) was constructed with codon optimization and expressed with a small T7-His-TEV cleavage site Tag (29aa) fusion at its N-terminal. This protein is expressed in E.coli as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

**Gene Symbol:** GAPDH (G3PD; GAPD; HEL-S-162eP)  
**Accession Number:** NP\_002037  
**Species:** Human  
**Size:** 20 µg / Vial  
**Composition:** 0.2 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, arginine, DTT and Sucrose.  
**Storage:** In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

### Key References

Lenglet G, et al., *Protein recognition of the S23906-1-DNA adduct by nuclear proteins:*



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*direct involvement of glyceraldehyde-3-phosphate dehydrogenase (GAPDH)* Biochem. J. 452 (1), 147-159 (2013)

Wang D, et al., *The expression of glyceraldehyde-3-phosphate dehydrogenase associated cell cycle (GACC) genes correlates with cancer stage and poor survival in patients with solid tumors.* PLoS ONE 8 (4), E61262 (2013)

Matsuda T, et al., *Prolyl oligopeptidase is a glyceraldehyde-3-phosphate dehydrogenase-binding protein that regulates genotoxic stress-induced cell death.* Int. J. Biochem. Cell Biol. 45 (4), 850-857 (2013)

Tristan C, et al., *The diverse functions of GAPDH: views from different subcellular compartments.* Cell. Signal. 23 (2), 317-323 (2011)

## **Applications**

1. May be used for in vitro GAPDH protein mediated uracil DNA glycosylase activity or nitrosylation of nuclear proteins regulation study with “ProFectin” based intracellular delivery of this protein.
2. May be used as substrate various proteases.
3. May be used for GAPDH protein – protein interaction assay, such as GOSPEL-GAPDH interaction.
4. Potential biomarker protein for monitoring cancer stages.
5. May be used for specific antibody production.

## **Quality Control**

Purity: > 90% by SDS-PAGE.

## **Recombinant Protein Sequence**

MASMTGGQQMGRGHHHHHENLYFQGGEFGKVKVGVNGFGRIGRLVTRAAFNSGKVDIVAINDP  
FIDLNYMVMYMFQYDSTHGKFKHGTVKAENGLVINGNPITIFQERDPSKIKWGDAGAEYVVESTG  
VFTTMEKAGAHLQGGAKRVIISAPSADAPMFVMGVNHEKYDNSLKIISNASCTTNCLAPLAKVI  
HDNFGIIVEGLMTTVHAITATQKTVDGPGSKLWRDGRGALQNIIPASTGAAKAVGKVIPELNGKL  
TGMAFRVPTANVSVVDLTCRLEKPAKYDDIKKVVKQASEGPLKGILGYTEHQVVSDFNSDTHS  
STFDAGAGIALNDHFVKLISWYDNEFGYSNRVVDLMAHMASKE