



**LD Biopharma, Inc.**  
7384 Trade Street, Suite B  
San Diego, CA 92121  
Tel: 858-876-8266  
<http://www.ldbiopharma.com>

## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human ID4 Protein  
**Catalog Number:** hTF-1935  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Human DNA-binding protein inhibitor ID4 (ID4) gene encodes a member of the inhibitor of DNA binding (ID) protein family. These proteins are basic helix-loop-helix transcription factors which can act as tumor suppressors but lack DNA binding activity. Consequently, the activity of the encoded protein depends on the protein binding partner. Recent data indicated that the positive regulatory circuit associated with PDGF-NO-ID4 signaling plays a pivotal role in regulating the self-renewal and tumor-initiating capacity of glioblastoma stem cells and might provide a promising therapeutic target for glioblastoma cells

Full-length human ID4 cDNA (160aa) was constructed with N-terminal codon optimization gene synthesis and expressed with a small T7-His-TEV cleavage site Tag (29aa) fusion at its N-terminal. It was 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:** ID4 (bHLHb27; IDB4)  
**Accession Number:** NP\_001537.1  
**Species:** Human  
**Size:** 50 µg / Vial  
**Composition:** 0.5 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.  
**Storage:** In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

### Key References

Eun K, et al., *A cell-autonomous positive-signaling circuit associated with the PDGF-NO-ID4-regulatory axis in glioblastoma cells*. Biochem Biophys Res Commun. Mar 19. Pii: s00006-291X(17) 30555-7.(2017)



**LD Biopharma, Inc.**  
7384 Trade Street, Suite B  
San Diego, CA 92121  
Tel: 858-876-8266  
<http://www.ldbiopharma.com>

Sharma P, et al., *Inhibitor of differentiation 4 (ID4) acts as an inhibitor of ID-1,-2 and -3 and promotes basic helix loop helix (bHLH) E47 DNA binding and transcriptional activity.* Biochimie 112, 139-150 (2015)

Peretz Y, et al., *Inhibitor of DNA Binding 4 (ID4) is highly expressed in human melanoma tissues and may function to restrict normal differentiation of melanoma cells.* PLoS ONE 10 (2), E0116839 (2015)

Beger C, et al., *Identification of Id4 as a regulator of BRCA1 expression by using a ribozyme-library-based inverse genomics approach.* Proc. Natl. Acad. Sci. U.S.A. 98 (1), 130-135 (2001)

## **Applications**

1. May be used for in vitro ID4 mediated PDGF-NO-ID4 signaling pathway regulation for cancer cells study by intracellular delivery of this protein with protein delivery reagent such as ProFectin reagent kit.
2. May be used for mapping ID4 protein-protein interaction.
3. May be used as enzymatic substrate for various proteases.
4. Potential biomarker protein for tumor treatment / prognosis.
5. As immunogen for specific antibody production.

## **Quality Control**

Purity: > 90% by SDS-PAGE.

## **Recombinant Protein Sequence**

```
MASMTGGQQMGRGHHHHHGNLYFQGGEFKAVSPVRPSGRKAPSGCGGGELALRCLAE  
HGHSLGGSAAAAAAAAAARCKAAEAAADEPALCLQCDMNDYC SRLRRLVPTIPPNKKV  
SKVEILQHVIDYILDLQLALETHPALLRQPPPPAPPHHPAGTCPAAPPRTPLTALNTD  
PAGAVNKQGDSILCR
```