



**LD Biopharma, Inc.**  
7384 Trade Street, Suite B  
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## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human PIN4 Protein  
**Catalog Number:** hRP-2431  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Human peptidyl-prolyl cis-trans isomerase NIMA-interacting 4 (PIN4) gene encodes a member of the parvulin subfamily of the peptidyl-prolyl cis/trans isomerase protein family. The encoded protein catalyzes the isomerization of peptidylprolyl bonds, and may play a role in the cell cycle, chromatin remodeling, and /or ribosome biogenesis. The encoded protein may play an additional role in the mitochondria. Recent data indicated that PIN4 plays an important role in FGFR3-TACC3 gene fusion glioblastoma by up-regulating tumor cell mitochondrial biogenesis.

Full-length human PIN4 cDNA (155aa) was constructed with codon optimization gene synthesis and expressed with a human alpha Fetal Protein N-terminal (AFPn) -His-TEV cleavage site Tag (217aa) fusion at its N-terminal. This protein 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:** PIN4 (EPVH; PAR14; PAR17)  
**Accession Number:** NP\_006214  
**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, 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

Veronique Frattini, et al. *A metabolic function of FGFR3-TACC3 gene fusions in cancer.* *Nature.* 553, 222-227 (11 January, 2018)

Burgardt NI, et al., *Parvulin 17-catalyzed Tubulin Polymerization Is Regulated by Calmodulin in a Calcium-dependent Manner.* *J. Biol. Chem.* 290 (27), 16708-16722 (2015)



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Saningong AD et al., *Human DNA-binding peptidyl-prolyl cis/trans isomerase Par14 is cell cycle dependently expressed and associates with chromatin in vivo*. *BMC Biochem.* 16, 4 (2015)

Kessler D, et al., *The DNA binding parvulin Par17 is targeted to the mitochondrial matrix by a recently evolved prepeptide uniquely present in Hominidae*. *BMC Biol.* 5, 37 (2007)

## **Applications**

1. May be used for in vitro PIN4 mediated RSK2-LARG-RhoA interactive signaling pathway regulation for cancer cell metastasis study by intracellular delivery of this protein with protein delivery reagent such as ProFectin reagent kit.
2. May be used for mapping protein-protein interaction.
3. May be used as specific substrate protein for specific kinase, and ubiquitin (Sumo pathway) related enzyme functional screening assays.
4. Potential biomarker protein, which may be used for PD disease prevention or treatment.
5. As immunogen for specific antibody production.

## **Quality Control**

Purity: > 90% by SDS-PAGE.

## **Recombinant Protein Sequence**

MTLHRNEYGIASILDSYQCTAEISLADLATIFFAQFVQEATYKEVSKMVKDALTAIEKPTGDEQ  
SSGCLLENQLPAFLLEELCHEKEILEKYGHSDCCSQSEEGRHNCFLAHKKPTPASIPLFQVPEPVT  
SCEAYEEDRETFFMNFIIYEIARRHPFLYAPTILLWAARYDKIIPSCCKAENAVECFQTKAATVT  
KELRESSGGSHHHHHHGSENLYFQGPMAGLLKGLVRQLEQFRVQQQASKMPPKGKSGSGKAGKG  
GAASGSDSADKKAQGPKGGGNAVKVRHILCEKHGKIMEAMEKLLKSGMRFNEVAAQYSEDKARQG  
GDLGWMTRGSMVGPVFQEAALPVSMDKPVFTDPPVKTKFGYHIIMVEGRK