



**LD Biopharma, Inc.**  
7384 Trade Street, Suite B  
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<http://www.ldbiopharma.com>

## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant YFP-Human **RIOK3** Protein  
**Catalog Number:** HRP-3500  
**Manufacturer:** LD Biopharma, Inc. USA

### Introduction

Human Serine/threonine-protein kinase RIO3 (RIOK3) gene encodes a kinase which involved in regulation of type I interferon (IFN)-dependent immune response. It plays a critical role in the innate immune response against DNA and RNA viruses. RIOK3 may act as an adapter protein essential for the recruitment of TBK1 to IRF3. Phosphorylates IFIH1 on 'Ser-828' interfering with IFIH1 filament assembly on long dsRNA and resulting in attenuated IFIH1-signaling. RIOK3 can inhibit CASP10 isoform 7-mediated activation of the NF-kappaB signaling pathway. It may play a role in the biogenesis of the 40S ribosomal subunit. It is also involved in the processing of 21S pre-rRNA to the mature 18S rRNA. Recent data indicated that Riok3 regulates the innate immune response by interacting with both RIG-I and MDA5 and inhibits their expression after RNA viral infection through TRIM40-mediated K48- and K27-linked ubiquitination pathway.

Full-length human RIOK3 cDNA (518aa) was constructed with codon optimization gene synthesis and expressed with YFP Protein as N-terminal (YFP; 256aa) fusion protein 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:** P1OK3 (SUDD)  
**Accession Number:** NP\_003822  
**Species:** Human  
**Size:** 50 µg / Vial  
**Composition:** 1.0 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose, DTT and others.  
**Storage:** In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least two weeks.



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## Key References

Yong Shen et al., *Riok3 Inhibits the Antiviral Immune Response by Facilitating TRIM40-mediated RIG-I and MDA5 Degradation*. Cell Reports 35. 109272 June 22, (2021)

Zhang T, et al., *The atypical protein kinase RIOK3 contributes to glioma cell proliferation/survival, migration/invasion and the AKT/mTOR signaling pathway*. Cancer Lett 415, 151-163 (2018)

Singleton DC, et al., *Hypoxic regulation of RIOK3 is a major mechanism for cancer cell invasion and metastasis*. Oncogene 34 (36), 4713-4722 (2015)

## Applications

1. May be used for in vitro RIOK3 protein mediated kinase pathway regulation for various cells study using intracellular delivery of recombinant YFP-human RIOK3 protein with protein delivery reagent such as ProFectin.
2. May be used for RIOK3 protein-protein interaction assay.
3. May be used as specific substrate protein for RIOK3 specific kinase, and ubiquitin (Sumo pathway) related enzyme functional screening assays.
4. As native human RIOK3 antigen for its specific antibody production.

## Quality Control

Purity: > 92 % by SDS-PAGE.

YFP protein: **Ex λ** = 517nm, and **Em λ** = 530nm.

## Recombinant **YFP**- Human RIOK3 Fusion Protein Sequence (87.0 kD)

**MKHHHHHQ**VSKGEELFTGVVPI~~LV~~ELDGDVNGHKFSVSGEGEGDATYGKLT~~LKLLCT~~TGKLPV  
PWPTLV~~TTL~~LGYG~~VQC~~FARYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRA~~EVK~~FE~~GDTL~~  
VNRIELK~~GID~~FKEDGNILGHKLEYNYN~~SHNVY~~ITADKQKNGIKANFKIRHNI~~EDGGVQLADHYQ~~  
QNTPIGDGPVLLPDNHYLSYQSALFKDPNEKR~~DHMLLEFL~~TAAGITEGMNELYK~~GS~~DLVGVAS  
PEPGTAAAWGPSKCPWAI~~PQNT~~ISCSLADVMSEQLAKELQLEEEAAVFPEVAVAEGPFITGENI  
DTSSDLMLLAQMLQMEYDREYDAQLRREEK~~FFNG~~D~~SKVSI~~SFENYRKVHPYEDSDSSEDEVDWQD



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TRDDPYRPAKPVPTPKKGFIGKGDITTKHDEVVCGRKNTARMENFAPEFQVGDGIGMDLKLSN  
HVFNALKQHAYSEERRSARLHEKKEHSTA EKAVDPKTRLLMYKMVNSGMLLETITGCI STGKESV  
VFHAYGGMEDEKEDSKVIPTECAIKVFKTTLNEFKNRDKYIKDDFRFKDRFSKLNPRKI IRMW  
AEKEMHNLARMQRAGIPCPTVVLLKKHILVMSFIGHDQVPAPKLKEVKLNSEEMKEAYYQTLHL  
MRQLYHECTLVHADLSEYNMLWHAGKVWLI DVSQSVEPTHPHGLEFLFRDCRNVSQFFQKGGVK  
EALSERELFNAVSGLNI TADNEADFLAEIEALEKMNE DHVQKNGRKAASFLKDDGDPPLLYDE