



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

## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant YFP-Human **FoxP3** Protein  
**Catalog Number:** HTF-2906  
**Manufacturer:** LD Biopharma, Inc. USA

### Introduction

Human FoxP3 gene encodes a transcriptional regulator which is crucial for the development and inhibitory function of regulatory T-cells (Treg). It plays an essential role in maintaining homeostasis of the immune system by allowing the acquisition of full suppressive function and stability of the Treg lineage, and by directly modulating the expansion and function of conventional T-cells. FoxP3 can act either as a transcriptional repressor or a transcriptional activator depending on its interactions with other transcription factors, histone acetylases and deacetylases. The suppressive activity of Treg involves the coordinate activation of many genes, including CTLA4 and TNFRSF18 by FoxP3 along with repression of genes encoding cytokines such as interleukin-2 (IL2) and interferon-gamma (IFNG). It inhibits cytokine production and T-cell effector function by repressing the activity of two key transcription factors, RELA and NFATC2. FoxP3 mediates transcriptional repression of IL2 via its association with histone acetylase KAT5 and histone deacetylase HDAC7. It can activate the expression of TNFRSF18, IL2RA and CTLA4 and repress the expression of IL2 and IFNG via its association with transcription factor RUNX1. FoxP3 inhibits the differentiation of IL17 producing helper T-cells (Th17) by antagonizing RORC function, leading to down-regulation of IL17 expression, favoring Treg development. It inhibits the transcriptional activator activity of RORA. FoxP3 also repress the expression of IL2 and IFNG via its association with transcription factor IKZF4.

Full-length human FoxP3 cDNA (430aa, Isoform-1) 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:** FoxP3 ( IPEX & JM2 )  
**Accession Number:** NP\_054728  
**Species:** Human



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<b>Size:</b>	40µg / Vial
<b>Composition:</b>	0.4 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose, DTT and others.
<b>Storage:</b>	In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least two weeks.

## Key References

Dehghani M, et al., ***Aberrant peripheral blood CD4(+) CD25(+) FOXP3(+) regulatory T cells/T helper-17 number is associated with the outcome of patients with lymphoma.*** Cancer Immunol. Immunother. 69 (9), 1917-1928 (2020)

Cortez JT, et al., ***CRISPR screen in regulatory T cells reveals modulators of Foxp3.*** Nature 582 (7812), 416-420 (2020)

Je-Min Choi, et al., ***Cell-permeable FoxP3 protein alleviates autoimmune disease associated with inflammatory bowel disease and allergic airway inflammation.*** PNAS. Dec 14, Vol 107. No 43: 18575 - 18580. (2010)

## Applications

1. May be used for in vitro FoxP3 protein mediated gene transcription regulation for Treg cell study using intracellular delivery of recombinant human YFP-FoxP3 fusion protein with protein delivery reagent such as ProFectin.
2. May be used for FoxP3 protein-protein interaction assay.
3. May be used as specific substrate protein for FoxP3 specific kinase, and ubiquitin (Sumo pathway) related enzyme functional screening assays.
4. Potential therapeutic protein, modulating FoxP3 activity may be useful for immune-response / inflammation related disease treatments, such as inflammatory bowel disease or allergic airway inflammation.
5. As native human FoxP3 antigen for its specific antibody production.

## Quality Control

Purity: > 92 % by SDS-PAGE.



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## Recombinant **YFP**- Human FoxP3 Protein Sequence (76.3 kD)

MKHHHHHHQVSKGEELFTGVVPII LVELDGDVNGHKFSVSGEGEGDATYGKLT LKLLCTTGKLPVPWP TLV  
TTLGYGVQCFARYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRAEVKFEGDTLVNRIELK GIDFK  
EDGNILGHKLEYNYNSHN VYITADKQKNGIKANFKIRHNI EDGGVQLADHYQQNTPIGDGPVLLPDNHYL  
SYQSALFKDPNEKRDH MVLLEFLTAAGITEGMNDLYKGS **ENLYFQGEF**PNPRPGKPSAPSLALGPS GAS  
PSWRAAPKASDLLGARGPGGTFQGRDLRGGAHASSSSLNPMPPSQLQLPTLPLVMVAPSGARLGPLPHLQ  
ALLQDRPHFMHQLSTVDAHARTPVLQVHPLESPAMISLTPPTTATGVFSLKARPGLPPGINVASLEWVSR  
EPALLCTFPNPSAPRKDSTLSAVPQSSYPLL ANGVCKWPGCEKVFEEPEDFLKHCQADHLLDEKGRAQCL  
LQREMVQSLEQQLVLEKEKLSAMQAHLAGKMALTKASSVASSDKGSCCIVAAGSQGPVVPAWSGP REAPD  
SLFAVRRHLWGSHGNSTFPEFLHNMDYFKFHNMRPPFTYATLIRWAILEAPEKQRTLNEIYHWFTRMFAF  
FRNHPATWKNAIRHNLSLHKCFVRVESEKGAVWTVDELEFRKKRSQRPSRCSNPTPGP