



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

**Name of Product:** Recombinant Human ACTG1 Protein  
**Catalog Number:** hRP-0712  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Actins are highly conserved proteins that are involved in various types of cell motility, and maintenance of the cytoskeleton. In vertebrates, three main groups of actin isoforms, alpha, beta and gamma have been identified. The alpha actins are found in muscle tissues and are a major constituent of the contractile apparatus. The beta and gamma actins co-exist in most cell types as components of the cytoskeleton, and as mediators of internal cell motility. Human Actin, gamma 1 (ACTG1), encoded by this gene, is a cytoplasmic actin found in non-muscle cells. Mutations in this gene are associated with DFNA20/26, a subtype of autosomal dominant non-syndromic sensorineural progressive hearing loss. Alternative splicing results in multiple transcript variants that display cell type specific distribution. Recent data indicated that ACTG1 also interact with Cdk9, a catalytic subunit of P-TEFb and affects RNA polymerase II activities.

Full-length human ACTG1 (357 aa) gene was constructed with 15 N-terminal T7 tag. This protein was expressed in *E. coli* as inclusion bodies, refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

**Gene Symbol:** ACTG1 (ACT; ACTG; DNFNA20; DFNA26)  
**Accession Number:** NP\_001605  
**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 and DTT.  
**Storage:** In Liquid. Keep at -20°C for long term storage. Product is stable at 4 °C for at least 30 days.



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## Key References

Dugina, V., et al., *Beta and gamma-cytoplasmic actins display distinct distribution and functional diversity*. J. Cell. Sci. 122 (PT 16), 2980-2988 (2009)

Martins-de-Souza, D., et al., *Sex-specific proteome differences in the anterior cingulate cortex of schizophrenia*. J Psychiatr Res 44 (14), 989-991 (2010)

Kiuchi, T., et al., *Measurements of spatiotemporal changes in G-actin concentration reveal its effect on stimulus-induced actin assembly and lamellipodium extension*. J. Cell Biol. 193 (2), 365-380 (2011)

Qi, T., et al., *G-actin participates in RNA polymerase II-dependent transcription elongation by recruiting positive transcription elongation factor b (P-TEFb)*. J. Biol. Chem. 286 (17), 15171-15181 (2011)

## Applications

1. May be used for in vitro gene transcription regulation control study with “ProFectin” reagent based intracellular delivery of this protein.
2. May be used for in vitro protein – protein interaction measurement for mapping ACTG1 binder.
3. May be used as antigen for specific antibody production.

## Quality Control

1. Purity: > 90% by SDS-PAGE.

## Recombinant Protein Sequence

MASMTGGQQMGRGEFGSEEEIAALVIDNGSGMCKAGFAGDDAPRAVFP SIVGRPRHQGMVGMG  
QKDSYVGDEAQSKRGILT LKYP IEHGIVTNWDDMEKIWHHTFYNELRVAP EHPVLLTEAPLNK  
ANREKMTQIMFETFNTPAMYVAIQAVLSLYASGR TTGIVMDSGDGVTH TVPIYEGYALPHAILR  
LDLAGRDLTDYLMKIL TERGYSFTTTAEREIVRDIKEKLCYVALDFEQEMATAASSSSLEKSYE  
LPDGQVITIGNERFRCPEALFQPSFLGMESCGIHETTFNSIMKCDVDIRKDLYANTVLSGGTTM  
YPGIADRMQKEITALAPSTMKIKI IAPPERKYSVWIGGSILASLSTFQQMWISKQEYDESGPSI  
VHRKCF