



LD Biopharma, Inc.  
9924 Mesa Rim Road Suite B  
San Diego, CA 92121  
Tel: 858-876-8266  
<http://www.ldbiopharma.com>

## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human RAB5A Protein  
**Catalog Number:** hRP-1640  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Endocytosis is involved in a wide variety of cellular processes, including uptake and internalization of solutes and components of the extracellular matrix (ECM), regulation of signaling induced by extracellular ligands, trafficking of cell surface receptors, such as integrins, and rearrangement of the actin cytoskeleton. Endocytosis and intracellular trafficking are coordinated by a family of small GTPases termed the Rabs. Rab proteins are classified according to their function and localization in different intracellular compartments and membrane domains. Human ras-related protein Rab5A (Rab5) participates in a multitude of cellular functions, including vesicle formation, early endosome fusion, early-to-late endosome maturation and motility along microtubules. Therefore, Rab5 is considered a master regulator of early endosome dynamics. As a small GTPase, Rab5 cycles between a GDP- (inactive) and GTP-bound form (active). Rab5 has also been implicated in other cellular processes, such as cell adhesion and migration. By regulating local actin remodeling, Rab5 recruits the Rac1 guanine-nucleotide-exchange factor (GEF) Tiam1 to early endosomes, promoting Rac1-GTP loading and formation of circular dorsal ruffles. Rab5-mediated activation of Rac1 is required for tumor cell migration *in vitro* and *in vivo*. Rab5 also associates with  $\beta$ 1 integrins, and regulates the rates of integrin internalization and recycling.

Full-length human ARB5A cDNA (214 aa, derived from BC001267) was constructed with codon optimization and expressed with a small T7-His-TEV cleavage site Tag (29aa) 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:** RAB5A (Rab5)  
**Accession Number:** NP\_004153  
**Species:** Human  
**Size:** 50  $\mu$ g / 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.



**LD Biopharma, Inc.**  
9924 Mesa Rim Road Suite B  
San Diego, CA 92121  
Tel: 858-876-8266  
<http://www.ldbiopharma.com>

## Key References

Lee JJ, et al., *Interplay between clathrin and Rab5 controls the early phagocytic trafficking and intracellular survival of Brucella abortus within HeLa cells*. J. Biol. Chem. 288 (39), 28049-28057 (2013)

Mendoza P, et al., *Rab5 activation promotes focal adhesion disassembly, migration and invasiveness in tumor cells*. J. Cell. Sci. 126 (PT 17), 3835-3847 (2013)

Bastin G et al., *Rab family proteins regulate the endosomal trafficking and function of RGS4*. J. Biol. Chem. 288 (30), 21836-21849 (2013)

Oku S, et al., *In silico screening for palmitoyl substrates reveals a role for DHHC1/3/10 ( $\alpha$ DHHC1/3/11)-mediated neurochondrin palmitoylation in its targeting to Rab5-positive endosomes*. J. Biol. Chem. 288 (27), 19816-19829 (2013)

Kirsten ML, et al., *Rab1a and Rab5a preferentially bind to binary lipid compositions with higher stored curvature elastic energy*. Mol. Membr. Biol. 30 (4), 303-314 (2013)

## Applications

1. May be used for in vitro RAB5A protein mediated endocytosis and intracellular trafficking regulation in cancer cells study by intracellular delivery of this protein with "ProFectin" reagent.
2. May be used for mapping RAB5A protein-protein interaction.
3. As antigen for specific antibody production.

## Quality Control

Purity: > 90% by SDS-PAGE.

## Recombinant Protein Sequence

MASMTGGQQMGRGHHHHHHENLYFQGGEFASRGATRPNGPNTGNKICQFKLVLLGESAVGKSSL  
VLRFBVKGQFHEFQESTIGAAFLTQTVCLDDTTVKFEIWDTAGQERYHSLAPMYRGAQAAIVVY  
DITNEESFARAKNWKELQRQASPNIVIALSGNKADLANKRAVDQEAQSYADDNSLLFMETSA  
KTSMNVNIEIFMAIAKKLPKNEPQNPGANSARGRGVDLTEPTQPTRNQCCSN