



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

**Name of Product:** Recombinant Human BCAT-1 Protein  
**Catalog Number:** hRP-1807  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

This gene encodes the cytosolic form of the enzyme branched-chain amino acid transaminase (BCAT-1). This enzyme catalyzes the reversible transamination of branched-chain alpha-keto acids to branched-chain L-amino acids essential for cell growth. Two different clinical disorders have been attributed to a defect of branched-chain amino acid transamination: hypervalinemia and hyperleucine-isoleucinemia. As there is also a gene encoding a mitochondrial form of this enzyme, mutations in either gene may contribute to these disorders. Recent data indicated that BCAT-1 enzyme activity might regulate mammalian physiological ageing process.

Full-length human BCAT-1 cDNA (385aa) was constructed with codon optimization using gene synthesis technology 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:** BCAT-1 (BCATC; ECA39; MECA39; PNAS121;PP18)  
**Accession Number:** NP\_005495.2  
**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 -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

### Key References

Eden A, et al., *Involvement of branched-chain amino acid aminotransferase (Bcat1/Eca39) in apoptosis*. FEBS Lett. 457 (2), 255-261 (1999)



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Hull J, et al., *Distribution of the branched chain aminotransferase proteins in the human brain and their role in glutamate regulation*  
J. Neurochem. 123 (6), 997-1009 (2012)

Zhou W, et al., *Over-expression of BCAT1, a c-Myc target gene, induces cell proliferation, migration and invasion in nasopharyngeal carcinoma*  
Mol. Cancer 12, 53 (2013)

Tonjes M, et al., *BCAT1 promotes cell proliferation through amino acid catabolism in gliomas carrying wild-type IDH1*. Nat. Med. 19 (7), 901-908 (2013)

Johannes Mansfeld, et al., *Branched-chain amino acid catabolism is a conserved regulator of physiological ageing*. Nat. communication. /DOI:10.1038/ncomms10043. (2015)

## Applications

1. May be used for in vitro BCAT-1 mediated LET-363/mTOR dependent neuro-endocrine signaling regulation study for neuronal cell lifespan by intracellular delivery of this protein with ProFectin Reagent.
2. May be used for protein-protein interaction mapping.
3. May be used as specific substrate protein for kinase, and ubiquitin (Sumo pathway) related enzyme functional screening assays
4. Potential biomarker protein for prognostic diagnosis of various cancers by monitoring BCAT-1 tissue expression level in tumor.
5. As immunogen for specific antibody production.

## Quality Control

Purity: > 90% by SDS-PAGE.

## Recombinant Protein Sequence

MASMTGGQQMGRGHHHHHENLYFQGGEFKDCSNGCSAECTGEGGSKEVVGTFKAKDLIVTPAT  
ILKEKPDNNLVFGTVFTDHMLTVEWSSEFGWEKPHIKPLQNLSLHPGSSALHYAVELFEGGLKA  
FRGVDNKRIRLFPNLMNDRMYRS AVRATLPVFDKEELLECIQQLVKLDQEWVPYSTSASLYIRP  
TFIGTEPSLGVKKPTKALLFVLLSPVGPYFSSGTFNPNVSLWANPKYVRAWKGGTGDCKMGGNYG  
SSLFAQCEAVDNGCQQVLWLYGEDHQITEVGTMNLFLYWINEDEGEEELATPPLDGIILPGVTRR  
CILDLAHQWGEFKVSERYLTMDLLTTALEGNRVREMFSGTACVVCVSDILYKGETIHIPTME  
NGPKLASRILSKLTDIQYGREESDWTIVLS