Legumain, MBP/His-Tag

Asparaginyl endopeptidase

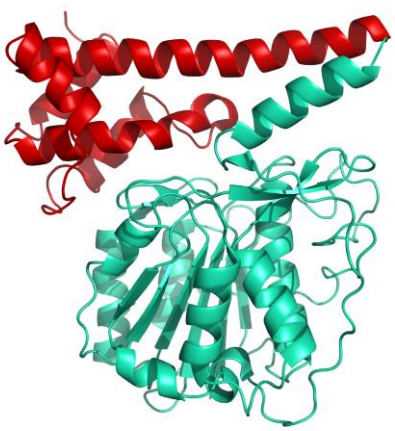
Cat. no. P2020-159

Product Information

Protein:	Legumain, MBP/His-Tag (~ 91.1 kDa)
Uniprot#:	Q99538
Sequence:	VPIDDPEDGGKHWVVIVAGSNGWYNYRHQADACHAYQIIHRNGIPDEQIVVMMYDDIAYS EDNPTPGIVINRPNGTDVYQGVPKDYTGEDVTPQNFLAVLRGDAEAVKGIGSGKVLKSGP QDHVFIYFTDHGSTGILVFPNEDLHVKDLNETIHYMYKHKMYRKMVFYIEACESGSMMNH LPDNINVYATTAANPRESSYACYYDEKRSTYLGDWYSVNWMEDSDVEDLTKETLHKQYHL VKSHTNTSHVMQYGNKTISTMKVMQFQGMKRKASSPVPLPPVTHLDLTPSPDVPLTIMKR KLMNTNDLEESRQLTEEIQRHLDARHLIEKSVRKIVSLLAASEAEVEQLLSERAPLTGHS CYPEALLHFRTHCFNWHSPTYEYALRHLYVLVNLCEKPYPLHRIKLSMDHVCLGHY Methionine at pos. 1 might be present due to cloning constraints, N-terminal His-tag and MBP-fusion not shown in sequence.
Source:	Recombinantly expressed in HEK293.
Tag(s):	His-tag, C-terminal
Purification:	Purified by affinity chromatography and subsequent buffer exchange.
Formulation:	20 mM Tris, 20 mM NaCl, 5 mM DTT; pH 7.5 Liquid, stored and shipped at -80 °C.
Purity:	> 85 % (will be determined by densitometry of Coomassie stained gel, example next page)
Concentration:	Will be determined by BCA-Assay.
Long-term storage:	No recommendations.
Comment:	Protein migrates at higher molecular weight during SDS-PAGE due to posttranslational modifications.

Background Information:

Legumain functions as lysosomal cysteine protease, specifically hydrolyzing peptide bonds after asparagine residues. Thereby, legumain plays a crucial role in the degradation of intracellular proteins.
Structurally, it contains a highly conserved His148-Gly-spacer-Ala-Cys189 motif, which is characteristic for members of the CD clan of cysteine proteases, such as caspase-1, clostripain and gingipain R. Legumain belongs to the C13 family of peptidases and is synthesized as inactive zymogen consisting of a N-terminal pro-peptide (Val18-Asp25), the cysteine protease domain (Gly26-Asn323) and a C-terminal pro-domain (Asp324-Tyr433). To become active, legumain requires autoproteolytic cleavage resulting in the release of both pro-peptides. Particularly, a pH shift to below 5.5 leads to autocatalytic removal of the C-terminal pro-domain and a further decrease in pH to approximately 4.0 removes the N-terminal pro-peptide, thus releasing the active protease.



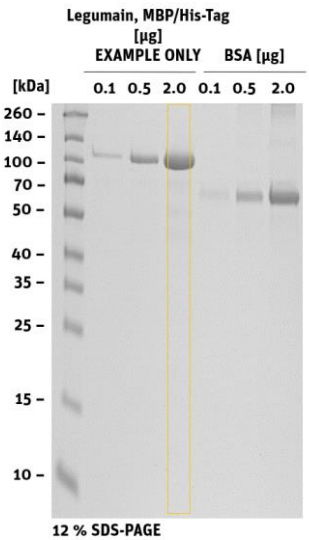
Structural model of Legumain

Product Information

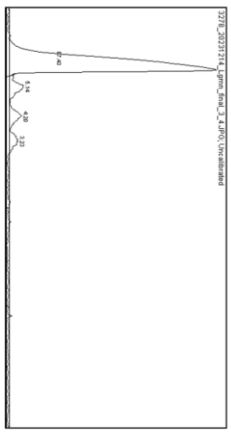
Legumain is responsible for the proteolysis of endocytosed proteins, generating antigenic peptides that bind to class II major histocompatibility complex (MHC) molecules with high affinity. In addition, the proteolytic activity of legumain promotes the dissociation of the invariant chain (Ii), which occupies the peptide-binding cleft of class II MHC molecules to prevent peptide binding within the endoplasmic reticulum (ER). Processing and dissociation of the Ii in lysosomes enables association of processed, high affinity peptides that are displayed on the surface of antigen presenting cells (APCs). This results in antigen recognition by CD4+ T lymphocytes and their activation. Hence, legumain plays an essential role in the regulation of adaptive immune responses.

In cancer, increased legumain expression has been associated with tumor progression, invasion, and metastasis, due to increased degradation of the extracellular matrix. Additionally, overexpression of legumain has been implicated in the pathogenesis of neurodegenerative diseases, such as Alzheimer's and Parkinson's disease, where its dysregulation contributes to the accumulation of misfolded proteins.

Quality Information (provided for each lot):



SDS-PAGE/Coll.Coomassie



	Area	Percent
1	7916.719	87.434
2	465.749	5.144
3	380.042	4.197
4	292.042	3.225

Histogram (of marked lane in gel picture)