PRODUCT INFORMATION

CRBN^{midi} (human, recombinant)

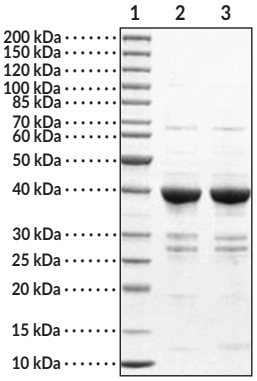
Item No. 45179

Overview and Properties

Synonym:	Cereblon^{midi}
Source:	Recombinant human N-terminal His-tagged CRBN^{midi} expressed in *E. coli*
Amino Acids:	41-187-GSG-249-426
Uniprot No.:	Q96SW2
Molecular Weight:	39.8 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	50 mM HEPES, pH 7.5, with 1 mM DTT, 200 mM sodium chloride, and 20% glycerol
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Protein Concentration:	***batch specific*** mg/ml

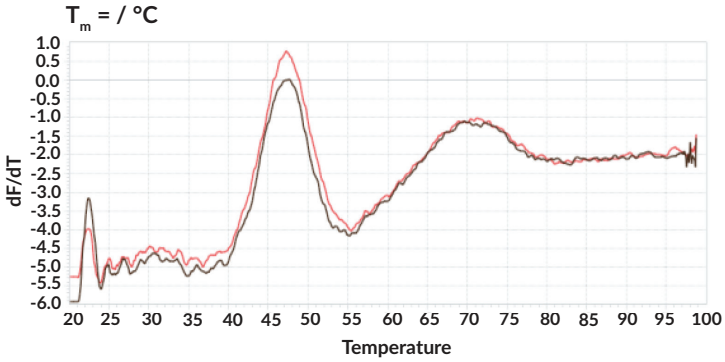
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



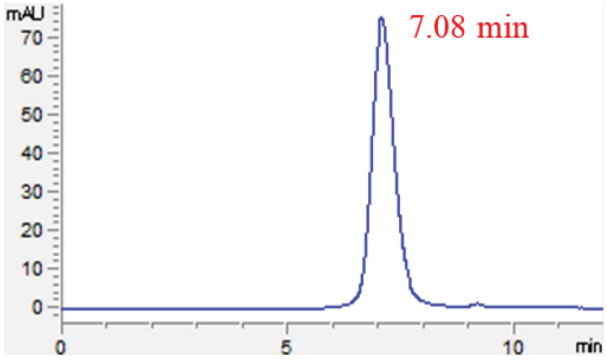
Lane 1: MW Markers
Lane 2: CRBN^{midi} (2 µg) (reduced)
Lane 3: CRBN^{midi} (2 µg) (non-reduced)

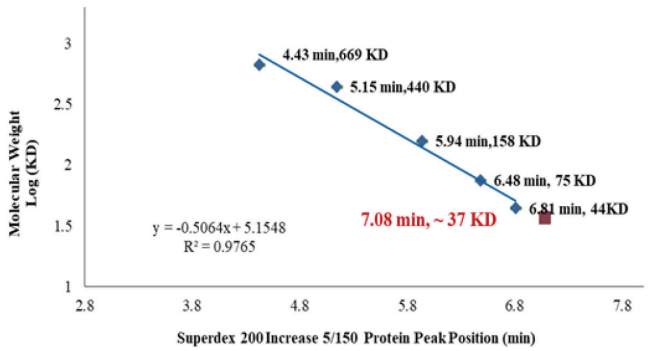
SDS-PAGE Analysis of CRBN^{midi}. This protein has a calculated molecular weight of 39.8 kDa.



Melting Profile of Purified CRBN^{midi}

Analytical SEC





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Description

Cereblon (CRBN) is the substrate receptor component of the cullin 4 RING ligase (CRL4) complex.[1,2] It is composed of an N-terminal unstructured region, a Lon protease-like domain, a helical bundle, and a thalidomide-binding domain.[1,3] CRBN is ubiquitously expressed and localizes to the nucleus, cytoplasm, and plasma membrane.[1] As part of the CRL4 complex with cullin 4, RING box protein 1 (RBX1), and DNA damage-binding protein 1 (DDB1), it facilitates the ubiquitination of substrates for proteasomal degradation. CRBN is involved in the regulation of ion channel expression, AMPK activation, energy metabolism, and endoplasmic reticulum (ER) stress.[1,2,4] Mutations in *CRBN* are associated with autosomal recessive non-syndromic intellectual disability, and CRBN is also the target of thalidomide-induced teratogenicity.[1,2,5] CRBN-targeting ligands, including thalidomide, pomalidomide, and lenalidomide, have been widely used to induce protein degradation using proteolysis-targeting chimera (PROTAC) technology.[6] CRBN^{midi} is an engineered construct that contains the Lon protease-like domain, a Gly-Ser-Gly linker, part of the helical bundle, and the thalidomide-binding domain with C78I, I92V, K116N, Q134E, R283W, C287N, V293S, G302D, L342R, C343E, T359I, and L423I stabilizing mutations.[3] These modifications enable the expression and purification of CRBN without co-expression of DDB1 in *E. coli* and the formation of binary and ternary complexes with degraders using crystallography. Cayman's CRBN^{midi} (human, recombinant) protein has a calculated molecular weight of 39.8 kDa.

References

1. Kim, H.K., Ko, T.H., Nyamaa, B., *et al.* Cereblon in health and disease. *Pflugers Arch* **468(8),** 1299-1309 (2016).
2. Kim, H.K., Seol, J.E., Ahn, S.W., *et al.* Cereblon: Promise and challenges for combating human diseases. *Pflugers Arch* **473(11),** 1695-1711 (2021).
3. Kroupova, A., Spiteri, V.A., Rutter, Z.J., *et al.* Design of a Cereblon construct for crystallographic and biophysical studies of protein degraders. *Nat. Commun.* **15(1),** 8885 (2024).
4. Park, N., Marquez, J., Pham, T.K., *et al.* Cereblon contributes to cardiac dysfunction by degrading $Ca_V1.2\alpha$. *Eur. Heart J.* **43(20),** 1973-1989 (2022).
5. Ito, T., Ando, H., Suzuki, T., *et al.* Identification of a primary target of thalidomide teratogenicity. *Science* **327(5971),** 1345-1350 (2010).
6. Lai, A.C. and Crews, C.M. Induced protein degradation: An emerging drug discovery paradigm. *Nat. Rev. Drug Discov.* **16,** 101-114 (2017).

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