

PRODUCT INFORMATION



CRBN/DDB1/Cullin 4A/RBX1 Complex (human, recombinant)

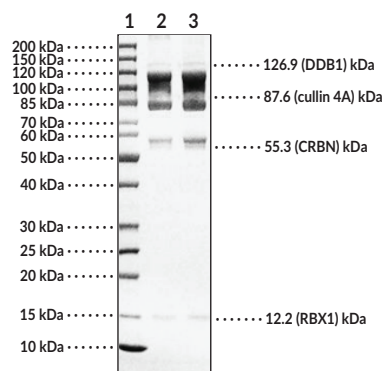
Item No. 45181

Overview and Properties

Synonyms:	CRBN: Cereblon, Cullin 4A: CUL4A, DDB1: Damage-specific DNA-binding Protein 1, DNA Damage-binding Protein 1, HBV X-associated Protein 1, UV-damaged DNA-binding Factor, UV-damaged DNA-binding Protein 1, UV-DDB1, XAP-1, Xeroderma Pigmentosum Group E-complementing Protein, XPE-BF, XPE-binding Factor RBX1: Regulator of Cullins-1, RING Box Protein 1, RING Finger Protein 75, RNF75, ROC1
Source:	Active recombinant human N-terminal His-AVI-tagged CRBN, DDB1, cullin 4A, and RBX1 expressed in insect cells
Amino Acids:	1-442 (CRBN) (full length), 1-1,140 (DDB1) (full length), 2-759 (cullin 4A) (full length), 1-108 (RBX1) (full length)
Uniprot Nos.:	Q96SW2/Q16531/Q13619/P62877
Molecular Weight:	55.3 (CRBN), 126.9 (DDB1), 87.6 (cullin 4A), and 12.2 (RBX1) kDa
Storage:	-80°C (as supplied); avoid repetitive freeze/thaw cycles
Stability:	≥1 year
Purity:	≥90%
Supplied in:	50 mM Tris-HCl, pH 7.5, with 200 mM sodium chloride, 20% glycerol, and 1 mM DTT
Endotoxin Testing:	<1 EU per µg of the protein
Protein Concentration:	<i>batch specific</i> mg/ml
Activity:	<i>batch specific</i> U/ml
Specific Activity:	<i>batch specific</i> U/mg

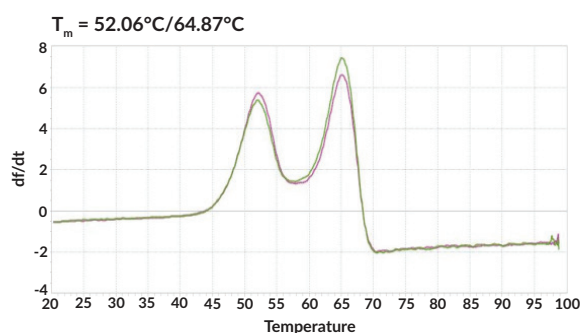
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: CRBN/DDB1/Cullin 4A/RBX1 Complex (2 µg) (reduced)
Lane 3: CRBN/DDB1/Cullin 4A/RBX1 Complex (2 µg) (non-reduced)

SDS-PAGE Analysis of CRBN/DDB1/Cullin 4A/RBX1 Complex.



WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

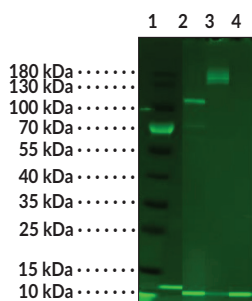
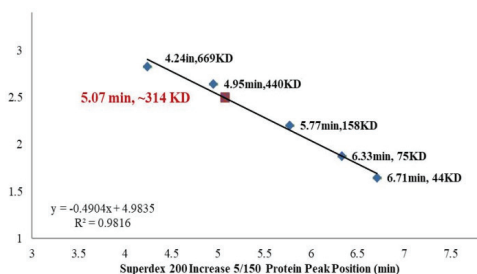
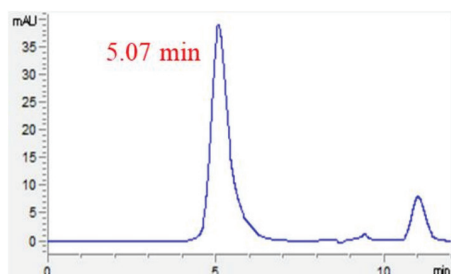
Copyright Cayman Chemical Company, 03/06/2026

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

PRODUCT INFORMATION

Images Cont.

Analytical SEC



Lane 1: MW Markers
Lane 2: BODIPY-Ub + UBE1 + UbcH5b + CRBN/DDB1/Cullin 4A/RBX1 with ATP
Lane 3: BODIPY-Ub + UBE1 + UbcH5b with ATP
Lane 4: BODIPY-Ub + UBE1 + UbcH5b without ATP

Gel based ligase assay. The ubiquitin conjugating activity of CRBN/DDB1/Cullin 4A/RBX1 was validated through its ability to catalyze the generation of polyubiquitin chains in the presence of the E1 activating enzyme UBE1, the E2 conjugating enzyme UbcH5b, and BODIPY-ubiquitin. Incubation of CRBN/DDB1/Cullin 4A/RBX1 for 60 minutes at 37°C in the presence of BODIPY-ubiquitin, UBE1, UbcH5b and ATP (Lane 2) was compared alongside two control reactions with either CRBN/DDB1/Cullin 4A/RBX1 (Lane 3) or CRBN/DDB1/Cullin 4A/RBX1 with ATP (Lane 4) excluded from the reaction. Ubiquitin conjugates were identified by the migration of the Bodipy-ubiquitin band and these were observed only in the presence of ATP and CRBN/DDB1/Cullin 4A/RBX1.

PRODUCT INFORMATION



Description

The cullin 4 RING ligase (CRL4) complex is an E3 ubiquitin ligase complex.¹⁻³ It is composed of the substrate receptor cereblon (CRBN), DNA damage-binding protein 1 (DDB1), cullin 4A or 4B, and RING box protein 1 (RBX1). CRBN and RBX1 bind to DDB1 and cullin 4A, respectively, and cullin 4A bridges DDB1 and RBX1, a configuration that allows CRBN to bind CRL4 substrates in proximity to RBX1 for ubiquitination.² In this way, the CRL4 complex targets substrates for proteasomal degradation and is involved in regulation of the cell cycle, embryogenesis, DNA repair, replication, transcription, and carcinogenesis. Mutations in CRBN are associated with autosomal recessive non-syndromic intellectual disability, and CRBN is also the target of thalidomide-induced teratogenicity.²⁻⁴ Mutations in DDB1 are also associated with intellectual disability, as well as obesity, digital anomalies, hypotonia, and malformations.⁵ *RBX1* and *CUL4A*, the gene encoding cullin 4A, are separately overexpressed in a variety of cancers and associated with poor overall survival.⁶⁻⁸ Cayman's CRBN/DDB1/Cullin 4A/RBX1 Complex (human, recombinant) can be used for enzyme activity assays.

References

1. Petroski, M.D. and Deshaies, R.J. Function and regulation of cullin-RING ubiquitin ligases. *Nat. Rev. Mol. Cell Biol.* **6(1)**, 9-20 (2005).
2. Kim, H.K., Ko, T.H., Nyamaa, B., *et al.* Cereblon in health and disease. *Pflugers Arch.* **468(8)**, 1299-1309 (2016).
3. 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).
4. Ito, T., Ando, H., Suzuki, T., *et al.* Identification of a primary target of thalidomide teratogenicity. *Science* **327(5971)**, 1345-1350 (2010).
5. White, S.M., Bhoj, E., Nellåker, C., *et al.* A DNA repair disorder caused by *de novo* monoallelic *DDB1* variants is associated with a neurodevelopmental syndrome. *Am. J. Hum. Genet.* **108(4)**, 749-756 (2021).
6. Lee, J. and Zhou, P. Pathogenic role of the CRL4 ubiquitin ligase in human disease. *Front. Oncol.* **2:21**, (2012).
7. Wang, W., Qiu, J., Liu, Z., *et al.* Overexpression of RING box protein-1 (RBX1) associated with poor prognosis of non-muscle-invasive bladder transitional cell carcinoma. *J. Surg. Oncol.* **107(7)**, 758-761 (2013).
8. Xing, R., Chen, K.-B., Xuan, Y., *et al.* RBX1 expression is an unfavorable prognostic factor in patients with non-small cell lung cancer. *Surg. Oncol.* **25(3)**, 147-151 (2016).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM