abcam

ab51017

Anti-DDB2 antibody [2246C4a]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4 Preservative: 0.05% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human DDB2. The exact immunogen used to generate this antibody is proprietary information. Database link Q92466
Clone number	2246C4a
Purification technique	Affinity purification Protein G
Concentration	0.1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified using protein G column chromatography from culture supernatant of hybridoma cultured in a medium containing bovine IgG depleted (approximately 95%) fetal bovine serum. Filtered through a 0.22 micrometer membrane.

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	5 µg/mL
Notes	

Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	1/50
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	10 µg/mL
Notes	-

Target data

See full target information DDB2

Function Protein, which is both involved in DNA repair and protein ubiquitination, as part of the UV-DDB complex and DCX (DDB1-CUL4-X-box) complexes, respectively (PubMed:10882109, PubMed:11278856, PubMed:11705987, PubMed:12732143, PubMed:15882621, PubMed:16473935, PubMed:18593899, PubMed:32789493, PubMed:9892649). Core component of the UV-DDB complex (UV-damaged DNA-binding protein complex), a complex that recognizes UV-induced DNA damage and recruit proteins of the nucleotide excision repair pathway (the NER pathway) to initiate DNA repair (PubMed:10882109, PubMed:11278856, PubMed:11705987, PubMed:12944386, PubMed:14751237, PubMed:16260596, PubMed:32789493). The UV-DDB complex preferentially binds to cyclobutane pyrimidine dimers (CPD),

6-4 photoproducts (6-4 PP), apurinic sites and short mismatches (PubMed:10882109, PubMed:11278856, PubMed:11705987, PubMed:12944386, PubMed:16260596). Also functions as the substrate recognition module for the DCX (DDB2-CUL4-X-box) E3 ubiquitin-protein ligase complex DDB2-CUL4-ROC1 (also known as CUL4-DDB-ROC1 and CUL4-DDB-RBX1) (PubMed:12732143, PubMed:15882621, PubMed:16473935, PubMed:18593899, PubMed:26572825). The DDB2-CUL4-ROC1 complex may ubiquitinate histone H2A, histone H3 and histone H4 at sites of UV-induced DNA damage (PubMed:16473935, PubMed:16678110). The ubiquitination of histones may facilitate their removal from the nucleosome and promote subsequent DNA repair (PubMed:16473935, PubMed:16678110). The DDB2-CUL4-ROC1 complex also ubiquitinates XPC, which may enhance DNA-binding by XPC and promote NER (PubMed:15882621). The DDB2-CUL4-ROC1 complex also ubiquitinates KAT7/HBO1 in response to DNA damage, leading to its degradation: recognizes KAT7/HBO1 following phosphorylation by ATR (PubMed:26572825). Isoform D1. Inhibits UV-damaged DNA repair. Isoform D2. Inhibits UV-damaged DNA repair.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	Up to 12 months
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	DDB2 also known as DNA damage-binding protein 2 plays a mechanical role in the nucleotide excision repair (NER) pathway. It is a part of the UV-damaged DNA-binding protein complex and assists in recognizing and cutting damaged DNA. The mass of DDB2 is approximately 48 kDa. The expression of DDB2 occurs broadly but it shows enhanced expression in tissues exposed to UV light like skin.
Biological function summary	Engagement in DNA repair mechanisms allows DDB2 to help maintain genomic stability. It forms a critical part of the DDB1-DDB2 complex which collaborates with other proteins in the initial damage recognition step of NER. This involvement ensures the repair of UV-induced damage and bulky DNA adducts preventing mutations that can cause harmful genetic alterations.
Pathways	The involvement of DDB2 is important within the nucleotide excision repair and transcription-coupled repair pathways. In these pathways DDB2 partners with proteins such as XPC and XPA facilitating the recognition and verification of DNA

damage. These interactions ensure an accurate and efficient repair process protecting cells from potential genotoxic stress.

Associated diseases and disorders

DDB2 has relevance to skin cancer and xeroderma pigmentosum. Among these mutations or dysregulation involving DDB2 can lead to skin cancer due to impaired DNA repair response to UV damage. It connects to p53 a protein that regulates the cell cycle and likewise contributes to cellular responses against DNA damage. In xeroderma pigmentosum defects in components of the NER pathway including DDB2 lead to extreme sensitivity to sunlight and subsequent skin abnormalities.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

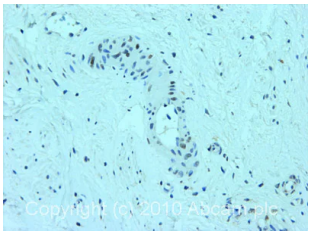
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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5 product images



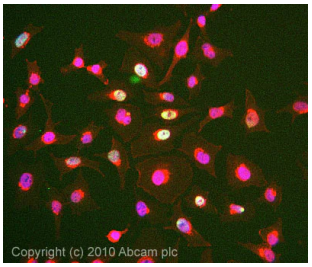
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-DDB2 antibody [2246C4a] (ab51017)

DDB2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-DDB2 antibody

IHC image of ab51017 staining in human normal cervical carcinoma formalin fixed paraffin embedded tissue section, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab51017, 5µg/ml,

for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

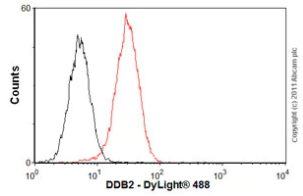
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Immunocytochemistry/ Immunofluorescence - Anti-DDB2 antibody [2246C4a] (ab51017)

DDB2 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-DDB2 antibody

ICC/IF image of ab51017 stained HeLa cells. The cells were 4% formaldehyde fixed (10 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab51017, 10µg/ml) overnight at +4°C. The secondary antibody (green) was Alexa Fluor® 488 goat anti-mouse IgG (H+L) used at a 1/1000 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM.

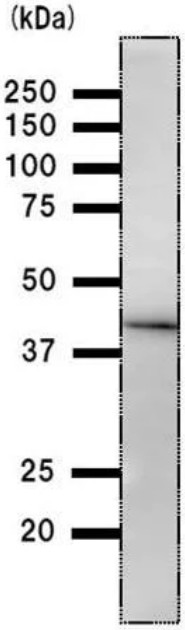


Flow Cytometry - Anti-DDB2 antibody [2246C4a] (ab51017)

DDB2 Flow Cytometry staining using mouse Anti-DDB2 antibody

Overlay histogram showing HeLa cells stained with ab51017 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab51017, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.

Western blot - Anti-DDB2 antibody [2246C4a] (ab51017)



All lanes:
Western blot - Anti-DDB2 antibody [2246C4a] (ab51017) at 1/50 dilution

All lanes:
HeLa whole cell lysate at 50 µg

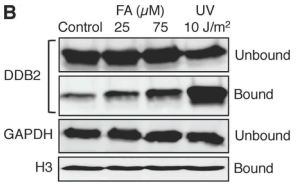
Secondary

All lanes:
Mouse IgG antibody at 1/2500 dilution

Developed using the ECL technique.

Predicted band size: 48 kDa

Observed band size: 45 kDa



Western blot - Anti-DDB2 antibody [2246C4a] (ab51017)

DDB2 western blot using anti-DDB2 antibody [2246C4a] ab51017. Publication image and figure legend from Luch, A., Frey, F. C., et al., 2014, PLoS One, PubMed 24722772.

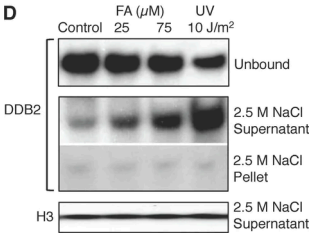


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ab51017 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab51017 please see the product overview.

Association of UV-DDB with damaged chromatin.(A) Flow diagram illustrating how chromatin was dissected to monitor the binding of UV-DDB. Unbound proteins were released by salt (0.3 M NaCl) extraction and the remaining chromatin was solubilized by MNase digestion. (B) Western blot visualization of the chromatin partitioning of UV-DDB using antibodies against DDB2. GAPDH (glyceraldehyde 3-phosphate dehydrogenase), marker of unbound proteins; histone H3, marker of chromatin. Human fibroblasts were exposed for 18 h to formaldehyde or UV-irradiated at the indicated doses. (C) Quantification of three independent binding assays demonstrating the differential interaction of DDB2 with formaldehyde- and UV-damaged chromatin (error bars, S.D.). (D) Release of chromatin-bound DDB2 and histone H3 by high-salt extraction. After incubation with 0.3 M NaCl buffer, the chromatin was dissolved with 2.5 M NaCl, thus liberating non-covalently bound chromatin proteins.

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