abcam

ab54676

Anti-XPD antibody [4G2-2A6]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human ERCC2. Database link P18074
Clone number	4G2-2A6
Purity	Tissue culture supernatant
Light chain type	kappa
Purification notes	Purified from TCS.

Reactivity data

IP

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information ERCC2

Function

ATP-dependent 5'-3' DNA helicase (PubMed:31253769, PubMed:8413672, PubMed:9771713). Component of the general transcription and DNA repair factor IIH (TFIIH) core complex, not absolutely essential for minimal transcription in vitro (PubMed:10024882, PubMed:17466626, PubMed:9771713). Required for transcription-coupled nucleotide excision repair (NER) of damaged DNA; recognizes damaged bases (PubMed:17466626, PubMed:23352696, PubMed:9771713). Sequestered in chromatin on UV-damaged DNA (PubMed:23352696). When complexed to CDK-activating kinase (CAK), involved in transcription by RNA polymerase II. In NER, TFIIH acts by opening DNA around the lesion to allow the excision of the damaged oligonucleotide and its replacement by a new DNA fragment. The ATP-dependent helicase activity of XPD/ERCC2 is required for DNA opening. Involved in DNA lesion verification (PubMed:31253769). In transcription, TFIIH has an essential role in transcription initiation. When the pre-initiation complex (PIC) has been established, TFIIH is required for promoter opening and promoter escape. Phosphorylation of the C-terminal tail (CTD) of the largest subunit of RNA polymerase II by the kinase module CAK controls the initiation of transcription. XPD/ERCC2 acts by forming a bridge between CAK and the core-TFIIH complex. The structure of the TFIIH transcription complex differs from the NER-TFIIH complex; large movements by XPD/ERCC2 and XPB/ERCC3 are stabilized by XPA which allow this subunit to contact ssDNA (PubMed:31253769, PubMed:33902107). Involved in the regulation of vitamin-D receptor activity. As part of the mitotic spindle-associated MMXD complex it plays a role in chromosome segregation. Might have a role in aging process and could play a causative role in the generation of skin cancers.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

This product was changed from ascites to tissue culture supernatant on 30th April 2019. Please note that the dilutions may need to be adjusted accordingly. If you have any questions, please do not hesitate to contact our scientific support team.

Supplementary info

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

Activity summary	XPD also known as ERCC2 is an essential helicase enzyme belonging to the family of ATP-dependent DNA helicases. It consists of approximately 761 amino acids and has a mass of around 87 kDa. XPD functions mechanically by unwinding double-stranded DNA which is important for various DNA repair processes. This protein is expressed ubiquitously in human tissues highlighting its critical role in maintaining genomic integrity.
Biological function summary	XPD catalyzes the unwinding of DNA within the transcription factor IIH (TFIIH) complex. This complex facilitates DNA repair and transcription initiation. XPD participates in the nucleotide excision repair (NER) pathway where it contributes to repairing damaged DNA by excising damaged nucleotides. Its role in transcription-coupled repair and general transcription initiation underlines its importance in cellular homeostasis.
Pathways	DNA repair and general transcription processes are significantly affected by XPD. It plays an integral role in nucleotide excision repair (NER) and transcription. Within these pathways XPD works closely with other proteins such as XPA which assists in damage verification and incision near DNA lesions. XPD's unwinding function is essential for the correct orientation of DNA during transcription and repair events ensuring accurate gene expression and stability.
Associated diseases and disorders	XPD mutations link to xeroderma pigmentosum (XP) and trichothiodystrophy (TTD). These conditions often result in increased sensitivity to ultraviolet (UV) radiation and various developmental abnormalities. XPD mutations impair the repair of UV-induced DNA damage causing symptoms in both XP and TTD. XPD

also connects with ERCC1 a protein important for repair synthesis and DNA incision highlighting its broad impact on human health when its function is compromised.

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

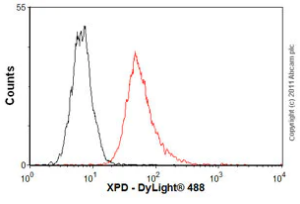
We do not recommend this combination. It is not covered by our product promise.

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.

Full details and terms and conditions can be found here:
Terms & Conditions.

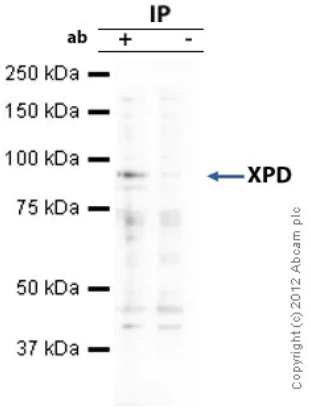
3 product images



Flow Cytometry - Anti-XPD antibody [4G2-2A6] (ab54676)

XPD Flow Cytometry staining using mouse Anti-XPD antibody

Overlay histogram showing HeLa cells stained with ab54676 (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 followed by the antibody (ab54676, 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. This image was generated using the ascites version of the product.

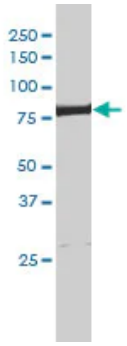


Immunoprecipitation - Anti-XPD antibody [4G2-2A6] (ab54676)

XPD was immunoprecipitated using 0.5mg Hela whole cell extract, 10µg of Mouse monoclonal to XPD and 50µl of protein G magnetic beads (+). No antibody was added to the control (-).
The antibody was incubated under agitation with Protein G beads for 10min, Hela whole cell extract lysate diluted in RIPA buffer was added to each sample and incubated for a further 10min under agitation.
Proteins were eluted by addition of 40µl SDS loading buffer and incubated for 10min at 70^{o}C; 10µl of each sample was separated on a SDS PAGE gel, transferred to a nitrocellulose membrane, blocked with 5% BSA and probed with ab54676.
Secondary: Goat polyclonal to mouse IgG light chain specific (HRP) at 1/5000 dilution.
Band: 150kDa: SMC1; Non specific - 41 and 42kDa: We are unsure as to the identity of this extra band.
This image was generated using the ascites version of the product.

All lanes:
Immunoprecipitation - Anti-XPD antibody [4G2-2A6] (ab54676)

Predicted band size: 87 kDa



Western blot - Anti-XPD antibody [4G2-2A6] (ab54676)

XPD Western blot staining using mouse Anti-XPD antibody

XPD antibody (ab54676) at 1ug/lane + HeLa cell lysate at 25ug/lane.
This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-XPD antibody [4G2-2A6] (ab54676)

Predicted band size: 87 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.