abcam

ab89

Anti-Rad50 antibody [13B3/2C6]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human RAD50 aa 1-450. The exact immunogen used to generate this antibody is proprietary information. Database link Q92878
Carrier free	Yes
Clone number	13B3/2C6
Purification technique	Affinity purification
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Affinity purified by Protein G.

Reactivity data

IP

Tested

Species	Human

Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/1000
Notes	-

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	1/500 - 1/3000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/100 - 1/1000
Notes	-

Target data

See full target information RAD50

Function	Component of the MRN complex, which plays a central role in double-strand break (DSB) repair, DNA recombination, maintenance of telomere integrity and meiosis (PubMed:15064416, PubMed:21757780, PubMed:27889449, PubMed:28134932, PubMed:28867292, PubMed:9590181, PubMed:9651580, PubMed:9705271). The MRN complex is involved in the repair of DNA double-strand breaks (DSBs) via homologous recombination (HR), an error-free mechanism which primarily occurs during S and G2 phases (PubMed:15064416, PubMed:21757780, PubMed:27889449, PubMed:28867292, PubMed:9590181, PubMed:9651580, PubMed:9705271). The complex (1) mediates the end resection of damaged DNA, which generates proper single-stranded DNA, a key initial steps in HR, and is (2) required for the recruitment of other repair factors and efficient activation of ATM and ATR upon DNA damage (PubMed:15064416, PubMed:27889449, PubMed:28867292, PubMed:9590181, PubMed:9651580, PubMed:9705271). The MRN complex possesses single-strand endonuclease activity and double-strand-specific 3'-5' exonuclease activity, which are provided by MRE11, to initiate end resection, which is required for single-strand invasion and recombination (PubMed:11741547, PubMed:9590181, PubMed:9651580, PubMed:9705271). Within the complex, RAD50 is both required to bind DNA ends and hold them in close proximity and regulate the activity of MRE11 (PubMed:11741547, PubMed:12805565, PubMed:28134932). RAD50 provides an ATP-dependent control of MRE11 by positioning DNA ends into the MRE11 active site: ATP-binding induces a large structural change from an open form with accessible MRE11 nuclease sites into a closed form (By similarity). The MRN complex is also required for DNA damage signaling via activation of the ATM and ATR kinases: the nuclease activity of MRE11 is not required to activate ATM and ATR (PubMed:15064416, PubMed:15790808, PubMed:16622404). The MRN complex is also required for the processing of R-loops (PubMed:31537797). In telomeres the MRN complex may modulate t-loop formation (PubMed:10888888).

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 01/02/2019. 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.

Clone 2C6 recognizes Rad50, a 153kDa protein involved in DNA double strand break repair. Rad50 is associated with Mre11 and p95 (Nibrin) to form a multiprotein complex involved in the double strand break repair process.

Supplementary info

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

Activity summary	Rad50 is an important component of the MRN complex with its partners MRE11 and NBS1. This protein plays an important role in DNA double-strand break repair and telomere maintenance. Rad50 also known by its molecular weight of approximately 153 kDa possesses ATPase activity that facilitates the bridging of DNA ends during repair processes. It is expressed in a variety of tissues with higher levels observed in rapidly dividing cells such as those found in testes and lymphoid organs.
Biological function summary	Rad50 contributes to genomic stability by participating in non-homologous end joining (NHEJ) and homologous recombination (HR) both of which are DNA repair mechanisms. It is part of the MRN complex a multi-protein assembly that detects DNA breaks and aids in processing and signaling them for repair. This complex acts at the early stages of DNA damage response assisting in the recruitment of other repair enzymes and proteins to the site of DNA lesions.
Pathways	Rad50 is integral to DNA damage response signaling and repair pathways like Ataxia Telangiectasia Mutated (ATM) signaling. The MRN complex activates ATM a kinase that phosphorylates key substrates involved in controlling cell cycle checkpoints and promoting repair of damaged DNA. This relationship positions Rad50 and its complex members as significant participants in maintaining cellular integrity by preventing the accumulation of genetic mutations.
Associated diseases and disorders	Rad50 mutations have links to cancer development due to their effect on genomic instability. Deficiencies in Rad50 or the MRN complex can impair DNA repair leading to an increased risk for neoplastic transformations. Additionally Rad50 interactions with proteins such as p53 a tumor suppressor underline its potential role in the mechanisms behind cancers like breast and ovarian cancer. These connections highlight the importance of Rad50 in understanding disease progression and developing therapeutic strategies.

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

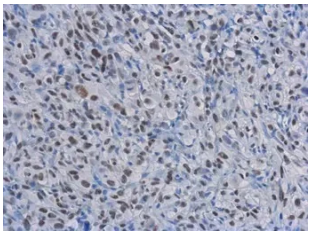
We do not recommend this combination. It is not covered by our product promise.

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.

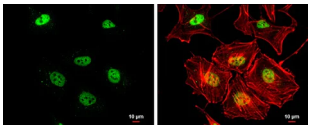
7 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rad50 antibody [13B3/2C6] (ab89)

Rad50 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Pc 3 Xenograft using mouse Anti-Rad50 antibody

Immunohistochemical analysis of paraffin embedded pc 3 xenograft tissue stained for Rad50 protein at nucleus with ab89 at a 1/200 dilution.
Antigen retrieval: Citrate buffer, pH 6.0, 15 min



Immunocytochemistry/ Immunofluorescence - Anti-Rad50 antibody [13B3/2C6] (ab89)

Rad50 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Rad50 antibody

Immunocytochemical analysis of 4% paraformaldehyde-fixed, HeLa cells labelling Rad50 with ab89 at 1/200 dilution (green). Phalloidin at a 1/200 dilution was used to counterstain the cytoskeleton (red).

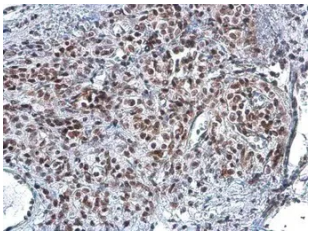


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rad50 antibody [13B3/2C6] (ab89)

Rad50 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Rad50 antibody

ab89 (1µg/ml) staining RAD50 in human placenta, using an automated system (DAKO Autostainer Plus). Using this protocol there is strong nuclear staining.
Sections were rehydrated and antigen retrieved with the Dako 3 in 1 AR buffer EDTA pH 9.0 in a DAKO PT link. Slides were peroxidase blocked in 3% H2O2 in methanol for 10 mins. They were then blocked with Dako Protein block for 10 minutes (containing casein 0.25% in PBS) then incubated with primary antibody for 20 min and detected with Dako envision flex amplification kit for 30 minutes. Colorimetric detection was completed with Diaminobenzidine for 5 minutes. Slides were counterstained with Haematoxylin and coverslipped under DePeX. Please note that, for manual

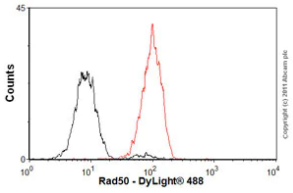
staining, optimization of primary antibody concentration and incubation time is recommended. Signal amplification may be required.
This image was generated using the ascites version of the product.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rad50 antibody [13B3/2C6] (ab89)

Rad50 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human Lung Cancer using mouse Anti-Rad50 antibody

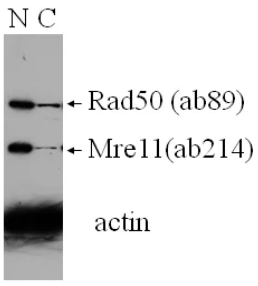
Immunohistochemical analysis of paraffin embedded human lung cancer tissue stained for Rad50 protein at nucleus with ab89 at a 1/100 dilution.
Antigen retrieval: Citrate buffer, pH 6.0, 15 min



Flow Cytometry - Anti-Rad50 antibody [13B3/2C6] (ab89)

Rad50 Flow Cytometry staining using mouse Anti-Rad50 antibody

Overlay histogram showing HeLa cells stained with ab89 (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 (ab89, 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.



Western blot - Anti-Rad50 antibody [13B3/2C6] (ab89)

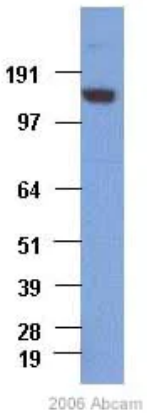
Rad50 Western blot staining using mouse Anti-Rad50 antibody

This picture was kindly supplied as part of the reviews for ab214 and for ab89 submitted by Anya Polischouk.
The bands represent nuclear (N) and cytoplasmic (C) extract from human lung cancer cells (U1810).

This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-Rad50 antibody [13B3/2C6] (ab89)

Predicted band size: 153 kDa



Western blot - Anti-Rad50 antibody [13B3/2C6] (ab89)

This image is courtesy of an Abreview submitted by **Philippe Szankasi** on **24 February 2006.**
This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-Rad50 antibody [13B3/2C6] (ab89) at 1/1000 dilution

All lanes:
50 ug Human HEK293 total cell lysate

Secondary

All lanes:
HRP conjugated Donkey Anti-Mouse IgG

Developed using the ECL technique.

Performed under non-reducing conditions.

Predicted band size: 153 kDa, 57 kDa, 68 kDa

Observed band size: 100 kDa, 160 kDa, 300 kDa, 68 kDa

Exposure time: 30s

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