abcam

ab133553

# Anti-Rad51 antibody [EPR4031(23)]

Recombinant | RabMAb

## Key facts

| | |
|---|---|
| **Isotype** | IgG |
| **Host species** | Rabbit |
| **Storage buffer** | pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Immunogen** | The exact immunogen used to generate this antibody is proprietary information. |
| **Clone number** | EPR4031(23) |
| **Purification technique** | Affinity purification Protein A |
| **Dissociation constant** | $8.93 \times 10^{-11}$ M |
| **Concentration** | 0.47 - 0.472 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |

## Reactivity data

## IHC-P

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/250 - 1/500 |
| **Notes** | - |

## Flow Cyt (Intra)

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/400 |
| **Notes** | - |

## Target data

See full target information RAD51

**Function**

Plays an important role in homologous strand exchange, a key step in DNA repair through homologous recombination (HR) (PubMed:12205100, PubMed:18417535, PubMed:20231364, PubMed:20348101, PubMed:22325354, PubMed:23509288, PubMed:23754376, PubMed:26681308, PubMed:28575658, PubMed:32640219). Binds to single-stranded DNA in an ATP-dependent manner to form nucleoprotein filaments which are essential for the homology search and strand exchange (PubMed:12205100, PubMed:18417535, PubMed:15226506, PubMed:20231364, PubMed:20348101, PubMed:23509288, PubMed:23754376, PubMed:26681308, PubMed:28575658). Catalyzes the recognition of homology and strand exchange between homologous DNA partners to form a joint molecule between a processed DNA break and the repair template (PubMed:12205100, PubMed:18417535, PubMed:20231364, PubMed:20348101, PubMed:23509288, PubMed:23754376, PubMed:26681308, PubMed:28575658, PubMed:38459011). Recruited to resolve stalled replication forks during replication stress (PubMed:27797818, PubMed:31844045). Part of a PALB2-scaffolded HR complex containing BRCA2 and RAD51C and which is thought to play a role in DNA repair by HR (PubMed:12442171, PubMed:24141787). Plays a role in regulating mitochondrial DNA copy number under conditions of oxidative stress in the presence of RAD51C and XRCC3 (PubMed:20413593). Also involved in interstrand cross-link repair (PubMed:26253028).

## Storage

| | |
|---|---|
| **Shipped at conditions** | Conditional Ambient |
| **Appropriate short-term storage conditions** | +4°C |
| **Appropriate long-term storage conditions** | -20°C |
| **Storage information** | Stable for 12 months at -20°C |

## Notes

**Patented technology**
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

**What are the advantages of a recombinant monoclonal antibody?**
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

## Supplementary info

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

| | |
|---|---|
| **Activity summary** | RAD51 also known as recombination protein A or Novus RAD51 is a DNA repair protein with a molecular mass of approximately 37 kDa. This protein plays a significant role in homologous recombination and is active in the repair of double-strand breaks in DNA. It is expressed in various tissues with high levels seen in rapidly dividing cells. RAD51 acts by forming nucleoprotein filaments on single-stranded DNA and facilitates the search for homology and strand pairing during the repair process. |
| **Biological function summary** | Processes involving RAD51 are essential for genomic stability and cellular response to DNA damage. RAD51 often functions as part of a repair complex along with other proteins such as BRCA2 and RPA. This complex binds and stabilizes single-stranded DNA during search and strand invasion which is vital for successful recombination repair. Such repair mechanisms are important for preventing chromosomal aberrations and maintaining genetic integrity. |
| **Pathways** | RAD51's activity fits into the broader context of DNA damage repair pathways notably the homologous recombination (HR) pathway. This pathway is important for repairing double-strand breaks utilizing other proteins such as ATM and ATR to signal repair processes. Furthermore RAD51 interacts with various members of the BRCA protein family combining efforts to ensure proper DNA damage response and repair. |
| **Associated diseases and disorders** | RAD51 mutations or dysregulation are linked to various types of cancer including breast and ovarian cancers. These cancers may involve mutations in BRCA1 and BRCA2 genes which affect RAD51's ability to effectively perform homologous recombination. Additionally disruptions in RAD51 function are associated with Fanconi anemia a disorder characterized by DNA repair defects. This condition demonstrates the importance of RAD51's interaction with FA pathway proteins in maintaining genomic stability and preventing disease. |

## 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.

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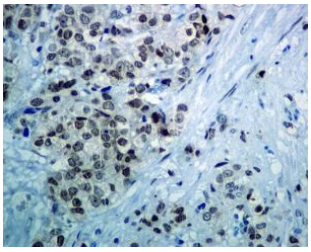
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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## 4 product images

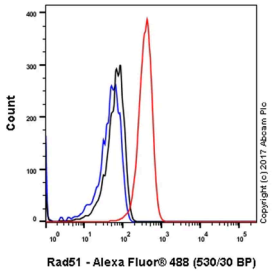


### Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rad51 antibody [EPR4031(23)] (ab133553)

Rad51 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Rad51 antibody

Immunohistochemical analysis of paraffin-embedded Human prostate adenocarcinoma tissue labelling Rad51 with ab133553 antibody at a dilution of 1/250.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

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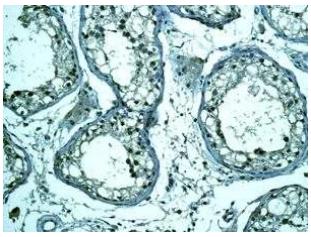



### Flow Cytometry (Intracellular) - Anti-Rad51 antibody [EPR4031(23)] (ab133553)

Rad51 Flow Cytometry (Intracellular) staining using rabbit Anti-Rad51 antibody

Intracellular Flow Cytometry analysis of Jurkat (human acute T cell leukemia) cells labeling Rad51 (red) with ab133553 at a 1/400 dilution. Cells were fixed with 4% paraformaldehyde and permeabilized with 90% methanol. A goat anti-rabbit IgG (Alexa Fluorr® 488) (ab150077) was used

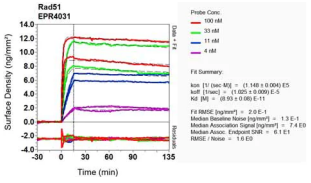
as the secondary antibody at a 1/2000 dilution. Black - Rabbit monoclonal IgG (ab172730). Blue (unlabeled control) - Cells without incubation with the primary and secondary antibodies.



## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rad51 antibody [EPR4031(23)] (ab133553)

Rad51 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Rad51 antibody

Immunohistochemical analysis of paraffin embedded Human testis tissue labelling Rad51 with ab133553 antibody at a dilution of 1/250.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.




## OI-RD Scanning - Anti-Rad51 antibody [EPR4031(23)] (ab133553)

We have systematically measured KD (the equilibrium dissociation constant between the antibody and its antigen), of more than 840 recombinant antibodies to assess not only their individual KD values but also to see the average affinity of antibody. Based on the comparison with published literature values for mouse monoclonal antibodies, Recombinant antibodies appear to be on average 1-2 order of magnitude higher affinity.

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