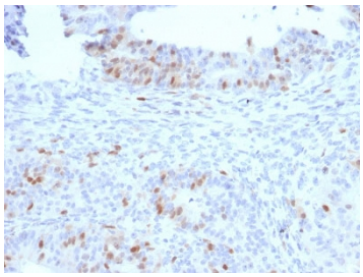
RAD51 Antibody / Homologous Recombination Protein Antibody [clone RAD51/2701] (V7491)

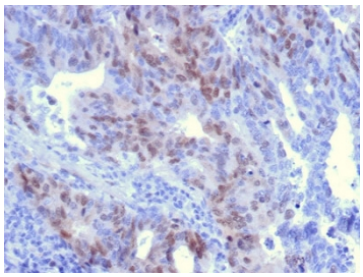
Catalog No.	Formulation	Size
V7491-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	100 ug
V7491-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	20 ug
V7491SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

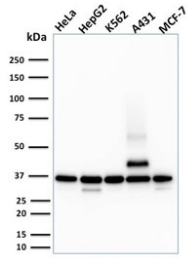
Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG2b, kappa
Clone Name	RAD51/2701
Purity	Protein G affinity chromatography
UniProt	Q06609
Localization	Nuclear
Applications	Flow cytometry: 1-2ug/ml Western blot: 1-2ug/ml Immunohistochemistry (FFPE): 1-2ug/ml
Limitations	This RAD51 Antibody / Homologous Recombination Protein Antibody is available for research use only.



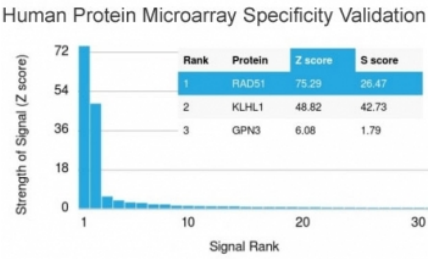
RAD51 Antibody Colon Carcinoma IHC. Immunohistochemical staining of FFPE human colon carcinoma demonstrates RAD51 expression using a RAD51 antibody. RAD51, also known as a Homologous Recombination Protein, is a key mediator of DNA double strand break repair and maintenance of genomic stability. Predominantly nuclear staining is observed in neoplastic cells, consistent with the elevated DNA repair activity frequently associated with proliferating tumors. Heat induced epitope retrieval was performed by boiling tissue sections in pH 9 10 mM Tris buffer containing 1 mM EDTA for 10 to 20 minutes followed by cooling prior to staining. These results support the utility of RAD51 Antibody for investigating homologous recombination, DNA damage responses, and therapeutic resistance in human cancers.



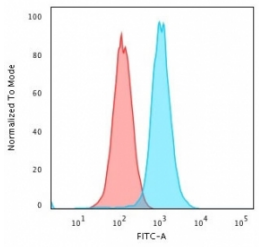
RAD51 Antibody Colon Carcinoma IHC. Immunohistochemical staining of FFPE human colon carcinoma demonstrates RAD51 expression using a RAD51 antibody. RAD51, also known as a Homologous Recombination Protein, is a central mediator of DNA double strand break repair and maintenance of genomic stability. Strong nuclear staining is observed in malignant epithelial cells, consistent with the elevated homologous recombination activity and proliferative capacity characteristic of colorectal tumors. Heat induced epitope retrieval was performed by boiling tissue sections in pH 9 10 mM Tris buffer containing 1 mM EDTA for 10 to 20 minutes followed by cooling prior to staining. These results support the utility of RAD51 Antibody for investigating DNA damage responses, homologous recombination, and therapeutic resistance in human cancers.



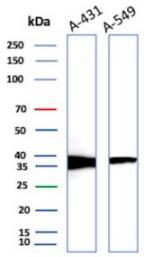
RAD51 Antibody Human Cell Lines WB. Western blot analysis of RAD51 expression using a RAD51 antibody. Lane 1: human HeLa cell lysate. Lane 2: human HepG2 cell lysate. Lane 3: human K562 cell lysate. Lane 4: human A431 cell lysate. Lane 5: human MCF-7 cell lysate. RAD51, also known as a Homologous Recombination Protein, is a key mediator of DNA double strand break repair and genome stability. A prominent band is detected at approximately 37 kDa in all cell lines, consistent with the predicted molecular weight of RAD51. Additional lower molecular weight bands are observed in some lysates and may represent degradation products or alternatively processed forms, while a higher molecular weight species is evident in A431 cells and may reflect post translationally modified or multimeric forms of RAD51. These results support the utility of RAD51 Antibody for studies of homologous recombination, DNA damage responses, and cancer biology.



RAD51 Antibody Protein Microarray Validation. Analysis of a HuProt human protein microarray containing more than 19,000 full length human proteins demonstrates the high specificity of the RAD51 antibody clone RAD51/2701. RAD51, also known as RAD51 Recombinase, is a key DNA repair protein involved in homologous recombination and maintenance of genomic stability. Among all proteins represented on the array, RAD51 exhibited the strongest signal with a Z score of 75.29. The next highest signal corresponded to KLHL1 with a Z score of 48.82, yielding an S score of 26.47 for RAD51. The Z score reflects the signal intensity generated by antibody binding relative to the mean signal of all proteins on the array, while the S score measures the difference between the top ranked target and the next highest signal. These results support the high specificity of the RAD51/2701 mAb and validate its utility for studies of DNA damage responses, homologous recombination, and genome maintenance.



RAD51 Antibody K562 Cells FACS. Flow cytometric analysis of human K562 cells was performed using RAD51 antibody (clone RAD51/2701). RAD51, also known as a Homologous Recombination Protein, is a key mediator of DNA double strand break repair and maintenance of genomic stability. Red histogram: isotype control. Blue histogram: RAD51 antibody. The pronounced rightward shift of the RAD51 antibody signal relative to the isotype control demonstrates specific detection of endogenous RAD51 in K562 cells. These results support the utility of RAD51 Antibody for studies of homologous recombination, DNA damage responses, and therapeutic resistance in cancer cells.



RAD51 Antibody A431 and A549 WB. Western blot analysis of RAD51 expression using RAD51 antibody (clone RAD51/2701). Lane 1: human A431 cell lysate. Lane 2: human A549 cell lysate. RAD51, also known as RAD51 Recombinase, is a central mediator of homologous recombination and DNA double strand break repair that preserves genomic stability. A prominent band is detected at approximately 37 kDa in both cell lines, consistent with the expected molecular weight of RAD51. These results demonstrate endogenous expression of RAD51 in epithelial cancer cells and support the utility of this antibody for studies of DNA repair pathways, genome maintenance, and cellular responses to genotoxic stress.

Description

RAD51 Antibody / Homologous Recombination Protein Antibody recognizes RAD51, a highly conserved recombinase that serves as a central mediator of homologous recombination and DNA double strand break repair. RAD51 is the eukaryotic homolog of bacterial RecA and functions by assembling nucleoprotein filaments on single stranded DNA, promoting strand invasion and DNA exchange during the repair process. Through interactions with BRCA1, BRCA2, PALB2, and additional DNA damage response proteins, RAD51 preserves genomic stability and protects cells from the accumulation of mutations. Tight regulation of RAD51 activity is essential for maintaining chromosome integrity during DNA replication and cellular stress.

RAD51 plays a critical role in repairing DNA lesions caused by ionizing radiation, replication stress, and endogenous cellular damage. In addition to double strand break repair, RAD51 participates in replication fork protection and helps ensure faithful chromosome segregation during mitosis and meiosis. RAD51 activity is coordinated with checkpoint pathways and apoptosis mechanisms to ensure that damaged DNA is accurately repaired before cell division proceeds. Defects in homologous recombination proteins such as RAD51 can result in genomic instability, developmental abnormalities, infertility, and increased susceptibility to cancer.

Aberrant RAD51 expression has been associated with numerous malignancies, including breast, ovarian, pancreatic, lung, colorectal, and cervical cancers. Elevated RAD51 levels are frequently linked to increased DNA repair capacity, therapeutic resistance, and poor prognosis. Interactions between RAD51 and BRCA pathway proteins have made homologous recombination proteins attractive targets for precision oncology approaches, particularly in the context of PARP inhibitors and synthetic lethality. Consequently, RAD51 has emerged as an important biomarker for predicting treatment responses and understanding mechanisms of resistance to chemotherapy and radiation therapy.

Beyond cancer biology, RAD51 contributes to embryonic development, gametogenesis, and maintenance of stem cell populations. In germ cells, RAD51 mediates meiotic recombination and chromosome pairing, while in rapidly dividing tissues it protects against replication associated DNA damage. Because homologous recombination pathways are highly conserved among eukaryotes, RAD51 has become one of the most extensively studied proteins involved in genome maintenance and cellular survival.

RAD51 Antibody / Homologous Recombination Protein Antibody is useful for studies of DNA damage responses, genome stability, cancer biology, developmental processes, and therapeutic resistance. Clone RAD51/2701 has been validated for western blotting, immunohistochemistry, flow cytometry, and Protein Microarray analysis. Analysis on a HuProt

microarray containing more than 19,000 full length human proteins demonstrated strong specificity for RAD51, supporting the utility of this antibody for investigations of homologous recombination, chromosome maintenance, and cellular responses to genotoxic stress.

Explore our RAD51 Antibody page for additional antibodies against RAD51 Recombinase, including IHC and Protein Microarray validated reagents for studies of homologous recombination, DNA damage responses, and genome stability.

Application Notes

Optimal dilution of the RAD51 Antibody / Homologous Recombination Protein Antibody should be determined by the researcher.

1. The prediluted format is supplied in a dropper bottle and is optimized for use in IHC. After epitope retrieval step (if required), drip mAb solution onto the tissue section and incubate at RT for 30 min.

Immunogen

A portion of amino acids 1-134 from the human protein was used as the immunogen for this RAD51 antibody.

Storage

Store the RAD51 antibody at 2-8oC (with azide) or aliquot and store at -20oC or colder (without azide).

Alternate Names

RAD51 Recombinase Antibody, DNA Repair Protein RAD51 Antibody, DNA Strand Exchange Protein Antibody, Double Strand Break Repair Protein Antibody, Genome Stability Protein Antibody, RecA Homolog Antibody, BRCA Pathway Protein Antibody

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