

KD-Validated Anti-RAD51 recombinase Rabbit Monoclonal Antibody

Rabbit monoclonal antibody
Catalog # AGI1460

Product Information

Application	WB, FC, ICC
Primary Accession	Q06609
Reactivity	Rat, Human, Mouse
Clonality	Monoclonal
Isotype	Rabbit IgG
Clone Names	23GB4600
Calculated MW	36966
Gene Name	RAD51
Aliases	RAD51; RAD51 Recombinase; RAD51A; BRCC5; FANCR; RECA; BRCA1/BRCA2-Containing Complex, Subunit 5; DNA Repair Protein RAD51 Homolog 1; RAD51 Homolog A; HsT16930; HsRad51; HRAD51; RAD51 Homolog (RecA Homolog, E. Coli) (S. Cerevisiae); RAD51 (S. Cerevisiae) Homolog (E Coli RecA Homolog); RAD51 Homolog (S. Cerevisiae); RecA, E. Coli, Homolog Of; Recombination Protein A; RecA-Like Protein; HST16930; HSRAD51; HsRAD51; MRMV2
Immunogen	A synthesized peptide derived from human Rad51

Additional Information

Gene ID	5888
Other Names	DNA repair protein RAD51 homolog 1, HsRAD51, hRAD51, RAD51 homolog A, RAD51 (HGNC:9817), RAD51A, RECA

Protein Information

Name	RAD51 {ECO:0000303 PubMed:8358431, ECO:0000312 HGNC:HGNC:9817}
Function	Homologous DNA recombinase that catalyzes strand exchange, a key step in DNA repair through homologous recombination (HR) (PubMed: 12205100 , PubMed: 12442171 , PubMed: 15937124 , PubMed: 17515904 , PubMed: 17515903 , PubMed: 18417535 , PubMed: 19303847 , PubMed: 20231364 , PubMed: 20348101 , PubMed: 22325354 , PubMed: 23509288 , PubMed: 23754376 , PubMed: 24141787 , PubMed: 26681308 , PubMed: 27941124 , PubMed: 28575658 , PubMed: 32640219 , PubMed: 37499663 , PubMed: 38509361 , PubMed: 7988572). Binds to single-stranded DNA (ssDNA) in an ATP-dependent manner to form nucleoprotein filaments which are essential for the homology search and strand exchange (PubMed: 12205100 , PubMed: 15937124 , PubMed: 17515904 , PubMed: 17515903 ,

PubMed:[18417535](#), PubMed:[19303847](#), PubMed:[15226506](#), PubMed:[20231364](#), PubMed:[20348101](#), PubMed:[23509288](#), PubMed:[23754376](#), PubMed:[26681308](#), PubMed:[28575658](#), PubMed:[37499663](#), PubMed:[39636933](#), PubMed:[41166468](#), PubMed:[38509361](#), PubMed:[7988572](#)). 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:[19303847](#), PubMed:[20231364](#), PubMed:[20348101](#), PubMed:[23509288](#), PubMed:[23754376](#), PubMed:[26681308](#), PubMed:[28575658](#), PubMed:[38459011](#)). RAD51 targeting to ssDNA promotes removal of replication protein-A (RPA) from ssDNA and stabilization of RAD51-ssDNA filaments by blocking ATP hydrolysis (PubMed:[20729859](#)). Nucleosomal DNA is peeled from the histone surface by the RAD51 filament (PubMed:[38509361](#)). Recruited to resolve stalled replication forks during replication stress (PubMed:[27797818](#), PubMed:[31844045](#)). Also required for homologous recombination during meiosis by acting as a non-catalytic accessory factor for DMC1 recombinase, enabling proper chromosome pairing and crossing over (By similarity). 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](#)).

Cellular Location

Chromosome. Nucleus. Cytoplasm. Cytoplasm, perinuclear region. Mitochondrion matrix. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome Note=Colocalizes with RAD51AP1 and RPA2 to multiple nuclear foci upon induction of DNA damage (PubMed:20154705). DNA damage induces an increase in nuclear levels (PubMed:20154705). Together with FIGL1, redistributed in discrete nuclear DNA damage-induced foci after ionizing radiation (IR) or camptothecin (CPT) treatment (PubMed:23754376). Accumulated at sites of DNA damage in a SPIDR- dependent manner (PubMed:23509288). Recruited at sites of DNA damage in a MCM9-MCM8-dependent manner (PubMed:23401855). Recruited at sites of DNA damage following interaction with TOPBP1 in S-phase (PubMed:26811421). Colocalizes with ERCC5/XPG to nuclear foci in S phase (PubMed:26833090). Recruited to stalled replication forks during replication stress by the TONSL-MMS22L complex, as well as ATAD5 and WDR48 in an ATR-dependent manner (PubMed:27797818, PubMed:31844045). In germ cells, during meiotic process, binds single-stranded DNA (ssDNA) away from the break site (By similarity) {ECO:0000250|UniProtKB:Q08297, ECO:0000269|PubMed:20154705, ECO:0000269|PubMed:23401855, ECO:0000269|PubMed:23509288, ECO:0000269|PubMed:23754376, ECO:0000269|PubMed:26811421, ECO:0000269|PubMed:26833090, ECO:0000269|PubMed:27797818, ECO:0000269|PubMed:31844045}

Tissue Location

Highly expressed in testis and thymus, followed by small intestine, placenta, colon, pancreas and ovary (PubMed:18417535) Weakly expressed in breast (PubMed:18417535)

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