10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

BRCA2 Antibody

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AM8529b

Product Information

Application	WB, E
Primary Accession	P51587
Reactivity	Human
Host	Mouse
Clonality	monoclonal
Isotype	IgG1,k
Clone Names	1643CT739.91.87
Calculated MW	384230

Additional Information

Gene ID	675
Other Names	Breast cancer type 2 susceptibility protein, Fanconi anemia group D1 protein, BRCA2, FACD, FANCD1
Target/Specificity	This BRCA2 antibody is generated from a mouse immunized with a recombinant protein between 251-495 amino acids from human BRCA2.
Dilution	WB~~1:2000 E~~Use at an assay dependent concentration.
Format	Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	BRCA2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	BRCA2 {ECO:0000303|PubMed:8524414, ECO:0000312|HGNC:HGNC:1101}
Function	Tumor suppressor protein that maintains genome stability primarily by repairing damaged DNA through homologous recombination (HR) (PubMed:11239456, PubMed:12442171, PubMed:15115758, PubMed:15199141, PubMed:15671039, PubMed:15937124, PubMed:17515903, PubMed:17515904, PubMed:18317453, PubMed:19303847, PubMed:20729832, PubMed:20729858,

	PubMed:20729859, PubMed:21719596, PubMed:27941124, PubMed:37499663, PubMed:37515771). Facilitates the repair of double-strand breaks (DSBs) by binding and mediating the loading of the RAD51 protein onto single-stranded DNA (ssDNA), thereby promoting the activity of RAD51, which catalyzes DNA strand exchange (PubMed:11239456, PubMed:12442171, PubMed:15937124, PubMed:17515903, PubMed:17515904, PubMed:18317453, PubMed:19303847, PubMed:20729832, PubMed:20729858, PubMed:20729859, PubMed:27941124, PubMed:37499663). BRCA2 nucleates and stabilizes RAD51 on ssDNA directly and delivers RAD51 to ssDNA-double-stranded DNA (dsDNA) junctions by sliding along dsDNA backbone (PubMed:12442171, PubMed:19303847, PubMed:37499663). 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). May play a role in the extension step after strand invasion at replication-dependent DNA double-strand breaks; together with PALB2 is involved in both POLH localization at collapsed replication forks and DNA polymerization activity (PubMed:24485656). Required to prevent R-loop-associated DNA damage and thus transcription-associated genomic instability (PubMed:24896180). Silencing of BRCA2 promotes R-loop accumulation at actively transcribed genes in replicating and non-replicating cells, suggesting that BRCA2 mediates the control of R-loop associated genomic instability, independently of its known role in homologous recombination (PubMed:24896180). Also promotes RAD51 loading to telomeric regions, facilitating telomere replication and capping (PubMed:21076401). Also required for homologous recombination during meiosis by promoting the recruitment of RAD51 and DMC1 recombinases to meiotic DSB sites, enabling proper chromosome pairing and crossing over (PubMed:26976601). Also promotes homologous recombination by inactivating the FIGNL1-FIRRM complex to protect RAD51 filament from premature disassembly (PubMed:37515771). Together with NPM1, may also regulate centrosome duplication (PubMed:21084279).
Cellular Location	Chromosome. Chromosome, telomere. Nucleus. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome Note=Colocalizes with ERCC5/XPG to nuclear foci following DNA replication stress.
Tissue Location	Highest levels of expression in breast and thymus, with slightly lower levels in lung, ovary and spleen

Background

Involved in double-strand break repair and/or homologous recombination. Binds RAD51 and potentiates recombinational DNA repair by promoting assembly of RAD51 onto single-stranded DNA (ssDNA). Acts by targeting RAD51 to ssDNA over double-stranded DNA, enabling RAD51 to displace replication protein-A (RPA) from ssDNA and stabilizing RAD51-ssDNA filaments by blocking ATP hydrolysis. Part of a PALB2-scaffolded HR complex containing RAD51C and which is thought to play a role in DNA repair by HR. May participate in S phase checkpoint activation. Binds selectively to ssDNA, and to ssDNA in tailed duplexes and replication fork structures. May play a role in the extension step after strand invasion at replication-dependent DNA double-strand breaks; together with PALB2 is involved in both POLH localization at collapsed replication forks and DNA polymerization activity. In concert with NPM1, regulates centrosome duplication. Interacts with the TREX-2 complex (transcription and export complex 2) subunits PCID2 and DSS1, and is required to prevent R-loop- associated DNA damage and thus transcription-associated genomic instability. Silencing of BRCA2 promotes R-loop accumulation at actively transcribed genes in replicating and non-replicating cells, suggesting that BRCA2 mediates the control of R-loop associated genomic instability, independently of its known role in homologous recombination (PubMed:24896180).

References

Wooster R.,et al.Nature 378:789-792(1995).
Tavtigian S.V.,et al.Nat. Genet. 12:333-337(1996).
Dunham A.,et al.Nature 428:522-528(2004).
Ozcelik H.,et al.Nat. Genet. 16:17-18(1997).
Hussain S.,et al.Hum. Mol. Genet. 13:1241-1248(2004).

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