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BRCA2 Rabbit pAb

Catalog # AP99048

Product Information

Application	IHC-P, IHC-F, IF, E
Primary Accession	P51587
Other Accession	P51587
Reactivity	Rat, Human
Predicted	Mouse
Host	Rabbit
Clonality	Polyclonal
Calculated MW	384230
Physical State	Liquid
Immunogen	KLH conjugated synthetic peptide derived from human BRCA2
Epitope Specificity	21-130/3418
Isotype	IgG
Purity	affinity purified by Protein A
Buffer	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol.
SIMILARITY	Contains 8 BRCA2 repeats.
SUBUNIT	Monomer and dimer. Interacts with RAD51; regulates RAD51 recruitment and function at sites of DNA repair. Interacts with DSS1. Interacts with both nonubiquitinated and monoubiquitinated FANCD2; this complex also includes XRCC3 and phosphorylated FANCG. Interacts with WDR16. Interacts with USP11. Interacts with DMC1. Part of a trimeric complex containing BRCA1, BRCA2 and PALB2. Interacts with PALB2. Interacts with BRCA1 only in the presence of PALB2 which serves as the bridging protein. Interacts with ROCK2 and NPM1.
Post-translational modifications	Phosphorylated by ATM upon irradiation-induced DNA damage. Phosphorylation by CHEK1 and CHEK2 regulates interaction with RAD51. Phosphorylation at Ser-3291 by CDK1 and CDK2 is low in S phase when recombination is active, but increases as cells progress towards mitosis; this phosphorylation prevents homologous recombination-dependent repair during S phase and G2 by inhibiting RAD51 binding. Ubiquitinated in the absence of DNA damage; this does not lead to proteasomal degradation. In contrast, ubiquitination in response to DNA damage leads to proteasomal degradation.
DISEASE	Defects in BRCA2 are a cause of susceptibility to breast cancer (BC). A common malignancy originating from breast epithelial tissue. Breast neoplasms can be distinguished by their histologic pattern. Invasive ductal carcinoma is by far the most common type. Breast cancer is etiologically and genetically heterogeneous. Important genetic factors have been indicated by familial occurrence and bilateral involvement. Mutations at more than one locus can be involved in different families or even in the same case. Defects in BRCA2 are the cause of pancreatic cancer type 2 (PNCA2) [MIM:613347]. It is a malignant neoplasm of the pancreas. Tumors can arise from both the exocrine and endocrine portions of the pancreas, but 95% of them develop from the exocrine portion, including the ductal epithelium, acinar cells, connective tissue, and lymphatic tissue.
Important Note	This product as supplied is intended for research use only, not for use in

	human, therapeutic or diagnostic applications.
Background Descriptions	Inherited mutations in BRCA1 and this gene, BRCA2, confer increased lifetime risk of developing breast or ovarian cancer. Both BRCA1 and BRCA2 are involved in maintenance of genome stability, specifically the homologous recombination pathway for double-strand DNA repair. The largest exon in both genes is exon 11, which harbors the most important and frequent mutations in breast cancer patients. The BRCA2 gene was found on chromosome 13q12.3 in human. The BRCA2 protein contains several copies of a 70 aa motif called the BRC motif, and these motifs mediate binding to the RAD51 recombinase which functions in DNA repair. BRCA2 is considered a tumor suppressor gene, as tumors with BRCA2 mutations generally exhibit loss of heterozygosity (LOH) of the wild-type allele. [provided by RefSeq, May 2020]

Additional Information

Gene ID	675
Other Names	BRCC2; BROVCA2; FACD; FAD; FAD1; FANCD; FANCD1; GLM3; PNCA2; XRCC11; BRCA2_HUMAN; BRCA2; Fanconi anemia group D1 protein; BRCA2 DNA repair associated; Fanconi anemia, complementation group D1; breast cancer 2, early onset; breast cancer 2; BRCA1/BRCA2-containing complex, subunit 2
Dilution	IHC-P=1:100-500,IHC-F=1:100-500,IF=1:100-500,ELISA=1:5000-10000
Storage	Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C.

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

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