

BRCA2 (3D12): sc-293185

BACKGROUND

In 1990, a breast cancer susceptibility gene designated BRCA1 was localized to chromosome 17q21.31. Mutations within this gene are believed to account for approximately 45% of families with high incidence of breast cancer and at least 80% of families with increased incidence of both early-onset breast cancer and ovarian cancer. A second breast cancer susceptibility gene, BRCA2 (breast cancer 2, early onset), located on chromosome 13q13.1, also confers a high incidence of breast cancer but, unlike BRCA1, does not confer a substantially elevated risk of ovarian cancer. Both BRCA1 and BRCA2 play a role in the maintenance of genome stability, particularly in the homologous recombination pathway for double-strand DNA repair. BRCA2 is regarded as a tumor suppressor gene; tumors with BRCA2 mutations exhibit loss of heterozygosity (LOH) of the wildtype allele. The protein encoded by the BRCA2 gene contains multiple copies of a 70 amino acid motif called the BRC motif. These motifs effect binding to the Rad51 recombinase, which operates in DNA repair.

REFERENCES

1. Wooster, R., et al. 1994. Localization of a breast cancer susceptibility gene, BRCA2, to chromosome 13q12-13. *Science* 265: 2088-2090.
2. Collins, N., et al. 1995. Consistent loss of the wildtype allele in breast cancers from a family linked to the BRCA2 gene on chromosome 13q12-13. *Oncogene* 10: 1673-1675.
3. Kerangueven, F., et al. 1995. Patterns of loss of heterozygosity at loci from chromosome arm 13q suggests a possible involvement of BRCA2 in sporadic breast tumors. *Genes Chromosomes Cancer* 13: 291-294.

CHROMOSOMAL LOCATION

Genetic locus: BRCA2 (human) mapping to 13q13.1.

SOURCE

BRCA2 (3D12) is a mouse monoclonal antibody raised against a partial recombinant protein corresponding to amino acids 3319-3418 of BRCA2 of human origin.

PRODUCT

Each vial contains 100 µg IgG₃ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

BRCA2 (3D12) is recommended for detection of BRCA2 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

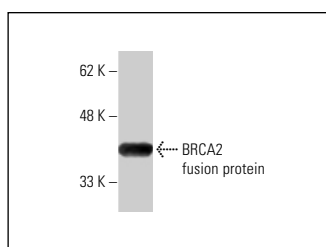
Suitable for use as control antibody for BRCA2 siRNA (h): sc-29825, BRCA2 shRNA Plasmid (h): sc-29825-SH and BRCA2 shRNA (h) Lentiviral Particles: sc-29825-V.

Molecular Weight of BRCA2: 390 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



BRCA2 (3D12): sc-293185. Western blot analysis of human recombinant BRCA2 fusion protein.

SELECT PRODUCT CITATIONS

1. Xia, Y., et al. 2018. Nuclear rupture at sites of high curvature compromises retention of DNA repair factors. *J. Cell Biol.* 217: 3796-3808.
2. Teng, Y., et al. 2018. ROS-induced R loops trigger a transcription-coupled but BRCA1/2-independent homologous recombination pathway through CSB. *Nat. Commun.* 9: 4115.
3. Miao, Y., et al. 2019. BRCA2 deficiency is a potential driver for human primary ovarian insufficiency. *Cell Death Dis.* 10: 474.
4. Hu, L., et al. 2020. A novel M phase blocker, DCZ3301 enhances the sensitivity of bortezomib in resistant multiple myeloma through DNA damage and mitotic catastrophe. *J. Exp. Clin. Cancer Res.* 39: 105.
5. Li, S., et al. 2021. PIF1 helicase promotes break-induced replication in mammalian cells. *EMBO J.* 40: e104509.
6. Shah, R.B., et al. 2021. FANCI functions as a repair/apoptosis switch in response to DNA crosslinks. *Dev. Cell* 56: 2207-2222.e7.
7. Jeong, A., et al. 2022. PRMT7 inhibitor SGC8158 enhances doxorubicin-induced DNA damage and its cytotoxicity. *Int. J. Mol. Sci.* 23: 12323.
8. Luo, H., et al. 2022. Androgen receptor splicing variant 7 (ARv7) promotes DNA damage response in prostate cancer cells. *FASEB J.* 36: e22495.
9. Lodovichi, S., et al. 2023. PARylation of BRCA1 limits DNA break resection through BRCA2 and EXO1. *Cell Rep.* 42: 112060.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.