



## p-BRCA1 (Ser 988): sc-12888

### BACKGROUND

BRCA1 is a cell cycle-regulated nuclear protein that is phosphorylated mainly on Serine and to a lesser extent on Threonine residues. Changes in phosphorylation occur in response to cell cycle progression and DNA damage. BRCA1 undergoes hyperphosphorylation during late G<sub>1</sub> and S phases of the cell cycle. BRCA1 is a substrate of ATM kinase, and phosphorylation of BRCA1 requires the presence of a functional ATM protein. Chk2 regulates BRCA1 function after DNA damage by phosphorylating serine 988 of BRCA1. This phosphorylation is required for the release of BRCA1 from Chk2 and the ability of BRCA1 to restore survival after DNA damage. BRCA1 is also phosphorylated at Serine 1497, which is part of a cyclin-dependent kinase consensus site.

### REFERENCES

1. Altiock, S., et al. 1999. Heregulin induces phosphorylation of BRCA1 through phosphatidylinositol 3-Kinase/AKT in breast cancer cells. *J. Biol. Chem.* 274: 32274-32278.
2. Cortez, D., et al. 1999. Requirement of ATM-dependent phosphorylation of BRCA1 in the DNA damage response to double-strand breaks. *Science* 286: 1162-1166.
3. Ruffner, H., et al. 1999. BRCA1 is phosphorylated at Serine 1497 *in vivo* at a cyclin-dependent kinase 2 phosphorylation site. *Mol. Cell Biol.* 19: 4843-4854.
4. Gatej, M., et al. 2000. Role for ATM in DNA damage-induced phosphorylation of BRCA1. *Cancer Res.* 60: 3299-3304.
5. Lee, J.S., et al. 2000. hCds1-mediated phosphorylation of BRCA1 regulates the DNA damage response. *Nature* 404: 201-204.
6. Cabart, P., et al. 2004. BRCA1 cooperates with NUFIP and P-TEF $\beta$  to activate transcription by RNA polymerase II. *Oncogene* 23: 5316-5329.
7. Xu, X., et al. 2004. Microcephalin is a DNA damage response protein involved in regulation of Chk1 and BRCA1. *J. Biol. Chem.* 279: 34091-34094.

### CHROMOSOMAL LOCATION

Genetic locus: BRCA1 (human) mapping to 17q21.31.

### SOURCE

p-BRCA1 (Ser 988) is available as either goat (sc-12888) or rabbit (sc-12888-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing phosphorylated Ser 988 of BRCA1 of human origin.

### PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12888 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

### RESEARCH USE

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

### APPLICATIONS

p-BRCA1 (Ser 988) is recommended for detection of Ser 988 phosphorylated BRCA1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for BRCA1 siRNA (h): sc-29219, BRCA1 shRNA Plasmid (h): sc-29219-SH and BRCA1 shRNA (h) Lentiviral Particles: sc-29219-V.

Molecular Weight of p-BRCA1: 220 kDa.

### RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: for goat primary antibody (sc-14268): use donkey anti-goat IgG-HRP: sc-2020 (range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (range: 1:2000-1:5000), for rabbit primary antibody (sc-14268-R): use goat anti-rabbit IgG-HRP: sc-2004 (range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (range: 1:2000-1:5000); Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent) and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: for goat primary antibody (sc-14268): use donkey anti-goat IgG-FITC: sc-2024 (range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (range: 1:100-1:400), for rabbit primary antibody (sc-14268-R): use goat anti-rabbit IgG-FITC: sc-2012 (range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

### SELECT PRODUCT CITATIONS

1. Coene, E.D., et al. 2005. Phosphorylated BRCA1 is predominantly located in the nucleus and mitochondria. *Mol. Biol. Cell* 16: 9997-1010.
2. Kwak, E.L., et al. 2006. Mammary tumorigenesis following transgenic expression of a dominant negative Chk2 mutant. *Cancer Res.* 66: 1923-1928.
3. Inoue, Y., et al. 2007. Phosphorylation of pRB at Ser 612 by Chk1/2 leads to a complex between pRB and E2F-1 after DNA damage. *EMBO J.* 26: 2083-2093.
4. Yeh, Y.H., et al. 2009. The cell cycle checkpoint kinase Chk2 mediates DNA damage-induced stabilization of TTK/hMps1. *Oncogene* 28: 1366-1378.

### STORAGE

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

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.