

PRODUCT INFORMATION



BRCA1 BRCT domains (human, recombinant)

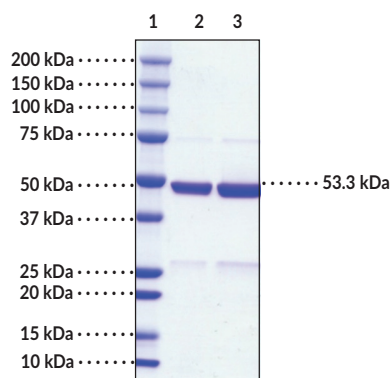
Item No. 14167

Overview and Properties

Synonyms: Breast Cancer Type 1 Susceptibility Protein
Source: Recombinant N-terminal GST-tagged protein expressed in *E. coli*
Uniprot No.: P38398
Molecular Weight: 53.3 kDa
Storage: -80°C (as supplied); avoid freeze/thaw cycles by aliquoting protein
Stability: ≥2 years
Purity: *batch specific* (≥90% estimated by SDS-PAGE)
Supplied in: 50 mM Tris-HCl, pH 8.0, with 150 mM sodium chloride, and 20% glycerol
Protein Concentration: *batch specific* mg/ml
Activity: *batch specific* U/ml
Specific Activity: *batch specific* U/mg

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: BRCA1 BRCT domains (2 µg)
Lane 3: BRCA1 BRCT domains (4 µg)

SDS-PAGE Analysis of BRCA1 BRCT domains.

Representative gel image shown; actual purity may vary between each batch.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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Description

The BRCA1 C-terminal (BRCT) domain is a modular unit of ~100 amino acids that folds independently and recognizes linear phosphoserine or phosphothreonine regions to mediate protein-protein and protein-DNA interactions.^{1,2} BRCT domains were initially recognized in the C-terminal region of the breast cancer protein BRCA1, as well as the p53 binding protein (53BP1; TP53BP1), and the yeast cell cycle checkpoint protein RAD9.³ BRCT domains often occur as tandem repeats at the C-terminal end of several proteins that are functionally diverse.² Most BRCT domain-containing proteins participate in DNA-damage checkpoint control or DNA-repair pathways, or both.^{3,4} Thus, BRCT domain-containing proteins likely participate in the cellular response to DNA damage. Germ-line mutations of the tumor suppressor genes BRCA1 and BRCA2 pre-dispose women to familial breast and ovarian cancer and are associated with approximately 10% of the cases.^{5,6} The carboxy-terminal BRCT domain in BRCA1 is involved in DNA repair and transcriptional activation.⁶⁻⁸ The BRCT region of BRCA1 binds phosphorylated BACH1, a DEAH helicase, which is essential for mediating repair of DNA double-strand breaks by controlling G2 to M phase transition during cell cycle progression.⁹⁻¹¹ BRCA1 also contains an N-terminal protein-protein-interaction RING-finger domain, that partners with BRCA1-associated RING domain 1 (BARD1).¹² The BRCA1/BARD1 heterodimer maintains genomic stability by regulating DNA damage repair and ubiquitination.¹³ This product contains the BRCT domains of BRCA1.

References

1. Manke, I.A., Lowery, D.M., Nguyen, A., *et al.* BRCT repeats as phosphopeptide-binding modules involved in protein targeting. *Science* **302**(5645), 636-639 (2003).
2. Woods, N.T., Mesquita, R.D., Sweet, M., *et al.* Charting the landscape of tandem BRCT domain-mediated protein interactions. *Sci. Signal.* **5**(242), (2012).
3. Bork, P., Hofmann, K., Bucher, P., *et al.* A superfamily of conserved domains in DNA damage-responsive cell cycle checkpoint proteins. *FASEB J.* **11**(1), 68-76 (1997).
4. Callebaut, I. and Mornon, J.-P. From BRCA1 to RAP1: A widespread BRCT module closely associated with DNA repair. *FEBS Lett.* **400**(1), 25-30 (1997).
5. O'Donovan, P.J. and Livingston, D.M. BRCA1 and BRCA2: Breast/ovarian cancer susceptibility gene products and participants in DNA double-strand break repair. *Carcinogenesis* **31**(6), 961-967 (2010).