

**ANTI-HUMAN ABCG2/BCRP1**

**Mouse Monoclonal Antibody Against Human ABCG2/BCRP1  
Clone 5D3**

**Purified**

**Catalog # 01428**

**100 mg**

**SPECIFICITY:**

Breast cancer resistance protein (BCRP1), also known as mitoxantrone resistance protein (MXR), placenta-specific ATP-binding cassette (ABC) protein (ABCP) or ABC G-subfamily member 2 (ABCG2), is a member of the ABC superfamily of drug transporters thought to be involved in multi-drug resistance in human neoplastic disease. ABCG2 is expressed in drug-resistant breast, colon and gastric cancer and fibrosarcoma cancer cell lines and in blast cells from patients with acute myeloid leukemia (AML).<sup>1-3</sup> Normal tissues that express the ABCG2 protein include placental syncytiotrophoblasts, mammary ducts and lobules, epithelium in the large intestine and colon, venous and capillary epithelium and bile canalicular membrane of the liver.<sup>5</sup>

Results from several studies indicate that ABCG2 is expressed in stem cells of different tissues and may be useful as a stem cell marker. ABCG2 is thought to be responsible for the ability of a population of very primitive hematopoietic and non-hematopoietic cells, the so-called SP (side population) subset, to efflux the Hoechst 33342 fluorescent dye. Semiquantitative RT-PCR results indicate that ABCG2 mRNA is expressed at higher levels in SP cells as compared to non-SP cells in human, rhesus monkey and mouse hematopoietic tissues, with the exception of erythroblasts and NK cells.<sup>6-9</sup> In human bone marrow, ABCG2 mRNA expression is higher in phenotypically defined populations of primitive CD34<sup>+</sup>CD38<sup>-</sup> hematopoietic cells as compared to more differentiated CD34<sup>+</sup>CD38<sup>+</sup> progenitor cells.<sup>7</sup> Bcrp1 mRNA is also expressed in SP cells in murine skeletal muscle, in neural stem cell and progenitor cells and in nestin-positive pancreatic islet derived progenitor cells.<sup>6,10,11</sup> Over-expression of the human ABCG2 gene by retroviral-mediated gene transfer confers the SP phenotype to mouse bone marrow cells.<sup>6</sup> Bcrp1 mRNA is expressed in SP as well as non-SP fractions of mouse embryonic stem cells.<sup>6</sup> This suggests that Bcrp1 protein levels may not always be reflected by mRNA levels, or that other characteristics of stem cells, e.g., cell cycle status or expression of other transporters, are also involved in the SP phenotype.<sup>6,9</sup>

**CLONE:** 5D3

**ISOTYPE:** IgG<sub>2b</sub>K (mouse)

**FORMAT:**

0.1 mg of purified antibody in 0.1 mL phosphate buffered saline.

**STABILITY AND STORAGE:**

Store at 4°C. DO NOT FREEZE. Product stable for at least 2 years.  
Filter sterilized. Contents sterile if unopened. Addition of 0.1% sodium azide (final) is recommended once vial is opened. Dilute with medium or phosphate buffered saline containing 0.1-1% bovine serum albumin as carrier protein.

**APPLICATIONS AND DIRECTIONS FOR USE:**

Flow cytometry:

Appropriate conditions should be established for each application.

**THIS REAGENT IS FOR RESEARCH ONLY.  
IT IS NOT TO BE ADMINISTERED TO HUMANS.**

**REFERENCES:**

1. Doyle LA, Yang W, Abruzzo LV, Krogmann T, Gao Y, Rishi AK, Ross DD: A multidrug resistance transporter from human MCF-7 breast cancer cells. *Proc Natl Acad Sci U S A.* 95:15665-70, 1998.
2. Ross DD, Karp JE, Chen TT, Doyle LA: Expression of breast cancer resistance protein in blast cells from patients with acute leukemia. *Blood* 96:365-8, 2000.
3. Miyake K, Mickley L, Litman T, Zhan Z, Robey R, Cristensen B, Brangi M, Greenberger L, Dean M, Fojo T, Bates SE: Molecular cloning of cDNAs which are highly overexpressed in mitoxantrone-resistant cells: demonstration of homology to ABC transport genes. *Cancer Res*:8-13, 1999.
4. van der Kolk DM, Vellenga E, Scheffer GL, Muller M, Bates SE, Scheper RJ, de Vries EG: Expression and activity of breast cancer resistance protein (BCRP) in de novo and relapsed acute myeloid leukemia. *Blood* 99:3763-70, 2002.
5. Maliepaard M, Scheffer GL, Faneyte IF, van Gastelen MA, Pijnenborg AC, Schinkel AH, van De Vijver MJ, Scheper RJ, Schellens JH: Subcellular localization and distribution of the breast cancer resistance protein transporter in normal human tissues. *Cancer Res* 61: 3458-64, 2001.
6. Zhou S, Schuetz JD, Bunting KD, Colapietro AM, Sampath J, Morris JJ, Lagutina I, Grosveld GC, Osawa M, Nakauchi H, Sorrentino BP: The ABC transporter Bcrp1/ABCG2 is expressed in a wide variety of stem cells and is a molecular determinant of the side-population phenotype. *Nat Med* 7: 1028-34, 2001.
7. Scharenberg CW, Harkey MA, Torok-Storb B. The ABCG2 transporter is an efficient Hoechst 33342 efflux pump and is preferentially expressed by immature human hematopoietic progenitors *Blood* 99: 507-12, 2002.
8. Kim M, Turnquist H, Jackson J, Sgagias M, Yan Y, Gong M, Dean M, Sharp JG, Cowan K. The multidrug resistance transporter ABCG2 (breast cancer resistance protein 1) effluxes Hoechst 33342 and is overexpressed in hematopoietic stem cells. *Clin Cancer Res.* 8: 22-8, 2002.
9. Bunting KD. ABC transporters as phenotypic markers and functional regulators of stem cells. *Stem Cells.* 20: 11-20, 2002. (Review).
10. Lechner A, Leech CA, Abraham EJ, Nolan AL, Habener JF. Nestin-positive progenitor cells derived from adult human pancreatic islets of Langerhans contain side population (SP) cells defined by expression of the ABCG2 (BCRP1) ATP-binding cassette transporter. *Biochem Biophys Res Commun:* 670-4, 2002.