

Data Sheet

BCRJ Code:	0162
Cell Line:	MCF7
Species:	Homo sapiens
Vulgar Name:	Human
Tissue:	Mammary Gland, Breast; Derived From Metastatic Site: Pleural Effusion
Cell Type:	Epithelial
Morphology:	Epithelial
Disease:	Adenocarcinoma
Growth Properties:	Adherent
Sex:	Female
Age/Ethnicity:	69 Year /
Applications:	These cells are a suitable transfection host
DNA Profile:	Amelogenin: X CSF1PO: 10 D13S317: 11 D16S539: 11,12 D5S818: 11,12 D7S820: 8,9 THO1: 6 TPOX: 9,12 vWA: 14,15
Products:	insulin-like growth factor binding proteins (IGFBP) BP-2; BP-4; BP-5
Biosafety:	1
Additional Info:	The MCF7 line retains several characteristics of differentiated mammary epithelium including ability to process estradiol via cytoplasmic estrogen receptors and the capability of forming domes. The cells express the WNT7B oncogene. [PubMed: 8168088] Growth of MCF7 cells is inhibited by tumor necrosis factor alpha (TNF alpha). Secretion of IGFBP's can be modulated by treatment with anti-estrogens.
Culture Medium:	RPMI-1640 medium modified to contain 2 mM L-glutamine, 1 mM sodium pyruvate, 4500 mg/L glucose and 20% of fetal bovine serum.

Subculturing:

Volumes used in this protocol are for 75 cm² flasks; proportionally reduce or increase amount of dissociation medium for culture vessels of other sizes. Remove and discard culture medium. Briefly rinse the cell layer with PBS without calcium and magnesium to remove all traces of serum which contains trypsin inhibitor. Add 2.0 to 3.0 mL of Trypsin-EDTA solution to flask and observe cells under an inverted microscope until cell layer is dispersed (usually within 5 to 15 minutes). Note: To avoid clumping do not agitate the cells by hitting or shaking the flask while waiting for the cells to detach. Cells that are difficult to detach may be placed at 37°C to facilitate dispersal. Add 6.0 to 8.0 mL of complete growth medium and aspirate cells by gently pipetting. Add appropriate aliquots of the cell suspension to new culture vessels. Incubate cultures at 37°C. Population Doubling Time approximately 29 hours NOTE: For more information on enzymatic dissociation and subculturing of cell lines consult Chapter 12 in Culture of Animal Cells, a manual of Basic Technique by R. Ian Freshney, 6th edition, published by Alan R. Liss, N.Y., 2010.

**Subculturing
Medium Renewal:**

2 to 3 times per week

**Subculturing
Subcultivation Ratio:**

1:3 to 1:6

Culture Conditions:Atmosphere: air, 95%; carbon dioxide (CO₂), 5% Temperature: 37°C**Cryopreservation:**

95% FBS + 5% DMSO (Dimethyl sulfoxide)

**Thawing Frozen
Cells:**

SAFETY PRECAUTION: It is highly recommended that protective gloves and clothing always be used and a full face mask always be worn when handling frozen vials. It is important to note that some vials leak when submerged in liquid nitrogen and will slowly fill with liquid nitrogen. Upon thawing, the conversion of the liquid nitrogen back to its gas phase may result in the vessel exploding or blowing off its cap with dangerous force creating flying debris. 1. Thaw the vial by gentle agitation in a 37°C water bath. To reduce the possibility of contamination, keep the O-ring and cap out of the water. Thawing should be rapid (approximately 2 minutes). 2. Remove the vial from the water bath as soon as the contents are thawed, and decontaminate by dipping in or spraying with 70% ethanol. All of the operations from this point on should be carried out under strict aseptic conditions. 3. For cells that are sensitive to DMSO it is recommended that the cryoprotective agent be removed immediately. Transfer the vial contents to a centrifuge tube containing 9.0 mL complete culture medium and spin at approximately 125 x g for 5 to 7 minutes. 4. Discard the supernatant and Resuspend cell pellet with the recommended complete medium (see the specific batch information for the culture recommended dilution ratio). 5. Incubate the culture in an appropriate atmosphere and temperature (see "Culture Conditions" for this cell line). NOTE: It is important to avoid excessive alkalinity of the medium during recovery of the cells. It is suggested that, prior to the addition of the vial contents, the culture vessel containing the growth medium be placed into the incubator for at least 15 minutes to allow the medium to reach its normal pH (7.0 to 7.6).

Sugarman BJ, et al. Recombinant human tumor necrosis factor-alpha: effects on proliferation of normal and transformed cells in vitro. *Science* 230: 943-945, 1985. PubMed: 3933111 Takahashi K, Suzuki K. Association of insulin-like growth-factor-I-induced DNA synthesis with phosphorylation and nuclear exclusion of p53 in human breast cancer MCF-7 cells. *Int. J. Cancer* 55: 453-458, 1993. PubMed: 8375929 Brandes LJ, Hermonat MW. Receptor status and subsequent sensitivity of subclones of MCF-7 human breast cancer cells surviving exposure to diethylstilbestrol. *Cancer Res.* 43: 2831-2835, 1983. PubMed: 6850594 Lan MS, et al. Polypeptide core of a human pancreatic tumor mucin antigen. *Cancer Res.* 50: 2997-3001, 1990. PubMed: 2334903 Pratt SE, Pollak MN. Estrogen and antiestrogen modulation of MCF7 human breast cancer cell proliferation is associated with specific alterations in accumulation of insulin-like growth factor-binding proteins in conditioned media. *Cancer Res.* 53: 5193-5198, 1993. PubMed: 7693333 Hugué EL, et al. Differential expression of human Wnt genes 2, 3, 4, and 7B in human breast cell lines and normal and disease states of human breast tissue. *Cancer Res.* 54: 2615-2621, 1994. PubMed: 8168088 Soule HD, et al. A human cell line from a pleural effusion derived from a breast carcinoma. *J. Natl. Cancer Inst.* 51: 1409-1416, 1973. PubMed: 4357757 Bellet D, et al. Malignant transformation of nontrophoblastic cells is associated with the expression of chorionic gonadotropin beta genes normally transcribed in trophoblastic cells. *Cancer Res.* 57: 516-523, 1997. PubMed: 9012484 Littlewood-Evans AJ, et al. The osteoclast-associated protease cathepsin K is expressed in human breast carcinoma. *Cancer Res.* 57: 5386-5390, 1997. PubMed: 9393764 Komarova EA, et al. Intracellular localization of p53 tumor suppressor protein in gamma-irradiated cells is cell cycle regulated and determined by the nucleus. *Cancer Res.* 57: 5217-5220, 1997. PubMed: 9393737 van Dijk MA, et al. A functional assay in yeas for the human estrogen receptor displays wild-type and variant estrogen receptor messenger RNAs present in breast carcinoma. *Cancer Res.* 57: 3478-3485, 1997. PubMed: 9270016 Landers JE, et al. Translational enhancement of mdm2 oncogene expression in human tumor cells containing a stabilized wild-type p53 protein. *Cancer Res.* 57: 3562-3568, 1997. PubMed: 9270029 Umekita Y, et al. Human prostate tumor growth in athymic mice: inhibition by androgens and stimulation by finasteride. *Proc. Natl. Acad. Sci. USA* 93: 11802-11807, 1996. PubMed: 8876218 Zamora-Leon SP, et al. Expression of the fructose transporter GLUT5 in human breast cancer. *Proc. Natl. Acad. Sci. USA* 93: 1847-1852, 1996. PubMed: 8700847 Geiger T, et al. Antitumor activity of a PKC-alpha antisense oligonucleotide in combination with standard chemotherapeutic agents against various human tumors transplanted into nude mice. *Anticancer Drug Des.* 13: 35-45, 1998. PubMed: 9474241 Jang SI, et al. Activator protein 1 activity is involved in the regulation of the cell type-specific expression from the proximal promoter of the human profilaggrin gene. *J. Biol. Chem.* 271: 24105-24114, 1996. PubMed: 8798649 Lee JH, et al. The proximal promoter of the human transglutaminase 3 gene. *J. Biol. Chem.* 271: 4561-4568, 1996. PubMed: 8626812 Chang K, Pastan I. Molecular cloning of mesothelin, a differentiation antigen present on mesothelium, mesotheliomas, and ovarian cancers. *Proc. Natl. Acad. Sci. USA* 93: 136-140, 1996. PubMed: 8552591 Zhu X, et al. Cell cycle-dependent modulation of telomerase activity in tumor cells. *Proc. Natl. Acad. Sci. USA* 93: 6091-6095, 1996. PubMed: 8650224 Bacus SS, et al. Differentiation of cultured human breast cancer cells (AU-565 and MCF-7) associated with loss of cell surface HER-2/neu antigen. *Mol. Carcinog.* 3: 350-362, 1990. PubMed: 1980588 Hugué EL, et al. Differential expression of human Wnt genes 2, 3, 4, and 7B in human breast cell lines and normal and disease states of human breast tissue. *Cancer Res.* 54: 2615-2621, 1994. PubMed: 8168088

References:



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