BCRJ Code:	0063
Cell Line:	CCRF-CEM
Species:	Homo sapiens
Vulgar Name:	Human
Tissue:	Peripheral Blood
Cell Type:	T Lymphoblast
Morphology:	Lymphoblast
Disease:	Acute Lymphoblastic Leukemia
Growth Properties:	Suspension
Sex:	Female
Age/Ethinicity:	4 Year / Caucasian
Derivation:	Human lymphoblasts from peripheral blood of a child with acute leukemia.
Applications:	This cell line is a suitable transfection host.
DNA Profile:	Amelogenin: X CSF1PO: 10,11 D13S317: 11,12 D16S539: 10,13 D5S818: 12,13 D7S820: 9,13 THO1: 6,7 TPOX: 8 vWA: 17,19
Tumor Formation::	IN SYRIAN HAMSTER [PubMed: 4295047]
Products:	Genes Expressed: CD3; Homo sapiens, expressed ,CD5; Homo sapiens, expressed ,CD7; Homo sapiens, expressed ,CD4; Homo sapiens, expressed
Biosafety:	1

Culture Medium:	RPMI-1640 medium modified to contain 2 mM L-glutamine, 1 mM sodium pyruvate, 4500 mg/L glucose and fetal bovine serum to a final concentration of 10%.
Subculturing:	Cultures can be maintained by addition of fresh medium. Alternatively, cultures can be established by centrifugation with subsequent resuspension at 1 x 10e5 viable cells/mL. Maintain cultures at a cell concentration between 1 x 10e5 and 1 x 10e6 cells/mL. NOTE: Do not allow the cell concentration to exceed 1 x 10e6 cells/mL. Population Doubling Time about: 24-30 hours
Subculturing Medium Renewal:	Every 2 to 3 days
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 strongly recommended to always wear protective gloves, clothing, and a full-face mask when handling frozen vials. Some vials may leak when submerged in liquid nitrogen, allowing nitrogen to slowly enter the vial. Upon thawing, the conversion of liquid nitrogen back to its gas phase may cause the vial to explode or eject its cap with significant force, creating flying debris.

1. Thaw the vial by gently agitating it in a 37°C water bath. To minimize 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 its contents are thawed and decontaminate it by dipping in or spraying with 70% ethanol. From this point, all operations must be performed under strict aseptic conditions.
3. For cells sensitive to DMSO, it is recommended to remove the cryoprotective agent immediately. Transfer the vial contents to a centrifuge tube containing 9.0 mL of complete culture medium and centrifuge at approximately 125 × g for 5 to 7 minutes.
4. Discard the supernatant and resuspend the cell pellet in the recommended complete medium (see specific batch information for the appropriate dilution ratio).
5. Incubate the culture under appropriate atmospheric and temperature conditions (see "Culture Conditions" for this cell line).

NOTE: It is important to avoid excessive alkalinity of the medium during cell recovery. To minimize this risk, it is recommended to place the culture vessel containing the growth medium in the incubator for at least 15 minutes before adding the vial contents. This allows the medium to stabilize at its normal pH (7.0 to 7.6).

References:	Foley GE, et al. Continous culture of human lymphoblasts from peripheral blood of a child with acute leukemia. Cancer 18: 522-529, 1965. PubMed: 14278051 Sandstrom PA, Buttke TM. Autocrine production of extracellular catalase prevents apoptosis of the human CEM T-cell line in serum-free medium. Proc. Natl. Acad. Sci. USA 90: 4708-4712, 1993. PubMed: 8506323 Adams RA. Formal discussion: the role of transplantation in the experimental investigation of human leukemia and lymphoma. Cancer Res. 27: 2479-2482, 1967. PubMed: 4170381 Uzman BG, et al. Morphologic variations in human leukemic lymphoblasts (CCRF-CEM cells) after long-term culture and exposure to chemotherapeutic agents. A study with the electron microscope. Cancer 19: 1725-1742, 1966. PubMed: 5224274 Adams RA, et al. Leukemia: serial transplantation of human leukemic lymphoblasts in the newborn Syrian hamster. Cancer Res. 27: 772-783, 1967. PubMed: 4295047 Miranda L, et al. Isolation of the human PC6 gene encoding the putative host protease for HIV-1 gp160 processing in CD4+ T lymphocytes. Proc. Natl. Acad. Sci. USA 93: 7695-7700, 1996. PubMed: 8755538 CCRF-CEM is a T lymphoblastoid cell line derived by G.E. Foley, et al. using cells obtained in November, 1964 from peripheral blood buffy coat of a 4-year-old Caucasian female with acute lymphoblastic leukemia.
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