Description

Recombinant clonal stable CHO cell line constitutively expressing full length human CD37 protein, also known as GP52-40; TSPAN26; leukocyte antigen CD37 (Genbank #NM_001774). Surface expression of CD37 was confirmed by flow cytometry. Each stable clonal cell line was selected for different levels of CD37 expression, (High and Low), to mimic different stages of cancer target cells with various CD37 expression levels.

Background

CD37 expression is restricted to cells of the immune system, with highest abundance on mature B cells, and lower expression is found on T cells and myeloid cells. CD37 is a cell surface glycoprotein that is known to complex with integrins and other transmembrane 4 superfamily proteins. It is also expressed in B-cell non-Hodgkin Lymphomas, in chronic lymphocytic leukemia (CLL), and in some cases of cutaneous and peripheral T-cell lymphomas.

CAR-37 T cells have demonstrated antigen-specific activation, cytokine production, and cytotoxic activity in models of B- and T-cell lymphomas *in vitro* and *in vivo*, including patient-derived xenografts. T cells expressing anti-CD37 CAR have substantial activity against 2 different lymphoid lineages, without evidence of significant T cell fratricide. Furthermore, anti-CD37 CARs have been combined with anti-CD19 CARs to generate dual-specific CAR T cells capable of recognizing CD19 and CD37 alone or in combination. CD37-CAR T cells represent a novel therapeutic agent for the treatment of patients with CD37-expressing lymphoid malignancies.

Application(s)

- Useful as CD37-expressing target cells in co-culture assay with CD37-CAR-T cells, for both CD37-specific cell killing assay and cytokine production assay.
- Useful for screening and validating antibodies against CD37 and anti-CD37 CAR-T for immunotherapy research and drug discovery.
- Useful for CD37 binding assays to screen for CD37 ligands.

Materials Provided

Components	Format
2 vials of frozen cells	Each vial contains 2 x 10^6 cells in 1 ml of cell freezing medium (BPS Bioscience #79796)

Parental Cell Line

CHO-K1 cells, Chinese Hamster Ovary, epithelial-like cells, adherent

Mycoplasma Testing

The cell line has been screened to confirm the absence of Mycoplasma species.

Materials Required but Not Supplied

These materials are not supplied with the cell line but are necessary for cell culture and cellular assays. BPS Bioscience's reagents are validated and optimized for use with this cell line and are highly recommended for best results. Media components are provided in the Media Formulations section below.

Media Required for Cell Culture

Name	Ordering Information
Thaw Medium 3	BPS Bioscience #60186
Growth Medium 3D	BPS Bioscience #79539

Storage Conditions

Cells are shipped in dry ice and should immediately be thawed or stored in liquid nitrogen upon receipt. Do not use a -80°C freezer for long term storage.
Contact technical support at support@bpsbioscience.com if the cells are not frozen in dry ice upon arrival.

Media Formulations

For best results, it is *highly recommended* to use these validated and optimized media from BPS Bioscience. Other preparations or formulations of media may result in suboptimal performance.

Note: Thaw Media do *not* contain selective antibiotics. However, Growth Media *do* contain selective antibiotics, which are used for maintaining the presence of the transfected gene(s) over passages.
Cells should be grown at 37°C with 5% CO_2. BPS Bioscience's cell lines are stable for at least 15 passages when grown under proper conditions.

Media Required for Cell Culture

Thaw Medium 3 (BPS Bioscience #60186):
F-12K medium supplemented with 10% FBS, 1% Penicillin/Streptomycin.

Growth Medium 3D (BPS Bioscience #79539):
F-12K medium supplemented with 10% FBS, 1% Penicillin/Streptomycin plus 1 mg/ml G418.

Cell Culture Protocol

Cell Thawing

1. Swirl the vial of frozen cells for approximately 60 seconds in a 37°C water bath. As soon as the cells are thawed (it may be slightly faster or slower than 60 seconds), quickly transfer the entire contents of the vial to a tube containing 10 ml of pre-warmed Thaw Medium 3 **(no Geneticin)**.
   Leaving the cells in the water bath at 37°C for too long will result in rapid loss of viability.
2. Immediately spin down the cells at 300 x g for 5 minutes, remove the medium and resuspend the cells in 5 ml of pre-warmed Thaw Medium 3 **(no Geneticin)**.
3. Transfer the resuspended cells to a T25 flask or T75 flask and incubate at 37°C in a 5% CO_2 incubator.
4. After 24 hours of culture, check for cell attachment and viability. Change medium to fresh Thaw Medium 3 **(no Geneticin)**, and continue growing in a 5% CO_2 incubator at 37°C until the cells are ready to passage.
5. Cells should be passaged before they are fully confluent. At first passage and subsequent passages, use Growth Medium 3D **(contains Geneticin)**.

Cell Passage

1. Aspirate the medium, wash the cells with phosphate buffered saline (PBS), and detach the cells from the culture vessel with 0.25% Trypsin/EDTA.
2. Once the cells have detached, add Growth Medium 3D and transfer to a tube. Spin down cells at 300 x g for 5 minutes, remove the medium and resuspend the cells in Growth Medium 3D **(contains Geneticin)**. Seed into new culture vessels at the desired sub-cultivation ratio of 1:10 to 1:15 twice per week.

Cell Freezing

1. Aspirate the medium, wash the cells with phosphate buffered saline (PBS), and detach the cells from the culture vessel with 0.25% Trypsin/EDTA.

2. Once the cells have detached, add Growth Medium 3D and count the cells.
3. Spin down the cells at 300 x g for 5 minutes, remove the medium and resuspend the cells in 4°C Freezing Medium (BPS Bioscience #79796, or 10% DMSO + 90% FBS) at ~2 x 10^6 cells/ml.
4. Dispense 1 ml of cell aliquots into cryogenic vials. Place the vials in an insulated container for slow cooling and store at -80°C overnight.
5. Transfer the vials to liquid nitrogen the next day for storage.

Note: It is recommended to expand the cells and freeze at least 10 vials at an early passage for future use.

A. Validation Data

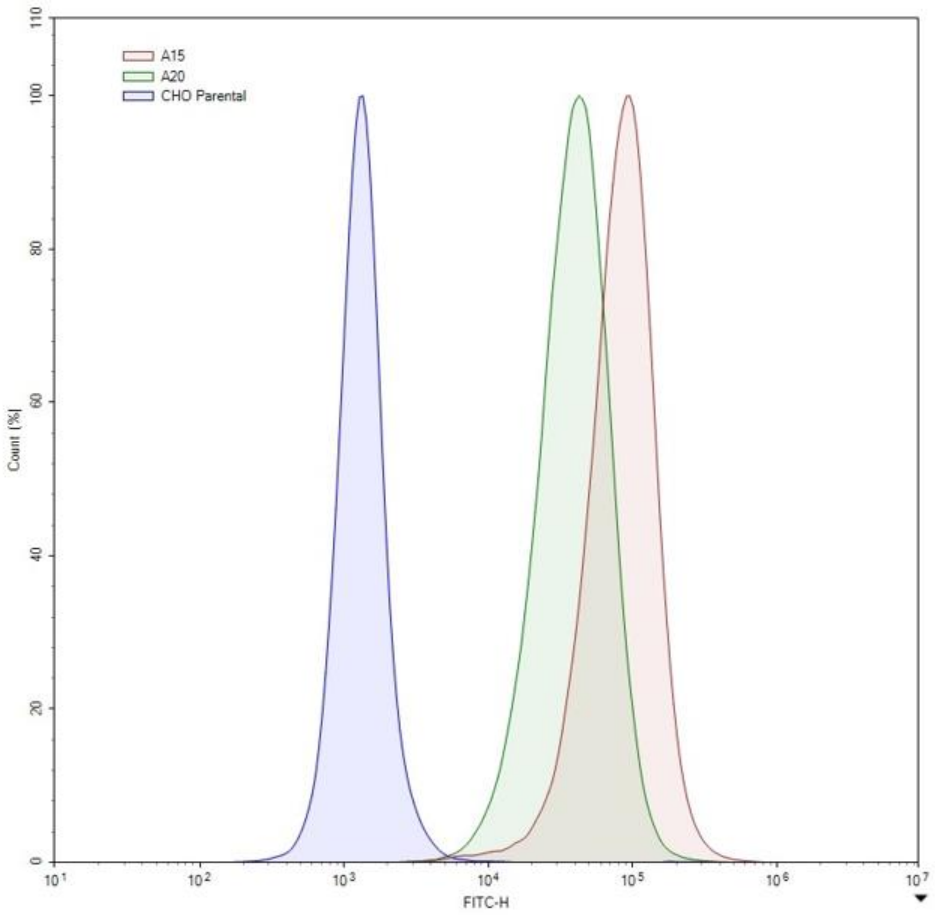

Figure 1. Expression of CD37 validated by flow cytometry.
Flow cytometry using FITC-conjugated anti-human CD37 antibody (Biolegend #356304) detects CD37 surface expression of CD37-CHO Recombinant Cell Lines with different expression levels: #79607-H, high expressor, clone A15, red; #79607-L, low expressor, clone A20, green; WT CHO negative control: blue.

Sequence
Human CD37 (NM_001774) was cloned into pIRESneo3.

MSAQESCLSLIKYFLFVFNLFFFVLGSLIFCFGIWILIDKTSFVSFVGLAFVPLQIWSKVLAISGIFTMGIALLGCVGALKELRCLLGLYF
GMLLLLFATQITLGILISTQRAQLERSLRDVVEKTIQKYGTNPEETAAEESWDYVQFQLRCCGWHYPQDWFQVLILRGNGSEAHR
VPCSCYNLSATNDSTILDKVILPQLSRLGHLARSRHSADICAVPAESHIYREGCAQGLQKWLHNNLISIVGICLGVGLLELGFMTLSIF
LCRNLDHVYNRLARYR

References

1. Scarfò, I. *et al.* Anti-CD37 chimeric antigen receptor T cells are active against B and T cell lymphomas. *Blood.* 2018 Oct; 132(14):1495-1506
2. Witkowska, M. *et al.* Investigational therapies targeting CD37 for the treatment of B-cell lymphoid malignancies. *Expert Opin Investig Drugs*. 2018 Feb;27(2):171-177

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Troubleshooting Guide
Visit bpsbioscience.com/cell-line-faq for detailed troubleshooting instructions. For all further questions, please email support@bpsbioscience.com.

Related Products

Products	*Catalog #*	*Size*
CS1/SLAMF7/CD319 Recombinant Cell Line	79608	2 vials
CD19/CHO Recombinant Cell Line	79561	2 vials
CD22/CHO Recombinant Cell Line	79557	2 vials
BCMA/CHO Recombinant Cell Line	79500	2 vials