Description

LAIR1 CHO Cell Line is a clonal CHO cell line stably expressing full-length human LAIR1 (leukocyte-associated immunoglobulin-like receptor 1) (NM_002287.6). Surface expression of LAIR1 was confirmed by flow cytometry. This stable clonal cell line was selected for high levels of LAIR1 expression compared to the parental CHO-K1 cell line.

Background

LAIR1, also known as leukocyte-associated immunoglobulin-like receptor 1 or CD305 (cluster of differentiation 305) is an inhibitory receptor present in NK (natural killer) cells, T and B cells. In NK cells it binds to SHP-1 (Src homology 2 domain-containing protein tyrosine phosphatase 1) and SHP-2 phosphatases, resulting in inhibition of NK-mediated cytotoxicity. LAIR1 contributes to $CD8^+$ T- cell exhaustion in cancer, by binding to collagen and suppressing T cell activity via SHP-1. The increased expression of collagen and LAIR1 in lung cancer patients is linked to a poor prognostic. In addition, patients that develop resistance to PD-1 (programmed death 1) inhibitor treatment present LAIR1 expression. The use of inhibitors that prevent the binding of LAIR1 to its ligand has been shown to increase anti-tumor immunity. Further studies are needed to fully elucidate the role of LAIR1 in cancer and develop efficacious therapies targeting LAIR1 alone or in combination with PD-1 inhibitors.

Application(s)

- Screen and validate antibodies against LAIR1 for drug discovery and research.
- Perform binding assays to screen for potential LAIR1 ligands.

Materials Provided

Components	Format
2 vials of frozen cells	Each vial contains >1 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 3J	BPS Bioscience #79974

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, the use of validated and optimized media from BPS Bioscience is *highly recommended*. 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 to maintain selective pressure on the cell population expressing the gene of interest.

Cells should be grown at 37˚C with 5% CO_2. BPS Bioscience's cell lines are stable for at least 10 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 3J (BPS Bioscience #79974):

F-12K medium supplemented with 10% FBS, 1% Penicillin/Streptomycin plus 5 µg/ml of Puromycin.

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.
   Note: 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.

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 48-72 hours of culture, check for cell attachment and viability. Change medium to fresh Thaw Medium 3 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 reach 100% confluence. Switch to Growth Medium 3J for passage.

Cell Passage

1. Aspirate the medium, wash the cells with phosphate buffered saline (PBS) without Ca^{2+}/Mg^{2+}, and detach the cells from the culture vessel with 0.25% Trypsin/EDTA following volumes recommended for the cell vessel being used.

2. Once the cells have detached, add Growth Medium 3J and transfer to a tube.

3. Spin down cells at 300 *x g* for 5 minutes, remove the medium and resuspend the cells in Growth Medium 3J.

4. Seed into new culture vessels at the recommended sub-cultivation ratio of 1:6 to 1:8 weekly or twice per week.

Cell Freezing

1. After detachment, spin down the cells at 300 *x g* for 5 minutes.

2. Remove the medium and resuspend the cells in 4°C Cell Freezing Medium (BPS Bioscience #79796) at ~2 x 10^6 cells/ml.

3. Dispense 1 ml of cell suspension into each cryogenic vial. Place the vials in an insulated container for slow cooling and store at -80°C overnight.

4. Transfer the vials to liquid nitrogen the next day for long term 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

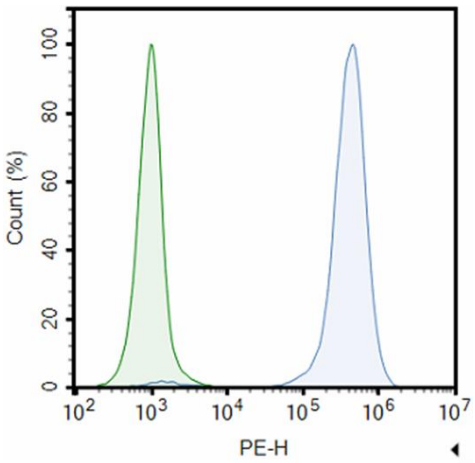

Figure 1: Cell surface expression of LAIR1 in LAIR1 CHO Cell Line.
LAIR1 CHO cell line and control parental CHO-K1 were stained with PE-conjugated anti-LAIR1 Antibody (Thermo Fisher #12-3059-42) and the expression of human LAIR1 was analyzed by flow cytometry. Parental CHO cells (green) were compared to LAIR1 CHO Cells (blue).

Data shown is representative. For lot-specific information, please contact BPS Bioscience, Inc. at support@bpsbioscience.com.

Sequence

MSPHPTALLGLVLCLAQTIHTQEEDLPRPSISAEPGTVIPLGSHVTFVCRGPVGVQTFRLERDSRSTYNDTEDVSQASPSESEARFRI
DSVREGNAGLYRCIYYKPPKWSEQSDYLELLVKESSGGPDSPDTEPGSSAGPTQRPSDNSHNEHAPASQGLKAEHLYILIGVSVVF
LFCLLLLVLFCLHRQNQIKQGPPRSKDEEQKPQQRPDLAVDVLERTADKATVNGLPEKDRETDTSALAAGSSQEVTYAQLDHWAL
TQRTARAVSPQSTKPMAESITYAAVARH

References

Meyaard L., *et al.*, 1997 *Immunity* 7(2): 283-90.
Aung T., *et al.*, 2023 *Cancer Res Commun.* 3(3): 471-482.

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Visit bpsbioscience.com/license for the label license and other key information about this product.

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*
LAIR1 Lentivirus	78903	500 µl x 2
LAIR1, Avi-His-Tag HiP™ Recombinant	79483	100 µg
NKp46 Lentivirus	78717	500 µl x 2
NKp46, Fc-fusion (IgG1), Avi-Tag, Biotin-Labeled Recombinant	100466	25 µg/50 µg