

## Description

Recombinant clonal stable CHO cell line constitutively expressing full length human CD38 protein (also known as ADPRC1, Genbank accession #NM\_001775) and human BCMA protein (B-Cell Maturation Antigen or CD269, GenBank accession #NM\_001192). This cell line was derived from our CHO-K1 Luciferase cells (BPS Bioscience, #79725), therefore it also constitutively expresses the firefly luciferase reporter. Surface expression of CD38 and BCMA was confirmed by flow cytometry.

## Background

The CD38 protein is a dimeric, non-lineage-restricted, type II transmembrane glycoprotein that synthesizes and hydrolyzes the second messengers cyclic ADP-ribose and NADP. CD38 is highly expressed by lymphoid and myeloid cells, particularly plasma cells. Increased CD38 expression on chronic lymphocytic leukemia (CLL) cells is linked to aggressive disease features and poor clinical outcome. CD38 is used as a prognostic marker for patients with CLL and multiple myeloma (MM), and is an ideal target for immunotherapy in CLL and MM.

B-Cell Maturation Antigen (BCMA), also known as CD269, is a cell surface receptor of the TNF receptor superfamily that recognizes B-Cell Activating Factor (BAFF). BCMA is preferentially expressed on mature B-lymphocytes and Multiple Myeloma (MM) cells. BCMA is a highly attractive target antigen for immunotherapy, not only because of its restricted expression in nonmalignant tissue, but also due to its almost universal expression on MM cells. Pre-clinical studies using CAR (Chimeric Antigen Receptor) T cells targeting BCMA have demonstrated anti-MM activity, and in 2017, the FDA granted BCMA CAR T-Cell immunotherapy the breakthrough designation in treating Multiple Myeloma.

## Application

1. Useful for validation of anti-CD38 and anti-BCMA bispecific antibody.
2. Useful as CD38- and/or BCMA-expressing target cells in co-culture assay with CD38- and/or BCMA-CAR-T cells, for both CD38/BCMA-specific cell killing assay and cytokine production assay.
3. Useful for screening and validating antibodies against CD38 or BCMA and anti CD38 or anti-BCMA CAR-T for immunotherapy research and drug discovery.

## Materials Provided

Components	Format
2 vials of frozen cells	2 x 10 <sup>6</sup> cells in 1 ml of 10% DMSO

## Host Cell

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

## Mycoplasma Testing

The cell line has been screened using the MycoAlert™ Mycoplasma Detection kit (Lonza, #LT07-218) to confirm the absence of Mycoplasma species.

## Materials Required but Not Supplied



These materials are not supplied with this cell line but are necessary for cell culture and cellular assays. BPS Bioscience reagents systems 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.

*Materials Required for Cell Culture*

Name	Ordering Information
Thaw Medium 3	<a href="#">BPS Bioscience #60186</a>
Growth Medium 3K	<a href="#">BPS Bioscience #78041</a>

*Materials Required for Cellular Assay*

Name	Ordering Information
ONE-Step™ Luciferase Assay System 96-well tissue culture-treated white clear-bottom assay plate Luminometer	<a href="#">BPS Bioscience #60690</a>

**Storage Conditions**

Cells will arrive upon 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](mailto: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. To formulate a comparable but not BPS validated media, formulation components can be found below.



Note: Thaw Media does *not* contain selective antibiotics. However, Growth Media *does* contain selective antibiotics, which are used for maintaining cell lines over many passages. Cells should be grown at 37°C with 5% CO<sub>2</sub> using Growth Medium 3K.

*Media Required for Cell Culture*

*Thaw Medium 3 (BPS Bioscience, #60186):*

Ham's F-12 medium (Hyclone #SH30526.01) supplemented with 10% FBS (Thermo Fisher, #26140079), 1% Penicillin/Streptomycin (Hyclone #SV30010.01).

*Growth Medium 3K (BPS Bioscience #78041):*

Thaw medium 3 (BPS Bioscience, #60186) plus 1000 µg/ml Geneticin (Thermo Fisher, #11811031), 5 µg/ml Puromycin (InvivoGen, #ant-pr-1) and 500 µg/ml of Hygromycin B (Thermo Fisher, #10687010) to ensure recombinant expression.

*Assay Medium:* Thaw Medium 3 (BPS Bioscience, #60186)

**Cell Culture Protocol***Cell Thawing*

1. To thaw the cells, it is recommended to quickly thaw the frozen cells from liquid nitrogen in a 37°C water-bath, then transfer the entire contents of the vial to a tube containing 10 ml of Thaw Medium 3 (**no Geneticin, Puromycin or Hygromycin B**).
2. Spin down the cells, remove supernatant and resuspend cells in 5 ml of pre-warmed Thaw Medium 3 (**no Geneticin, Puromycin or Hygromycin B**).

3. Transfer the resuspended cells to a T25 flask and incubate at 37°C in a 5% CO<sub>2</sub> incubator.
4. After 24 hours of culture, add an additional ~3 ml of Thaw Medium 3 (**no Geneticin, Puromycin or Hygromycin B**) and continue growing culture in a CO<sub>2</sub> incubator at 37°C until the cells are ready to be split.
5. Cells should be split before they are fully confluent. At first passage, switch to Growth Medium 3K (**contains Geneticin, Puromycin and Hygromycin B**).

#### Cell Passage

1. To passage the cells, remove the medium, rinse cells with phosphate buffered saline (PBS), and detach cells from culture vessel with 0.25% Trypsin/EDTA.
2. After detachment, add Growth Medium 3K (**contains Geneticin, Puromycin and Hygromycin B**) and transfer to a tube, spin down cells, resuspend cells in Growth Medium 3K and seed appropriate aliquots of cell suspension into new culture vessels. Sub cultivation ration: about 1:20 every 5 days.

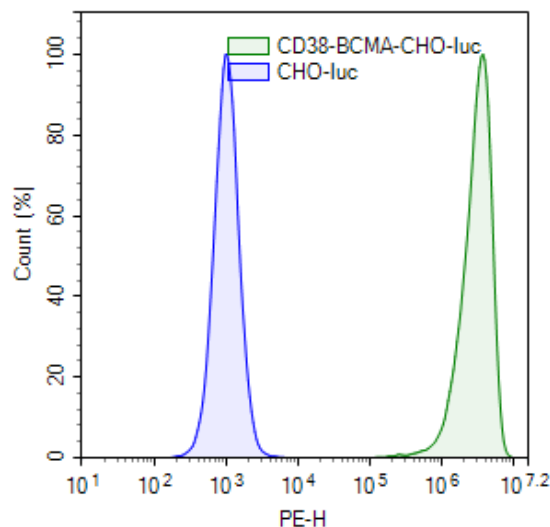
#### Cell Freezing

1. To freeze down the cells, remove the medium, rinse cells with phosphate buffered saline (PBS), and detach cells from culture vessel with 0.25% Trypsin/EDTA.
2. After detachment, add Thaw Medium 3 (**no Geneticin, Puromycin or Hygromycin B**) and count the cells, then transfer to a tube, spin down cells, and resuspend in 4°C Freezing Medium (BPS Bioscience, #79796) at ~2 x 10<sup>6</sup> cells/ml.
3. Dispense 1 ml of cell aliquots into cryogenic vials. Place vials in an insulated container for slow cooling and store at -80°C overnight.
4. Transfer to liquid nitrogen the next day for storage.



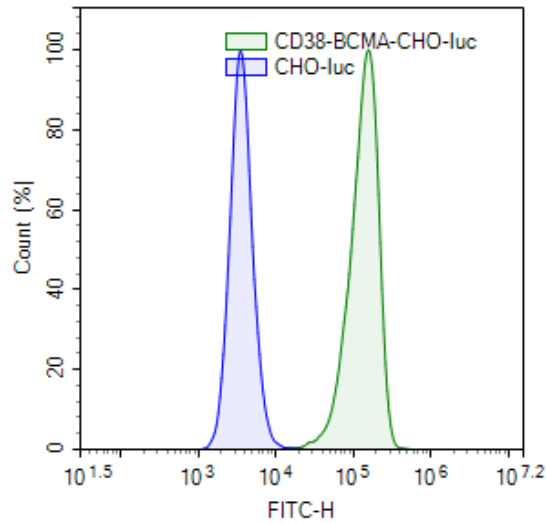
Note: It is recommended to expand the cells and freeze down at least 10 vials of cells at an early passage for future use.

#### Validation Data



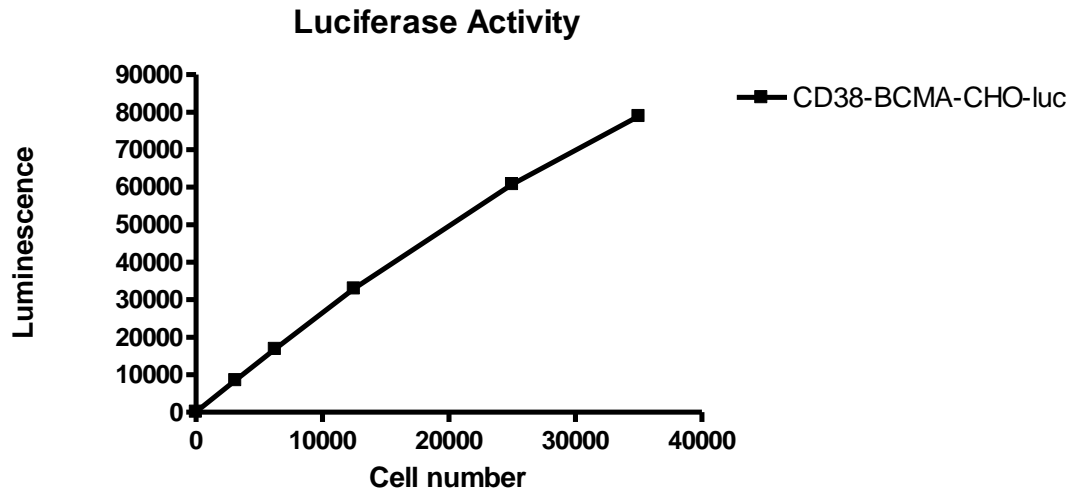
**Figure 1. Expression of CD38 validated by flow cytometry.**

Flow cytometry using PE-conjugated anti-human CD38 antibody (Biolegend, #303506) to detect CD38 surface expression on either the CD38 / BCMA / Firefly Luciferase - CHO Recombinant Cell Line (green) or parental CHO-luc cells (blue).



**Figure 2. Expression of BCMA validated by flow cytometry.**

Flow cytometry using FITC-conjugated anti-human BCMA antibody (R&D Systems, #FAB1931G) to detect BCMA surface expression on either the CD38 / BCMA / Firefly Luciferase - CHO Recombinant Cell Line (green) or parental CHO-luc cells (blue).



**Figure 3. Luciferase activity of CD38 / BCMA / Firefly Luciferase - CHO Recombinant Cells.**

CD38 / BCMA / Firefly Luciferase - CHO Recombinant Cells were seeded in a 96-well plate at various densities. After four hours, luciferase activity under CMV promoter was measured using the ONE-Step luciferase assay system (BPS Bioscience, #60690).

**Sequence**

Human CD38 sequence (accession number NM\_001775)

MANCEFSPVSGDKPCCRLSRRALCLGVSILVLLVVLAVVVPRWRQQWSGPGTTKRFPEVTLARCVKYTEIHPEMRHVDCQS  
VWDAFKGAFISKHPCNITEEDYQPLMKLGTQTVPCNKILLWSRIKDLAHQFTQVQRDMFTLEDTLGLYADDLWCGEFNTSKIN  
YQSCPDRKDCSNNPVSVFWKTVSRRFAEAACDVVHVMLNGSRSKIFDKNSTFGSVEVHNLQPEKVQTLAWVIHGGREDSR  
DLCQDPTIKELESIISKRNIFQFCKNIYRPDKFLQCVKNPEDSSCTSEI

Human BCMA sequence (accession number NM\_001192)

MLQMAGQCSQNEYFDSLLHACIPCQLRCSNTPPLTCQRYCNASVTNSVKGTNAILWTCLGLSLIISLAVFVLMFLLRKINSEPLKD  
EFKNTGSGLLGMANIDLEKSRTGDEIILPRGLETVVEECTCEDCIKSKPKVSDHCFPLPAMEEGATILVTTKTNDYCKSLPAALSAT  
EIEKSISAR

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**Troubleshooting Guide**

Visit [bpsbioscience.com/cell-line-faq](https://bpsbioscience.com/cell-line-faq) for detailed troubleshooting instructions. For all further questions, please email [support@bpsbioscience.com](mailto:support@bpsbioscience.com).

**Related Products**

<i>Products</i>	<i>Catalog #</i>	<i>Size</i>
BCMA-CHO Recombinant Cell Line (High Expression)	79500-H	2 vials
BCMA-CHO Recombinant Cell Line (Low Expression)	79500-L	2 vials
BCMA/Luciferase-CHO Recombinant Cell line	79724	2 vials
CD38-CHO Recombinant Cell Line (Various Expression)	79615	2 vials
Firefly Luciferase - CHO Recombinant Cell Line	79725	2 vials
Human BCMA (CD269)	90105	Various Sizes
Human BCMA, Fc-Fusion, Avi-Tag HiP™	79465	100 µg
Human BCMA, Fc-fusion (IgG1), Avi-Tag, Biotin-Labeled HiP™	79467	50 µg
Anti-BCMA Antibody	100173	Various Sizes
CD38 Inhibitor Screening Assay Kit (Cyclase Activity)	71275	96 reactions
CD38 Inhibitor Screening Assay Kit (Hydrolase Activity)	79287	96 reactions
CD38, Avi-His-Tag	100346	100 µg
CD38, His-Tag (Human), HiP™	71277	100ug
CD38-APC, His-Tag	71883	100 ug