**Description**
Recombinant stable MM.1S cell line constitutively expressing a firefly luciferase and enhanced GFP (eGFP) cassette driven by a CMV promoter.

**Background**
MM.1S are multiple myeloma human B lymphoblasts [1]. The parent cell line MM.1 was established from the peripheral blood of a multiple myeloma patient who had become resistant to steroid-based therapy. MM.1S cells are sensitive to dexamethasone.

The cells were infected with an integrating Firefly luciferase-eGFP lentivirus (BPS Bioscience #79980-G) and cloned by limited dilution to get a monoclonal population. The cells stably express both the Firefly luciferase and enhanced GFP genes, making these cells an excellent tool to measure specific killing by CAR-T or NK cells.

**Application**

1. Use as a control for killing assays
2. Suitable as a B-cell target for CAR-T or CAR-NK cells for optimizing CAR design

**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**
MM.1S human B lymphoblasts, suspension

**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 2 | BPS Bioscience #60184 |
| Growth Medium 2Q | BPS Bioscience #78380 |

**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 2 (BPS Bioscience, #60184):*
RPMI 1640 medium supplemented with 10% FBS, 1% Penicillin/Streptomycin

*Growth Medium 2Q (BPS Bioscience, #78380):*
RPMI 1640 medium supplemented with 10% FBS, 1% Penicillin/Streptomycin plus 500 µg/ml Geneticin

**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 2 **(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 2 **(no Geneticin)**.
3. Transfer the resuspended cells to a T25 flask and incubate at 37°C in a 5% $CO_2$ incubator.
4. After 24 hours of culture, check for cell viability. For a T25 flask, add 3-4 ml of Thaw Medium 2 **(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 reach a density of 2 x $10^6$ cells/ml. At first passage and subsequent passages, use Growth Medium 2Q **(contains Geneticin)**.

*Cell Passage*

Dilute the cell suspension into new culture vessels at no less than 0.2 x $10^6$ cells/ml of Growth Medium 2Q **(contains Geneticin)**. The sub-cultivation ratio should be calculated so that cells are maintained between 0.2 x $10^6$ cells/ml and 2 x $10^6$ cells/ml.

*Cell Freezing*

1. Spin down the cells at 300 x g for 5 minutes, remove the medium and resuspend the cell pellet in 4°C Freezing Medium (BPS Bioscience #79796, or 10% DMSO + 90% FBS) at a density of ~2 x $10^6$ cells/ml.
2. 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.
3. 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.

**Validation Data**

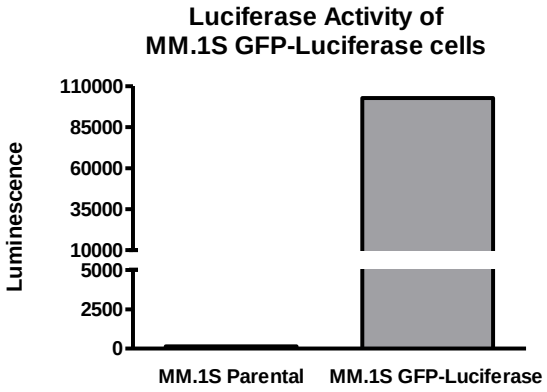


*Figure 1: Luciferase activity in GFP/Firefly Luciferase MM.1S Cell Line.* GFP/Firefly Luciferase MM.1S cells and parental MM.1S cells were seeded in a 96-well plate at a density of 25,000 cells/well. Luciferase activity was measured using the ONE-Step luciferase assay system (BPS Bioscience #60690).

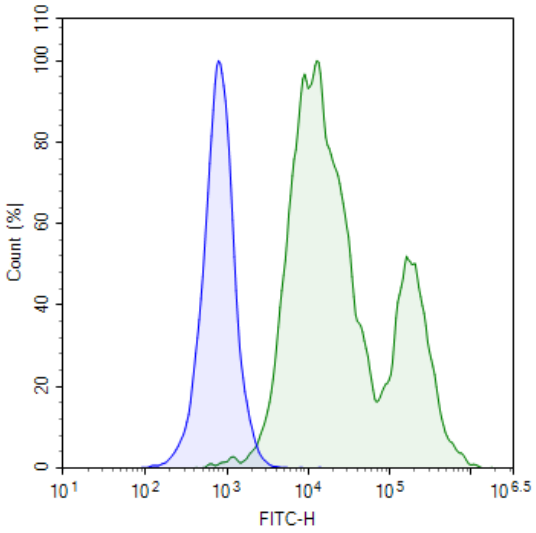


*Figure 2. Expression of eGFP in the GFP/Firefly Luciferase MM.1S Cell line.* 20,000 GFP/Firefly Luciferase MM.1S cells and parental MM.1S cells were analyzed by flow cytometry without any staining. The MM.1S Parental cells are shown in blue, and the GFP/Firefly Luciferase MM.1S cells are shown in green.

**References**

Greenstein S, *et al*. Characterization of the MM.1 human multiple myeloma (MM) cell lines. *Exp. Hematol.* 2003; **31**: 271-282.

**License Disclosure**

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* |
|---|---|---|
| Firefly Luciferase-eGFP Lentivirus (G418) or (Puromycin) | 79980 | 500 µl x 2 |
| Enhanced GFP Lentivirus (Puromycin) | 79979 | 500 µl x 2 |
| Firefly Luciferase Lentivirus (G418, Hygromycin and Puromycin) | 79692 | 500 µl x 2 |
| RFP Lentivirus | 78347 | 500 µl x 2 |
| Firefly Luciferase Raji Cell Line | 78622 | 2 vials |
| Firefly Luciferase K562 Cell Line | 78621 | 2 vials |
| Firefly Luciferase - CHO Recombinant Cell Line | 79725 | 2 vials |
| Firefly Luciferase – RPMI 8226 Recombinant Cell Line | 79834 | 2 vials |
| Firefly Luciferase Molm13 Cell Line | 78372 | 2 vials |
| Firefly Luciferase Jurkat Cell Line | 78373 | 2 vials |