Description

Recombinant THP-1 cells constitutively expressing the firefly (*Photinus pyralis*) luciferase gene under the control of a CMV promoter.

Background

THP-1 is a human monocytic leukemia cell line, derived from the peripheral blood of a patient with acute monocytic leukemia. THP-1 cells have Fc and C3b receptors and lack surface and cytoplasmic immunoglobulins. The THP-1 cell line provides a valuable model for studying the mechanisms involved in macrophage differentiation and exploring the regulation of macrophage-specific genes. The use of a reporter such as luciferase allows for an easy ready out in several assays, with the signal generated by the firefly luciferase being proportional to the cell number.

Application

- Use as an internal control in CAR-T co-culture killing assays.
- *In vitro* and *in vivo* bioluminescence imaging.

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

THP-1, Human Monocytic Leukemia, 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 2R	BPS Bioscience #78411

Materials Required for Cellular Assay

Name	Ordering Information
ONE-Step™ Luciferase Assay System	BPS Bioscience #60690
Luminometer	

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 2 (BPS Bioscience #60184):

RPMI-1640 medium supplemented with 10% FBS (Fetal bovine Serum), 1% Penicillin/Streptomycin.

Growth Medium 2R (BPS Bioscience #78411):

RPMI-1640 medium supplemented with 10% FBS (Fetal bovine Serum), 1% Penicillin/Streptomycin, plus 400 µg/ml Hygromycin B.

Cell Culture Protocol

Cell Thawing

1. Retrieve a cell vial from liquid nitrogen storage. Keep on dry ice until ready to thaw.

2. When ready to thaw, swirl the vial of frozen cells for approximately 60 seconds in a 37°C water bath. Once cells are thawed (it may be slightly faster or slower than 60 seconds), quickly transfer the entire content of the vial to an empty 50 ml conical tube.

   Note: Leaving the cells in the water bath at 37°C for too long will result in rapid loss of viability.

3. Using a 10 ml serological pipette, slowly add 10 ml of pre-warmed Thaw Medium 2 to the conical tube containing the cells. Thaw Medium 2 should be added dropwise while gently rocking the conical tube to permit gentle mixing and avoid osmotic shock.

4. 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.

5. Transfer the resuspended cells to a T25 flask or T75 flask and incubate at 37°C in a 5% CO_2 incubator.

6. After 24 hours of culture, check for cell viability. Change medium to fresh Thaw Medium and continue growing in a 5% CO_2 incubator at 37°C until the cells are ready to passage.

7. Cells should be passaged once density reach 2 x 10^6/ml. At first passage and subsequent passages, use Growth Medium 2R**.**

Cell Passage

Dilute the cell suspension into new culture vessels before they reach a density of 2 x 10^6 cells/ml, but no less than 0.2 x 10^6 cells/ml of Growth Medium 2R. The sub-cultivation ratio should maintain the cells 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 Cell Freezing Medium (BPS Bioscience #79796) at a density of ~2 x 10^6 cells/ml.

2. 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.

3. 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

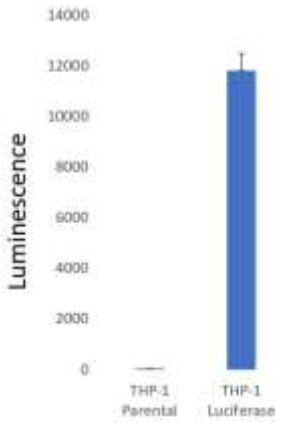

Figure 1. Luciferase activity in the Firefly Luciferase THP-1 Cell Line.
Firefly Luciferase THP-1 cells or parental THP-1 cells were seeded in a 96-well plate at a density of 1 x 10^4 cells/well, and luciferase activity was measured with the ONE-Step™ luciferase Assay System.

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

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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*
Firefly Luciferase HL-60 Cell Line	78410	2 vials
Firefly Luciferase Jurkat Cell Line	78373	2 vials
Firefly Luciferase K562 Cell Line	78621	2 vials
Firefly Luciferase Raji Cell Line	78622	2 vials
Firefly Luciferase RPMI 8226 Cell Line	78834	2 vials
GFP/Firefly Luciferase MM.1S Cell Line	78376	2 vials