

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 signal generated by the firefly luciferase is proportional to cell numbers.

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 2×10^6 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, 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% CO₂. 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 (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. 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 Hygromycin**).
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 Hygromycin**).
3. Transfer the resuspended cells to a T25 flask or T75 flask and incubate at 37°C in a 5% CO₂ incubator.
4. After 24 hours of culture, check for cell viability. Change medium to fresh Thaw Medium 2 (**no Hygromycin**), and continue growing in a 5% CO₂ incubator at 37°C until the cells are ready to passage.
5. Cells should be passaged once density reach 2 x 10⁶/ml. At first passage and subsequent passages, use Growth Medium 2R (**contains Hygromycin**)

Cell Passage

Dilute the cell suspension into new culture vessels before they reach a density of 2 x 10⁶ cells/ml, at no less than 0.2 x 10⁶ cells/ml of Growth Medium 2R (**contains Hygromycin**). The sub-cultivation ratio should maintain the cells between 0.2 x 10⁶ cells/ml and 2 x 10⁶ 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 10⁶ 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.

A. Validation Data

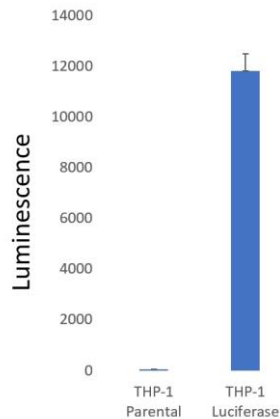


Figure 1. Luciferase activity in the Firefly Luciferase THP-1 Cell Line. Firefly Luciferase THP-1 cells or parental THP-1 cells were seeded in a 96-well plate at a density of 1×10^4 cells/well, and luciferase activity was measured using the ONE-Step™ Luciferase assay system (BPS Bioscience #60690)

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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

<i>Products</i>	<i>Catalog #</i>	<i>Size</i>
Firefly Luciferase HL-60 Cell Line	78410	2 vials
Firefly Luciferase-eGFP Lentivirus (G418) or (Puromycin)	79980	500 µl x 2
Negative Control eGFP Reporter Lentivirus	79927	500 µl x 2
Firefly Luciferase Lentivirus (G418, Hygromycin and Puromycin)	79692	500 µl x 2
Negative Control Luciferase Lentivirus	79578	500 µl x 2
Firefly Luciferase Jurkat Cell Line	78373	2 vials
Firefly Luciferase K562 Cell Line	78621	2 vials
Firefly Luciferase MC38 Cell Line	78383	2 vials
Firefly Luciferase Molm13 Cell Line	78372	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