Data Sheet

LuM1 High-Metastatic Murine Cell Line

Cancer Cell Line

Catalogue number SCC654

Pack Size: ≥ 1x10^6 viable cells/vial

Store in liquid nitrogen.

FOR RESEARCH USE ONLY

Not for use in diagnostic procedures. Not for Human or Animal Consumption.

Background

Tumor metastasis is one of the most life-threatening events in cancer and often leads to inevitable cancer growth that cannot be effectively treated. Treatment options after metastasis often involve slowing tumor growth or relieving harsh symptoms. The process of metastasis, known as the metastatic cascade, involves a series of events in which cancer cells break away from the primary tumor and begin growing in other tissues. This process proceeds by cancer cells moving through blood vessels or lymph nodes and spreading via the circulatory system to eventually colonize other more distant tissues.[1] The importance of understanding metastasis remains continually relevant and requires a variety of models for understanding the underlying mechanisms. LuM1 (SCC654) and NM11 (SCC655) were developed together to provide two similar cell models with differing metastatic potentials. NM11 was selected as low-metastatic cell line and is derived from murine colon adenocarcinoma while LuM1 was developed through repeated tumor transplantation until metastatic potential of the cells had changed visibly through lung tumor nodule formation.[1]

The LuM1 and NM11 cell lines have been utilized for metastasis, migration, and invasion assays. LuM1 and NM11 have been useful in understanding Matrix Metalloproteinase (MMP) protein expression and their relation to metastatic potential and tumor progression.[2,3]

Source

Non-GMO

Derived from mouse colon adenocarcinoma that was transplanted into a BALB/c mouse. Resulting tumor was repeatedly transplanted into new mice until metastatic potential of the tumors were visible through lung nodule formation.

Short Tandem Repeat

M18-3: 19	M6-7: 12	M19-2: 13	M1-2: 17	M7-1: 25.2	M3-2: 14
M8-1: 13	M12-1: 16	M5-5: 14	M1-1: 14, 15	M2-1: 16, 17	M11-2: 16, 17
MX-1: 25,26	M13-1: 16.2, 17.2	M4-2: 21.3, 22.3	M15-3: 21.3, 22.3	M6-4: 18, 19, 20	M17-2: 15, 16, 17

Quality Control Testing

- LuM1 High-Metastatic Murine Cells are verified to be of mouse origin and negative for rat, human, Chinese hamster, Golden Syrian hamster, and nonhuman primate interspecies contamination, as assessed by a Contamination Clear panel by Charles River Animal Diagnostic Services.
- Cells tested negative for infectious diseases against a Mouse Essential CLEAR panel by Charles River Animal Diagnostic Services.
- Cells tested negative for mycoplasma.

Storage and Handling

SCC654 LuM1 cells should be stored in liquid nitrogen until use. The cells can be cultured for at least 10 passages after initial thawing without significantly affecting the cell marker expression and functionality.

Representative Data

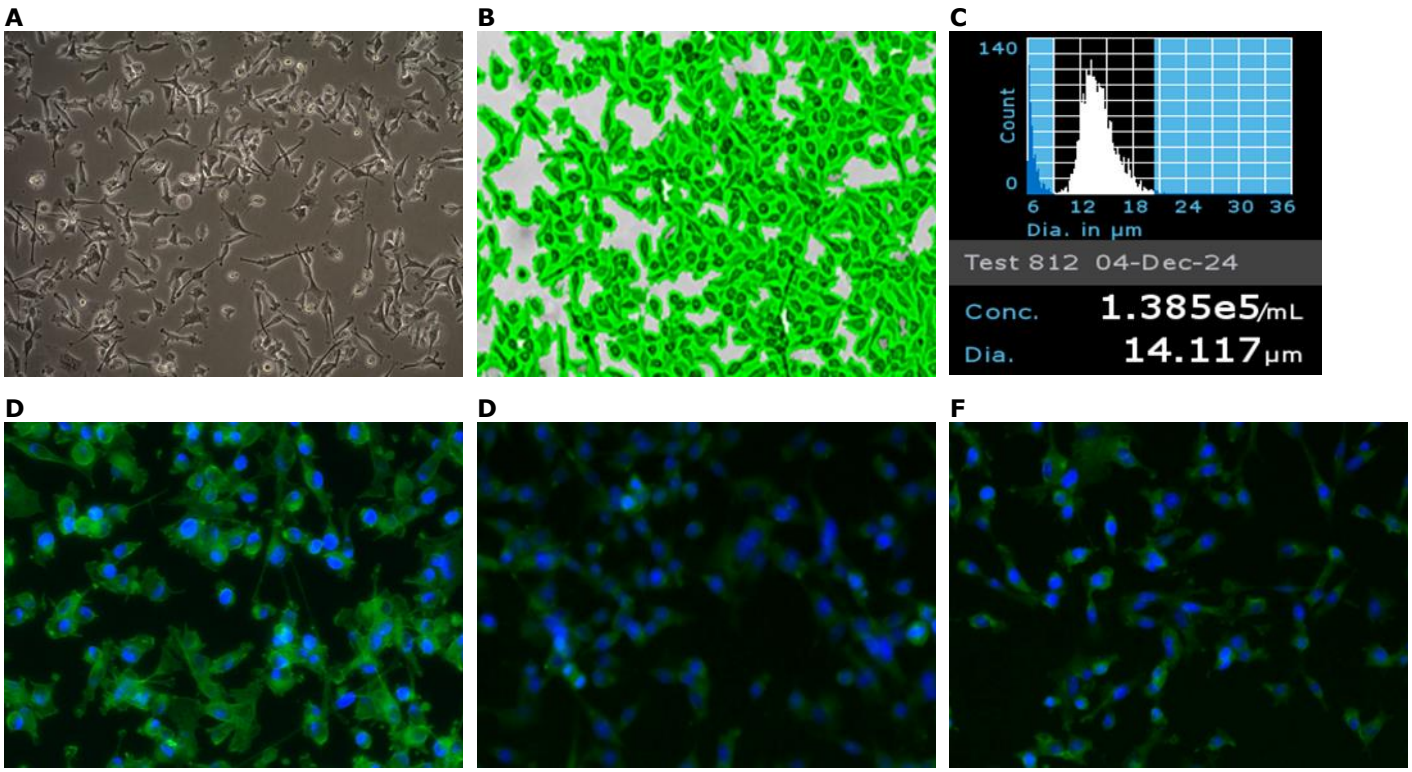

Figure 1. (**A**) Bright-field images of LuM1 cells one day after thaw in a T75 flask (4X magnification). (**B**) Cell confluency was assessed throughout the culture using the MilliCell® Digital Cell Imager (MDCI10000). (**C**) Cell counting was performed using the Scepter™ 3.0 Handheld Automated Cell Counter using 60 µm sensors (PHCC360KIT). (**D**) LuM1 cells stained with Phalloidin-Atto-488 (49409). (**E**) LuM1 cells express MMP-3 (Thermo-Fisher 17873-1-AP). (**F**) LuM1 cells express MMP-9 (SAB5700633).

Protocols

Thawing the Cells

1. Do not thaw the cells until the recommended medium is on hand. Cells can grow on standard tissue culture ware surfaces without any additional coating.
2. LuM1 cells are thawed and expanded in LuM1 Expansion Medium comprising of RPMI (R8758) containing 10% FBS (ES-009-B), 2 mM L-Glutamine (G7513) and Penicillin/Streptomycin (P4333).
3. Remove the vial of frozen LuM1 cells from liquid nitrogen and incubate in a 37 °C water bath. Closely monitor until the cells are completely thawed. Maximum cell viability is dependent on the rapid and complete thawing of frozen cells.

   Important: Do not vortex the cells.
4. As soon as the cells are completely thawed, disinfect the outside of the vial with 70% ethanol. Proceed immediately to the next step.
5. In a laminar flow hood, use a 1- or 2-mL pipette to transfer the cells to a sterile 15 mL conical tube. Be careful not to introduce any bubbles during the transfer process.
6. Using a 10 mL pipette, slowly add dropwise 9 mL of LuM1 Expansion Medium (Step 1 above) to the 15 mL conical tube.

   Important: Do not add the entire volume of media all at once to the cells. This may result in decreased cell viability due to osmotic shock.
7. Gently mix the cell suspension by slowly pipetting up and down twice. Be careful not to introduce any bubbles.

   Important: Do not vortex the cells.
8. Centrifuge the tube at 300 x *g* for 2-3 minutes to pellet the cells.
9. Decant as much of the supernatant as possible. Steps 5-8 are necessary to remove residual cryopreservative (DMSO).
10. Resuspend the cells in 15 mL of LuM1 Expansion Medium.
11. Transfer the cell mixture to a T75 tissue culture flask.
12. Incubate the cells at 37 °C in a humidified incubator with 5% CO_2.

Subculturing the Cells

1. LuM1 cells can be passaged at ~80-85% confluency.
2. Carefully remove the medium from the tissue culture flask containing the 80-85% confluent layer of LuM1 cells.
3. Rinse the flask with 10 mL 1X sterile PBS (TMS-012-A). Aspirate after the rinse.
4. Apply 5-7 mL of pre-warmed Accutase® (A6964) and incubate in a 37 °C incubator for 5 minutes.
5. Inspect the flask and ensure the complete detachment of cells by gently tapping the side of the flask with the palm of your hand.
6. Add 5-7 mL of LuM1 Expansion Medium to the plate.
7. Gently rotate the flask to mix the cell suspension. Transfer the dissociated cells to a 15 mL conical tube.
8. Centrifuge the tube at 300 x *g* for 3-5 minutes to pellet the cells.
9. Discard the supernatant, then loosen the cell pellet by tapping the tip of the tube with a finger.
10. Apply 2-5 mL of LuM1 cell medium to the conical tube and resuspend the cells thoroughly. Large cell clumps may be broken up by gentle trituration.

    Important: Do not vortex the cells.
11. Count the number of cells using a hemocytometer or a Scepter™ 3.0 handheld automated cell counter.
12. Plate the cells to the desired density. Typical split ratio is 1:10.

Cryopreservation of the Cells

SCC654 LuM1 cells may be frozen in LuM1 Expansion Medium supplemented with 10% DMSO using a Nalgene® slow freeze Mr. Frosty® container.

Related Products

SCC655, NM11 Low-Metastatic Murine Cell Line

References

1. Sakata K, Kozaki K, Iida K, Tanaka R, Yamagata S, Utsumi KR, Saga S, Shimizu S, Matsuyama M. 1996. Establishment and characterization of high- and low-lung-metastatic cell lines derived from murine colon adenocarcinoma 26 tumor line. Japanese journal of cancer research : Gann. 87(1):78–85. doi: https://doi.org/10.1111/j.1349-7006.1996.tb00203.x.
2. Taha EA, Chiharu Sogawa, Yuka Okusha, Kawai H, May Wathone Oo, Abdellatif Elseoudi, Lu Y, Hitoshi Nagatsuka, Kubota S, Ayano Satoh, et al. 2020. Knockout of MMP3 Weakens Solid Tumor Organoids and Cancer Extracellular Vesicles. Cancers. 12(5):1260–1260. doi: https://doi.org/10.3390/cancers12051260.
3. Koyama Y, H. Naruo, Y. Yoshitomi, S. Munesue, S. Kiyono, Kusano Y, Hashimoto K, Yokoi T, Nakanishi H, Shimizu S, et al. 2008. Matrix Metalloproteinase-9 Associated with Heparan Sulphate Chains of GPI-Anchored Cell Surface Proteoglycans Mediates Motility of Murine Colon Adenocarcinoma Cells. The Journal of Biochemistry. 143(5):581–592. doi: https://doi.org/10.1093/jb/mvn006. [accessed 2024 Nov 15].

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