Data Sheet

MC38 Murine Colon Adenocarcinoma

Cancer Cell Line

SCC172

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

Adenocarcinoma is responsible for an estimated 96% of colorectal cancers. Adenocarcinoma affects the glandular epithelial cells, and risk factors include smoking, obesity, high alcohol consumption, and poor diet. Inflammatory bowel disease increases risk for adenocarcinoma of the large intestine.[1] A significant indication for colorectal cancer is the presence of colon polyps, which can take many years to become cancerous. This makes early screening particularly important for preventing cancer progression.

Adenomas are benign tumor polyps that initiate in the glandular epithelial cells and progressively develop molecular abnormalities until they eventually become metastatic and invasive cancers. Surgical removal is common for treating pre-malignant adenomas as well as advanced metastatic adenocarcinomas. Survival outlook is determined by disease progression at the time of diagnosis. Patients with metastasized colorectal adenocarcinoma have poor survival outlook with a 5-year survival rate lower than 10%.[1]

The cell line MC38 is relevant to the continued need to identify and analyze colorectal adenocarcinoma progression, enabling analysis of molecular alterations present in adenocarcinomas and investigation into how these mutations drive tumor progression. MC38 is an established and well-characterized cellular model for colorectal cancer, exhibiting a rapid growth rate and expressing the colon epithelium markers claudin-1 and SATB. The MC38 murine colon adenocarcinoma cell line allows independent study of genomic and epigenomic factors to expand the potential for identification of colorectal adenocarcinoma treatment options.

Source

The MC38 cell line originated from a female C57BL/6 mouse.[2]

Short Tandem Repeat

M18-3: 15,16	M1-2: 18, 19, 20	M8-1: 16	M11-2: 16	MX-1: 27
M4-2: 20.3	M7-1: 26.2	M2-1: 16	M17-2: 15, 16	M13-1: 17
M6-7: 15, 16	M1-1: 15, 16, 17	M15-3: 22.3	M12-1: 16, 17, 18	
M19-2: 13	M3-2: 14, 15	M6-4: 17, 18	M5-5: 17	

Cancer cell lines are inherently genetically unstable. Instability may arise in the form of loss of heterozygosity of alleles at one or more genetic sites with increased passages.

Quality Control Testing

- MC38 cells are verified to be of mouse origin and negative for human, rat, Chinese hamster, non-human primate, and Golden Syrian hamster 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

MC38 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

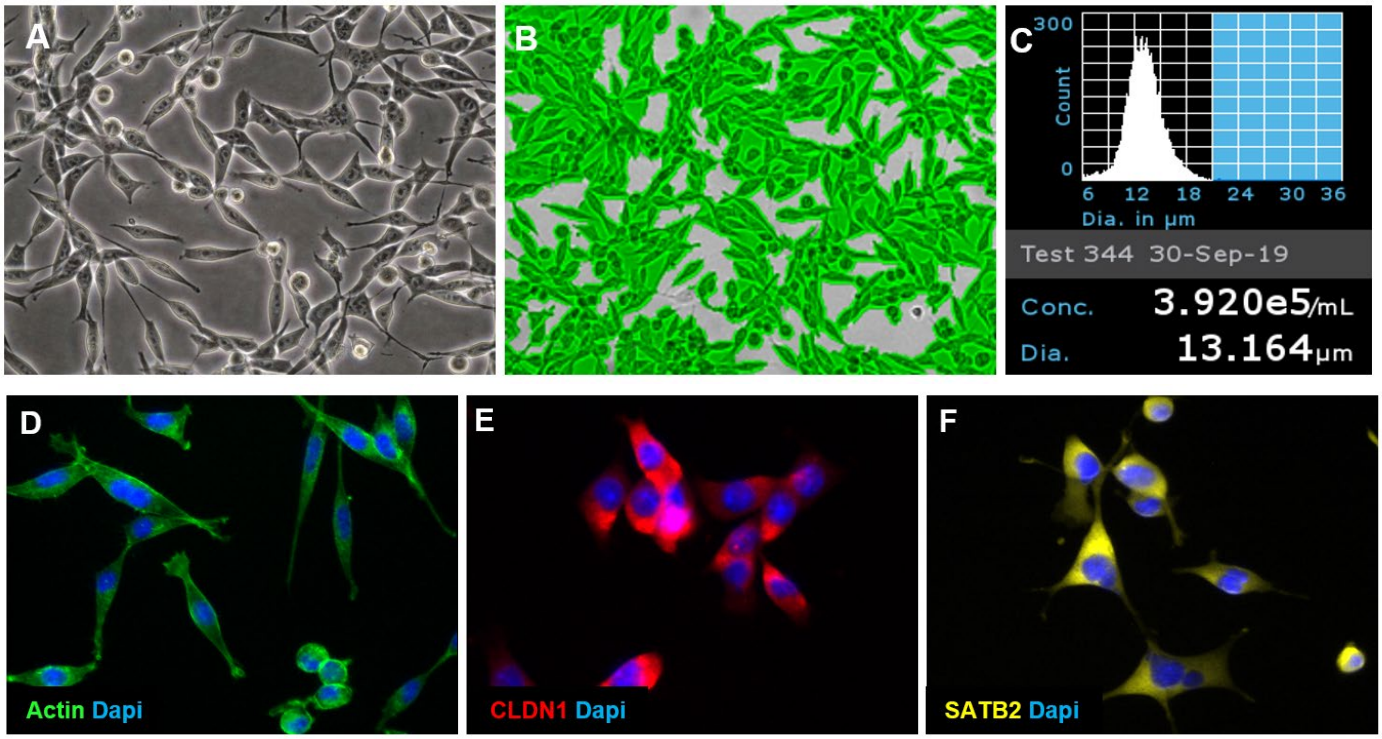

Figure 1. Brightfield image of MC38 cells two days after thaw in a T175 flask (**A**). Cell confluency was assessed throughout the culture using the MilliCell® Digital Cell Imager (**B**, Cat. No. MDCI10000). Cell counting was performed using Scepter™ 3.0 handheld automated cell counter using 60 µm sensors (**C**, Cat. No. PHCC360KIT). Cells express actin, (**D**, Cat. No. 49409) CLDN1, (**E**, Cat. No. SAB3500438) and SATB2 (**F**, Cat. No. ABE600).

Protocols

MC38 cells proliferate very rapidly and should be thawed in a T175 flask. Cells are expected to be ~ 80-85% confluent by day 2 after thaw.

Thawing the Cells

1. Do not thaw the cells until the recommended medium is on hand. Cells can grow on standard tissue cultureware surfaces without any additional coating.

   Cells are thawed and expanded in MC38 Expansion Medium comprising DMEM high glucose medium (Cat. No. D5796) containing 10% FBS (Cat. No. ES-009-B), 2 mM L-Glutamine (Cat. No. TMS-002-C), 1X non-essential amino acids (Cat. No. TMS-001-C), 1 mM sodium pyruvate (Cat. No. S8636), and 50 µg/mL gentamycin sulfate (Cat. No. 345815).
2. Remove the vial of frozen MC38 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.
3. As soon as the cells are completely thawed, disinfect the outside of the vial with 70% ethanol. Proceed immediately to the next step.
4. 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.
5. Using a 10 mL pipette, slowly add dropwise 9 mL of MC38 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.
6. 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.
7. Centrifuge the tube at 300 x *g* for 2-3 minutes to pellet the cells.
8. Decant as much of the supernatant as possible. Steps 5-8 are necessary to remove residual cryopreservative (DMSO).
9. Resuspend the cells in 15 mL of MC38 Expansion Medium.
10. Transfer the cell mixture to a T175 tissue culture flask. Add additional MC38 Expansion Medium for a total of 30 mL.
11. Incubate the cells at 37 °C in a humidified incubator with 5% CO_2.

Subculturing the Cells

1. Do not allow the cells to grow to confluency. MC38 cells should be passaged at ~ 80-85% confluency.
2. Carefully remove the medium from the T175 tissue culture flask containing the 80% confluent layer of MC38 cells.
3. Rinse the flask with 10-15 mL 1X PBS. Aspirate after the rinse.
4. Apply 10 mL of Accutase® and incubate in a 37 °C incubator for 3-5 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 10 mL of MC38 Expansion Medium to the flask.
7. Gently rotate the flask to mix the cell suspension. Transfer the dissociated cells to a 50 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 MC38 Expansion 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

MC38 cells may be frozen in MC38 Expansion Medium supplemented with 10% DMSO using a Nalgene® slow freeze Mr. Frosty™container.

References

1. *Bioessays* 2015, 37(8): 909-920.
2. *Cancer Res* 1975, 35(9): 2434-2439.

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