

T37i Mouse Brown Adipocyte Cell Line

Immortalized Cell Line

Cat. # SCC250

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NOT FOR USE IN DIAGNOSTIC PROCEDURES.
NOT FOR HUMAN OR ANIMAL CONSUMPTION.
THIS PRODUCT CONTAINS GENETICALLY MODIFIED ORGANISMS.

Pack size: $\geq 1 \times 10^6$

viable cells/vial

Store in liquid nitrogen



Data Sheet

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Background

Brown adipose tissue (brown fat) has generated intense research interest due to its unique thermogenic properties and potential applications for development of treatments for metabolic diseases.¹ Cellular models that reliably reflect the transition of preadipocytes to brown fat are necessary tools for investigating the mechanisms and roles of brown fat in metabolic systems.

The T37i cell line is a rapidly proliferating brown preadipocyte cell line derived from a mouse hibernoma. Differentiation of T37i cells into brown adipocytes occurs when incubated with triiodothyronine (T3) and insulin over 3-6 days. Differentiation can also be induced by incubation with steroid hormones such as aldosterone, which induces differentiation through its interaction with mineralocorticoid receptor (MR). Mature brown adipocytes are characterized via triglyceride accumulation, morphology, and expression of early adipogenic genes.² Differentiated T37i cells express the thermogenic uncoupling protein 1 (UCP1) and exhibit lipid droplet accumulation. The T37i cell line is a versatile model for metabolic and functional studies of brown fat.

Source

The T37i cell line was derived from a hibernoma (malignant brown fat tumor) of a transgenic mouse carrying a hybrid gene composed of the human MR proximal promoter linked to the SV40 large T antigen.¹

Storage and Handling

T37i Mouse Brown Adipocyte Cell Line should be stored in liquid nitrogen. The cells can be cultured for at least 10 passages after initial thawing without significantly affecting the cell marker expression and functionality.

References

1. *J Biomed Res.* 2016; 31(1): 1-2.
2. *J Clin Invest.* 101(6): 1254-60.
3. *Am J Physiol Endocrinol Metab.* 2000; 279(2): E386-94.

Quality Control Testing

- Each vial contains $\geq 1 \times 10^6$ viable cells.
- Cells are tested negative for infectious diseases by a Mouse Essential CLEAR panel by Charles River Animal Diagnostic Services.
- Cells are verified to be of mouse origin and negative for inter-species contamination from rat, chinese hamster, Golden Syrian hamster, human and non-human primate (NHP) as assessed by a Contamination Clear panel by Charles River Animal Diagnostic Services
- Cells are negative for mycoplasma contamination.

Representative Data

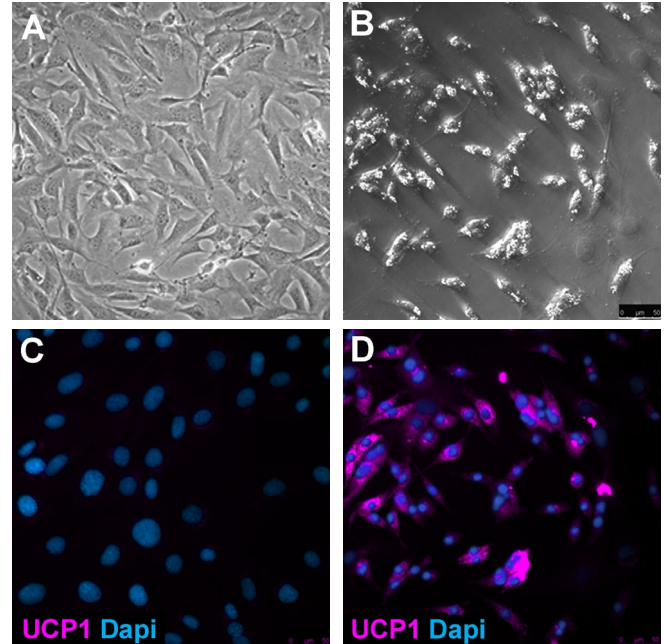


Figure 1. Bright-field images of undifferentiated T37i cells one day after thaw (A). Differentiated T37i cells (B) express the brown fat marker, UCP1 (D), while undifferentiated cells do not (C).

Protocols

Thawing Cells

1. Do not thaw the cells until the recommended medium is on hand. Cells can grow on normal tissue cultureware surfaces without any additional coating.
T37i Expansion Medium: cells are thawed and expanded in DMEM/F12 with HEPES, L-Glutamine (Sigma DF-041-B) and 10% FBS (Cat. No. ES-009-B).
2. Remove the vial of frozen T37i 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 T37i 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 T37i Expansion Medium.
10. Transfer the cell mixture to a T75 tissue culture flask.
11. Incubate the cells at 37°C in a humidified incubator with 5% CO₂.

Subculturing Cells

1. Do not allow the cells to grow to confluency. T37i cells should be passaged at ~80-85% confluence.
2. Carefully remove the medium from the T75 tissue culture flask containing the 80% confluent layer of T37i cells.
3. Rinse the flask with 10 mL 1X PBS. Aspirate after the rinse.
3. Apply 5-7 mL of Accutase and incubate in a 37°C incubator for 3-5 minutes.
4. Inspect the flask and ensure the complete detachment of cells by gently tapping the side of the flask with the palm of your hand.
5. Add 5-7 mL of T37i Expansion Medium to the plate.
6. Gently rotate the flask to mix the cell suspension. Transfer the dissociated cells to a 15 mL conical tube.
7. Centrifuge the tube at 300 x g for 3-5 minutes to pellet the cells.
8. Discard the supernatant, then loosen the cell pellet by tapping the tip of the tube with a finger.
9. Apply 2-5 mL of T37i Expansion Medium to the conical tube and resuspend the cells thoroughly.
IMPORTANT: Do not vortex the cells.
10. Count the number of cells using a hemocytometer.
11. Plate the cells to the desired density. Typical split ratio is 1:6.

Differentiation of Cells

Incubate **sub-confluent undifferentiated** T37i cells with T37i Expansion Medium containing 2 nM 3,3',5-Triiodo-L-thyronine, T3 (Sigma T-5516) and 20 nM insulin (Sigma I-1882) for 3 – 6 days.

Cryopreservation of Cells

T37i Mouse Brown Adipocyte Cell Line may be frozen in T37i Expansion Medium and 10% DMSO using a Nalgene slow freeze Mr. Frosty container.

■ antibodies ■ Multiplex products ■ biotools ■ cell culture ■ enzymes ■ kits ■ proteins/peptides ■ siRNA/cDNA products

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