mTeSR™ Plus

Stabilized feeder-free maintenance medium for human ES and iPS cells

Catalog #100-0276 1 Kit

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Product Description

mTeSR™ Plus is a stabilized, serum-free cell culture medium for the feeder-free maintenance and expansion of human embryonic stem (ES) and induced pluripotent stem (iPS) cells. It is based on the mTeSR™1 formulation[1, 2], the most widely published feeder-free cell culture medium for human ES and iPS cells.

To enhance cell quality attributes, particularly during restricted feeds, critical medium components have been stabilized, including fibroblast growth factor 2 (FGF2; also known as basic FGF [bFGF]), and medium pH is more consistent. As a result, mTeSR™ Plus allows for greater cell expansion rates with daily feeding, while also maintaining cell quality during restricted feeding schedules.

mTeSR™ Plus is compatible with a variety of culture matrices, including Corning® Matrigel® hESC-Qualified Matrix (Corning Catalog #354277) and Vitronectin XF™ (Catalog #07180, a matrix developed and manufactured by Nucleus Biologics).

Each lot of mTeSR™ Plus 5X Supplement is used to prepare complete mTeSR™ Plus medium and then performance-tested in a culture assay using human pluripotent stem cells (hPSCs).

Product Information

The following components are sold as part of the mTeSR™ Plus kit (Catalog #100-0276) and are not available for individual sale.

COMPONENT NAME	COMPONENT #	SIZE	STORAGE	SHELF LIFE
mTeSR™ Plus Basal Medium	100-0274	400 mL	Store at 2 - 8°C.	Stable until expiry date (EXP) on label.
mTeSR™ Plus 5X Supplement	100-0275	100 mL	Store at -20°C.	Stable until expiry date (EXP) on label.

Preparation of Complete mTeSR™ Plus Medium

Use sterile technique to prepare complete mTeSR™ Plus medium (Basal Medium + 5X Supplement). The following example is for preparing 500 mL of complete medium. If preparing other volumes, adjust accordingly.

NOTE: Thaw supplements or complete medium at room temperature (15 - 25°C) or overnight at 2 - 8°C. Do not thaw in a 37°C water bath.

1. Thaw mTeSR™ Plus 5X Supplement at room temperature (15 - 25°C) or overnight at 2 - 8°C. Warm to room temperature. Mix thoroughly.

   NOTE: mTeSR™ Plus 5X Supplement may appear slightly cloudy after thawing. If this is noted, ensure that the supplement is at room temperature (15 - 25°C). If cloudiness persists, place in a 37°C water bath for approximately 5 minutes, swirling occasionally until supplement becomes clear. Supplement must be free of cloudiness before adding to basal medium (step 2).

   NOTE: Once thawed, use supplement immediately or aliquot and store at -20°C for up to 3 months. Do not exceed the shelf life of the supplement. After thawing the aliquoted supplement, use immediately. Do not re-freeze.

2. Add 100 mL of mTeSR™ Plus 5X Supplement to 400 mL of mTeSR™ Plus Basal Medium. Mix thoroughly.

   NOTE: If not used immediately, store complete mTeSR™ Plus medium at 2 - 8°C for up to 2 weeks. Alternatively, aliquot and store at -20°C for up to 6 months. Do not exceed the shelf life of the individual components. After thawing the aliquoted complete medium, use immediately or store at 2 - 8°C for up to 2 weeks. Do not re-freeze.

   If prepared aseptically, complete mTeSR™ Plus medium is ready for use. If desired, the medium can be filtered using a 0.2 - 0.22 µm low protein binding polyethersulfone (PES) filter unit (e.g. Fisher 09-741-04 [0.2 µm, 250 mL]; Fisher SCGP00525 [0.22 µm, 50 mL]).

Directions for Use

For complete instructions on how to maintain human ES and iPS cells in mTeSR™ Plus, refer to the Technical Manual: Maintenance of Human Pluripotent Stem Cells in mTeSR™ Plus (Document #10000007757), available at www.stemcell.com or contact us to request a copy.

Feeding Schedule

mTeSR™ Plus enables using a more flexible feeding schedule without affecting culture quality. To determine a convenient schedule that suits your lab's routine, follow the table below to determine the volume of medium required at each feed. Any combination of feeding intervals can be used throughout a passage when following these guidelines.

FEEDING INTERVAL		
DAILY FEEDING	SKIP ONE DAY	SKIP TWO CONSECUTIVE DAYS
Standard feed volume (e.g. 2 mL per well of a 6-well plate)	Standard feed volume (e.g. 2 mL per well of a 6-well plate)	Double feed volume (e.g. 4 mL per well of a 6-well plate)

Notes for mTeSR™1 Users

Cultures grown in mTeSR™ Plus are very similar to cultures grown in mTeSR™1. An enhanced growth rate may be observed with mTeSR™ Plus, resulting in larger colonies and higher confluence cultures sooner after passaging. Therefore, experienced mTeSR™1 users may note one or more of the following slight adjustments to the passaging parameters established for mTeSR™1 cultures, as outlined in the Technical Manual for mTeSR™ Plus:

- Increased dissociation time during passaging of larger colonies
- Increased split ratio to maintain similar confluency
- Decreased passaging interval for more rapidly growing cultures

Assessment of hPSCs

The following antibodies can be used to characterize hPSCs by flow cytometry or immunocytochemistry:

- Anti-Human SSEA-4 Antibody, Clone MC-813-70 (Catalog #60062)
- Anti-Human TRA-1-60 Antibody, Clone TRA-1-60R (Catalog #60064)
- Anti-Human OCT4 (OCT3) Antibody, Clone 3A2A20 (Catalog #60093)

For complete flow cytometry protocols and antibodies that can be used, refer to the Technical Manual: Maintenance of Human Pluripotent Stem Cells in mTeSR™ Plus (Document #10000007757), available at www.stemcell.com or contact us to request a copy.

Related Products

For related products, including specialized cell culture and storage media, matrices, antibodies, cytokines, and small molecules, visit www.stemcell.com/hPSCworkflow or contact us at techsupport@stemcell.com.

References

1. Ludwig TE et al. (2006) Derivation of human embryonic stem cells in defined conditions. Nat Biotechnol 24(2): 185–7.
2. Ludwig TE et al. (2006) Feeder-independent culture of human embryonic stem cells. Nat Methods 3(8): 637–46.