HEK293FT

305275

GENERAL INFORMATION

Description

The HEK293FT cell line is a derivative of the HEK293 cell line, originally derived from human embryonic kidney cells. The "FT" designation indicates that these cells have been transfected with the SV40 large T-antigen gene, which enhances their ability to replicate plasmid vectors containing the SV40 origin of replication. This modification makes 293FT cells particularly useful for high-efficiency production of viral vectors, such as lentiviruses and adenoviruses, and for transfection studies in molecular biology and gene therapy research.
HEK293FT cells exhibit an epithelial morphology and grow rapidly in culture, providing a robust and reliable system for producing high-titer viral stocks. They retain many of the characteristics of the parental HEK293 cells, including high transfection efficiency and the ability to support the replication of recombinant viruses. Researchers utilize 293FT cells to produce viral vectors for gene delivery, to study gene function and regulation, and to develop gene therapies for various diseases. Their role in the production of viral vectors makes 293FT cells a cornerstone in the fields of gene therapy, functional genomics, and molecular cloning, facilitating the advancement of research and therapeutic development.

Tissue	Fetal Kidney

Synonyms

- HEK293-FT
- HEK-293FT
- HEK 293FT
- HEK-293-FT
- HEK293FT
- 293-FT
- FT-293

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This HEK293-derived cell line (293-FT) contains an SV40 expression plasmid with neomycin selection, supporting enhanced proliferation and transfection efficiency. The construct provides stable SV40. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial

IDENTIFIERS

Citation

HEK293FT (Cytion catalog number 305275)

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NCBI TaxID	9606
Cellosaurus	CVCL_6911

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

SV40 large T antigen, Adenovirus early region 1A (E1A)

Viruses

Transformant: Adenovirus 5, Simian virus 40 (SV40)

HANDLING AND CULTURE

Culture medium

DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS.

Dissociation reagent	Accutase

Subculturing

Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

Seeding density	2 to 5 x 10^4 cells/cm^2
Fluid renewal	2 times per week

Thawing and culturing

Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

QUALITY CONTROL AND CRYOPRESERVATION

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.
To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.

Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

Storage conditions

For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Shipping conditions

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.

DONOR

Donor age	Fetus

LEGAL AND SAFETY

Safety precautions

When planning to store a cryovial in liquid nitrogen for future thawing, it is mandatory to adhere to stringent safety measures. Appropriate protective gloves and clothing are essential, and the use of a face mask or safety goggles is required during the transfer of frozen samples to or from the liquid nitrogen tank. This is to mitigate the risk of injury from potential cryovial explosions upon removal, which can result in the projection of sharp fragments.

Warranty

At Cytion, we stand behind the quality and viability of our products.
We guarantee that our cells will be viable at the start of culture for
60 days after shipment from our facilities.
We assure that all materials conform to the specifications described in the
Certificate of Analysis and/or Product Sheet.
For full details, please refer to our
Warranty Statement.

Material Transfer Agreement required	Yes

PRODUCT DETAILS

Composition table