Product sheet

HEK293T Cells | 300189

General information

Description	HEK 293T, a highly transfectable derivative of the parental HEK 293 cell, stands out as a versatile and powerful tool in the field of biotechnology for the production of recombinant proteins and various types of vaccines. HEK-293T cells were generated by transfecting embryonic kidney 293 cells with a plasmid encoding the SV40 large T antigen. The original HEK293 cell line was developed from the epithelial cells of human embryonic kidney tissue, with its transformation occurring in what was notably the 293rd experiment conducted by the researchers. In the realm of vaccine development, the 293T embryonic kidney cells are pivotal for viral vector production, including adenovirus vectors. HEK293T cells, under specific culture conditions, are transfected with vectors carrying adenoviral and retroviral elements, including the SV40 origin of replication, leading to the production of virus-like particles (VLPs). The VLPs, devoid of viral genetic material, are key in forming the basis of subunit and VLP-based vaccines. The recombinant protein production in 293T cells is facilitated by various transfection methods, with an emphasis on the generation of AP fusion proteins and other protein types that form the antigenic component of vaccines. The 293T cell line's genome engineering capabilities allow for the customization of expression constructs, further boosting the production of viral vectors. This, coupled with the ability to produce proteins in suspension culture or adherent conditions, makes the 293T cell line a full-stack solution for modern vaccine development.
Organism	Human
Tissue	Kidney
Applications	Vaccine development
Synonyms	Hek293T, HEK-293T, HEK 293T, HEK-293-T, HEK 293 T, 293-T, 293 T, 293T, Human Embryonic Kidney 293T, 293tsA1609neo

Characteristics

Age	Fetus
Gender	Female
Morphology	Epithelial-like
Growth properties	Adherent

Regulatory Data

HEK293T Cells | 300189

Citation	HEK293T (Cytion catalog number 300189)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0063
GMO Status	GMO-S1: This HEK293T cell line contains SV40 Large T Antigen sequences, supporting high-level expression of transfected plasmids and efficient viral packaging. The construct is integrated into human embryonic kidney cells. This classification applies only within Germany and may differ elsewhere

Biomolecular Data

Receptors expressed	Vitronectin
Protein expression	CEA negative, p53 positive
Tumorigenic	In nude mice

Handling

Culture Medium	EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)
Supplements	Supplement the medium with 10% FBS and 1% NEAA
Dissociation Reagent	Accutase
Doubling time	30 hours
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	1 x 10^4 cells/cm^2 will yield in a confluent layer in about 4 days

HEK293T Cells | 300189

Fluid renewal	2 times per week
Post-Thaw Recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.
Freeze medium	As a cryopreservation medium, 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.

Thawing and Culturing Cells

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. 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.
3. 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.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. 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.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. 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.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

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

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.

Quality control / Genetic profile / HLA

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.