Product sheet

HEK293-F Cells | 300260

General information

Description	HEK293-F cells are a fast-growing, highly transfectable subline derived from the human embryonic kidney 293 (HEK293) cell line. The 'F' designation indicates that these cells have been adapted for growth in suspension cultures, making them particularly useful for large-scale protein production. The cells grow in a variety of serum-free media, facilitating scalable processes in biotechnological and pharmaceutical applications. HEK293-F cells retain the epithelial-like morphology of the parent HEK293 line and are maintained in suspension without the need for attachment to a solid substrate. These cells are highly efficient at expressing recombinant proteins and are widely utilized in the production of viral vectors for gene therapy, including adenoviral, lentiviral, and retroviral vectors. Their robust growth in suspension and ease of transfection make them ideal for use in transient transfection protocols, where they can produce high yields of protein within a few days post-transfection. This characteristic is critical for rapid production cycles in research and industrial settings. The adaptability of HEK293-F cells to various growth conditions and their capacity for high-density culture enhance their utility in bioprocessing environments.
Organism	Human
Tissue	Kidney
Applications	Transfection host
Synonyms	HEK-293-F, HEK 293-F, HEK-293F, HEK293F, 293-F, 293 F, 293F

Characteristics

Age	Fetus
Gender	Female
Morphology	Epithelial-like
Growth properties	Suspension

Regulatory Data

Citation	HEK293-F (Cytion catalog number 300260)
Biosafety level	1
NCBI_TaxID	9606

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CellosaurusAccession	CVCL_6642
GMO Status	GMO-S1: This HEK293-F cell line contains SV40, enabling high transfection efficiency and robust growth in suspension culture. The modification is stably present in 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
Viruses	Transformed with adenovirus 5 DNA adenovirus 5 DNA

Handling

Culture Medium	CD293 (Thermo)
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
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.

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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.
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 & Molecular Analysis

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.