Product sheet

HEK293A Cells | 305070

General information

Description	The HEK293A cell line, a derivative of the human embryonic kidney 293 (HEK293) cells, represents a specialized tool in virological and gene therapy research, particularly in the production, amplification, and titration of replication-incompetent adenoviruses. These cells exhibit a flat morphology, which significantly aids in the microscopic examination and titration processes, making it simpler to count and assess viral particles. A pivotal feature of the HEK293A cell line is the stable integration of the adenovirus E1 gene into its genome. This integration is critical as it provides the necessary transcriptional machinery for the expression of E1 proteins, specifically E1a and E1b. The presence of these proteins is essential for the replication of adenoviral vectors in the cell. The E1a protein primarily functions to activate transcription of the adenovirus genome, while E1b proteins are involved in viral replication and cell cycle disruption. The utility of HEK293A cells extends beyond merely supporting viral replication. These cells facilitate the efficient production of high titer, high-quality viral preparations essential for both basic research and therapeutic applications. The cell line's robust replication capacity and ease of handling enable researchers to screen and develop adenoviral constructs with unprecedented precision and efficiency. In summary, the HEK293A cell line is an indispensable resource in the field of virology and gene therapy. Its ability to stably express E1 proteins and support adenoviral replication makes it a valuable tool for researchers looking to produce and manipulate adenoviral vectors. The cell line's characteristics allow for the efficient generation of viral vectors, crucial for advancing research and potential therapeutic interventions.
Organism	Human
Tissue	Embryonic kidney
Synonyms	HEK-293A, HEK293A, HEK 293A, HEK293-A, QBI-HEK 293A, QBI-293A

Characteristics

Age	Fetus
Gender	Female
Morphology	Epithelial
Growth properties	Adherent

Regulatory Data

Citation	HEK293A (Cytion catalog number 305070)

HEK293A Cells | 305070

Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_6910
GMO Status	GMO-S1: This HEK293A cell line contains SV40 from Simian Virus 40, supporting enhanced transfection performance and proliferation. The construct is stably integrated into embryonic kidney cells. This classification applies only within Germany and may differ elsewhere.

Biomolecular Data

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
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.
Fluid renewal	2 to 3 times per week
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.