Product sheet

A7r5 Cells | 305198

General information

Description	Derived from the smooth muscle of the embryonic thoracic aorta in a BDIx rat, the A7r5 cell line is extensively employed in cardiovascular research. These fibroblast-like cells display a unique flat ribbon-like morphology that transitions into parallel arrays of spindle-shaped cells as they differentiate. This distinct structural adaptation facilitates the study of cellular dynamics and morphology under various physiological conditions. During the stationary phase of their growth cycle, A7r5 cells exhibit a significant increase in the activities of myokinase and creatine phosphokinase (CPK), enzymes critical in cellular energy transfer and metabolism. The synthesis of a specific muscle type CPK isoenzyme upon cessation of cell division in A7r5 cells provides a valuable model for investigating molecular mechanisms underlying muscle development and differentiation. This cell line has been instrumental in exploring the effects of angiotensin II on vascular oxidative stress, offering insights into how this hormone influences cardiovascular physiology. Additionally, A7r5 cells have been used to study the inhibitory effects of phospholipase A2 (PLA2) on lipid droplet formation, further highlighting their utility in cardiovascular research. These applications underscore the A7r5 cell line's versatility and its pivotal role in elucidating critical pathways and potential therapeutic targets in cardiovascular disease studies.
Organism	Rat
Tissue	Aorta, thoracic, smooth muscle
Synonyms	A7R5

Characteristics

Age	Embryo
Morphology	Fibroblast
Growth properties	Adherent

Identifiers / Biosafety / Citation

Citation	A7r5 (Cytion catalog number 305198)
Biosafety level	1

Expression / Mutation

Protein expression	Myokinase, Creatine Phosphokinase(Muscle Isoenzyme), Myosin

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Handling

Culture Medium	DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 1.5 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)
Medium supplements	Supplement the medium with 10% FBS
Passaging solution	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.
Split ratio	1:2 to 1:4
Fluid renewal	2 to 3 times per week
Freeze medium	CM-1 (Cytion catalog number 800100)

Handling of cryopreserved cultures

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.

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.