Product sheet

H9c2(2-1) Cells | 305203

General information

Description	H9c2(2-1) cells, derived from the ventricular myoblasts of embryonic BD1X rat hearts, are a subclone of the original H9 cell line established in the early 1990s. These cells are immortalized myoblasts that are commonly used in vitro to study cardiac metabolism, physiology, and pathophysiology, including myocardial ischemia, hypertrophy, and apoptosis mechanisms. Phenotypically, H9c2 cells exhibit characteristics of skeletal muscle but retain the ability to adopt a cardiac muscle phenotype under specific experimental conditions, such as differentiation induced by retinoic acid or other agents. This flexibility makes them a valuable model for investigating cardiac muscle behavior in response to various physiological and pharmacological stimuli. Genetically, H9c2 cells are diploid, facilitating their use in genetic studies, where maintaining a stable karyotype is crucial. Research employing H9c2(2-1) cells has contributed significantly to understanding cellular responses to oxidative stress, mitochondrial dysfunction, and the protective roles of various pharmacological agents against cardiotoxicity. This cell line remains a cornerstone in cardiomyocyte-related research, offering a reproducible, controlled model to elucidate the complex biological and molecular mechanisms underlying cardiac function and diseases.
Organism	Rat
Tissue	Heart, myocardium
Synonyms	H9c2 (2-1), H9c2, H9C2

Characteristics

Age	Embryo
Morphology	Myoblast
Growth properties	Adherent

Identifiers / Biosafety / Citation

Citation	H9c2(2-1) (Cytion catalog number 305203)
Biosafety level	1

Expression / Mutation

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Receptors expressed	Acetylcholine, expressed
Protein expression	Myokinase, Creatine Phosphokinase, Myosin

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.