

HuH-6 Cells | 305092

General information

Description

HuH-6 cells, short for Human Hepatoma 6 cells, are a permanent cell line established from hepatoma tissue obtained from a 57-year-old Japanese male in 1982.

These cells have become a valuable tool in biological research, providing a convenient substitute for primary hepatocytes. The primary application of HuH-6 cells lies in studying hepatitis C virus (HCV) infection and hepatoma. Researchers often use these cells as a cell culture model to investigate the mechanisms of HCV infection and explore potential treatments for hepatoma.

One crucial area of study involving HuH-6 cells is understanding drug metabolism and pharmacokinetics. These cells are commonly used to assess the potential for drug-drug interactions (DDIs) by analyzing the gene expression of various CYP450 enzymes.

Regulatory agencies require an evaluation of DDI potential in hepatocytes for specific enzymes like CYP3A4, CYP1A2, and CYP2B6. HuH-6 cells, known as Cryopreserved Human Hepatocytes, Induction qualified (HUCPI), have been characterized to exhibit enzyme induction levels recommended by the FDA for evaluating DDIs.

Another significant application of HuH-6 cells is the study of transporter-mediated efflux inhibition. Plating the hepatocytes onto collagen and overlaying them with a basement membrane extract allows the formation of polarized cell surface structures and the re-expression of bile efflux transporters.

This enables researchers to investigate the effects of drug inhibition on bile efflux transport, which can range from drug-drug interactions to liver toxicity caused by the accumulation of intracellular bile acids. Hepatocytes pre-characterized for transporter function are well-suited for these studies. Additionally, HuH-6 cells play a crucial role in the pharmaceutical discovery of drugs with a slower metabolism.

By measuring the basic metabolic properties of drugs that are metabolized at a slower rate, researchers can develop medications that remain effective for more extended periods. Plated hepatocytes, like HuH-6 cells, maintain their metabolic activity for an extended duration, making them ideal for assays lasting four hours or longer. Hepatocytes prequalified for low clearance are especially valuable for these studies, although Induction or Transporter qualified hepatocytes (HUCPI) can also be used. HuH-6 cells are a valuable cell line derived from hepatoma tissue.

They are commonly used in biological research to study hepatitis C virus infection, hepatoma, drug metabolism and pharmacokinetics, drug-drug interactions, transporter-mediated efflux inhibition, and the discovery of drugs with a slower metabolism. These cells provide researchers with a convenient and reliable model to investigate various aspects of liver-related biology and drug development.

Organism

Human

Tissue

Liver

Disease

Hepatoblastoma

Synonyms

HUH-6, HuH 6, HuH6, HUH6, Huh6

Characteristics

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Age 1 year**Gender** Male**Ethnicity** Asian**Morphology** Epithelial**Growth properties** Adherent

Identifiers / Biosafety / Citation

Citation HuH-6 (Cytion catalog number 305092)**Biosafety level** 1

Expression / Mutation

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

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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.

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STR profile

Amelogenin: x,y
CSF1PO: 10,12
D13S317: 8,12
D16S539: 10,11
D5S818: 8,11
D7S820: 11,12
TH01: 7,8
TPOX: 8
vWA: 14,17
D3S1358: 14,17
D21S11: 29,3
D18S51: 13,21
Penta E: 11
Penta D: 9,13
D8S1179: 10,11
FGA: 19,24
D6S1043: 13,18
D2S1338: 18
D12S391: 18,2
D19S433: 12,12.2