Product sheet

LMH | 601411

General information

Description	LMH cells, derived from a Leghorn male hepatoma, are a versatile cell line widely used in biological research. Tomoyuki Kitagawa established them in 1981 at the Cancer Institute in Tokyo, Japan. These cells have an epithelial phenotype and are particularly useful for studying host-pathogen interactions in the gastrointestinal tract of poultry. LMH cells are adherent and exhibit a dendritic-like morphology. They express glucose-6-phosphatase and weak canalicular ATPase activity. With a triploid karyotype and six marker chromosomes, these cells display distinct genetic characteristics. Notably, LMH cells have been shown to efficiently support duck hepatitis B virus (DHBV) DNA synthesis when transfected with viral constructs. This makes them an invaluable tool for virology research, particularly in the context of poultry-related viral infections. The derivation of LMH cells involved inducing tumorous nodules in the liver of Leghorn chickens through long-term treatment with diethylnitrosamine. These cells have also been chemically transformed, allowing for their immortalization and continuous propagation in culture. In terms of tumorigenicity, LMH cells have the ability to form tumors in athymic nude mice. This characteristic makes them an important model for studying hepatocellular carcinoma. LMH cells express the estrogen receptor and can be induced to express the liver-specific apolipoprotein II (apoII) gene. This indicates their involvement in estrogen signaling pathways and lipid metabolism. To culture LMH cells, it is necessary to precoat tissue culture vessels with 0.1% gelatin. This ensures proper cell adhesion and growth.
Organism	Chicken
Tissue	Liver
Disease	Hepatocellular carcinoma
Applications	The cell line is useful for transfection studies.
Synonyms	Leghorn Male Hepatoma cell line

Characteristics

Age	16 months
Gender	Male
Morphology	Epithelial-like, Dendritic like.
Growth properties	Adherent. It may take a couple of days until cells grow in fully adherent colonies.

Identifiers / Biosafety / Citation

Citation	LMH (Cytion catalog number 601411)

Biosafety level	1

Expression / Mutation

Receptors expressed	Estrogen (low level expression).
Tumorigenic	LMH cells form tumors in athymic mice.
Products	glucose-6-phosphatase, canalicular ATPase activity (weak)
Karyotype	triploid, modal number = 116, six marker chromosomes

Handling

Culture Medium	EMEM
Medium supplements	10% FBS, w: 2 mM L-Glutamine, w: 1.5 g/L NaHCO3, w: EBSS, w: 1 mM Sodium pyruvate, w: NEAA
Passaging solution	Accutase
Subculturing	LMH cells attach better to tissue culture vessels which have been precoated with Collagen. Remove medium and rinse the adherent cells using PBS without calcium and magnesium (3-5 ml PBS for T25, 5-10 ml for T75 cell culture flasks). Add Accutase (1-2 ml per T25, 2.5 ml per T75 cell culture flask), the cell sheet must be covered completely. Incubate at ambient temperature for 8-10 minutes. Carefully resuspend the cells with medium (10 ml), centrifuge for 3 min at 300 g, resuspend cells in fresh medium and dispense into new flasks which contain fresh medium.
Split ratio	A ratio of 1:2 to 1:4 is recommended
Seeding density	1 to 3 x 10^4 cells/cm^2
Fluid renewal	Every 2 days
Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

Handling of cryopreserved cultures	The cells come deep-frozen shipped on dry ice. Please make sure that the vial is still frozen. If immediate culturing is not intended, the cryovial must be stored below -150 degree Celsius after arrival. If immediate culturing is intended, please follow the below instructions: Quickly thaw by rapid agitation in a 37 degree Celsius water bath within 40-60 seconds. The water bath should have clean water containing an antimicrobial agent. As soon as the sample has thawed, remove the cryovial from the water bath. A small ice clump should still remain and the vial should still be cold. From now on, all operations should be carried out under aseptic conditions. Transfer the cryovial to a sterile flow cabinet and wipe with 70% alcohol. Carefully open the vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of culture medium (room temperature). Resuspend the cells carefully. Centrifuge at 300 x g for 3 min and discard the supernatant. The centrifugation step may be omitted, but in this case the remains of the freeze medium have to be removed 24 hours later. Resuspend the cells carefully in 10 ml fresh cell culture medium and transfer them into two T25 cell culture flasks. All further steps are described in the subculture section.
Handling of proliferating cultures	One or two cell culture flasks come filled with cell culture medium. Collect the entire medium in 1 or 2 x 50 ml centrifuge tubes, respectively. Carefully add 5 ml of cell culture medium to each T25 cell culture flask. Control the cell morphology and confluency under the microscope. Incubate at 37 degree Celsius for a minimum of 24 hours. Spin down the collected medium at 300 x g for 3 minutes to collect the cells which may have detached during transit. If a cell pellet is visible, resuspend the cells in 5 ml of cell culture medium and transfer to a T25 cell culture flask. Incubate at 37 degree Celsius for a minimum of 24 hours.

Quality control / Genetic profile / HLA

Sterility	Mycoplasma contaminations are ruled out through PCR-based and luminescence-based mycoplasma assays. The absence of bacterial, fungal or yeast contamination is controlled through daily visual cell monitoring.
STR profile	**Amelogenin**: x,x