CELLULAR ENGINEERING TECHNOLOGIES

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Product Information Sheet

Human HepG2 Hepatocellular Carcinoma Cells

Catalog Number: CR1015-500

Product Overview	
Product Name	**Human HepG2 Hepatocellular Carcinoma Cells**
Catalog #s	CR1015-500
Quantity	One vial (approx. 500,000 cells)
Product Form	Frozen
Cell Type	Human Hepatocellular Carcinoma
Reagents Needed	Customer choice of high-grade or fully defined Fetal Bovine Serum (FBS) (not included) Penicillin/Streptomycin/Amphotericin B solution or Penicillin/Streptomycin solution, 100x (not included)[1]

Product Description

HepG2 is a human cell line isolated from a liver biopsy of a 14-year-old male donor. HepG2 cells are used in a wide range of studies, from the oncogenesis to the cytotoxicity of substances in the liver.

HepG2 cells have been used to study liver function broadly, including liver metabolism, cancer metastasis, and tumor formation. These cells secrete various major plasma proteins, including albumin, α2-macroglobulin, α1-anti-trypsin, and plasminogen.

These cells can be used for (i) the study of carcinogenesis as a surrogate for liver toxicity, (ii) the analysis of signaling events, (iii) molecular biology, and (iv) protein-based assays. These immortalized hepatic cell lines can be used instead of biopsies for research purposes.

These HepG2 cells are homogenous and grow robustly in cell culture. HepG2 cells grow slowly initially and grow in clusters rather than as an intact monolayer.

Vial contains approximately 500,000 cells. Shipped with dry ice.

Note: This product is designed and tested to function with Cellular Engineering Technologies Inc. ("CET") product MR1010 Human HepG2 Hepatocellular Carcinoma Expansion Media (not included). Although investigators are welcome to use this product with other media formulations, CET cannot and will not guarantee this product's performance. Additionally, such use of third-party media with this product will void CET's warranty should they not function as indicated. Please refer to CET's Terms & Conditions, available at www.celleng-tech.com.

Product Image

Cell Characteristics	
Growth Properties	Adherent
Donor Age	14 years old
Ethnicity	Caucasian
Gender	Male
Karyotype	Modal number = 55 (range = 50 to 60); has a rearranged chromosome 1
Tumorigenic	No; No, in immunosuppressed mice Yes, in semisolid medium
Genes expressed	alpha-fetoprotein (AFP, alpha-fetoprotein); albumin; alpha2 macroglobulin (alpha-2-macroglobulin); alpha1 antitrypsin (alpha-1-antitrypsin); transferrin; alpha1 antichymotrypsin (alpha-1-antichymotrypsin); haptoglobin; ceruloplasmin; plasminogen, complement (C4); C3 activator; fibrinogen; alpha1 acid glycoprotein (alpha-1 acid glycoprotein); alpha2 HS glycoprotein (alpha-2-HS-glycoprotein); beta lipoprotein (beta-lipoprotein); retinol binding protein (retinol-binding protein)
Expression markers	Insulin: insulin-like growth factor II (IGF II)

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CELLULAR ENGINEERING TECHNOLOGIES, INC.
2500 Crosspark Road, Suite E110 Coralville, IA 52241
T: (319) 665-3000 F: (319) 665-3003
Email: support@celleng-tech.com
www.celleng-tech.com

Media Formulation Instructions (for MR1010 Human HepG2 Hepatocellular Carcinoma Expansion Media not included)	
Defrosting / Preparation	Defrost 50mL of FBS (not included) and 5mL of antibiotic/antimycotic solution (not included) in a 37°C water bath until ice in the tubes is no longer visible. Immediately disinfect the tubes and the bottle containing this base media with 70% isopropanol (not included).
Mixing	Working in a laminar flow hood, remove 5mL of Human HepG2 Hepatocellular Carcinoma Expansion Media (MR1010) (not included) from the bottle and discard. This and all other procedures must be done in a sterile manner. Add 50mL of FBS to the base media. Add 5mL of the antibiotic/antimycotic solution to the base media[1]. Cap the bottle containing the mixed liquid solution and gently swirl a few times. This formulated media is now considered complete media and ready to use with cells.

Cell Thawing and Plating Instructions	
Thawing	Remove the Human HepG2 Hepatocellular Carcinoma Cells vials from dry ice or a storage unit. Defrost the vial of cells in a 37°C water bath with constant, moderate agitation until the ice in the ampoule is barely visible. DO NOT OVERTHAW. Immediately disinfect with 70% isopropanol (not included).
Plating	Working in a laminar flow hood, open the vial and transfer the contents to a sterile 15 mL tube. Very slowly, add approximately 10 mL of complete media (see Media Formulation Instructions), pre-warmed to 37°C before use. Centrifuge suspended cells at 200 x g for 10 minutes. Decant the medium and gently resuspend the pellet in the appropriate amount of complete media necessary to achieve a plating density of 20,000 cells/cm^2 of surface area. After 24 hours, aspirate media from the flask or dish, rinse with 1X Dulbecco's Phosphate Buffered Saline (not included), and replenish with fresh complete media, pre-warmed to 37°C before use.
Observation/Expansion	It is normal for HepG2 cells to grow slowly initially for one week post-thaw. It is also normal for some cells to be shed during media changes. HepG2 cells tend to grow in clusters rather than discrete monolayers. Subculture cells at a 1:3 split ratio using 0.25% Trypsin/EDTA (not included).

Storage and Stability		
	Storage Temperature	**Storage Time**
Human HepG2 Hepatocellular Cells	-80°C (preferably in the vapor phase of a liquid nitrogen storage unit)	12 months
Human HepG2 Hepatocellular Carcinoma Expansion Media (not included)	4°C	3 months
complete media *(see Media Formulation Instructions)*	2-8°C	Not applicable
Avoid repeated freeze-thaw cycles for cells. Avoid repeated exposure to room temperature and light for media.		

Publications and Product Citations
Thrombospondin 2 is a Key Determinant of Fibrogenesis in Non-Alcoholic Fatty Liver Disease Kimura, T et al. | Liver International 2024 FEB.
Comparison of Amine-Modified Polymeric Stationary Phases for Polar Metabolomic Analysis Based on Unified-Hydrophilic Interaction/Anion Exchange Liquid Chromatography/High-Resolution Mass Spectrometry (Unified-HILIC/AEX/HRMS) Ikeda, K et al. | Mass Spectrometry 2024 JAN.
Hydroxyapatite Nanocoating on Calcium Peroxide Microparticles for Sustained Oxygen Release Tomioka, D. et al. | Chemistry of Materials 2023
Decellularized liver hydrogel enhances cell engraftment in orthotopic hepatocyte transplantation by promoting cell-cell interaction and angiogenesis. Udagawa, D et al. | Research Square 2023 MAY.
Relationship between clock gene expression and CYP2C19 and CYP3A4 with benzodiazepines. Tani, N et al. | Human & Experimental Toxicology 2023 APR.
Effect of methamphetamine on clock genes and drug-metabolizing enzyme expression. Tani, N et al. | Human & Experimental Toxicology 2022 AUG.

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T: (319) 665-3000 F: (319) 665-3003
Email: support@celleng-tech.com

Cell History	
Depositors	Wistar Institute
Patent	4,393,133
Cross references	GenBank Z29481

[1] These solutions should be portioned in 5mL aliquots, stored at -20°C, and never frozen/thawed. Although antimycotics are unnecessary, CET highly recommends their usage for long-term cell culture. Antibiotics and antimycotics should not be used as an alternative to proper aseptic techniques.

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