

Stem Cell
Products

Human iPS-derived hepatocytes



Cellartis® Enhanced hiPS-HEP - Frozen hepatocytes as effective tools for *in vitro* evaluation of hepatotoxicity and drug metabolism studies.

Cellartis Enhanced hiPS-HEP are a highly homogenous hepatocyte population with substantial expression of drug metabolizing enzymes. This makes them ideal for use in drug metabolism studies, toxicity testing and other applications that demand a highly reproducible platform and a continuous supply of functional human hepatocytes.

- More than 90% pure hepatocytes
- High CYP activities
- Ideal for drug metabolism and toxicity studies

An inexhaustible source of functional human hepatocytes with high batch-to-batch consistency

Cellartis Enhanced hiPS-HEP are derived from the human iPS cell line 18 (ChiPS18) using a robust differentiation protocol. This ensures low batch-to-batch variability compared to primary hepatocytes where phenotype and functionality vary substantially between different donors. They can be produced from the same hiPSC line in virtually unlimited amounts over many years and thus allow to obtain hepatocytes from the same genetic background with a reproducible phenotype and high batch-to-batch consistency.

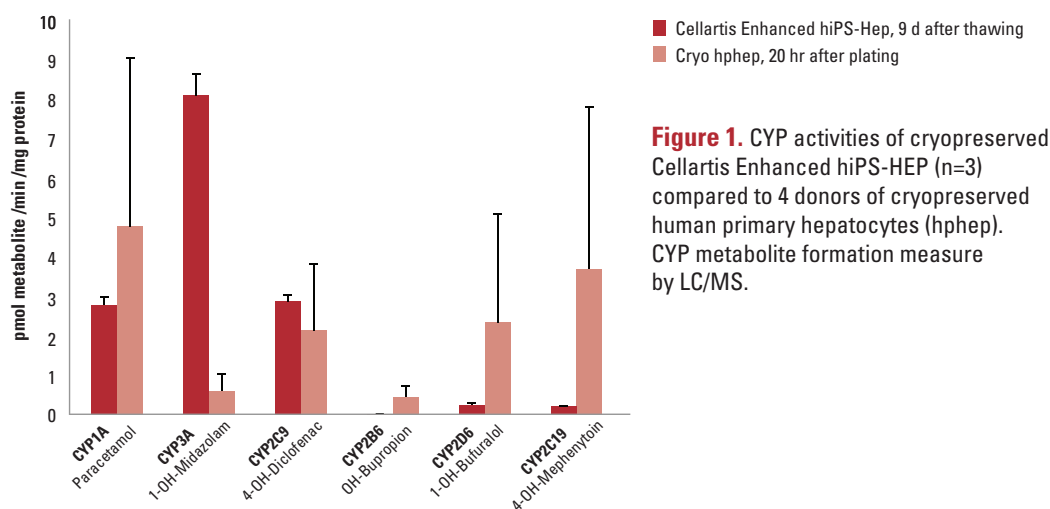


Figure 1. CYP activities of cryopreserved Cellartis Enhanced hiPS-HEP (n=3) compared to 4 donors of cryopreserved human primary hepatocytes (hphep). CYP metabolite formation measure by LC/MS.



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Applications

- Toxicity testing
- High content analysis
- Drug metabolism studies
- Vaccine development
- Viral infection studies



Closer than ever to primary hepatocytes

Cellartis Enhanced hiPS-HEP express several key cytochrome P450 genes (CYPs) in the same range as human primary hepatocytes, e.g. CYP1A, 3A and 2C9 (Figure 1). Further features include expression of CYP2B6, 2C19 and 2D6 as well as the Phase II enzymes UGT1A1, UGT2B7, and GSTA1-1 and transporters including BSEP, MRP2, and NTCP.

The expression of these important hepatic factors is detected by immunocytochemistry, Western Blot and gene expression analysis (see Table 1 for a full list). The presence and activity of the factors enable Cellartis Enhanced hiPS-HEP to function very similarly to primary hepatocytes in terms of drug metabolism and the cells are stable for 6 days in culture. This makes them highly suitable for drug metabolism studies, toxicity testing and basic liver research.

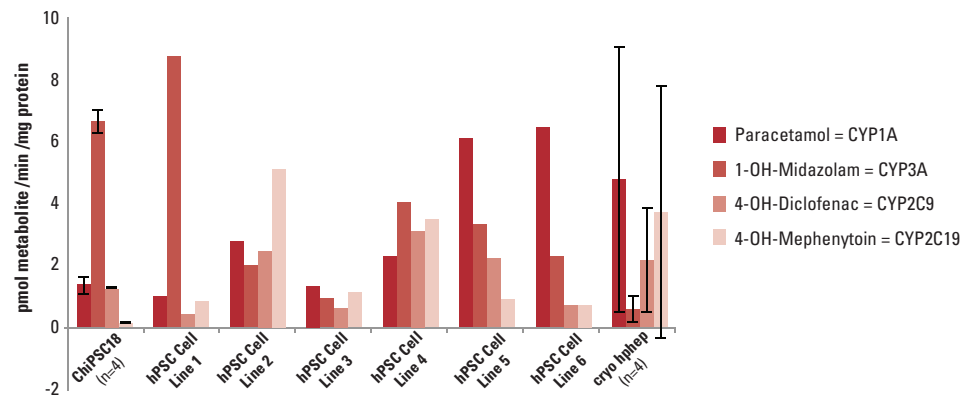


Figure 3. Diverse CYP activity profiles of hepatocytes derived from 7 hPSC lines.

Characteristic	Assay	Analyte
CYP activity	LC/MS	CYP1A (paracetamol), CYP2B6 (OH-bupropion), CYP2C9 (OH-diclofenac), CYP2C19 (OH-mephenytoin), CYP2D6 (OH-bufuralol), CYP3A (OH-midazolam)
Protein markers	ICC	α 1-antitrypsin, Albumin, HNF4 α , CK18, GSTA1, CYP2C9, CYP3A
Gene expression	qPCR	Phase I, e.g., CYP1A1, 1A2, 2B6, 2C9, 2C19, 2D6, 3A4, 3A5, low 3A7
Gene expression	qPCR	Phase II, e.g., UGT1A1, 2B7, GSTA1.1
Gene expression	qPCR	Transporters, e.g., BSEP, BCRP, MDR-1 (P-gp), MRP2, NTCP, OATP1B1, OCT-1
Gene expression	qPCR	Albumin, α 1-antitrypsin, low AFP
Capability to store	PAS staining	Glycogen

PRODUCTS

Cat. #	Product	Source	Format
Y10050	Frozen Cellartis Enhanced hiPS-HEP	hiPS cell line 18	1 vial suitable for one 96-well plate

Kit content: 1 vial of Cellartis Enhanced hiPS-HEP, Cellartis HEP Coat and Cellartis HEP Supplement

Learn more at www.clontech.com/stemcells

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