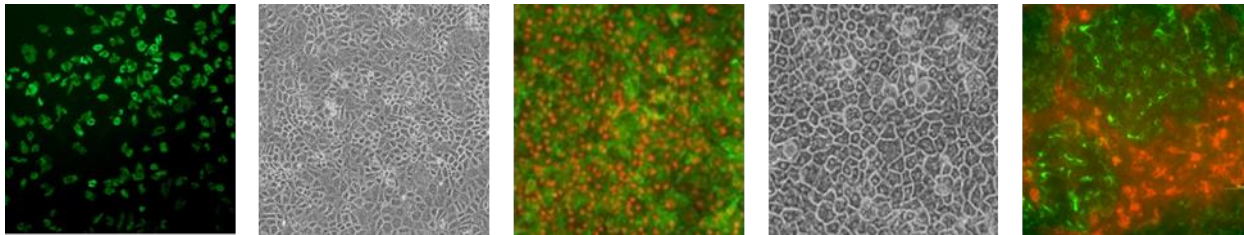


Clontech Takara cellartis



肝脏细胞模型专题（一） 肝脏细胞模型介绍

宝日医生物技术（北京）有限公司

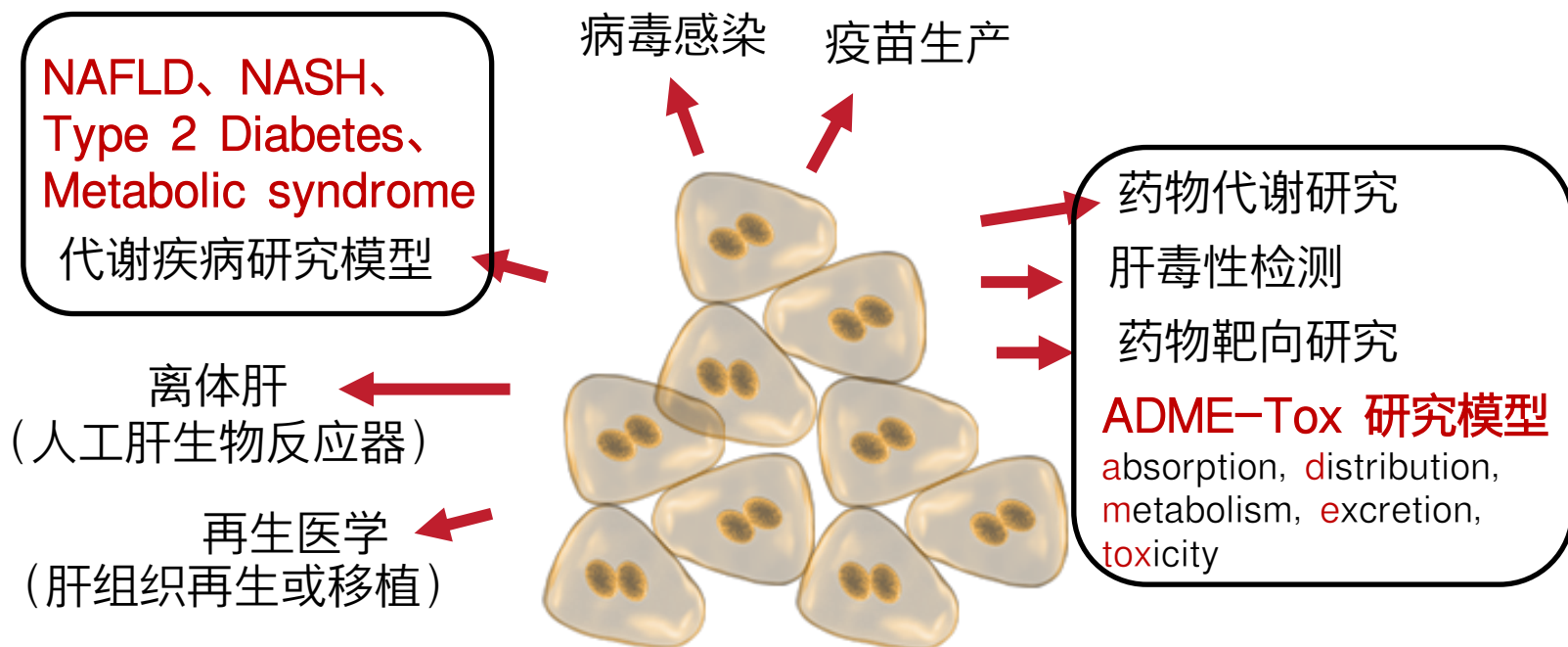
目录



肝脏细胞模型介绍

Takara助力肝脏细胞模型相关研究

肝脏细胞应用



肝脏细胞 Hepatocytes

人肝脏细胞模型

原代肝脏细胞

- 优：具备成熟的、典型的肝脏细胞特征；广泛应用
- 缺：① 取材困难，供体材料有限，无法长期供应，不同供体差异大；
② 终端分化细胞，无法增殖培养，成本较高
③ 活性和功能性维持时间较短

(永生化肝脏细胞)

- 优：可增殖培养（来源于癌化组织），可无限供应，有效降低成本
- 缺：不具备典型的、功能性的肝脏细胞表型

iPS细胞来源肝脏细胞

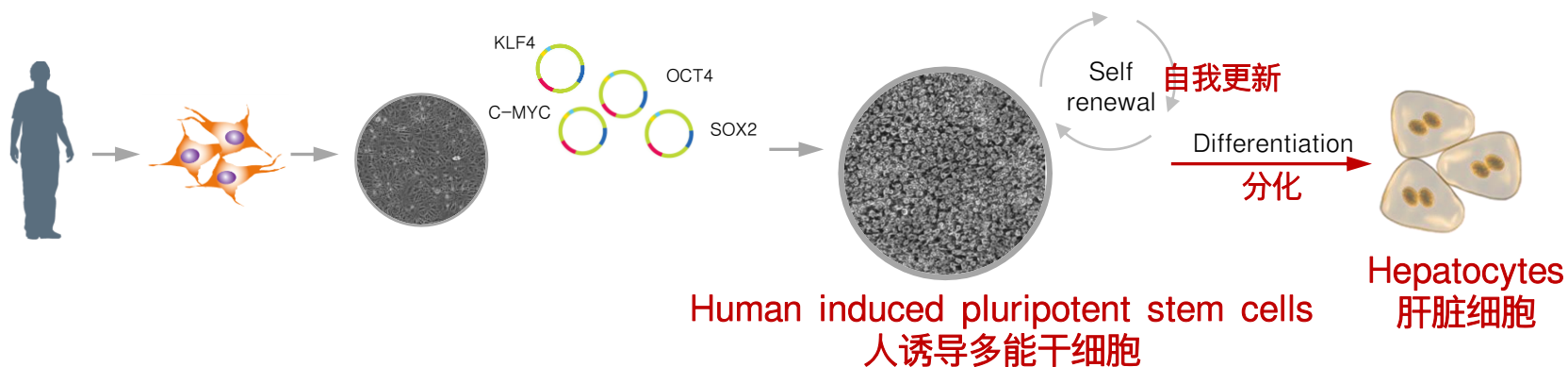
新方法

人iPS细胞来源肝脏细胞

iPS细胞来源肝脏细胞

新方法

- 优：① 由iPS细胞定向分化，与原代细胞功能相似，保留供体遗传背景；
② iPS细胞可稳健增殖，持续供应，批次间差异小
- 缺：难完全具备成熟的肝脏细胞表型



- 具备多向分化潜能
- 拥有稳健的增殖能力
- 来源于成体细胞，无伦理问题
- 保留供体遗传背景（健康/疾病）
- 结合基因编辑技术，获得突变细胞系，进行基因功能性研究

Takara 助力“肝脏细胞模型”研究

确保使用的肝脏细胞模型在长时间的实验窗口内保有活性和功能特性

□ 选择原代肝脏细胞作为模型



□ 选择人iPS细胞来源肝脏细胞作为模型



人原代肝脏细胞培养基



完全培养液，适用于多种品牌的原代肝脏细胞培养

操作简便：**2D培养**，隔天换液，周末免换液，可分装冻存

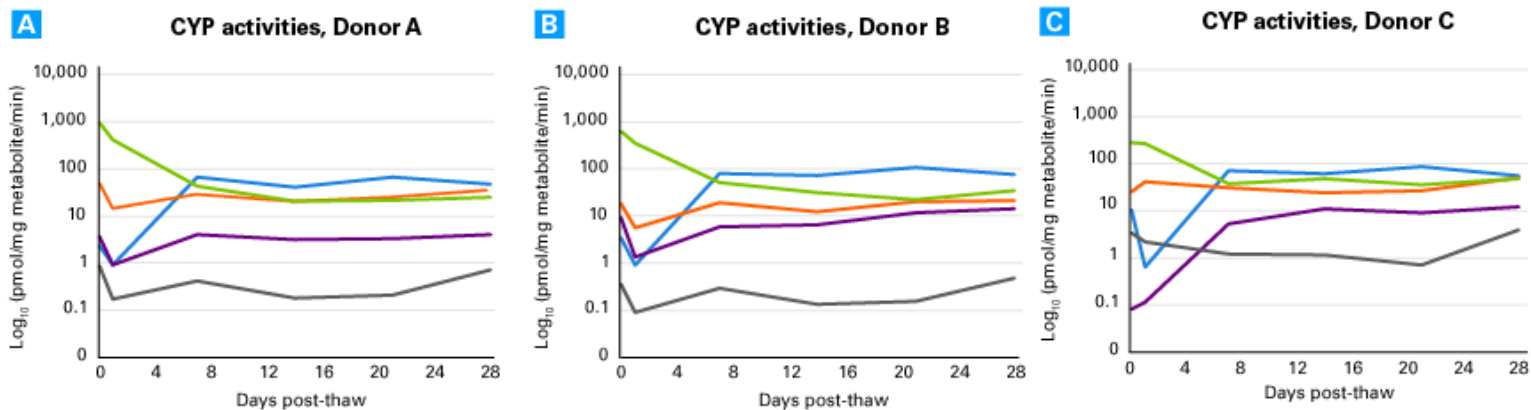
体外培养**4周**，保持原代肝脏细胞的存活和代谢活性

应用于：肝脏代谢疾病模型和药物ADME-Tox研究
以及**慢性-毒性实验**和**病毒感染实验**研究

| 产品货号 | 产品名称 | 规格 |
|--------|--------------------------------------|--------|
| Y20020 | Cellartis® Power™ Primary HEP Medium | 250 ml |

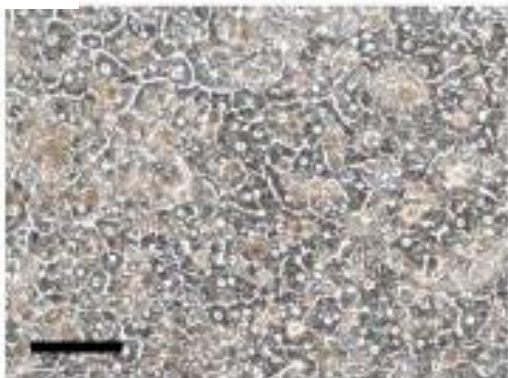
人原代肝脏细胞培养基

不同供体的hHep使用Power HEP medium培养，28天内持续保有CYP活性和典型形态

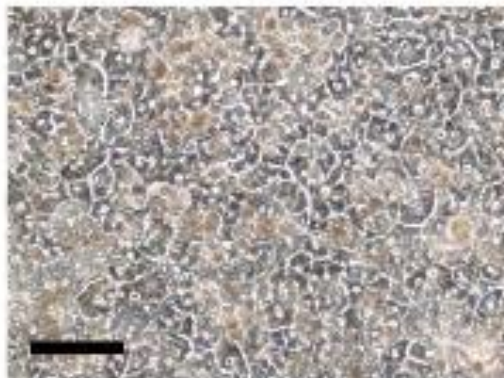


28天

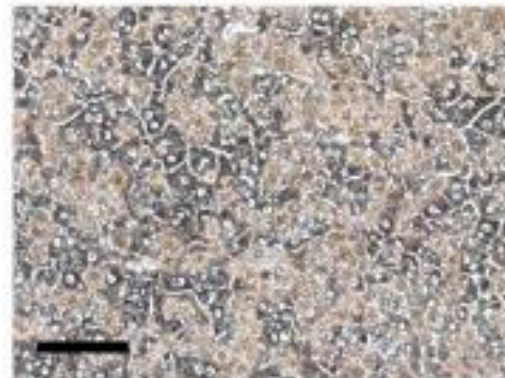
Donor A



Donor B

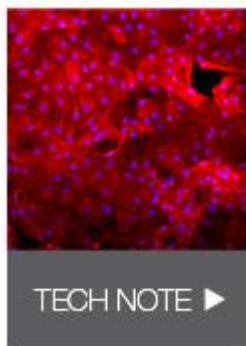


Donor C



hHep from four vendors (BioreclamationIVT, Lonza, Corning, Thermo Fisher Scientific)

技术数据：应用于长时间维持培养



TECH NOTE

Cellartis Power Primary HEP Medium, a novel maintenance medium, enables long-term culture of human primary hepatocytes

Maintain human primary hepatocyte viability and typical morphology >>

Support stable albumin secretion for four weeks in culture >>

Sustain CYP activities of human primary hepatocytes long term >>

Induce CYP expression in human primary hepatocytes long term >>



全文链接：

<https://www.takarabio.com/learning-centers/stem-cell-research/stem-cell-technical-notes/long-term-human-primary-hepatocyte-culture>

人原代肝脏细胞培养基：支持长达28天的培养

Power™ Primary HEP Medium:

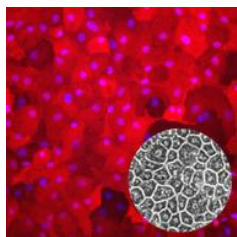
维持人原代肝脏细胞活力和典型形态>>

支持4周内稳定分泌白蛋白>>

长时间维持人原代肝脏细胞CYP活性>>

诱导人原代肝脏细胞长时间表达CYP表达>>

即用的人iPS细胞来源肝脏细胞



- 高度同质化，批次间差异小，拥有14天的实验窗口
- 肝脏细胞(1.2×10^7 cells/管)+包被剂+解冻铺板液+培养液

- 具备成体肝脏细胞功能特征，应用于肝脏代谢疾病模型和ADME-Tox研究

表达标志蛋白质，分泌Alb，具备CYP活性，调控胰岛素和葡萄糖，调控脂质代谢
表达药物代谢机制相关的 I 相酶、II相酶、转运蛋白等，对毒性药物呈现预期反应

| 产品货号 | 产品名称 | 规格 |
|--------|---|-------|
| Y10133 | Cellartis® Enhanced hiPS-HEP (from ChiPSC12) v2 Kit | 1 Kit |
| Y10134 | Cellartis® Enhanced hiPS-HEP (from ChiPSC18) v2 Kit | 1 Kit |
| Y10135 | Cellartis® Enhanced hiPS-HEP (from ChiPSC22) v2 Kit | 1 Kit |

人iPS细胞来源肝脏细胞

All-in-one型



肝脏细胞
C12/C18/C22

+



25 ml解冻液

+



20 ml接种液

+



6 ml包被剂

+



35 ml清洗液

+



200 ml培养液

解冻细胞

维持培养

d0

d1

d5

d11

d19

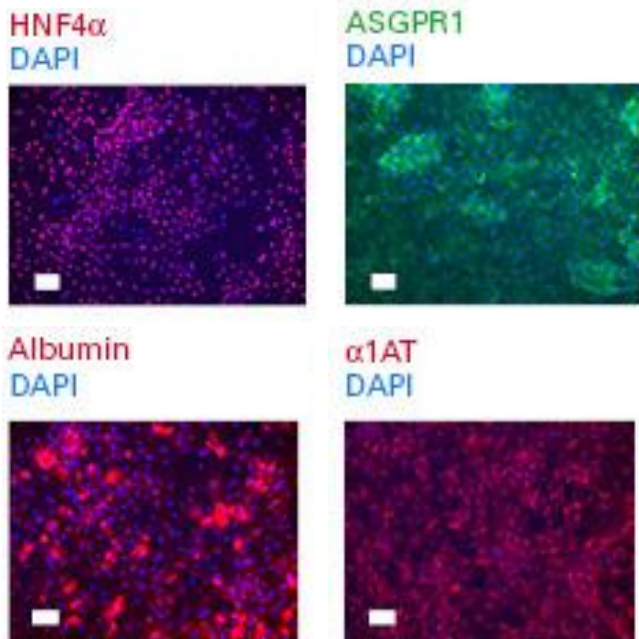
> 14天的实验窗口

应用于慢性-毒性实验和病毒感染实验研究

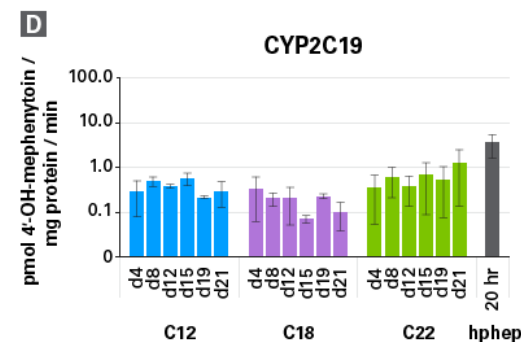
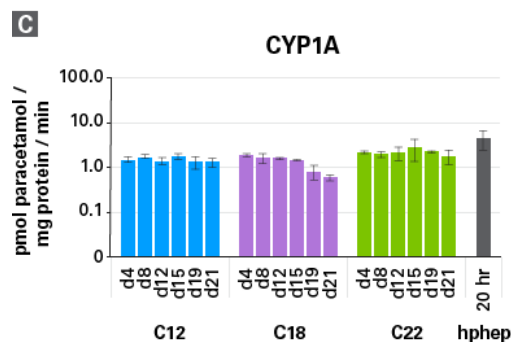
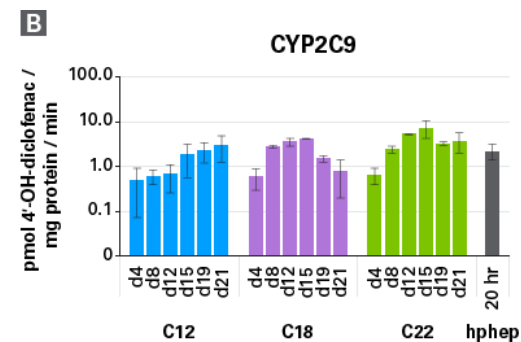
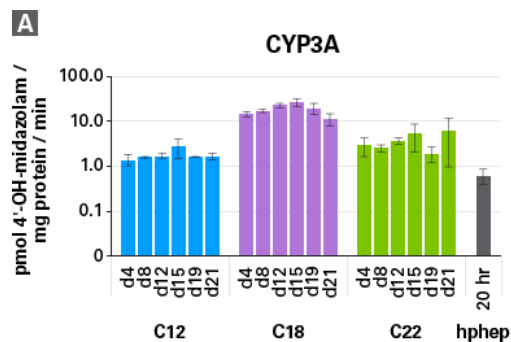
人iPS细胞来源肝脏细胞

成熟肝脏细胞特征

Enhanced hiPS-HEP表达肝脏细胞标志物和CYP活性



Enhanced hiPS-HEP (from ChiPSC18), d12



技术数据：应用于代谢疾病模型



TECH NOTE

Next-generation human iPS cell-derived hepatocytes for metabolic disease modeling

Improved hepatocytes for modeling metabolic disorders

Cells express expected markers and display functional characteristics of mature hepatocytes >>

Functional glucose regulation

Cells demonstrate normal insulin response and functional glucose regulation >>

Functional lipid metabolism

Cells demonstrate important features of lipid metabolism >>

An appropriate model for progressing NAFLD

Upon induction of steatosis, cells show elevated triglycerides and TNF α >>

全文链接:

<https://www.takarabio.com/learning-centers/stem-cell-research/stem-cell-technical-notes/hepatocytes-for-disease-modeling>

人iPS细胞来源肝脏细胞：新型的代谢疾病模型

Enhanced hiPS-HEP:

表达预期的标志物和呈现成熟肝脏细胞的功能特征>>

显示功能性的葡萄糖调节>>

显示功能性的脂质代谢>>

作为NAFLD模型>>

技术数据：应用于药物代谢研究



TECH NOTE

Next-generation human iPS cell-derived hepatocytes for long-term drug metabolism studies

Long-term expression of drug-metabolizing machinery

Cellartis enhanced hiPS-HEP cells express hepatic uptake and efflux transporters, phase II enzymes, and cytochrome P450 (CYP) enzymes until Day 20 post-thawing.

High batch-to-batch consistency

Cellartis enhanced hiPS-HEP cells display consistent CYP activity levels and high homogeneity between batches.

Interindividual variation in CYP activities due to availability of three donor lines

Cellartis enhanced hiPS-HEP cells derived from different hiPSC lines display different CYP activity profiles, as expected.

全文链接：

<https://www.takarabio.com/learning-centers/stem-cell-research/stem-cell-technical-notes/hepatocytes-for-drug-metabolism-studies>

人iPS细胞来源肝脏细胞：长时间的药物代谢研究

Enhanced hiPS-HEP:

长时间表达药物代谢机制（CYP酶、II相酶、转运蛋白等）>>
不同批次间差异小，CYP活性水平一致>>
三种供体来源细胞如预期显示不同的CYP活性谱>>



that's
GOOD
science!®

Clontech **TAKARA** cellartis