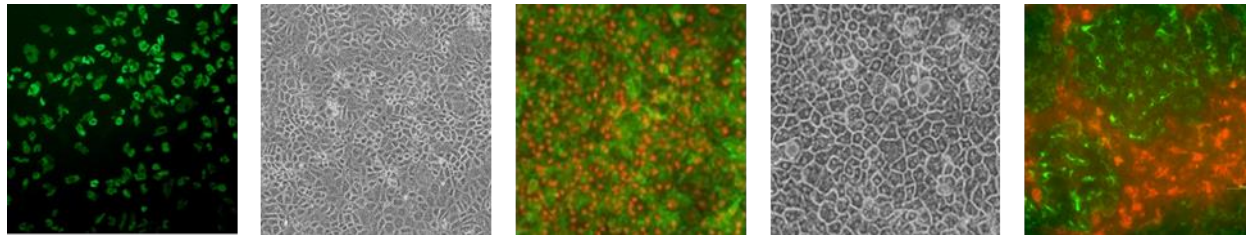


Clontech Takara cellartis

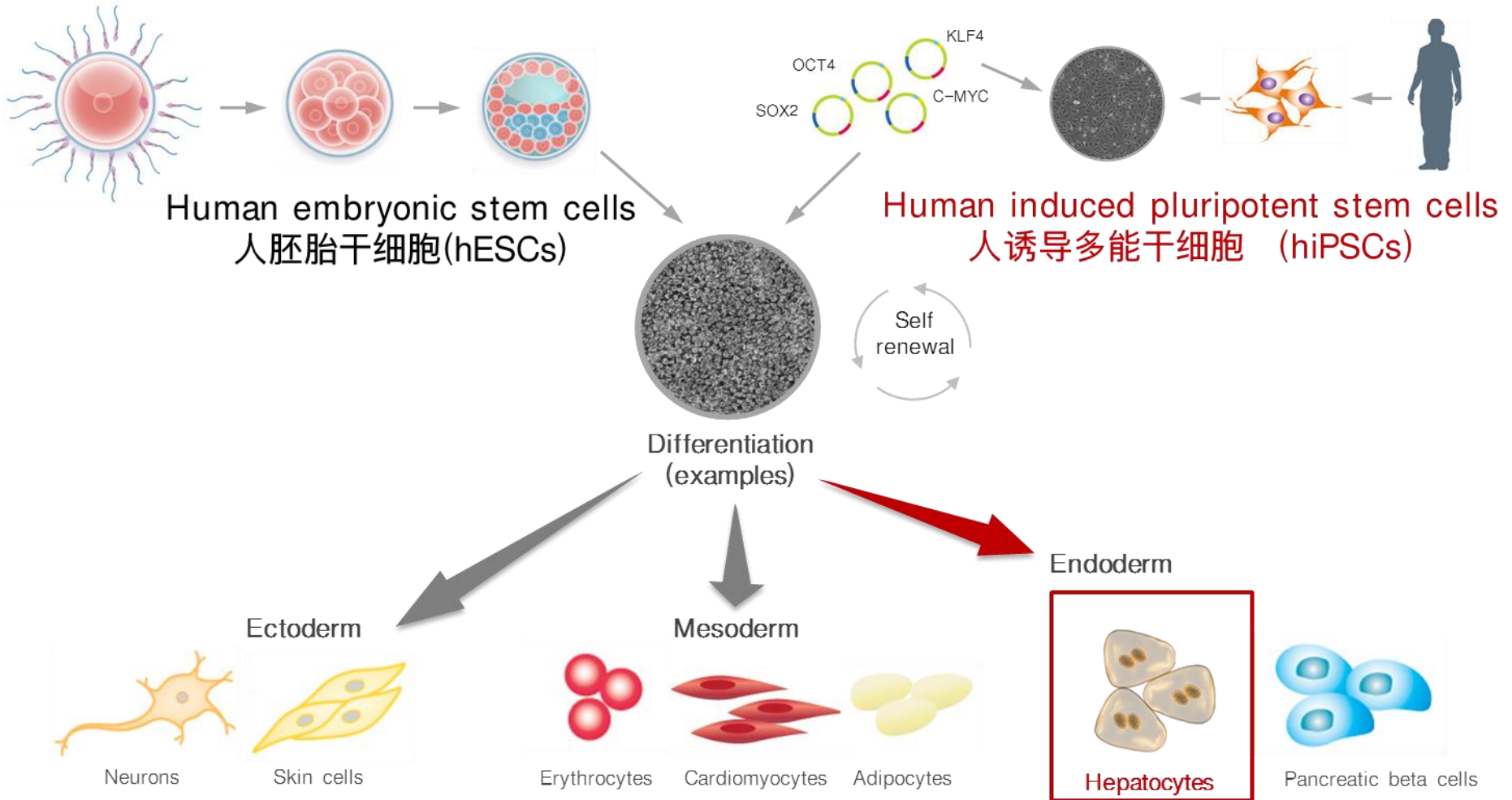


肝脏细胞模型专题 (三)

Takara: 人iPS细胞向肝脏细胞定向分化系统

宝日医生物技术 (北京) 有限公司

人iPS细胞向肝脏细胞定向分化



人iPS细胞向肝脏细胞定向分化

成功定向分化的关键：

- ※ 起始细胞：高度同质化的多能干细胞
- ※ 分化诱导过程：模拟胚胎发育进程

肝脏发育进程：

Pluripotent
Day 0

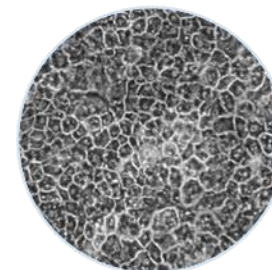
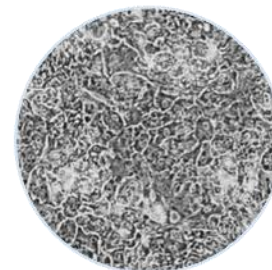
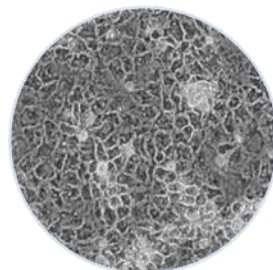
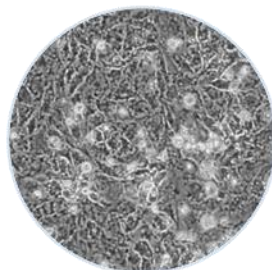
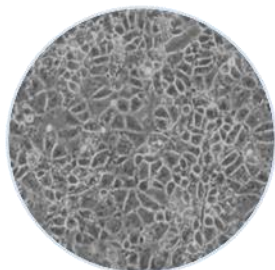
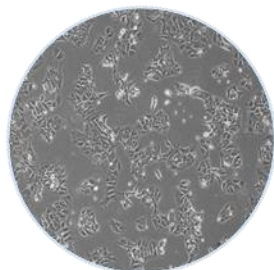
Definitive
Endoderm
Day 7

Ventral Foregut
Days 8 - 10

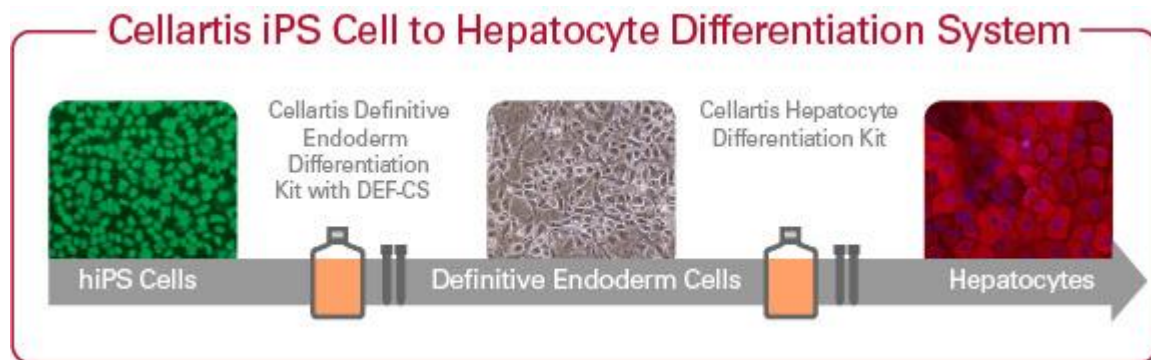
Hepatoblast
Days 11 - 14

Fetal-like
Hepatocyte
Days 15 - 20

Hepatocyte
Day 21+



Takara: 人iPS细胞向肝脏细胞定向分化系统



保留供体细胞遗传背景
保持生理功能稳定性
表达特异性标志物
表达药物代谢相关酶系统
表达药物转运系统

- ※ **灵活**: 由客户自定义的人iPS细胞分化产生
- ※ **方便**: 完整的试剂盒, 即用的培养基和包被剂
- ※ **易操作**: 标准的操作步骤和优化的分化体系
- ※ **通用**: 多种人iPS细胞系经过分化测试验证
- ※ **稳定的功能特性**: 与人原代肝脏细胞功能相似

产品货号	产品名称	规格
Y30055	Cellartis® iPS Cell to Hepatocyte Differentiation System	1 Kit

人iPS细胞向肝脏细胞定向分化系统



1

DEF-CS 100 Culture System



2

DE Differentiation Kit



3

Hepatocyte Differentiation Kit

Day	Suggested Weekday	Components to be Used	Volume [ml/cm ²]	Cell Density at Seeding
0	Mon.	Definitive Endoderm Differentiation Coating	0.1 (Coat.)	3.0–4.0 x 10 ⁴
1	Tue.	Definitive Endoderm Differentiation Day 0	0.2 (Med.)	cells/cm ²
2	Wed.	Definitive Endoderm Differentiation Day 1	0.2	
3	Thu.	Definitive Endoderm Differentiation Day 2	0.2	
4	Fri.	Definitive Endoderm Differentiation Day 3	0.27	
5	Sat.	Definitive Endoderm Differentiation Day 4	~0.52	
6	Sun.	Definitive Endoderm Differentiation Day 6	~0.52	
7	Mon.	Hepatocyte Coating	0.15 (Coat.)	1.25–1.50 x 10 ⁵
		Hepatocyte Dissociation and Seeding Medium	0.5 (Med.)	cells/cm ²
8	Tue.			
9	Wed.	Hepatocyte Progenitor Medium	0.5	
10	Thu.			
11	Fri.	Hepatocyte Progenitor Medium	0.5	
12	Sat.			
13	Sun.			
14	Mon.	Hepatocyte Maturation Medium	0.5	
15	Tue.			
16	Wed.	Hepatocyte Maturation Medium	0.5	
17	Thu.			
18	Fri.	Hepatocyte Maintenance Medium	0.5	
19	Sat.			
20	Sun.			
21	Mon.	Hepatocyte Maintenance Medium	0.5	
22	Tue.			
23	Wed.	Hepatocyte Maintenance Medium	0.5	
24	Thu.			
25	Fri.	Hepatocyte Maintenance Medium	0.5	
26	Sat.			
27	Sun.			
28	Mon.	Hepatocyte Maintenance Medium	0.5	
29	Tue.			
30	Wed.	Hepatocyte Maintenance Medium	0.5	
31	Thu.			
32	Fri.			

分化为肝脏细胞，
纯度高达90%

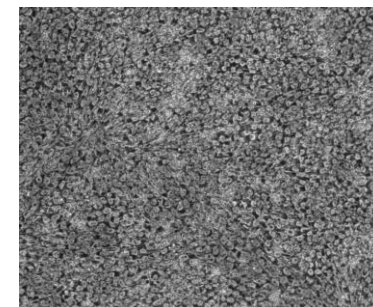
人iPS细胞培养



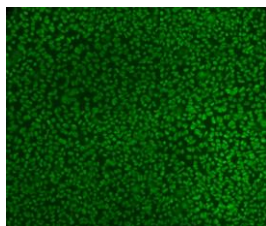
1

DEF-CS 100
Culture System

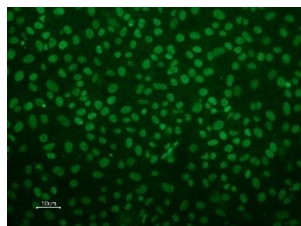
DEF-CS系统培养的人iPS细胞呈现均匀地、**非集落状地、单层**生长模式，高度同质化；并高效表达多种多能性标志蛋白质



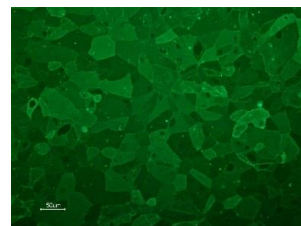
Oct4



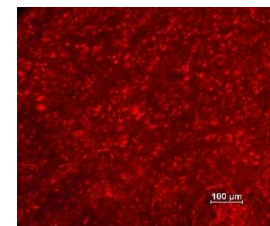
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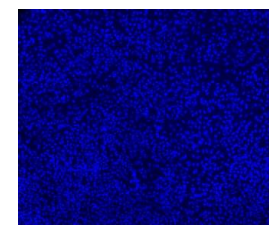
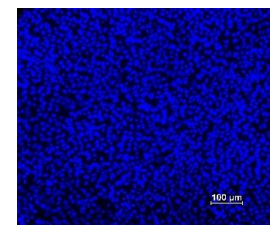
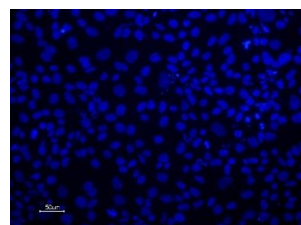
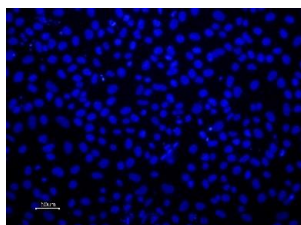
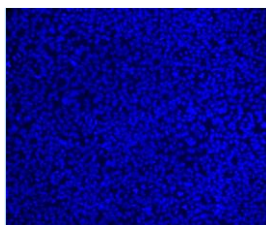
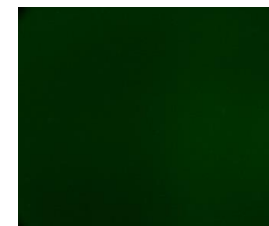
TRA-1-60



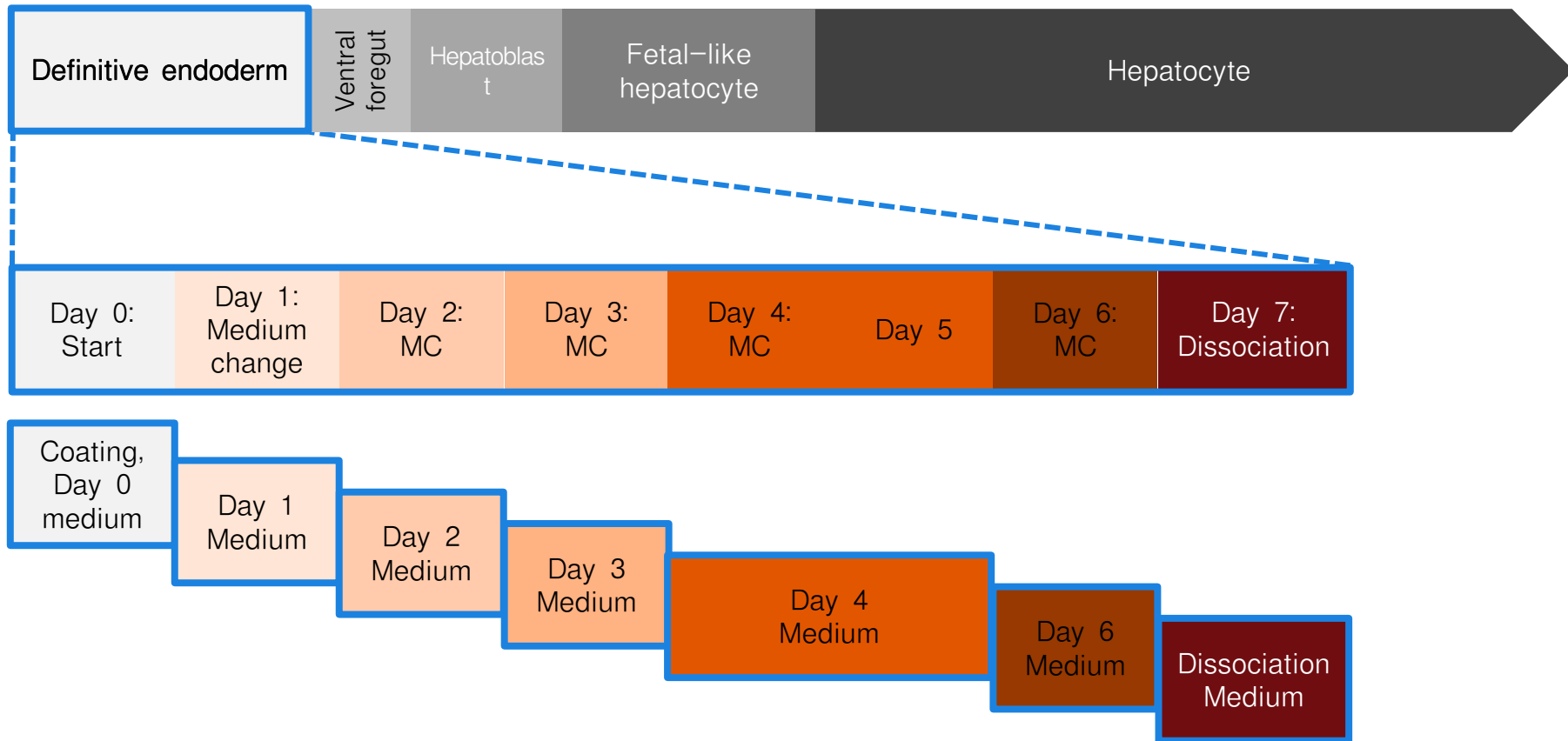
TRA-1-81



SSEA-1



DE分化



DE分化



1

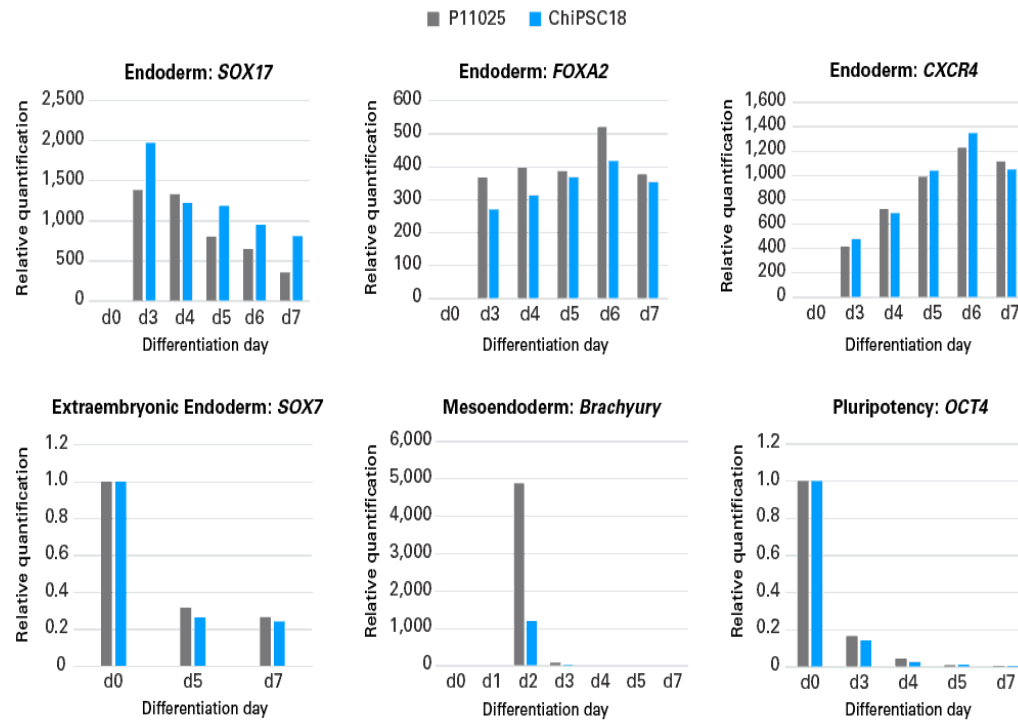
DEF-CS 100
Culture System



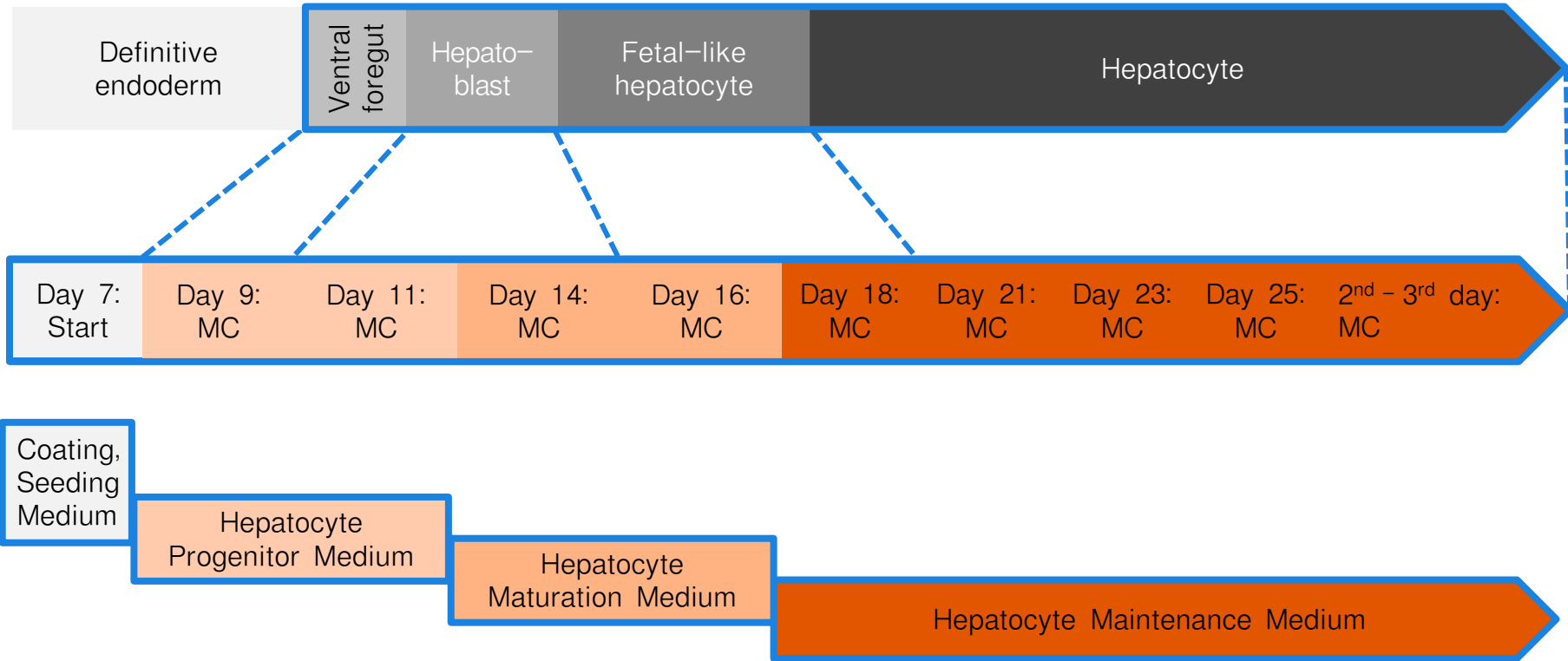
2

DE Differentiation Kit

两种人iPS 细胞分别向DE细胞分化过程中，内胚层标志物SOX17、FOXA2、CXCR4如预期表达



肝脏分化



肝脏分化



1

DEF-CS 100
Culture System



2

DE Differentiation Kit

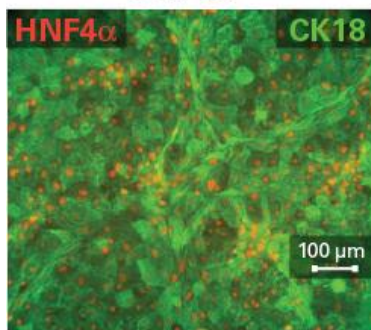


3

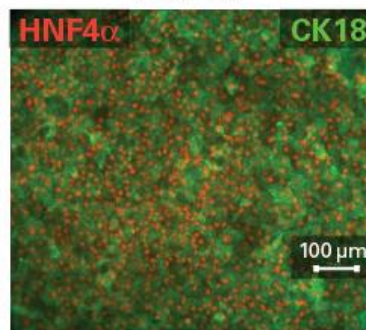
Hepatocyte Differentiation Kit

14天到21天，**肝脏特异性标志** HNF4 α 和 CK18 表达量增加；
28天时，**成熟肝脏特异性标志** CYP3A 和 ALB 也高效表达

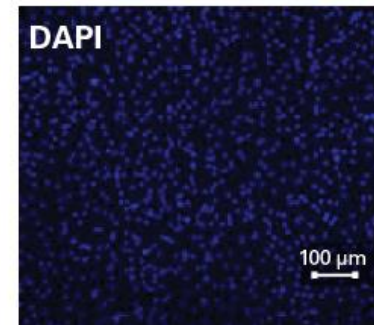
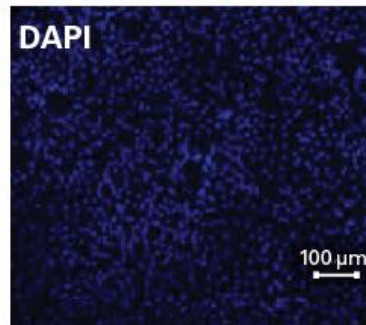
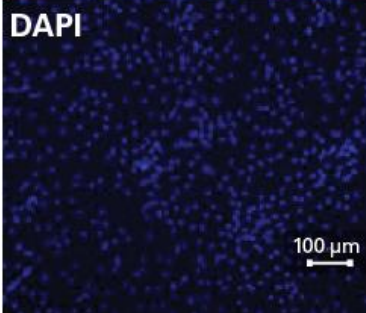
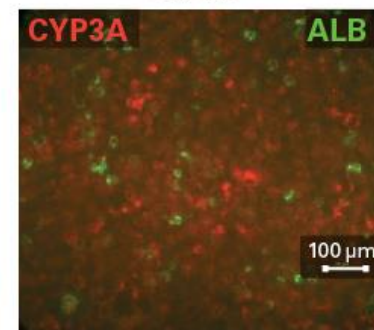
Day 14



Day 21



Day 28



肝脏分化



1

DEF-CS 100
Culture System



2

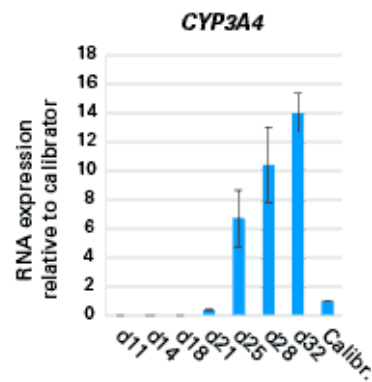
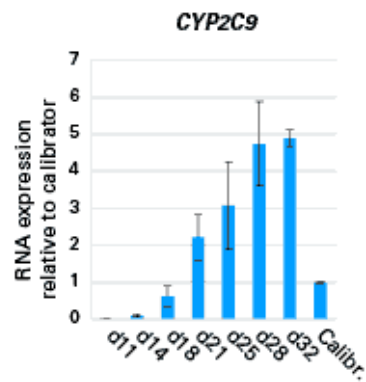
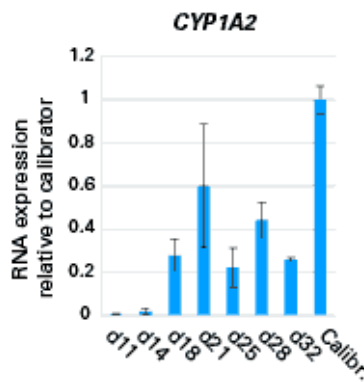
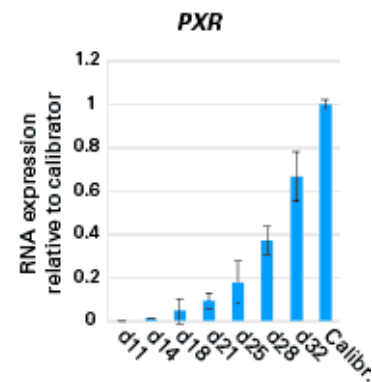
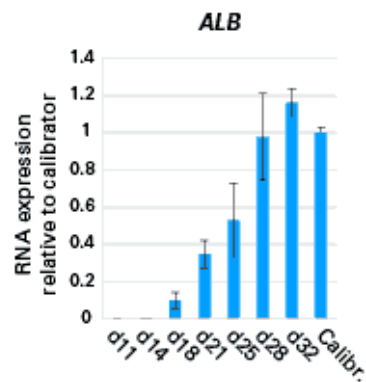
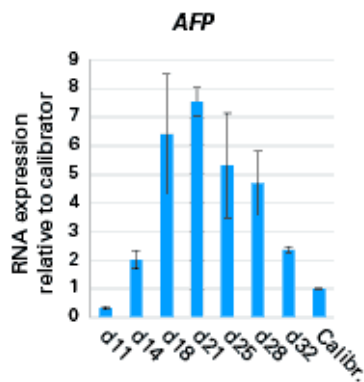
DE Differentiation Kit



3

Hepatocyte Differentiation Kit

21天后, **成熟肝脏特异性标志** ALB、PXR、CYP等表达量增加



文献和关联产品

Asplund, A. *et al.* One standardized differentiation procedure robustly generates homogenous hepatocyte cultures displaying metabolic diversity from a large panel of human pluripotent stem cells. *Stem Cell Rev.* **12**, 90–104 (2016).

来源于24个不同供体的**25种**人多能干细胞系，使用Takara的Cellartis® iPS Cell to Hepatocyte Differentiation System (Y30055)，均成功分化为功能性的肝脏细胞

由Cellartis® Y30055 分化获得的人iPS来源的肝脏细胞:

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

关联产品

Cellartis® Y30055 组件（可单独销售）：

产品货号	产品名称	规格
Y30035	Cellartis® Definitive Endoderm Differentiation Kit with DEF-CS™ Culture System	1 Kit
Y30050	Cellartis® Hepatocyte Differentiation Kit	1 Kit
Y30051	Cellartis® Hepatocyte Maintenance Medium	100 ml

由Cellartis® Y30035 分化获得的人iPS来源的DE细胞：

Y10040	Cellartis® Definitive Endoderm Cells (from ChiPSC18)	1 vial
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Cellartis® 人iPS细胞系：

Y00275	Cellartis® Human iPS Cell Line 7 (ChiPSC7) Kit	1 Kit
Y00285	Cellartis® Human iPS Cell Line 12 (ChiPSC12) Kit	1 Kit
Y00305	Cellartis® Human iPS Cell Line 18 (ChiPSC18) Kit	1 Kit
Y00315	Cellartis® Human iPS Cell Line 21 (ChiPSC21) Kit	1 Kit
Y00325	Cellartis® Human iPS Cell Line 22 (ChiPSC22) Kit	1 Kit



that's
GOOD
science!®

Clontech **TAKARA** cellartis