

誘導性多能幹細胞整合方案

iPSC

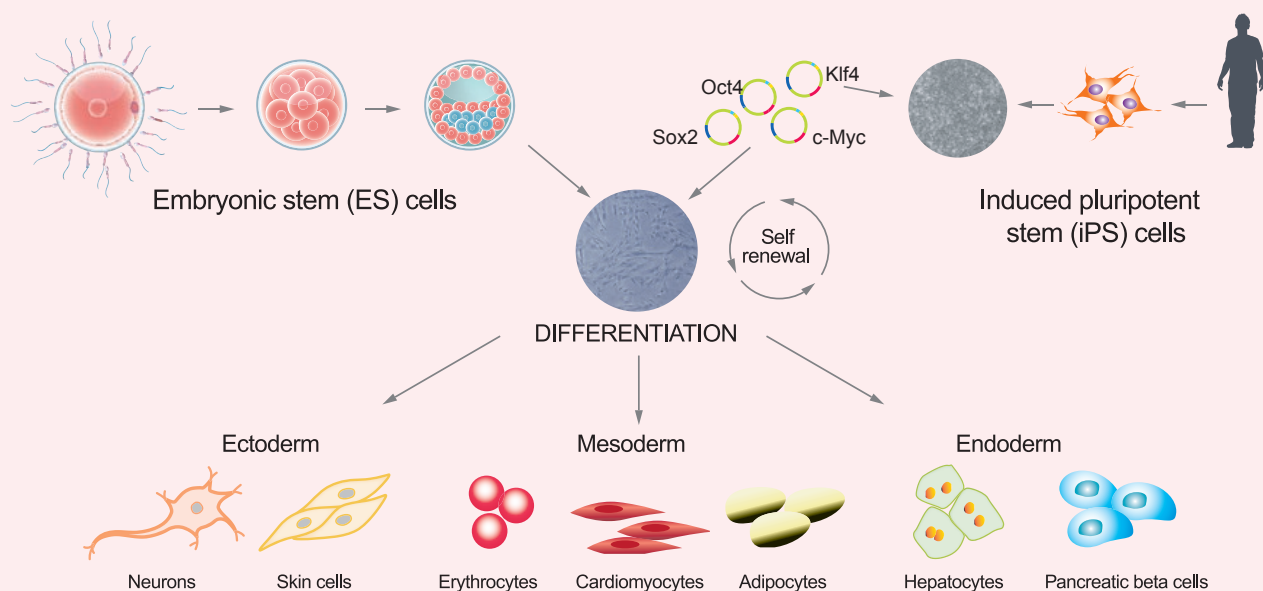
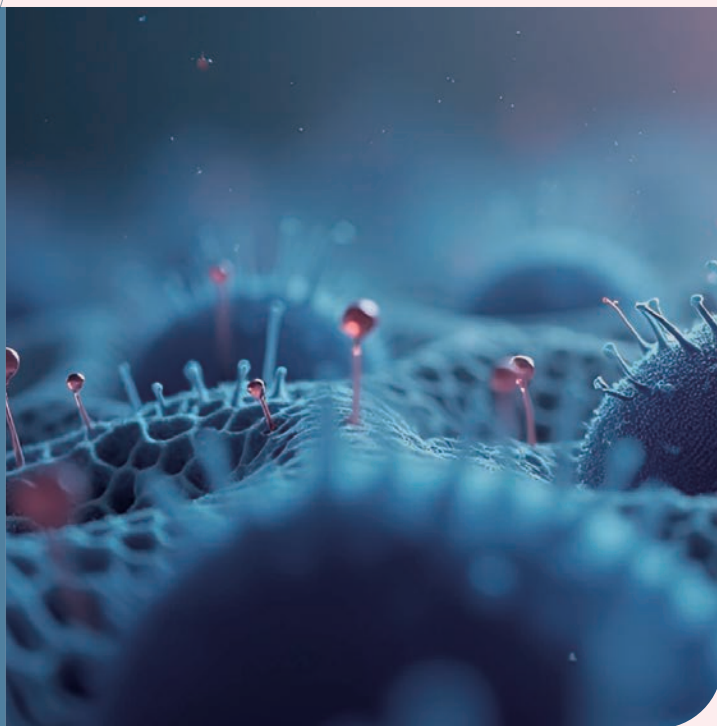
Induced Pluripotent Stem Cell

誘導性多能幹細胞整合方案

iPSC

Induced Pluripotent Stem Cell

誘導性多能幹細胞 (iPSC) 技術由日本京都大學山中伸彌 (Shinya Yamanaka) 教授於 2006 年首次提出，透過將四個轉錄因子 (Oct4、Sox2、Klf4、c-Myc) 導入體細胞中，使其回復至具多能性的幹細胞狀態。此一突破性發現顛覆了成熟細胞不可逆分化的既有認知，並於 2012 年與英國學者 John B. Gurdon 共同獲頒諾貝爾生理醫學獎，奠定 iPSC 在現代細胞生物學與再生醫學中的關鍵地位。



綜合上述機制，iPSC 具自我更新與多向分化能力，可穩定衍生多種功能性細胞，已成為細胞治療、疾病模型建構與藥物篩選開發中最具關鍵性的核心細胞技術平台。



3D cell cultured
3D 細胞培養專刊

3D Culture & Organoid

iPSC 結合 3D 培養與類器官技術，可建立具完整組織結構與細胞間交互作用的立體模型，廣泛應用於腦、肝、腸與視網膜類器官研究。透過重建體內微環境與組織分化結構，可真實呈現疾病在組織層級的病理變化，並用於藥物篩選、毒性測試與器官層級藥效評估，彌補傳統 2D 培養在生理相關性上的不足。

Cellular Therapy & Stem Cell

iPSC 可穩定衍生為免疫細胞與多種功能性幹細胞，已成為次世代細胞治療的重要細胞來源。透過 iPSC-NK、iPSC-T 結合基因編輯與 CAR 受體工程技術，可進一步發展為異體即用型免疫細胞製劑，有效突破傳統自體細胞在數量、品質與製備時程上的限制；同時，iPSC 衍生之視網膜色素上皮細胞（RPE）為目前臨床發展最成熟的應用之一，並與心肌、神經與 MSC 共同展現高度再生與組織修復潛力，逐步拓展至眼科、神經與心血管等臨床領域。



Stem cell
幹細胞專刊



Immune cell therapy
免疫細胞治療專刊



Gene Editing & Disease Modelling

iPSC 結合 CRISPR 等基因編輯技術，可在同一遺傳背景下精準導入或修復致病突變，建立具因果驗證能力的 isogenic 疾病模型。此類模型可直接解析基因突變與細胞表型之間的關聯，應用於遺傳性疾病、腫瘤突變與視網膜、神經退化疾病的致病機制研究，並支撐精準醫療與個人化用藥評估。



GenScript CRISPR
Services



Gene editing
基因編輯

誘導性多能幹細胞整合方案

iPSC

Induced Pluripotent Stem Cell

胚胎幹細胞和誘導性多能幹細胞皆屬於全功能性的幹細胞，由於胚胎幹細胞牽扯到道德倫理議題，所以研發受到限制。而誘導性多能幹細胞可利用患者本人的細胞製造，移植時發生排斥反應的可能性較小，這使誘導性多能幹細胞應用於再生醫學上更有利。

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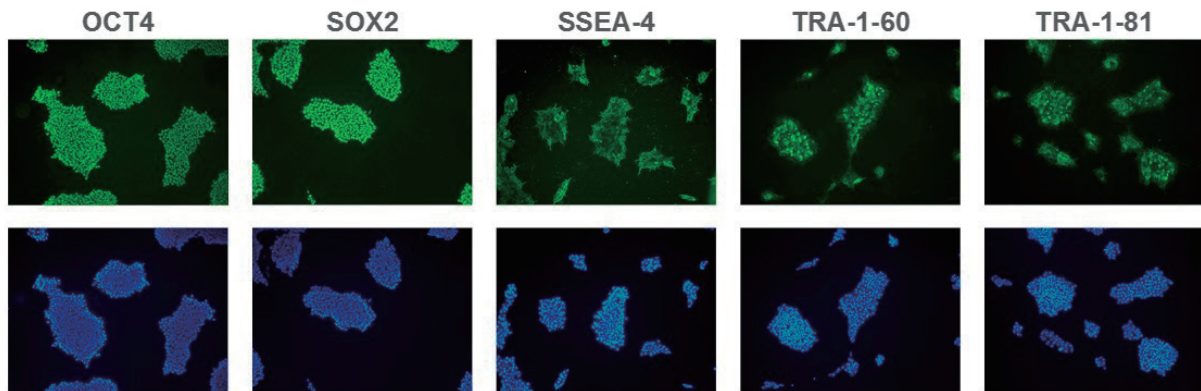
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Induced Pluripotent Stem Cells/Embryonic Stem Cell

- 產品豐富：物種來源有人和老鼠
- 細胞資料清楚透明：有 Donor 基本資料、reprogramming 方法、操作說明
- 高品質：符合 Pluripotency 特性、形態 (Pluripotency Marker Analysis、Alkaline Phosphatase (AP) Staining、Karyotype Analysis)
- 具有 genome editing 和 differentiation 能力
- 下游應用廣：disease modeling, drug discovery/screening, neurotoxicity screening

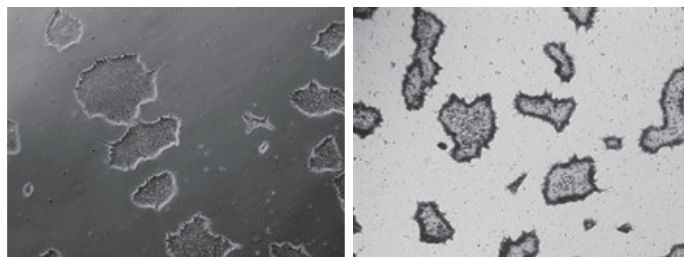


Pluripotency Marker Analysis



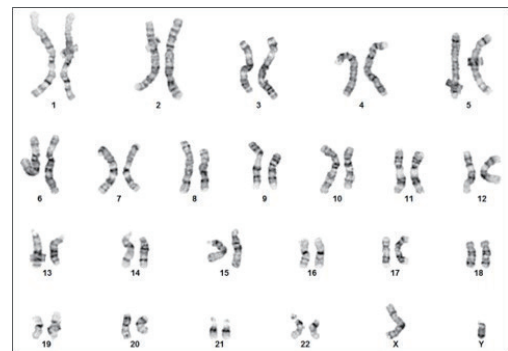
Bottom row: Corresponding DAPI nuclear staining. All images were taken at 10x magnification.

Alkaline Phosphatase (AP) Staining



a typical unstained colony (a) was used to gauge the extent of the AP staining (b)

Karyotype analysis

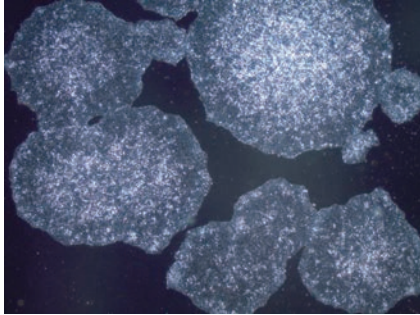


貨號	產品	包裝	物種
ASE-9211	iPS Cells (iPSCs from Fibroblast, African American, Male, Neonatal, Episomal); NIST Line	0.5 x 10 ⁶ cells/vial	Human
ASE-9217	iPS Cells (iPSCs from PBMC, Caucasian, Female)	1 x 10 ⁶ cells/vial	Human
ASE-9280	ActiCells GMP hiPSCs (CD34+ Cord Blood Cells, Normal, Male)	1 x 10 ⁶ cells/vial	Human
ASE-9250	ActiCells GMP-Matching RUO hiPSCs (CD34+ Cord Blood Cells, Normal, Male)	1 x 10 ⁶ cells/vial	Human
ASE-9209	iPS Cells (iPSCs from Fibroblasts, Caucasian, Female, Age 47, Episomal)	0.5 x 10 ⁶ cells/vial	Human
ASE-9215	iPS Cells (iPSCs from PBMC, Caucasian, Male, Age 21)	0.5 x 10 ⁶ cells/vial	Human
ASE-9216	iPS Cells (iPSCs from HDF, Caucasian, Male, Neonatal)	0.5 x 10 ⁶ cells/vial	Human

Simplicon® Human iPS Cell Line #SCC271

- integration-free : 非使用病毒傳送方式製造，安全無慮
- 高品質：符合 Pluripotency 特性、形態 (Pluripotency Marker Analysis、Karyotype Analysis) 以及身分驗證 (genotyped by STR)
- 具有 genome editing 和 differentiation 能力

型態聚集，Colony 清晰



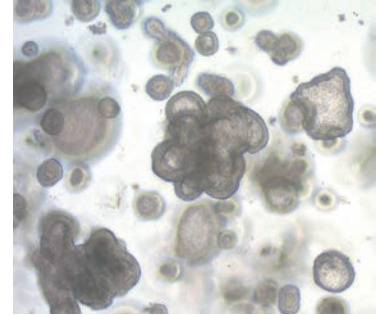
Undifferentiated morphology of Simplicon® human iPS cells display dense colonies with clear and defined borders.

Karyotype 分析無異常



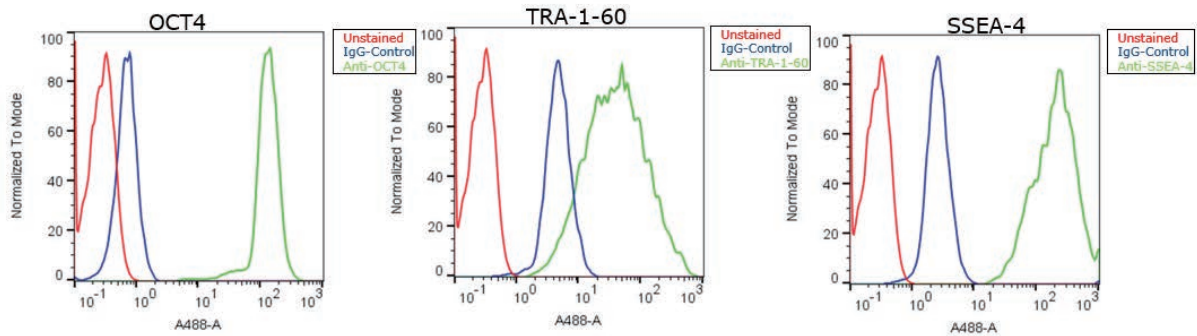
Chromosomal analysis of Simplicon® human iPS cells. Karyotype of human iPSCs show normal male karyotype with no chromosomal abnormalities.

分化能力佳



Differentiation potential of Simplicon® human iPS cells. Human iPSCs were differentiated into colonic organoids following protocol outlined by Crespo et. al

多能性標誌高表現



Characterization of Simplicon® human iPS cells using flow cytometry. The Simplicon® human iPS cells are >90% positive for pluripotency markers Oct-4, TRA-1-60 and SSEA-4.

建議
搭配
培養基



PluriSTEM® Human ES/iPS Cell Medium #SCM130

serum
free

feeder
free

ready
to use



FibroGRO[®]

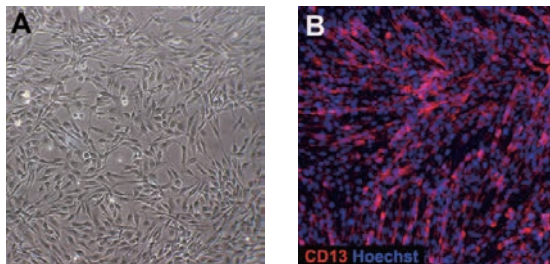
Xeno-Free Human Foreskin Fibroblasts #SCC058

serum free

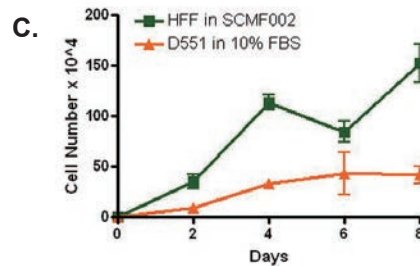
Inactivated Xeno-Free Human Foreskin Fibroblasts #SCC057

- 測試可成功誘導成 iPSC
- #SCC057 經 Mitomycin C 處理
- Xeno-free
- 高品質：符合 Pluripotency 特性、形態 (Pluripotency Marker Analysis、Karyotype Analysis) 以及身分驗證 (genotyped by STR)

型態及標誌表現正常

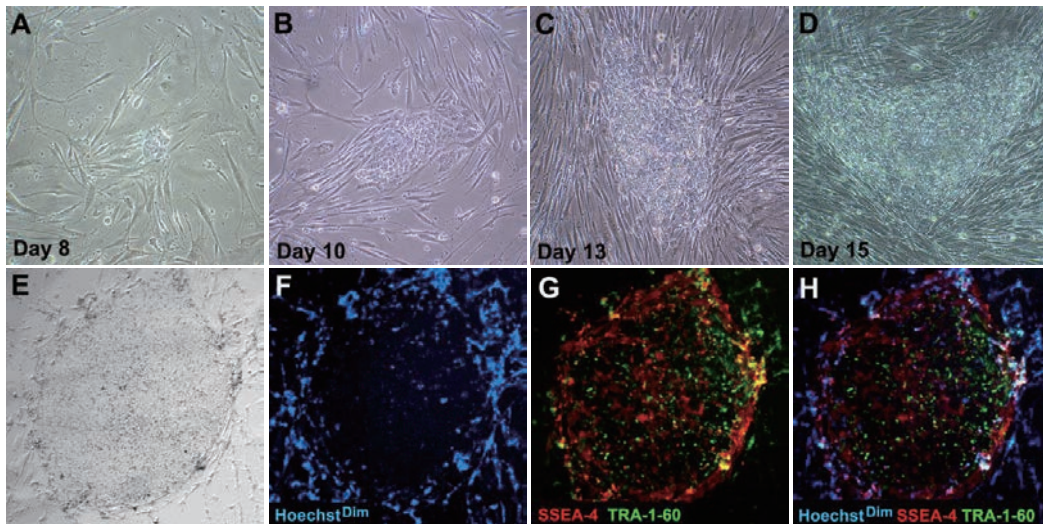


生長速度快



FibroGRO[®] Xeno-free Human foreskin fibroblasts (Cat. No. SCC058) are grown as monolayers (A), express the fibroblast marker, CD13 PE (B, red) and are negative for pluripotent markers, SSEA-4 and TRA-1-60 (data not shown). Human foreskin fibroblasts cultured in FibroGRO[®] LS Complete Medium (Cat. No. SCMF002) proliferate significantly faster than D551 human fibroblasts grown in medium containing 10% FBS (C).

可成功誘導成 iPSC



建議
搭配
培養基



FibroGRO[®]-LS Complete
Media Kit #SCMF002

low
serum瓶身設計
防 UVphenol
red free

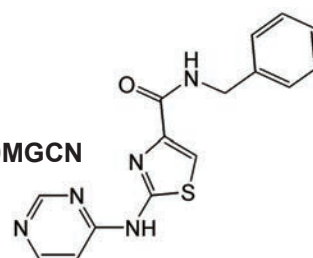
Reprogramming methods 比較表

廠牌	品名	方法	重編程轉錄因子	安全	效率	形式	適用物種
	Simplicon® RNA Reprogramming Kit	RNA	OXS-iG; Oct4, Klf4, Sox2, Glis1	++++	+++	RNA	Human
	PhiC31 Integrase iPSC Reprogramming	Integrase	Yamanaka system (Sox2, Oct4, Klf4, c-Myc)	+++	++++	vector	Mouse
	PiggyBac Reprogramming	transposon	microRNA-302bcd/367 cluster	+++	++	vector	Mouse
			Oct4, Sox2, Klf4, c-Myc			vector	
	STEMCCA Constitutive Polycistronic(OKSM) Lentivirus Reprogramming Kit	Lentivirus	Yamanaka system (Sox2, Oct4, Klf4, c-Myc)	+	++++	viral vectors	Human/ Mouse
	STEMCCA Cre-Excisable Constitutive Polycistronic(OKSM) Lentivirus Reprogramming Kit	Lentivirus	Yamanaka system (Sox2, Oct4, Klf4, c-Myc)	+	++++	viral vectors	Human/ Mouse
	TcBuster™ ((TcB-M)	transposon	可客製化	+++	+++	Vector	Human
	Small molecules (品項見 P.10)	Chemical reprogramming	-	+++++	+	Small molecules	Human



iPSC Induction Enhancer, Thiazovivin

#420220-10MGCN



■ 具細胞通透性

■ 抑制 ROCK 的效力高於 Y-27632 5 倍

■ 有效防止胰蛋白酶誘導的細胞凋亡：透過穩定新合成的細胞表面 E- 鈣黏蛋白和細胞間黏附

■ 提高轉染效率：搭配 TGF- β and MEK-ERK 抑制劑，體細胞轉染至 iPSC 的生成效率，可增加超過 200 倍

■ 即使在沒有 ECM 的情況下，Thiazovivin 也能保護分離的 hiPSC

貨號	產品	包裝	作用
688000	Y-27632; ROCK Inhibitor	1 / 5 / 10 / 100 mg	抑制細胞凋亡
616461-5MG	TGF- β RI Kinase Inhibitor VI, SB431542	5 mg	抑制 TGF β 和 MEK-ERK pathways 可使人
444966-5MG	MEK1/2 Inhibitor III	5 mg	iPSC 生成率提高 50 倍以上

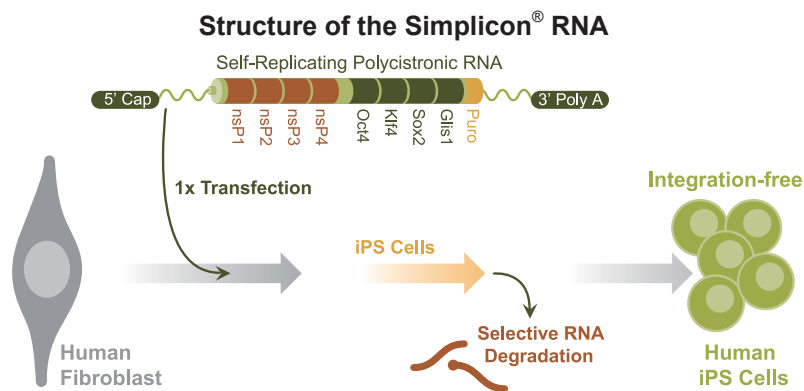
培養 iPSC/ESC 時，單細胞的解離會過度激活 Rho-ROCK 訊號傳遞並導致細胞死亡

Simplicon[®]

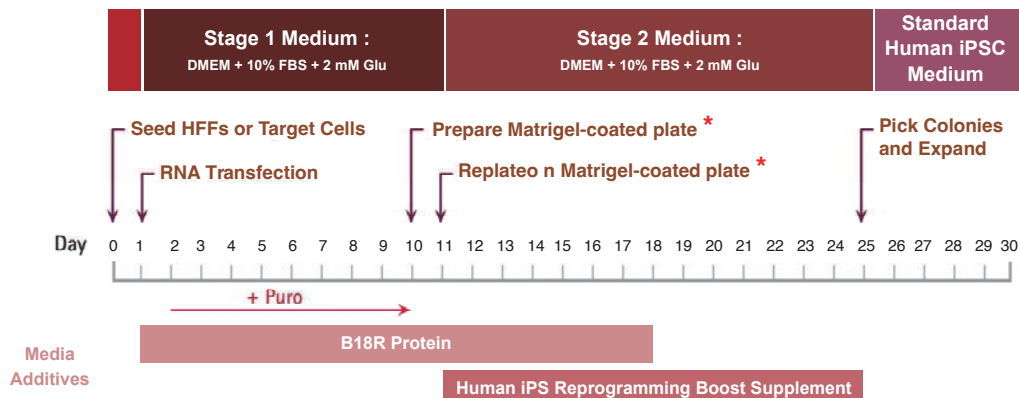
RNA Reprogramming Kit (OKSG) #SCR550

Reprogramming RNA #SCR549

- 無基因重組風險：integration free
- 安全：virus-free，合成的 RNA (包含 OKS-iG; Oct4, Klf4, Sox2 and Glis1)
- 快速：只需一天的轉染 transfection
- 經驗證可使用在 feeder-free 及 feeder-based 系統
- B18R 用來維持 RNA 複製，移除 B18R 即可讓 RNA 自然降解，達到調控 RNA 表現
- #SCR549 不含 B18R Protein 及 Boost Supplement



實驗流程 (feeder-free)



另有 **STEMCCA Reprogramming Lentivirus** 試劑，歡迎洽詢

建議
搭配
轉染試劑



RiboJuice mRNA Transfection Kit #TR-1013

毒性低

- non-liposomal cationic polymer
- 含 Boost Reagent，轉染效果佳
- 血清存在與否不影響轉染效果
- Animal-Free Format
- 使用 MS 和 NMR 識別及確認純度
- 每批皆進行轉染效率確認

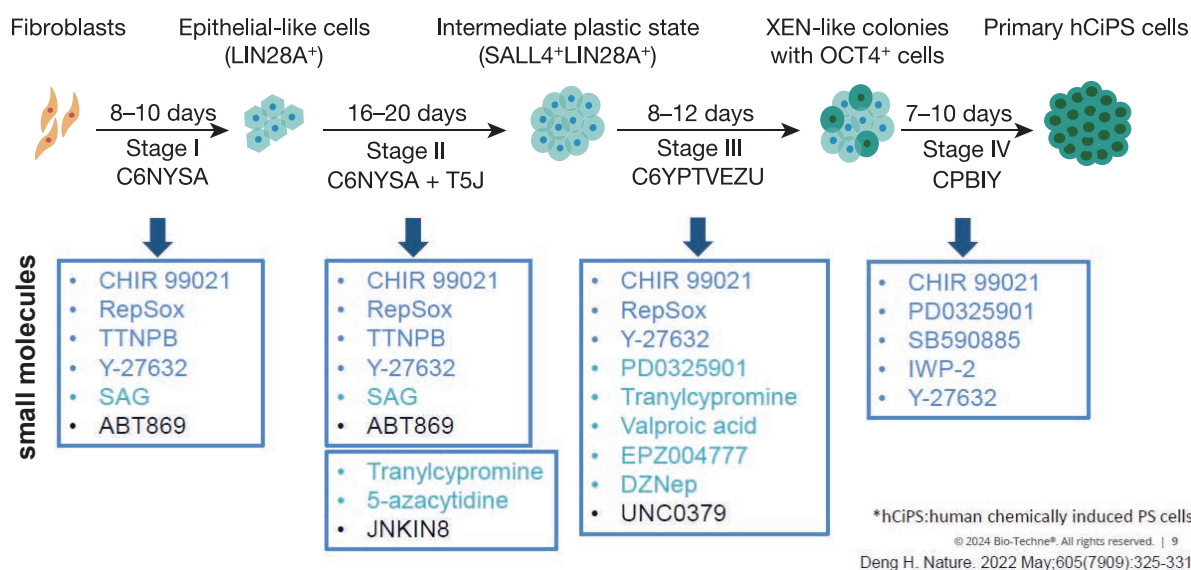


hCiPSC : human chemically induced PS cells

利用化學小分子誘導重編程人類多功能幹細胞

化學小分子誘導 (Chemical reprogramming) 方法，提供了一種非病毒、非 DNA 為基礎的新平台，是更有效率、更安全的重新編程過程，也是一個新方法來生產臨床等級病患特異性的多功能幹細胞 (patient-specific PS cells)。2022 年發表在 Nature 期刊，說明了如何用小分子成功將纖維母細胞誘導成 hCiPS。Bio-Techne/TOCRIS 提供了研究用、Ancillary Material 及 GMP 等級的小分子化合物產品 (Small Molecules)。

利用小分子將纖維母細胞生成 hCiPS 細胞的化學重編程



TOCRIS small molecules 產品推薦

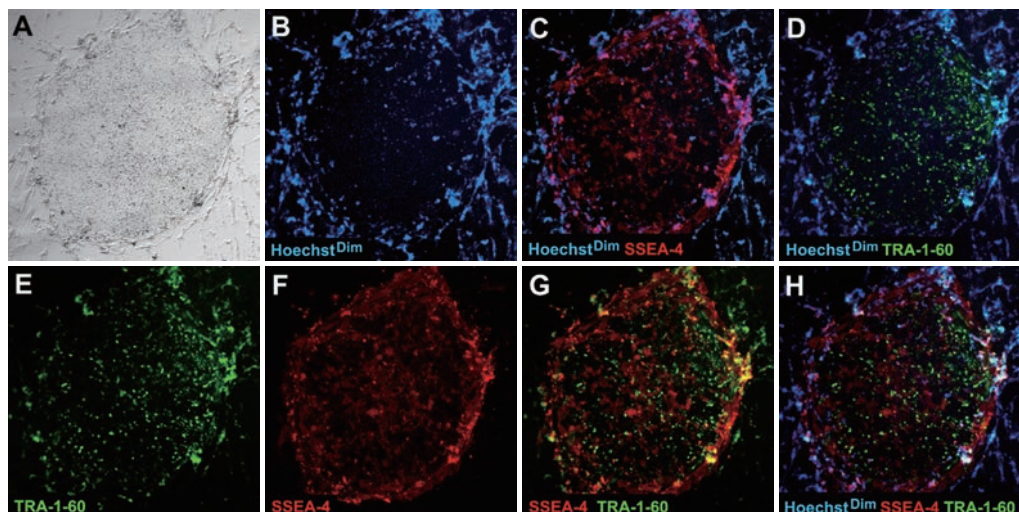
貨號	品名	等級	產品說明
4423	CHIR 99021	RUO	Highly selective GSK-3 inhibitor; used in small molecule cocktail to generate ciPSCs from MEFs
TB4423-GMP		GMP	
3742	RepSox	RUO	Enhances reprogramming efficiency; replaces Sox2; Potent and selective inhibitor of the TGF- β RI
TB3742-RMU		AM*	
761	TTNPB	RUO	Retinoic acid analog; RAR agonist; enhances efficiency of reprogramming in CiPSCs
1254	Y-27632	RUO	Selective ROCK inhibitor; increases survival of human embryonic stem cells undergoing cryopreservation
TB1254-GMP		GMP	
4366	SAG	RUO	Potent Smoothened receptor agonist; activates the Hedgehog signaling pathway; enhances neuronal differentiation of iPSCs into dopaminergic neurons
3852	Tranylcypromine	RUO	In combination with CHIR 99021, enables reprogramming of mouse embryonic fibroblasts transduced by only two factors, Oct4 and Klf4, into iPSC.
3842/50	5-Azacytidine	RUO	DNA methyltransferase inhibitor; enhances efficiency of somatic cell reprogramming
4192	PD 0325901	RUO	Potent inhibitor of MEK1/2. PD 0325901 enhances generation of iPSCs.
2815	Valproic acid, sodium salt	RUO	Histone deacetylase inhibitor; enhances efficiency of reprogramming of somatic cells
5567	EPZ 004777	RUO	Highly potent DOT1L inhibitor; improves reprogramming efficiency
4703	DZNep	RUO	Enhances Oct4 expression in CiPSCs. Histone methyltransferase inhibitor
TB4703-RMU		AM*	
2650	SB 590885	RUO	Potent B-Raf inhibitor; used in a protocol to reprogram HEFs into iPSCs
3533	IWP 2	RUO	IWP 2 is a potent inhibitor of Wnt processing and secretion. The compound has also been used in protocols to reprogram human somatic cells to CiPSCs.

*AM: Ancillary Material

Human iPS Selection Kit #SCR502

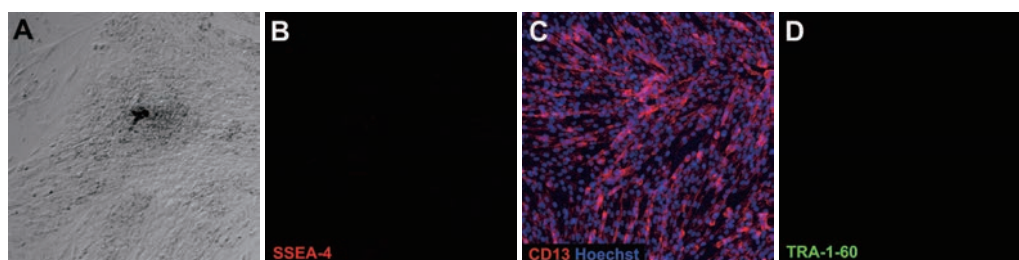
- 操作方便：使用 ICC 非侵入式方式，操作簡單
- 即時活體顯像確認，染色後可將抗體洗掉，繼續培養細胞
- 經濟實惠：試劑中包含了三隻螢光抗體 (positive : SSEA-4-PE、TRA-1-60-FITC ; negative : CD13-PE) 以及一個核染劑 (Hoechst)

篩選誘導成功的 iPSC



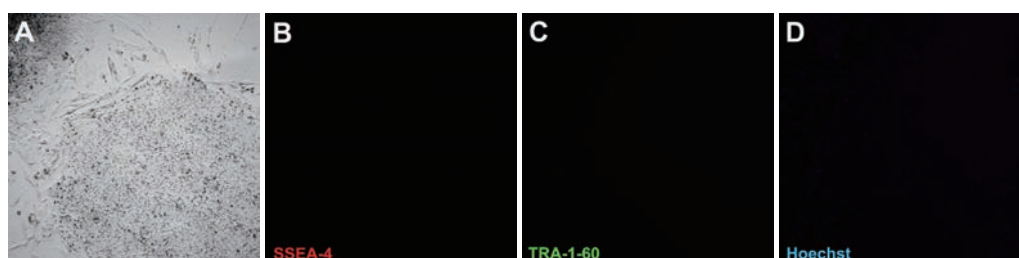
Fully reprogrammed human iPS cells express human pluripotent markers, TRA-1-60 FITC (D, E, G, H, green) and SSEA-4 PE (C, F, G, H, red) while downregulating the fibroblast marker, CD13 PE (data not shown).

誘導後沒表現的 iPSC



Non-iPS cells lack the defined morphology of human ES (A) and do not stain for human pluripotent markers, SSEA-4 PE (B, red). Human foreskin fibroblasts stain positively for the fibroblast marker, CD13 PE (C, red) and are negative for pluripotent markers, TRA-1-60 FITC (D) and SSEA-4 PE (data not shown).

篩選後的細胞可繼續培養



Antibodies can be washed off after live cell staining without altering the morphology and proliferation of human iPS colonies. Bright field image of fully reprogrammed human iPS colony (A).

ExCellerate iPSC Expansion Medium #CCM036-GMP

無人類或動物成分培養基，支持幹細胞培養的穩健擴增和維持，提高一致性和再現性

- Ready-to-use : 完整的一體化配方
- Animal-free GMP : 非常適合臨床前到臨床的研究，另有 RUO 等級，從研發到臨床可無縫接軌
- Consistent : 可再現性
- Stable : 在長期培養中可維持細胞活力、基因型和分化潛力



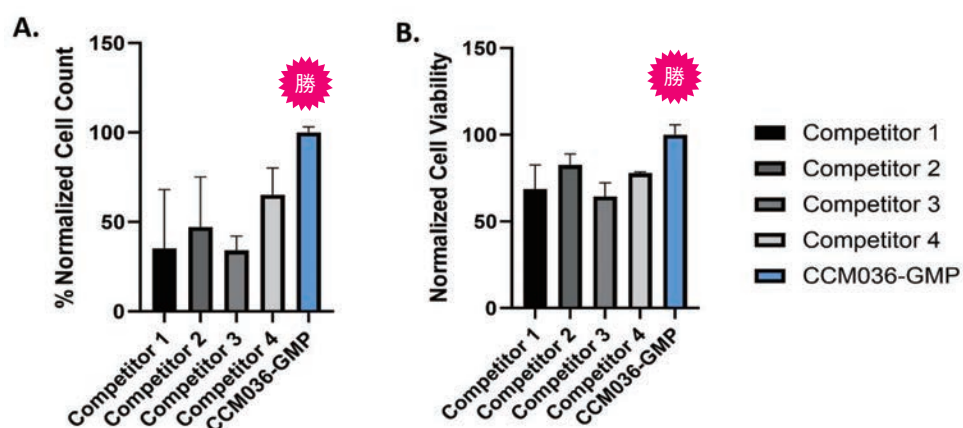
Animal-Free

GMP

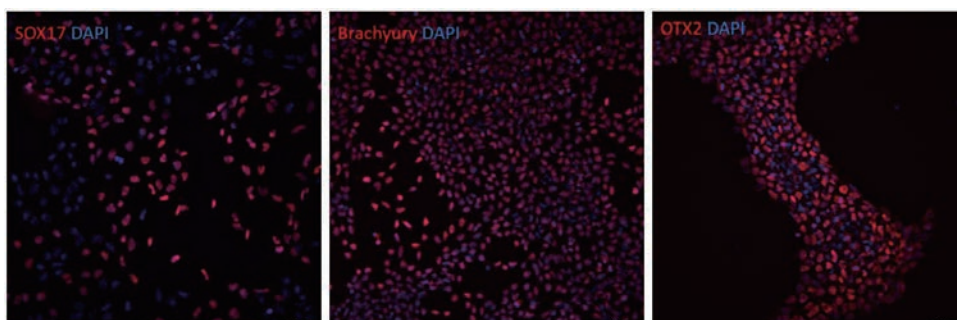
ready to use

與他牌
相較

ExCellerate iPSC 培養基能更有效地支持低密度的 iPSC 培養



ExCellerate iPSC 培養基能保留 iPSC 的多能性 (pluripotency)



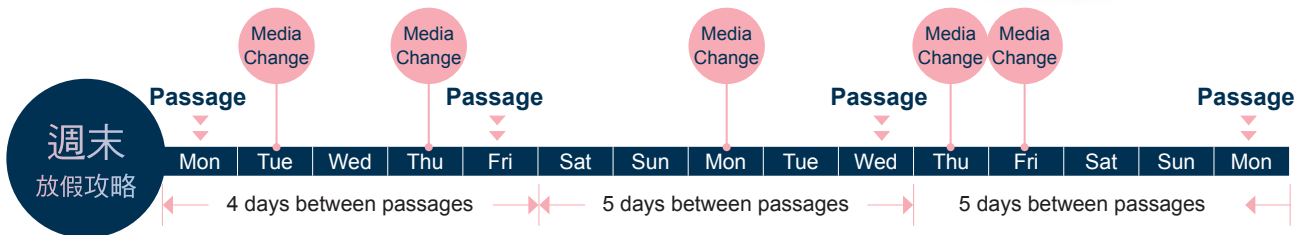
貨號	品名	包裝	等級
CCM036-GMP	ExCellerate™ iPSC Expansion Medium, Animal-Free, GMP	500 mL	GMP
CCM036	ExCellerate™ iPSC Expansion Medium, Animal Component-Free	500 mL	RUO

PluriSTEM[®]

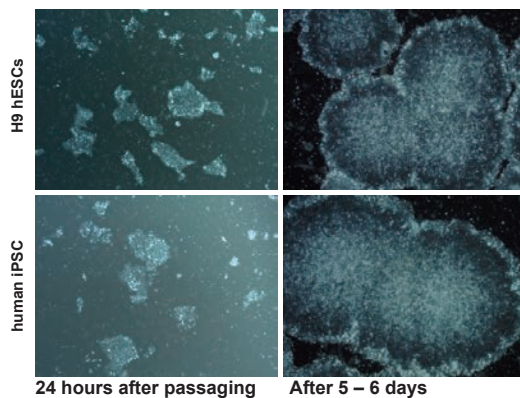
Human ES/iPS Cell Medium #SCM130

Human ES/iPS Medium #SCM132

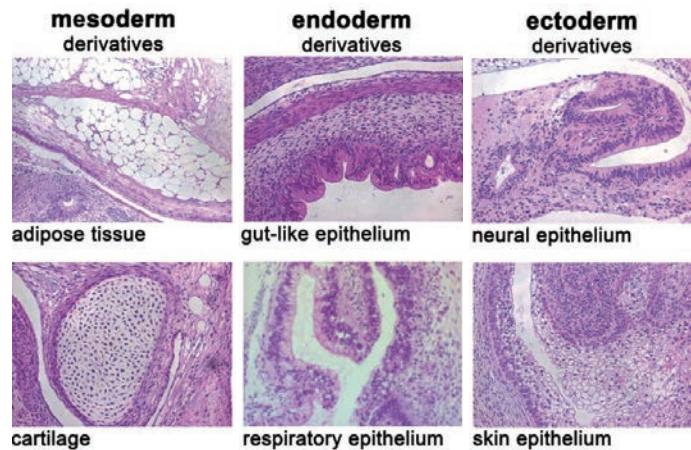
- 方便：不須額外添加添加物
- 品質控管：每批培養基都經過嚴格的測試
- Xeno-free & 小分子培養基 (#SCM132)

serum
freefeeder
freeready
to use

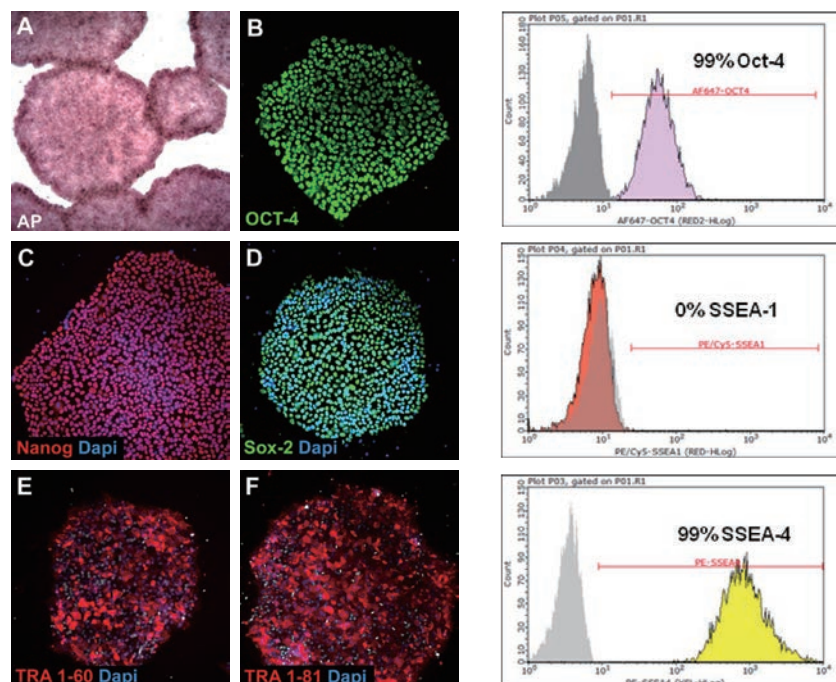
型態不改變



分化能力不變



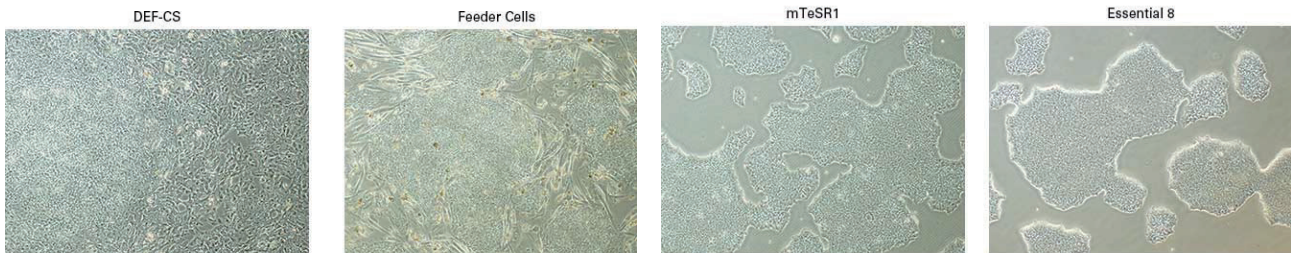
多能性標誌表現不變



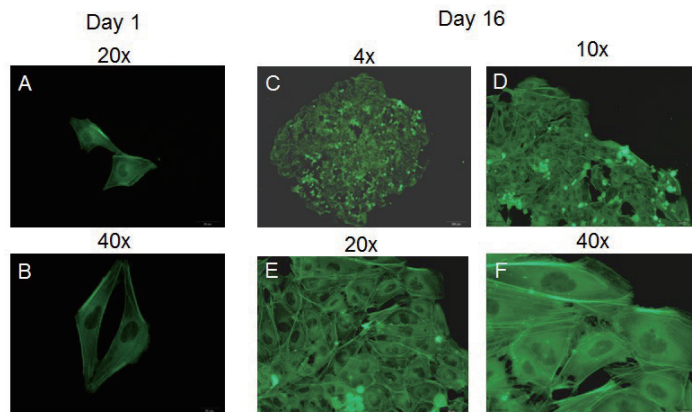
Cellartis DEF-CS iPSC 培養液



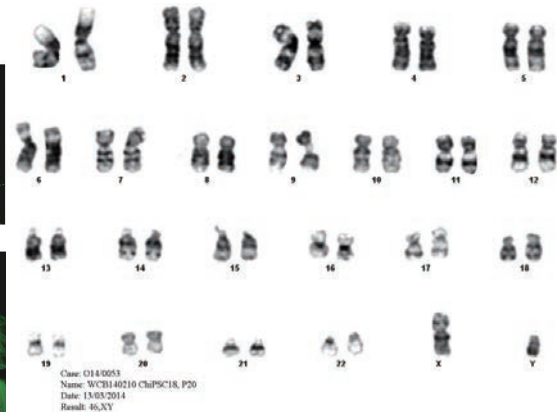
- 提供 GMP 版本，高效銜接臨床階段實驗
- 像是其他細胞株般以 Non-colony、2D-monolayer 形式培養 hiPSC
- 保持細胞的多能性，並長期保持自我更新、分化能力
- 強大培養系統可提供 hiPSC 高再現性、穩定生長並確保 維持正常 Karyotype
- 推薦用於 單細胞培養、基因編輯、Reprogramming 等 iPSC 應用



Cellartis DEF-CS 系統 將 hiPSC 培養為 單一同質的單層未分化細胞，與使用傳統 Feeder 及他牌 iPSC 培養系統的聚集細胞型態不同！



hiPSC 在 Cellartis DEF-CS 系統 中能以 單細胞 形式繼代並增殖！



Cellartis 的 hiPSC 細胞 株 ChiPSC18 於 DEF-CS 系統 中 培養 20 代後，染色體分析顯示其仍保留了正常的 karyotype！

貨號	產品	包裝	Kit 內容	特點
Y30010	Cellartis® DEF-CS™ 500 Culture System	1 Kit	Medium	一般使用， 包含完整的培養系統 (Y30010)
			COAT-1 (Y30012)	
			Additives	
Y30017	Cellartis® DEF-CS™ 500 Basal Medium with Additives	500 mL	Medium	
			Additives	
Y30071	Cellartis® DEF-CS™ 500 Xeno-Free GMP Grade Basal Medium	500 mL	Medium	Xeno-Free, GMP Grade

Corning® Biocoat Matrigel® hESC-Qualified Matrix #354277

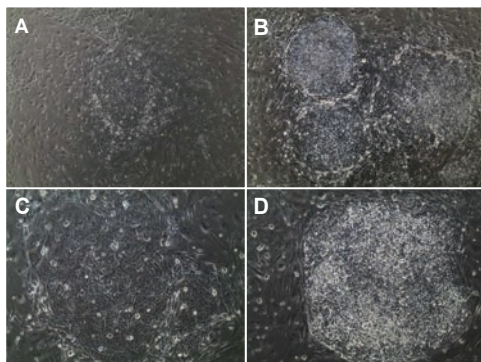
- 自 Engelbreth-Holm-Swarm (EHS) 小鼠肉瘤組織中萃取的細胞外基質，成分包含 Laminin (主成分)，Collagen IV, heparin sulfate proteoglycans, entactin/nidogen 及多種生長因子
- Feeder layer-free culture，降低細胞污染機率，提升細胞純度
- 每批產品皆經原廠以下測試

- (1) 成功培養 hES 細胞，並確認無品質疑慮
- (2) 培養五代後仍能維持幹細胞未分化狀態 (分析細胞狀態及表面 marker 表現)
- (3) Neurite outgrowth assay 確認生物活性

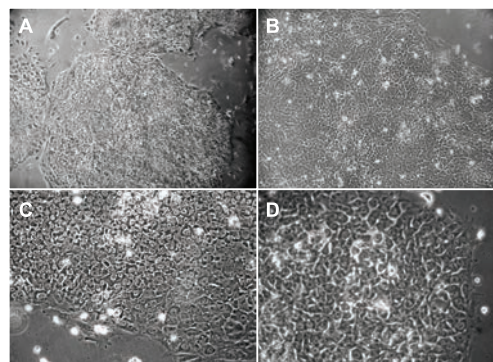


>35 年持續突破
>13000 篇文獻引用

可提供 **feeder layer-free** 環境並維持 **iPSC** 型態，減少污染機率

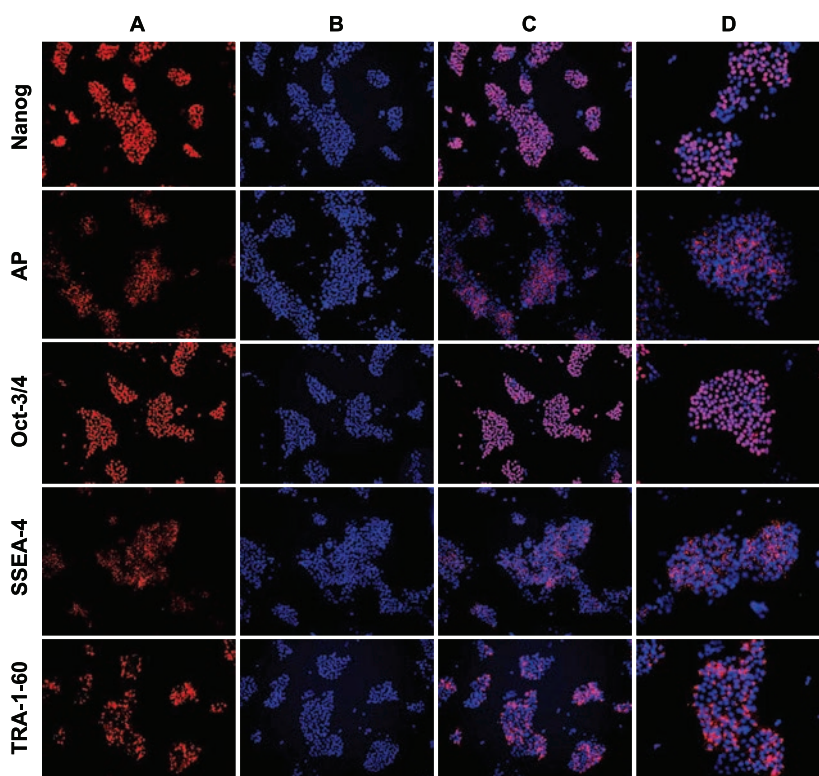


hiPSC cultured on feeder layer of mouse embryonic fibroblasts (MEFs)



hiPSC cultured on feeder-free Corning Matrigel hESC-qualified matrix

hiPSC 繼代 10 代後仍維持幹細胞未分化特性



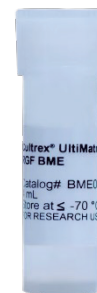
References

1. Takahashi K, Yamanaka S. Cell, 126:663-76 (2006).
2. Meherali N, et al. Cell Stem Cell, 1:55-70 (2007).
3. Yamanaka S, Cell Stem Cell, 1:39-49 (2007).
4. Chan EM, et al. Nature Biotechnology, 11:1033-1038 (2009).

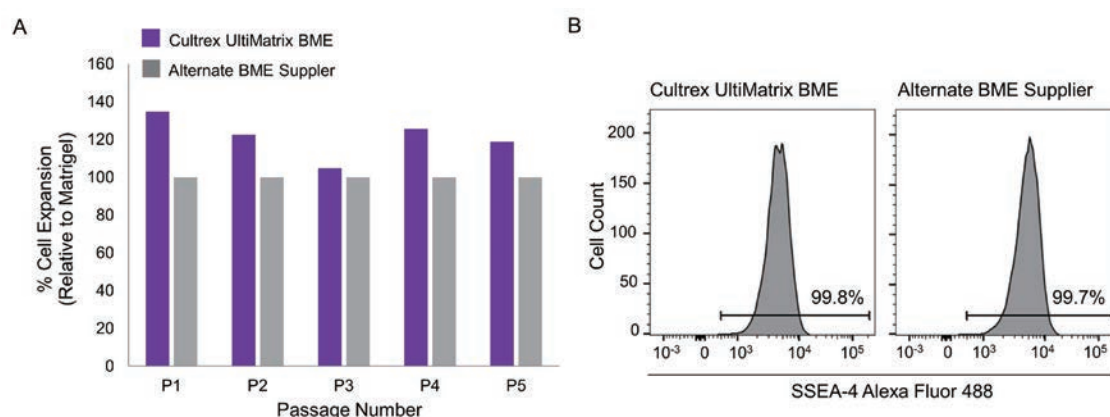
Cultrex UltiMatrix Reduced Growth Factor Basement Membrane Extract (BME)

是一種優化且高效的生長支架，適用於類器官、多能幹細胞和進階的 3D 細胞培養應用。它可以直接使用，也可以稀釋至特定濃度後使用。

- 來源：Murine Engelbreth-Holm-Swarm (EHS) tumor
- 最佳化的細胞外基質組成成分與可溶性蛋白
- 專為類器官和幹細胞培養設計 (可用於 feeder-free)
- 針對 3D 培養應用進行了最佳化
- 批次間效能一致性高
- 內毒素含量低



與其他廠牌的 BME 相比，Cultrex UltiMatrix BME 能讓 iPSC 擴增更為快速



(A) Human iPSCs were passaged in 6 well plates (seeded at 7.5×10^5 cells/well) using either Cultrex UltiMatrix RGF BME (purple) or an Alternate BME Supplier (grey) as a substrate. B) iPSC cells grown on Cultrex UltiMatrix BME retained expression of the pluripotency marker SSEA-4, as labeled using a Fluorescein conjugated SSEA-4 antibody (Catalog # FAB1435).

貨號	品名	包裝	濃度
BME001-01	Cultrex UltiMatrix Reduced Growth Factor Basement Membrane Extract	1 mL	10-12 mg/mL
BME001-05		5 mL	
BME001-10		2 x 5 mL	



Human fibronectin

Fibronectin 適用於作為細胞體外增殖的附著因子，可幫助各類型貼附型細胞更穩定的貼附。

- 液體形式好方便：溶液為 1 mg/mL
- 適用於細胞培養用，幫助細胞貼附
- 適用於多種幹細胞培養：誘導多能幹細胞、人類胚胎幹細胞、神經幹細胞、造血幹細胞、間質幹細胞 ... 等
- 高純度好品質：純度約 95%

貨號	品名	包裝	形式
FC010	Human Plasma Fibronectin Purified Protein	1 mg	liquid
FC010-5MG	Human Plasma Fibronectin Purified Protein	5 mg	liquid
FC010-10MG	Human Plasma Fibronectin Purified Protein	10 mg	liquid
FC010-100MG	Human Plasma Fibronectin Purified Protein	100 mg	lyophilized

ZENOGEN PHARMA

可直接
儲存在
-80°C文獻
引用多日本市佔
NO.1存活率
高於 90%維持細胞
功能完整

(可用於細胞治療相關研究)

GMP 幹細胞 & 免疫細胞專用Xeno
freeserum
freePIC/S GMP
gradeChemically
defined**STEM-CELLBANKER®**

凍存 iPSC、MSC、PBMC 效果好



20 / 100 mL

**STEM-CELLBANKER®
DMSO Free**

不含 DMSO，降低對細胞的傷害



20 / 100 mL

STEM-CELLBANKER® EX所有成分已獲準用於靜脈注射
凍存 HSC、ADSC 效果好

100 mL

實際使用案例

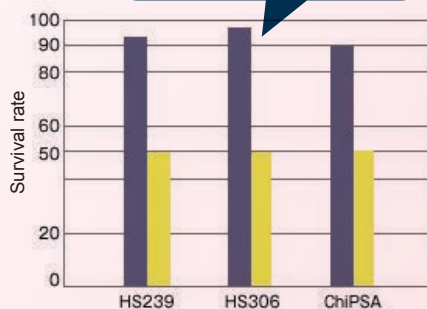
iPSC 細胞研究領域的權威，諾貝爾獎得主山中伸彌 教授 (Dr. Shinya Yamanaka) 團隊

使用 STEM-CELLBANKER® 凍存 iPSC、PBMC、cord blood cells

建立臨床級 iPSC HLA haplobank iPSC 細胞庫，這些臨床級的 iPSC 已被使用在一些臨床試驗和研究中

Yoshida et al. Med (New York, N.Y.). 2023; 4:51-66.e10

細胞存活率高



■ STEM-CELLBANKER ■ Media + 10% DMSO + Serum

細胞存活率評估

hESC & iPSC 使用 STEM-CELLBANKER® 凍存 human ESC 和 iPSC 存活率高於 使用常規細胞凍存液 (10% DMSO + 血清代替培養基) 凍存

HS293 & HS306 (hESC); ChiPSA (human iPSC)

細胞株	STEM-CELLBANKER®	常規凍存液
HS293	93%	49%
HS306	96%	49%
ChiPSA	90%	50%

勝

資料來源：瑞典卡羅林斯卡醫學院臨床科學部 Outi Hovatta 教授

RUO 即用型凍存液，適用於大部分的細胞

20 / 100 mL

CELLBANKER® 1

含 ≤80% Bovine serum



100 mL

CELLBANKER® 2

不含 Bovine serum

適用無血清培養環境



Jennifer Doudna 博士和 Emmanuelle Charpentier 博士在 2012 年發現了 **CRISPR-Cas9** 基因組編輯，並在 2020 年獲得諾貝爾化學獎。對於 **iPSC** 領域的研究者來說，這兩種突破性技術的結合幾乎可以立即為醫學研究和治療帶來前所未有的收益。

CRISPR-Cas9 **iPS** 技術的明確應用是研究基因的作用。之前研究人員使用動物模型或細胞株來探討基因功能相關問題，然而，這些方式都較不能真實反映人體狀況。CRISPR 編輯的 **iPS** 細胞消除了與這些研究相關的許多混雜因素，使研究人員能夠對任何所需細胞或組織的基因功能進行精確研究。

現今，已經有使用 **CRISPR-Cas9 iPS** 技術

2017

研究使用 CRISPR 剔除 **iPSC** 產生的巨噬細胞中的脂肪酶 A (**LIPA**) 基因，以確定對膽固醇酯 (**CE**) 處理、外排和基因表達的影響。

2019

研究使用 CRISPR 編輯的 **iPSC** 用於生成神經系統疾病急需的模型，研究人員將 **iPSC** 分化為兩個相同的神經細胞系，然後使用 CRISPR 在一個細胞系中誘導 **APP** (amyloid precursor protein) 突變和在另一個細胞系中誘導 **PSEN1** (presenilin) 雜合突變，為阿茲海默症 (**Alzheimer's disease ; AD**) 研究創建了兩個精確模型。

2021

誘導性多能幹細胞神經變性計劃 (**iNDI**)。此計畫由美國衛生研究院 (**NIH**) 和 **Synthego** 發起，旨在為阿茲海默病和相關癡呆症 (**ADRD**) 生成數百個疾病模型。

發表在 **Nature Biomedical Engineering** 上的一篇論文使用 CRISPR 對源自 **iPSC** 的低免疫原性 **T** 細胞進行基因改造，其中已刪除了同種異體和細胞毒性免疫細胞激活因子。由此產生的細胞保持了抗腫瘤活性，但能夠逃避白血病小鼠模型中的免疫反應，這是創造通用 **CAR-T** 療法的重要一步。

因為 **iPSC** 能夠產生所有可能類型的成人組織，可以有效地用於再生醫學和器官移植。通過創建人類疾病的精確模型，**iPSC** 基因編輯使研究人員能夠減少對動物模型的依賴。這有助於加快整個臨床開發過程，節省寶貴的時間和資源，並使研究能夠進入臨床試驗。

相關產品請參考 **CRISPR-Cas9** 專刊

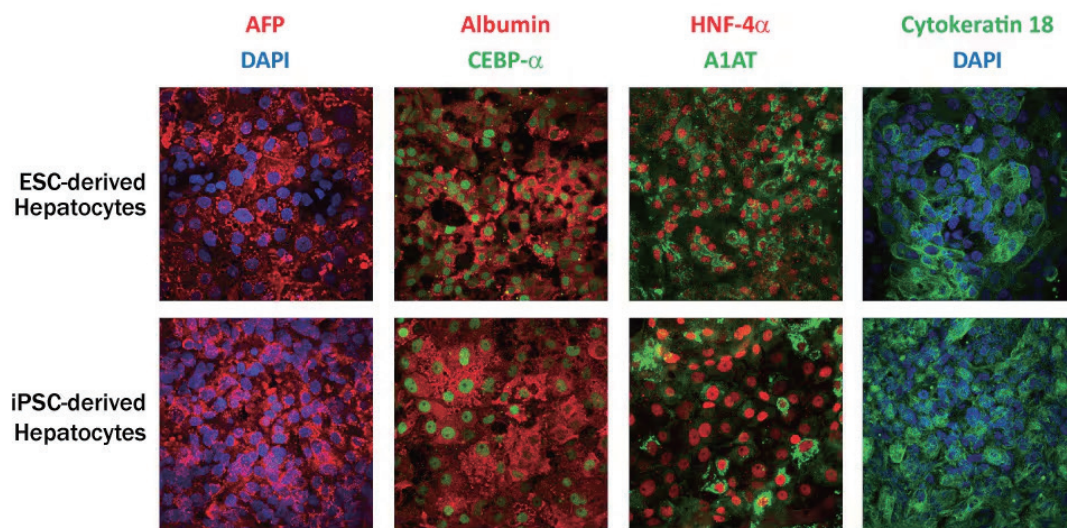


StemXVivo Hepatocyte Differentiation Kit #SC033

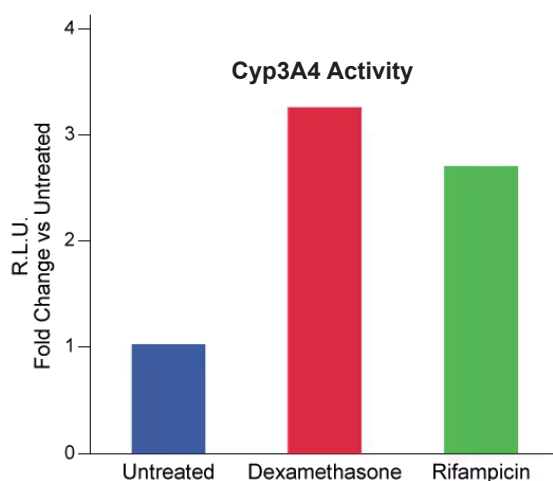
人類多能幹細胞分化成肝細胞的分化鑑定套組 分化 + 鑑定

- 優化配方套組可獲得高產量 (> 70% purity) 的肝細胞 (hepatocyte-like cells)
- 套組包含分化用的培養基和鑑定用的抗體 (anti-human Serum Albumin monoclonal antibody)
- 具再現性的分化方案可節省成本和時間
- 適用於肝毒性藥物及小分子的篩選

分化的肝細胞能夠表現 **ASGPR1, AFP, Albumin, Hepatocyte Nuclear Factor 4 alpha, CEBP-alpha, Cytokeratin 18** 和 **Serpin A1** 等標誌 (部分數據請見原廠網頁)



人類胚胎幹細胞分化之肝細胞的 **Cyp3A4** 誘導與活性表現



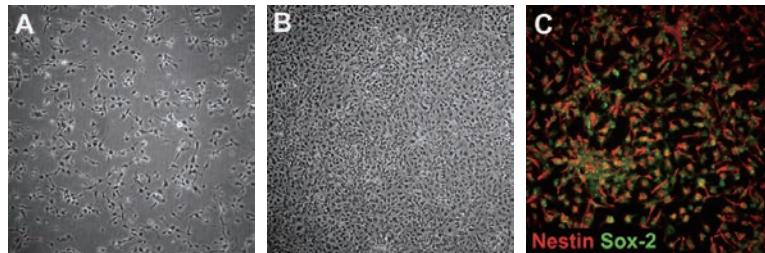
Hepatocyte-like cells differentiated from BG01V Human Embryonic Stem Cells using the StemXVivo®Hepatocyte Differentiation Kit were treated for 48 hours with either 50 μ M Dexamethasone (Tocris; Catalog #1126) or 25 μ M Rifampicin (Tocris; Catalog #4121) to induce Cyp3A4 expression.

更多產品資訊

貨號	品名	產品內容	鑑定方法
SC033	StemXVivo Hepatocyte Differentiation Kit (肝細胞)	Differentiation Base Media Supplements, Differentiation Cocktails, and Anti-Human Serum Albumin antibody.	ICC
SC035	StemXVivo Neural Progenitor Differentiation Kit (神經前驅細胞)	Base Media Supplement, Differentiation Cocktails, and Anti-Human SOX1 antibody	ICC

Human iPSC Derived Neural Progenitors KIT #SCR131

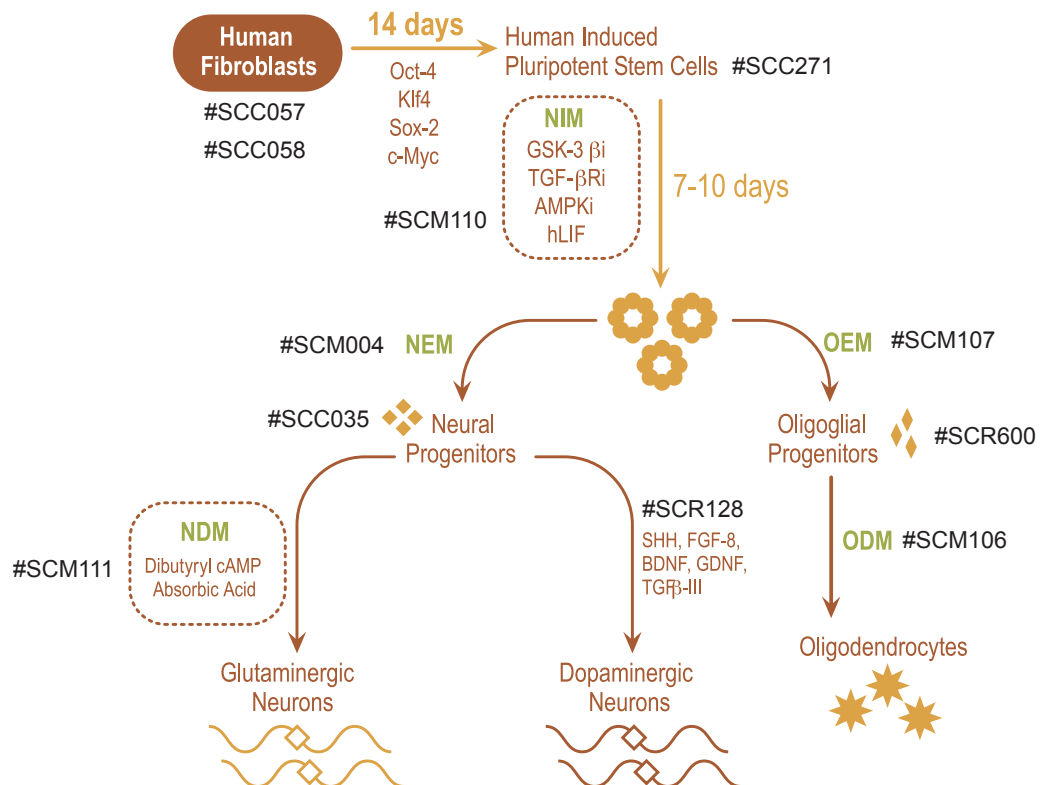
- 安全：細胞使用 STEMCCA Cre-Excisable Constitutive Polycistronic (OKSM) lentivirus 製造產生，可利用 TAT-Cre recombinase (Cat. No. SCR508) 將轉入基因移除
- 高表現神經標誌物：Nestin 及 Sox-2 表現量超過 80 % 以上
- 可利用不同的分化培養液讓其前驅細胞分化成神經元細胞
- 經濟：包含細胞以及培養基



Human iPSC-derived Neural Progenitor Cells are provided at P3 and upon thawing, becomes P4. Cells were thawed on a Matrigel (1:50 dilution) coated T25 flask in 5 mL of ENStem-A Neural Expansion Medium containing 40 ng/mL FGF-2. (A). One day post-thaw. (B) Cells are >95% confluent at time of passage. (C) Majority of the neural progenitor cells express neural stem cell markers, Nestin and Sox-2.

#SCR510 #SCR531 #SCR544 #SCR550
#SCR511 #SCR518 #SCR549

STEMCCA





建議搭配培養基 / 分化培養液

Human ES/iPS Neurogenesis Kit #SCR603

(含 #SCM004 + #SCM110 + #SCM111)

ENStem-A Neural Expansion Medium #SCM004

- serum-free
- provided FGF-2

Human ES/iPS Neuronal Differentiation Medium #SCM111

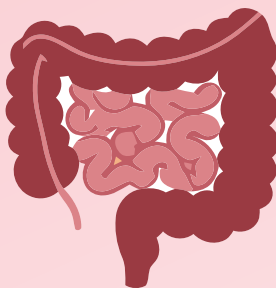
- serum free
- chemically define
- differentiated to neurons

ENStem-A Neuronal Differentiation Medium #SCM017

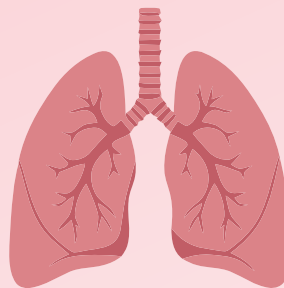
- differentiated to neurons (>90% β III-tubulin positive)
- astrocytes (<0.5% GFAP positive)

iPSC 衍生出的類器官

3dGRO[®] Human iPSC Derived Progenitor cells



Colon #SCC300



Lung #SCC301



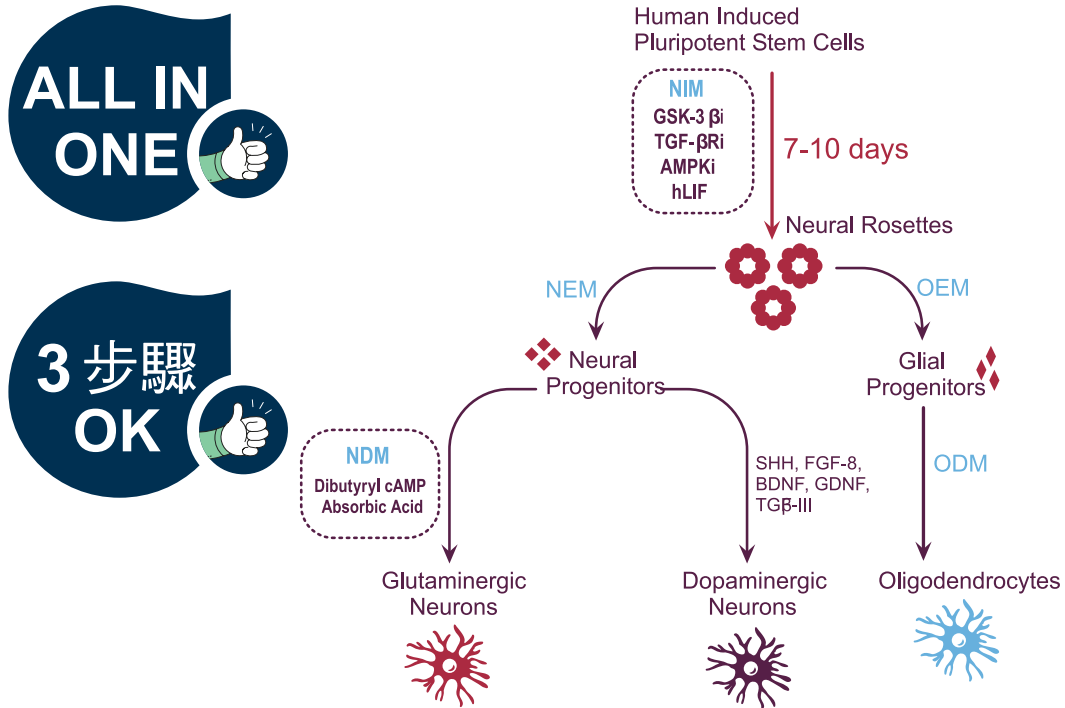
更多 3D 培養資訊

Human ES/iPS Neurogenesis Kit

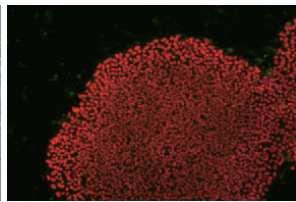
#SCR603

serum
free

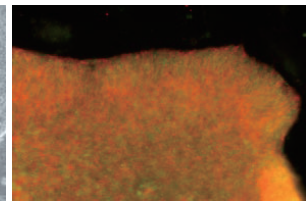
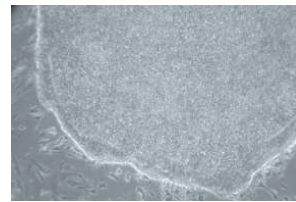
- All in one : 包含所有分化試劑
- Serum free/chemically defined media
- 友善包裝 : 所有的內含物皆可單獨購買
 1. Human ES/iPS Neural Induction Medium ; NIM1/2 #SCM110
 2. ENStem-A Neural Expansion Medium ; NEM #SCM004
 3. Human ES/iPS Neuronal Differentiation Medium ; NDM #SCM111
- 嚴謹的品質控管 : 不同批次測試形態和基因表現 (Oct4, Pax6, NeuN) 皆一致



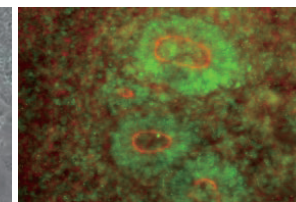
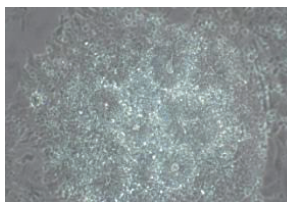
iPSC 成功誘導成神經細胞



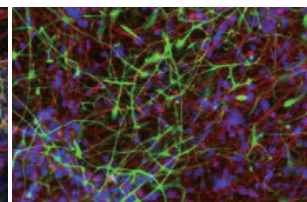
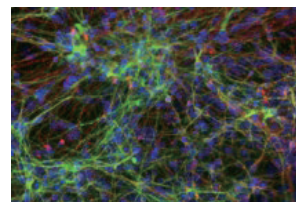
Day 0 使用 STEMCCA Cre-Excisable Constitutive Polycistronic (OKSM) Lentivirus Reprogramming Kit 誘導的 hiPSC



Day 5 使用誘導培養基 NIM 1 培養五天



Day 10 誘導培養基 (NIM1/NIM2) 培養十天後, >80% 的細胞開始有 neuroprogenitors 表現 (Pax6, N-cadherin)



分化培養基 (NDM) 分化培養九天後, 細胞有神經細胞標誌物高度表現 (Tuj1, MAP2, GFAP)

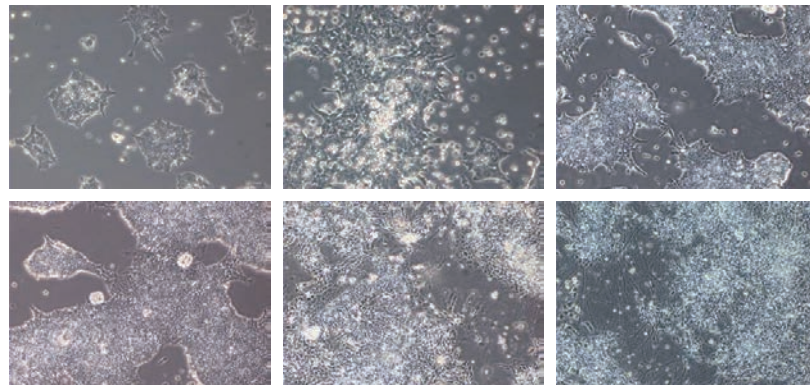
Mouse ES2N Complete Medium Kit #SCM082

serum
free

- serum free
- 友善包裝：所有的內含物皆可單獨購買
 1. ES2N Basal Medium #SCM083
 2. Neuro27 Medium Supplement #SCM013
 3. Neuro2 Medium Supplement #SCM012
- 嚴謹的品質控管：每批 ES2N 培養基都經過分化測試



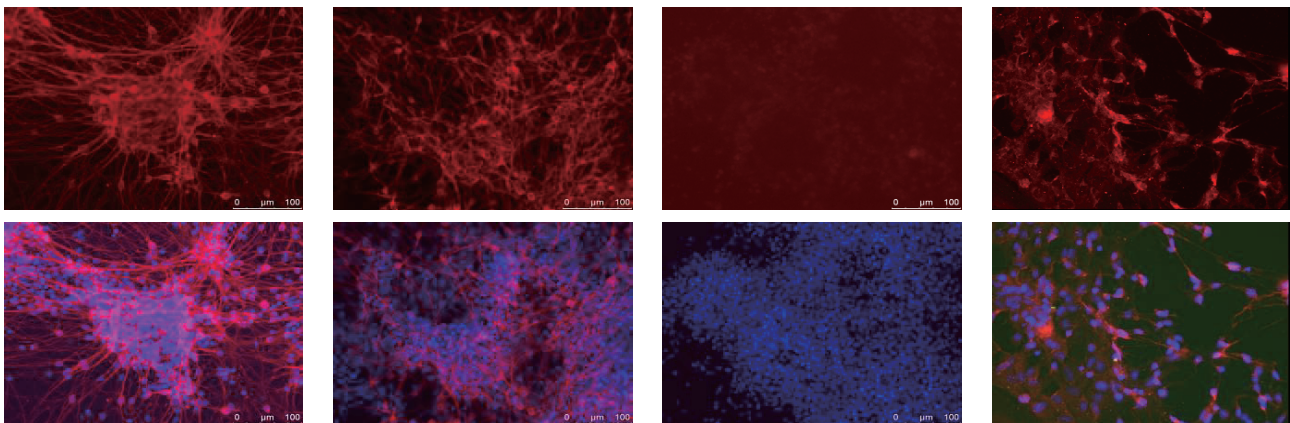
成功將 ESC 分化成神經細胞



Morphology and time course of neuronal differentiation from CMT1-1 (129SvEv) mES cells.

- a) Day 1, small flat colonies appear.
- b) Day 2, note that undifferentiated cells start to float.
- c) Day 3, continued floating of undifferentiated and dead cells.
- d) Day 4, continued floating of undifferentiated and dead cells.
- e) Day 7, neuronal rosettes have formed.
- f) Day 9, Differentiated neurons can be seen at the earliest at day 9, by day 12 most cells have are differentiated.

分化標誌物高度表現

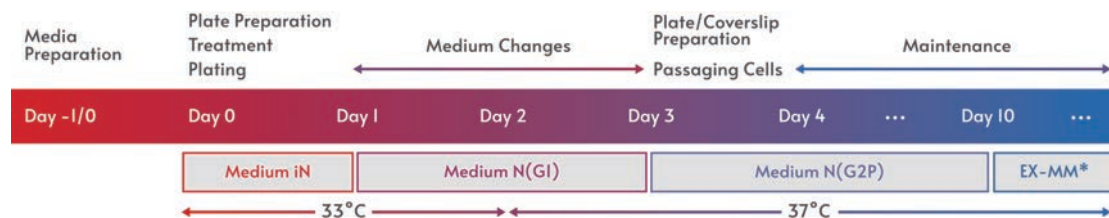


Staining of differentiated neurons from SCR012 (129S6) mES cells at day 12. Tubulin red staining (Cat. No. MAB1637).
 Overlay of Tubulin and nuclear DAPI staining, note that more than 80% of cells stain Tubulin positive.
 MAP-2 red staining (Cat. No. MAB4318). Overlay of MAP-2 and DAPI staining.
 Oct-4 staining (Cat. No. MAB4419), note absence of Oct-4 staining, indicating that most of the stem cells have differentiated.
 Overlay of Oct-4 and DAPI showing only nuclear DAPI staining.
 GFAP (red) staining (Cat. No. AB5804). Overlay of GFAP/DAPI staining.

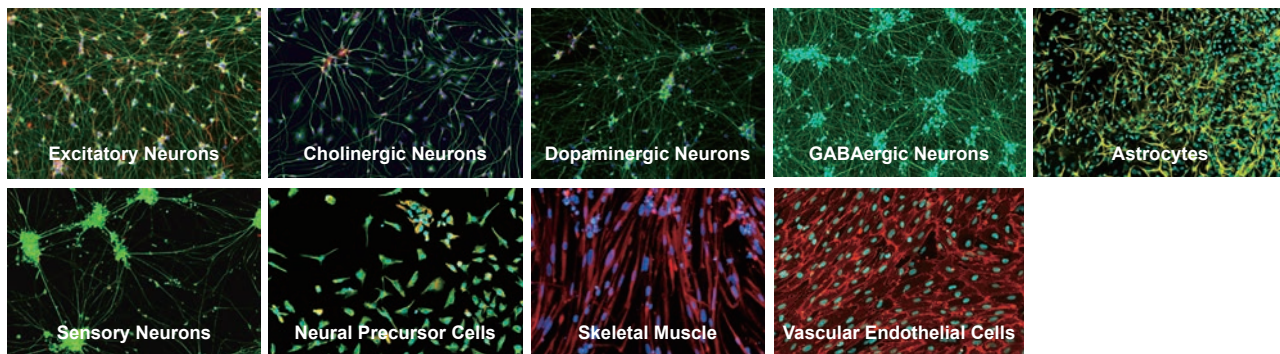
Quick-Neuron Sev/mRNA kit

- 運用 Quick Tissue Differentiation technology，送入獨家 transcription factor cocktail 至 iPSC/ESC，使細胞分化
- 分化週期僅 1-2 週，輕鬆獲得不同類型的神經細胞
- 無基因殘留疑慮，產品型式為 efficient mRNA, non-integrating Sendai virus

溫度敏感的 **Sendai virus**，於 37 度作用即失去活性



各種神經細胞都有相對應的產品



細胞	貨號	產品	包裝
neuron			
Cholinergic	CH-SeV-S/L	Quick-Neuron™ Cholinergic - SeV Kit (Small/Large)	4 wells of a 24-well plate 6 wells of a 6-well plate/a 100 mm dish
	CH-mRNA-S	Quick-Neuron™ Cholinergic - mRNA Kit (Small)	4 wells of a 24-well plate
	CH-MM	Quick-Neuron™ Cholinergic - Maintenance Medium	4 wells of 24-well plate for 2 weeks
Dopaminergic	DA-mRNA-S/L	Quick-Neuron™ Dopaminergic - mRNA Kit (Small/Large)	4 wells of a 24-well plate 6 wells of a 6-well plate/a 100 mm dish
	DA-MM	Quick-Neuron™ Dopaminergic - Maintenance Medium	4 wells of 24-well plate for 2 weeks
Excitatory neuron	EX-SeV-S/L	Quick-Neuron™ Excitatory - SeV Kit (Small/Large)	4 wells of a 24-well plate 6 wells of a 6-well plate/a 100 mm dish
	EX-mRNA-S	Quick-Neuron™ Excitatory - mRNA Kit (Small)	4 wells of a 24-well plate
	EX-MM	Quick-Neuron™ Excitatory - Maintenance Medium	4 wells of 24-well plate for 2 weeks
GABAergic	GA-mRNA-S/L	Quick-Neuron™ GABAergic - mRNA Kit (Small/Large)	4 wells of a 24-well plate 6 wells of a 6-well plate/a 100 mm dish
	GA-MM	Quick-Neuron™ GABAergic - Maintenance Medium	4 wells of 24-well plate for 2 weeks
Sensory	SS-mRNA-S	Quick-Neuron™ Sensory - mRNA Kit (Small)	4 wells of a 24-well plate
	SS-MM	Quick-Neuron™ Sensory - Maintenance Medium	4 wells of 24-well plate for 2 weeks
Astrocyte	AS-SV-S/L	Quick-Glia™ Astrocyte - SeV Kit (Small/Large)	4 wells of a 24-well plate 6 wells of a 6-well plate/a 100 mm dish
Neural Precursor Cells	NP-mRNA-S	Quick-Neuron™ Precursor - mRNA Kit	4 wells of a 24-well plate
Skeletal muscle			
Skeletal muscle	SM-SeV-S	Quick-Muscle™ Skeletal - SeV Kit (Small)	4 wells of a 24-well plate
	SM-mRNA-S	Quick-Muscle™ Skeletal - mRNA Kit (Small)	4 wells of a 24-well plate
	SM-MM	Quick-Muscle™ Skeletal - Maintenance Medium	4 wells of 24-well plate for 2 weeks
Vascular endothelium			
Vascular endothelium	VE-mRNA-S	Quick-Endothelium™ Vascular - mRNA Kit (Small)	4 wells of a 24-well plate
	VE-MM	Quick-Endothelium™ Vascular - Maintenance Medium	4 wells of 24-well plate for 2 weeks

biotechne® / R&D SYSTEMS 用於 iPSC 分化的細胞激素、生長因子、訊號蛋白和小分子

重組蛋白 細胞激素及生長因子，提供 GMP 和 RUO 等級產品

Cytokines for ESC and iPSC Expansion									
	品名	Activin	BMP-4	FGF	Nodal	TGF-beta	Wnt-3a		
RUO	貨號	338-AC	314-BPE	BT-FGFB	3218-ND	240-B	5036-WN		
GMP	貨號	338-GMP	314E-GMP	BT-FGFB-GMP		240-GMP			
Cytokines for Ectoderm Lineage Differentiation									
	品名	BMP-4	EGF	FGF	Noggin				
RUO	貨號	314-BPE	236-EG	BT-FGFB	6057-NG				
GMP	貨號	314E-GMP	236-GMP	BT-FGFB-GMP	6057-GMP				
Cytokines for Mesoderm Lineage Differentiation									
	品名	Activin	BMP-2	BMP-4	Dkk-1	FGF	FGF-3	FGF-10	FGF-17
RUO	貨號	338-AC	355-BM	314-BPE	5439-DK	BT-FGFB	1206-F3	345-FG	319-FG
GMP	貨號	338-GMP	355-GMP	314E-GMP		BT-FGFB-GMP			
	品名	Flt-3	IL-3	IL-6	IL-11	Noggin	PDGF-BB	SCF/c-kit	TGF-beta
RUO	貨號	BT-FT3L	203-IL	206-IL	10836-IL	6057-NG	220-BB	BT-SCF	240-B
GMP	貨號	BT-FT3L-GMP	203-GMP	206-GMP		6057-GMP	220-GMP	BT-SCF-GMP	240-GMP
	品名	Thrombopoietin/TPO	VEGF	Wnt-5a					
RUO	貨號	BT-TPO	BT-VEGF	645-WN					
GMP	貨號	BT-TPO-GMP	BT-VEGF-GMP						
Cytokines for Endoderm Lineage Differentiation									
	品名	Activin	BMP-4	EGF	FGF	FGF-4	FGF-7/KGF	FGF-10	FGF-18
RUO	貨號	338-AC	314-BPE	236-EG	BT-FGFB	235-F4	BT-KGF	345-FG	8988-F18
GMP	貨號	338-GMP	314E-GMP	236-GMP	BT-FGFB-GMP		BT-KGF-GMP		
	品名	HGF	IGF-I/IGF-1	Noggin	PDGF-BB	Sonic	VEGF	Wnt-3a	
RUO	貨號	294-HGN	291-G1	6057-NG	220-BB	1314-SH	BT-VEGF	5036-WN	
GMP	貨號	294-GMP	291-GMP	6057-GMP	220-GMP	1314-GMP	BT-VEGF-GMP		
Cytokines for iPSC-derived NK *									
	品名	IL-2	IL-3	IL-7	IL-15	FLT-3 Ligand	SCF	VEGF	BMP-4
RUO	貨號	BT-002	203-IL	BT-007	BT-015	BT-FT3L	BT-SCF	BT-VEGF	314-BPE
GMP	貨號	BT-002-GMP	203-GMP	BT-007-GMP	BT-015-GMP	BT-FT3L-GMP	BT-SCF-GMP	BT-VEGF-GMP	314E-GMP
	品名	bFGF	IL-12	IL-18					
RUO	貨號	BT-FGFB	219-IL	9124-IL					
GMP	貨號	BT-FGFB-GMP							

* 眾多包裝，請洽當區業務

MERCK Sigma-Aldrich®

抑制劑 利用小分子物質加強或抑制 iPSC 分化

貨號	產品	包裝	功能
616452-2MG	TGF-β RI Kinase Inhibitor II	2 mg	Inhibitors targeting TGF-β have been considered by pharmaceutical companies for cancer therapy. Replace Sox2 for generation (iPSC).
676380-5GM	Valproic Acid, Sodium Salt	5 g	valproic acid (VPA), enables reprogramming of primary human fibroblasts with only Oct4 and Sox2, without the need for the oncogenes c-Myc or Klf4.
420099	JAK Inhibitor I	500 µg/1 mg	Inhibit IL2- and IL4-dependent proliferation of CTLL cells and block the phosphorylation of STAT5
553210	Rapamycin	100 µg/1 mg/ 5 mg/10 mg	Increase in patient-derived cells with intracellular aggregation derived from patient-specific pluripotent stem cells.
239804	Cyclopamine-KAAD	100 µg/500 µg	Activation of hedgehog signaling regulates derivation of enteric NC from hiPSCs.
440202	LY 294002	5 mg/10 mg/25 mg	LY294002 induces differentiation of ES cells
559389	SB 203580; BMP-P38 MAPK signaling inhibitor	1 mg/5 mg/10 mg	The BMP-SMAD signal has important roles in the induction and maintenance of pluripotency.

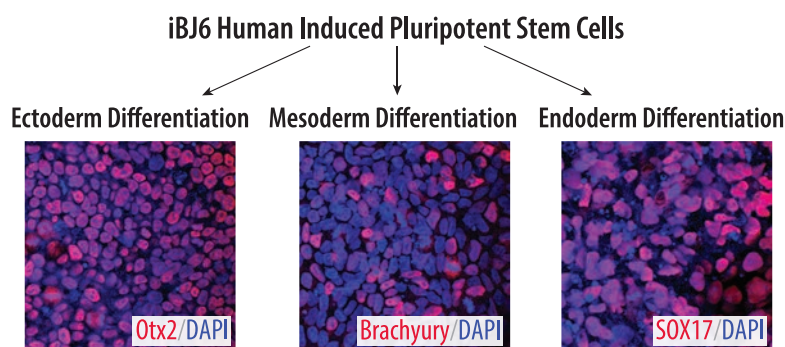
貨號		品名	產品說明
GMP Small Molecules			
GMP grade	TB4423-GMP	CHIR 99021	Enables reprogramming of MEFs to iPSCs;enhances ESC self-renewal; also commonly used in organoid generation; GSK-3 β inhibitor.
	TB1254-GMP	Y-27632	Selective ROCK inhibitor; increases survival of human embryonic stem cells undergoing cryopreservation
	TB1614-GMP	SB 431542	Replaces Sox2 in reprogramming of fibroblasts into iPSCs; potent and selective TGF- β RI inhibitor.
	TB3748-GMP	XAV 939	Promotes cardiomyocyte differentiation from ESCs; tankyrase inhibitor; inhibits Wnt signaling.
	TB6053-GMP	LDN 193189	Promotes neural induction of hPSCs; ALK2/3 inhibitor.
Stem cell survival			
	7991	CEPT Cocktail Kit	Cell culture supplement for improving stem cell survival. Easy-to-use kit for the preparation of 5 L of CEPT Cocktail media. Chroman 1 (Cat. No. 7163), Emricasan (Cat. No. 7310), Polyamine Supplement (Cat. No. 7739), trans-ISRIB (Cat. No. 5284) and DMSO (Cat. No. 3176)
Differentiation			
β Cell	6476	Compound E	Used in the generation of b cells from hPSCs ; g-secretase inhibitor
	4439	ISX 9	Used in protocols to generate b cells
	3742	RepSox	Used in protocols to generate b cells from hPSCs; TGF-bRI inhibitor
	1974	SANT-1	Used in protocols to generate b cells from hPSCs; TGF-bRI inhibitor; inhibits Hedgehog signaling
	5343	TPPB	Induces differentiation of hESCs into pancreatic progenitors; PKC activator
	6666	T3	Used in generation of b cells
	5148	Wnt-C59	Induces differentiation of b cells; PORCN inhibitor
Cardiomyocyte	3842	5-Azacytidine	DNA methyltransferase inhibitor; induces differentiation of MSCs into cardiomyocytes
	3093	Dorsomorphin	Potent AMPK inhibitor; also BMP type I receptor inhibitor; promotes cardiomyocyte differentiation in mouse ESCs
	1041	1-EBIO	Activator of epithelial KCa channels; promotes differentiation of ESCs to cardiomyocytes
	4439	ISX 9	Induces cardiomyogenic differentiation; neurogenic agent; induces neuronal differentiation of SVZ progenitors
	5068	ITD 1	Selective inhibitor of TGF- β signaling; induces cardiomyocyte differentiation in ESCs
	3533	IWP 2	PORCN inhibitor; inhibits Wnt processing and secretion; suppresses self-renewal in R1 ESCs and promotes cardiomyocyte differentiation
	5214	IWP 4	Potent inhibitor of Wnt/ β -catenin signaling; induces cardiomyocyte differentiation of human ESCs and iPSCs
	6976	JNJ 10198409	Potent PDGFR α and PDGFR β inhibitor; enhances transdifferentiation of human fibroblasts into functional cardiomyocytes, as part of 9C cocktail
	4731	KY 02111	Inhibits canonical Wnt signaling; promotes differentiation of human ESCs and iPSCs into cardiomyocytes
	4287	Poly(I:C)	TLR3 agonist; promotes maturation of hPSC-derived cardiomyocytes
	6577	Pyridone 6	Potent pan-JAK inhibitor; induces intermediate mesoderm; cell-permeable
	3304	SU 16f	Potent and selective PDGFR β inhibitor; component of 9C cocktail for conversion of fibroblasts to cardiomyocytes
	6666	T3	Thyroid hormone; promotes differentiation and maturation of hPSC-derived cardiomyocytes
	7690	T 112	Estrogen-related receptor γ agonist; promotes maturation of hiPSC-derived cardiomyocytes
	5148	Wnt-C59	Highly potent PORCN inhibitor; induces differentiation of iPSCs to cardiomyocytes
	3748	XAV 939	Potent tankyrase inhibitor; promotes cardiomyogenesis
	2293	Zebularine	DNA methyltransferase and cytidine deaminase inhibitor; induces cardiomyocyte differentiation in MSCs
Hepatocyte	2952	CI 994	Class I histone deacetylase inhibitor; increases efficiency of hPSCs to hepatocyte differentiation
	5254	FH 1	Enhances iPSC-derived hepatocyte differentiation and maturation
	3850	Sodium butyrate	Histone deacetylase inhibitor; directs differentiation of mESCs into hepatocvtes

貨號		品名	產品說明
			Differentiation
Mesenchymal	5778	2-Phospho-L-ascorbic acid	Ascorbic acid derivative; maintains differentiation potential in bone marrow-derived MSCs
	2840	AICAR	AMPK activator; promotes osteogenic differentiation of bone marrow-derived MSCs
	1126	Dexamethasone	Anti-inflammatory glucocorticoid; induces differentiation of human MSCs
	4513	Kartogenin	Potently induces chondrogenesis in MSCs
	6787	KI-7	Positive allosteric modulator of A2B receptors; potentiates osteoblast differentiation from MSCs
	4106	Nicotinamide	PARP-1 inhibitor; promotes MSC differentiation
	4551	Purmorphamine	Smo receptor agonist
	6187	SK 216	Plasminogen activator inhibitor-1 (PAI-1) inhibitor; attenuates TGF- β -dependent epithelial-mesenchymal transition
Neural	6476	Compound E	γ -secretase inhibitor; induces neuronal differentiation
	2634	DAPT	γ -secretase inhibitor; induces neuronal differentiation
	1141	Dibutyryl-cAMP, sodium salt	Cell-permeable cAMP analog; promotes differentiation of hPSCs to dopaminergic neurons
	4011	EC 23	Synthetic retinoid; induces neural differentiation of stem cells
	927	Fluoxetine	5-HT reuptake inhibitor; induces differentiation of neuronal precursors
	1099	Forskolin	Adenylyl cyclase activator; induces neuronal differentiation
	7807	Hh-Ag1.5	Potent and high affinity Smo receptor agonist; induces differentiation of PSCs into spinal motor and sensory neurons
	2845	IBMX	PDE inhibitor (non-selective); facilitates differentiation of neural progenitor cells
	4439	ISX 9	Neurogenic agent; induces neuronal differentiation of SVZ progenitors and also induces cardiomyogenic differentiation
	4888	KHS 101	Selective inducer of neuronal differentiation in hippocampal neural progenitors
	6053	LDN 193189	Potent and selective ALK2 and ALK3 inhibitor; promotes neural induction of hPSCs
	2864	Metformin	Activator of LKB1/AMPK; enhances neurogenesis; antidiabetic agent
	6668	ML 184	Selective GPR55 agonist; also promotes NSC proliferation and differentiation
	5186	Neuropathiazol	Selective inducer of neuronal differentiation in hippocampal neural progenitors
	3854	1-Oleoyl lysophosphatidic acid sodium salt	Endogenous agonist of LPA1 and LPA2; inhibits differentiation of neural stem cells into neurons
	4076	P7C3	NAMPT activator; also proneurogenic and neuroprotective
	3044	PD 173074	FGFR1 and -3 inhibitor; inhibits proliferation and differentiation of oligodendrocyte progenitors
	6385	Phenanthroline	Enhances hPSC differentiation into cranial placode cells
	3534	PNU 74654	β -catenin binder; inhibits Wnt signaling; promotes neural differentiation of hPSCs as part of a chemical cocktail
	4366	SAG	Potent Smoothened receptor agonist; activates the Hedgehog signaling pathway; enhances neuronal differentiation of iPSCs into dopaminergic neurons
	6390	SAG dihydrochloride	Dihydrochloride salt of SAG
	1614	SB 431542	Promotes neural differentiation of hPSCs; inhibitor of TGF- β RI, ALK4 and ALK7
	6336	Trazodone	5-HT _{2A} and α 1 adrenoceptor antagonist; also enhances neural differentiation; antidepressant and neuroprotectant
	7405	TWS 119	GSK-3 β inhibitor; induces neuronal differentiation in ESCs;
	3115	WHI-P 154	JAK3 inhibitor; also inhibits EGFR; also induces differentiation of neural progenitor cells
Osteogenic	5495	CW 008	PKA signaling activator; promotes osteogenesis from hMSCs
Retinal	5329	CKI 7	CK1 inhibitor; induces retinal cell differentiation from human ESCs and iPSCs
	4011	EC 23	Synthetic retinoid; induces neural differentiation of hESC
	695	Retinoic Acid	Promotes maturation of retinal organoids; retinoic acid receptor agonist
	209	Taurine	Promotes differentiation of retinal pigment epithelial cells from hPSCs

Human Pluripotent Stem Cell Functional Identification Kit

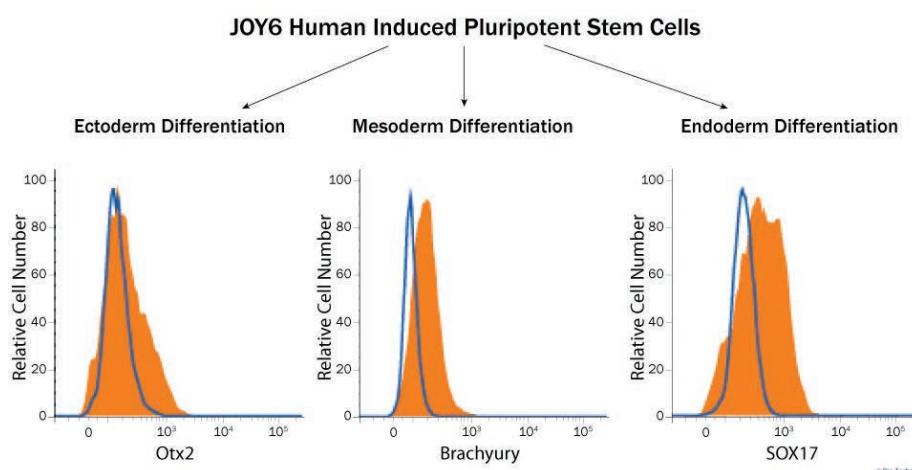
鑑定人類多能幹細胞的分化成三胚層的套組 **分化 + 鑑定**

- 套組包含幹細胞分化成三胚層用的 **supplements** 和驗證用抗體 (**Otx2, Brachyury, SOX17**)
- 高效率：僅需 **5 天**
- 有完整操作手冊，從分化到鑑定一次完成
- 偵測方法：**ICC, FCM**



Verification of Human Induced Pluripotent Stem Cell Pluripotency

The cells were stained using NorthernLights™ 557-conjugated Donkey Anti-Goat IgG Secondary Antibody (R&D Systems®, Catalog # NL001; red) and the nuclei were counterstained with DAPI (blue).



Analysis of Functional Tri-lineage Differentiation using Flow Cytometry.

Differentiated cells (orange) show increased expression of their respective lineage specific markers (ectoderm - Otx2, mesoderm - Brachyury, endoderm - SOX17 compared to undifferentiated JOY6 pluripotent stem cells (blue).

貨號	品名	產品內容	鑑定方法
SC027B	Human Pluripotent Stem Cell Functional Identification Kit	* Supplements (for three germ layers) * Unconjugated Abs (Goat anti-human SOX17, Goat anti-human Otx2, Goat anti-human Brachyury)	FCM, ICC

三胚層獨立套組 (套組包含培養用 **supplements** 和鑑定用抗體)

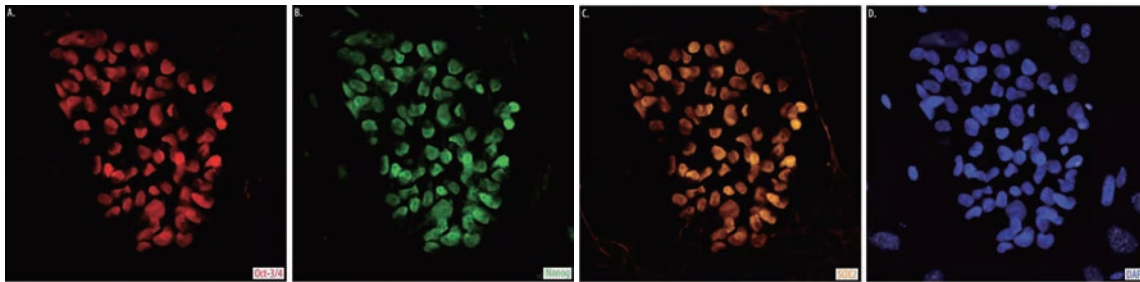
貨號	品名	產品內容	鑑定方法
SC031B	StemXVivo Ectoderm Kit	Base Media Supplement (50X), Differentiation Supplements, and Anti-Human Otx2 antibody	ICC
SC019B	StemXVivo Endoderm Kit	Base Media Supplement (50X), recombinant human FGF basic (1000X), recombinant human Activin A , recombinant human Wnt-3a, and Anti-Human SOX17 antibody	ICC
SC030B	StemXVivo Mesoderm Kit	Base Media Supplement (50X), Differentiation Supplements, and Anti-Human Brachyury antibody	ICC

Human Pluripotent Stem Cell 3-Color Immunocytochemistry Kit #SC021

使用 **single-step ICC** 方法來鑑定人類幹細胞的多能性

套組內包含 **3** 支螢光抗體

Marker	FLUOROCHROME	ABSORPTION MAXIMUM (nm)	EMISSION MAXIMUM (nm)
SOX2	NL557	557	574
Oct-3/4	NL637	637	658
Nanog	NL493	493	514



Verification of Human Embryonic Stem Cell Pluripotency.

貨號	品名	應用	包裝
SC021	Human Pluripotent Stem Cell 3-Color Immunocytochemistry Kit	Immunocytochemistry/ Immunofluorescence	25 assays

其他鑑定多能幹細胞套組推薦

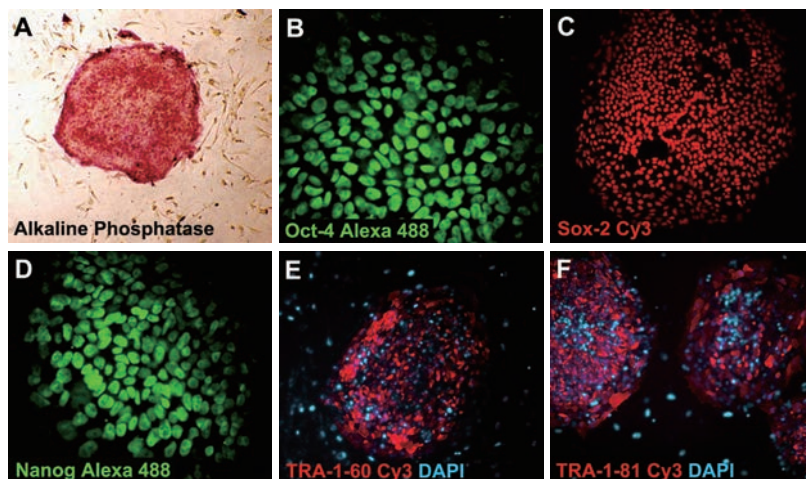
貨號	品名	偵測標的	應用	包裝
SC008	Human Pluripotent Stem Cell Marker Antibody Panel	* Positive: Alkaline Phosphatase, Nanog, Oct-3/4, SSEA-4 * Negative : SSEA-1 (5 種 unconjugated Abs)	FCM, ICC	25 µg/each Abs
SC009	Human Pluripotent Stem Cell Marker Antibody Panel Plus	* Positive : Nanog, Oct-3/4, SSEA-4, CD9, E-Cadherin, PODXL, Sox2 * Negative : SSEA-1 (8 種 unconjugated Abs)	FCM, ICC	25 µg/each Abs
FMC001	H/M Pluripotent Stem Cell Multi-Color Flow Cytometry Kit	* Positive: SOX2-PE, Oct-3/4-APC * Positive for human; Negative for mouse: SSEA-4-CFS * Negative for human; Positive for mouse : SSEA-1-PerCP * 其他 : Isotype Controls, Fixation/Permeabilization Buffer, Permeabilization/Wash Buffer	FCM	25 tess
ARY010	Proteome Profiler Human Pluripotent Stem Cell Array Kit	15 markers : Oct-3/4, Nanog, SOX2, E-Cadherin, Alpha-Fetoprotein (AFP), GATA-4, HNF-3 beta/FoxA2, PDX-1/IPF1, SOX17, Otx2, TP63/TP73L, Goosecoid (Gsc), Snail, VEGF R2/KDR/Flk-1, HCG	Antibody Array (for screening)	kit

Fluorescent Human ES/iPS Cell Characterization Kit #SCR078

Fluorescent Mouse ES/iPS Cell Characterization Kit #SCR077

一組試劑包含染劑以及螢光抗體，方便不同應用使用

超划算
好實惠



Human 含染劑以及螢光抗體

1. Alkaline phosphatase
2. Anti-Oct-4, Alexa Fluor® 488
3. Anti-Sox-2, Cy3 conjugate
4. Anti-Nanog, Alexa Fluor® 488
5. Anti-TRA-1-60, Cy3
6. Anti-TRA-1-81, Cy3
7. DAPI, 100 µL
8. Fast Red Violet solution

Mouse 含染劑以及螢光抗體

1. Alkaline phosphatase
2. Anti-Oct-4, Alexa Fluor® 488
3. Anti-Sox-2, Cy3
4. Anti-DPPA-2, Alexa Fluor® 488
5. Anti-SSEA-1, Cy3
6. DAPI, 100 µL
7. Fast Red Violet solution

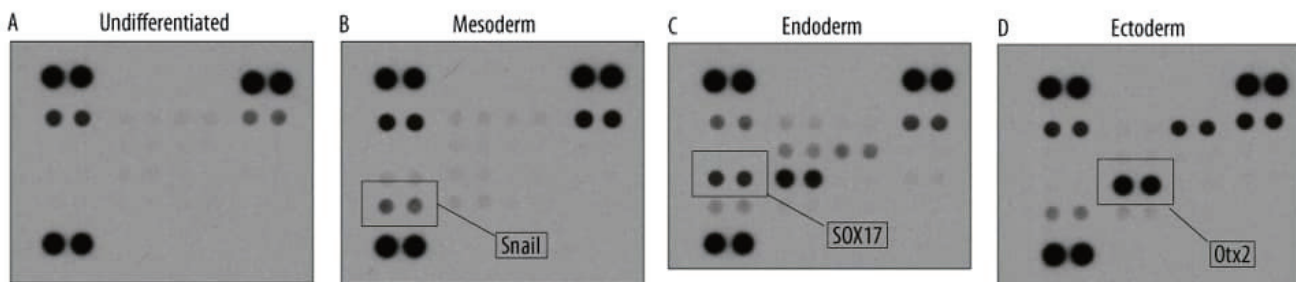
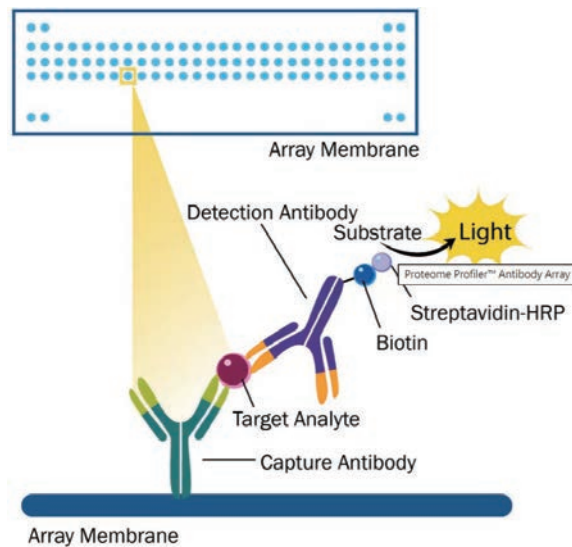
References

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2. Yu, J., Thomson, et al, Induced pluripotent stem cell lines derived from human somatic cells. 2007, Science 318(5858): 1917-20.
3. Thomson, J. A., Jones, J. M. et al, Embryonic stem cell lines derived from human blastocytes. 1998, Science 282(5391): 1145-7.
4. Takahashi, K. and Yamanaka, S., Induction of pluripotent stem cells from mouse embryonic and adult fibroblast cultures by defined factors. 2006, Cell 126(4): 663-76.
5. Chen, L. and Daley, G. Q., Molecular basis of pluripotency. 2008, Hum. Mol. Genet. 17(R1): R23-7.
6. Natunen, Valmu, L. et al, The binding specificity of the marker antibodies TRA-1-60 and TRA-1-81 reveals a novel pluripotency-associated type 1 lactosamine epitope. 2011, Glycobiology 21(9): 1125- 30.
7. Ramirez, J. M., De Vos J., et al, Brief report: benchmarking human pluripotent stem cell markers during differentiation into the three germ layers unveils a striking heterogeneity: all markers are not equal. 2011, Stem Cells 29(9): 1469-74.

Proteome Profiler™ Human Pluripotent Stem Cell Array Kit

- 快速：可同時偵測 15 stem cell markers
- 簡單：比 Western blot 更容易操作
- 便捷：無需使用特殊設備
- 貼心設計：二重複抗體矩陣設計 (nitrocellulose membranes* 8 片)
- 15 markers：Oct-3/4, Nanog, SOX2, E-Cadherin, Alpha-Fetoprotein (AFP), GATA-4, HNF-3 beta/FoxA2, PDX-1/IPF1, SOX17, Otx2, TP63/TP73L, Goosecoid (Gsc), Snail, VEGF R2/KDR/Flk-1, HCG.

抗體膜原理



Small Sample Lysate Volume Used to Detect Germ Layer Markers in Differentiated Human Pluripotent Stem Cells. BG01V human embryonic stem cells were differentiated into mesoderm, endoderm, and ectoderm using the differentiation supplements included in the Human Pluripotent Stem Cell Functional Identification Kit (Catalog # SC027B). Following differentiation in a 24-well plate, a single well of confluent cells was lysed in 100 μ L of lysis buffer and analyzed using the Proteome Profiler Human Pluripotent Stem Cell Antibody Array (Catalog # ARY010). The differentiation supplements upregulated expression of the germ layer markers (A) Snail, (B) Sox17, and (C) Otx2 compared to undifferentiated cells.

貨號	品名	包裝
ARY010	Proteome Profiler Human Pluripotent Stem Cell Array Kit (1 Kit)	1 Kit

抗體

貨號	產品	包裝	物種	應用
Undifferentiated				
MAB4407	Anti-HESCA-1 Antibody	100 µL	H	ICC, IHC, IF, FC
AB3209	Anti-Oct-4 Antibody	100 µL	H, M	ICC, IHC, WB
MAB4419/A4	Anti-OCT-4 [POU5F1] Antibody, clone 7F9.2/ Alexa Fluor® 488 conjugate	100 µL	H, M	ICC, FC, WB/ICC
MAB4303-I	Anti-Stage-Specific Embryonic Antigen-3	100 µL	H	FC, ICC, IF, IHC
MAB4304	Anti-Stage-Specific Embryonic Antigen-4	100 µL	H, M	FC, ELISA, IF, IHC
MAB4360/A4/C3	Anti-TRA-1-60 Antibody, clone TRA-1-60/Alexa Fluor 488 Conjugate/Cy3 conjugate	100 µL	H	WB, FC, IF, IP, ICC/ICC/ ICC
MAB4381/C3	Anti-TRA-1-81 Antibody, clone TRA-1-81/Cy3 conjugate	100 µL	H	WB, FC, IF, IP, ICC/ICC
AB5731	Anti-Nanog Antibody, NT	100 µL	H, M, R	WB
MAB4343	Anti-SOX-2 Antibody	100 µL	H, M	ICC, IHC, WB
AB5603	Anti-Sox2 Antibody	100 µL	H, M	WB, ICC, IF, IHC
06-756	Anti-Frizzled 5 Antibody	200 µL	H, M, R	WB
Differentiated (Ectoderm)				
MAB5326/C3	Anti-Nestin Antibody, clone 10C2/Cy3 conjugate	100 µL	H	ICC, IHC, IH(P), WB/ICC
G3893-100UL	Anti-Glial Fibrillary Acidic Protein (GFAP)	100 µL	H, R, P	WB, ICC, IHC, IF, Array
MAB360	Anti-Glial Fibrillary Acidic Protein	100 µL	H, M, Po, R, Rb	ICC, IHC, IH(P), WB
MAB3402C3	Anti-GFAP Antibody, Cy3 Conjugate	100 µL	H, M, R, Po, Ch	ICC, IHC
T8660	Monoclonal Anti-β-Tubulin III	100 µL	B, R, H	WB, ELISA
MAB1637	Anti-Tubulin Antibody, beta	100 µL	B, H, M, R	ELISA, ICC, IHC, IH(P), IP, WB
AB15708A4/C3	Anti-Beta III Tubulin Antibody, Alexa Fluor® 488 Conjugate/Cy3 Conjugate	100 µL	R, M, H	ICC, IHC/ICC
MAB5324	Anti-Polysialic Acid-NCAM	50 µL	H, R, M, Vrt	ICC, IHC, RIA, WB
AB5977	Anti-Musashi-1 Antibody; MSI1	100 µL	H, M, R	ICC, IHC, WB
563566	Alexa Fluor® 647 Mouse anti-NeuroD1	50 tests	H, M	FACS
AB15766	Anti-Sox1 Antibody	100 µL	H, M, R	WB, IHC
V6630-100UL	Anti-Vimentin antibody	100 µL	R, B, Fe, Rb, P, H	IHC, WB
ABN174	Anti-MNX1 (HB9) Antibody; HLXB9	100 µL	H, M	WB, IHC
Differentiated (Endoderm)				
HPA004712	Anti-HNF4A antibody produced	100 µL	H	WB, IF, IHC
AB1858	Anti-Osteonectin Antibody; SPARC	100 µL	H	ELISA, IH(P)
WH0000174M1	Anti-AFP antibody produced in mouse	100 µL	H	IP, ELISA, IF, WB
AB756P	Anti-Collagen Antibody, Type IV	100 µL	M	ELISA, IF, IH(P)
AB769	Anti-Collagen Type IV Antibody	200 µL	B, H, M	DB, ELISA, ICC, IHC
07-633	Anti-HNF3 β /FOXA2 Antibody	200 µL	H, M, R	IHC, WB
09-038-I	Anti-SOX17	100 µL	H, M, R	WB, IHC, IF
Differentiated (Mesoderm)				
ABN174	Anti-MNX1 (HB9) Antibody; HLXB9	100 µL	H, M	WB, IHC
612292	Anti-BMPRII	50 µL	H, M, R	WB

試劑 經濟實惠，包含多種抗體標誌，可多重確認細胞狀態

貨號	產品	包裝	內含物
Undifferentiated			
SCR001	ES Cell Characterization Kit	100 Rxns	Fast Red Violet, Napthol AS-BI phosphate, SSEA-1, SSEA-4, TRA-1-60, TRA-1-81
SCR004	Alkaline Phosphatase Detection Kit	100 Rxns	Fast Red Violet, Napthol AS-BI phosphate
SCR066	Quantitative Alkaline Phosphatase ES Characterization Kit	100 Rxns	p-NPP Substrate (50X), p-NPP Buffer, Reaction Stop Solution, 1X Wash Solution, Recombinant Alkaline Phosphatase Standard
SCR030	Human Embryonic Germ Layer Characterization Kit	Kit	Alpha Fetoprotein, Smooth Muscle Actin, Nestin, Cardiac Troponin, MAP-2
Differentiated			
SCR067	Human Mesenchymal Stem Cell Characterization Kit	Kit	HCAM, THY-1 (CD90), STRO-1, MCAM (CD146), CD19, CD14
SCR601	Human Oligodendrocyte Characterization Kit	Kit	NG2 Chondroitin Sulfate Proteoglycan, Myelin Proteolipid, Galactocerebroside, Myelin Oligodendrocyte Glycoprotein (MOG), Glial Fibrillary Acidic Protein (GFAP), MAP2
SCR060	Human Neural Stem Cell Characterization Kit	Kit	Nestin, Sox-2, Musashi, bIII Tubulin, GFAP, Oligodendrocyte marker O1, Mouse IgM, Mouse IgG, Rabbit IgG
SCR019	Neural Stem Cell Marker Characterization Kit	Kit	Nestin, Sox 2, MAP-2, GFAP, Oligodendrocyte marker O1, Mouse IgM, Mouse IgG, Rabbit IgG,
SCR020	Mesenchymal Adipogenesis Kit	Kit	Dexamethasone Solution, IBMX Solution, Insulin Solution, Indomethacin Solution, Oil Red O, Hematoxylin Solution
SCR028	Mesenchymal Stem Cell Osteogenesis Kit	Kit	Dexamethasone Solution, Ascorbic Acid 2-Phosphate Solution, Glycerol 2- Phosphate Solution, Collagen Type I, Vitronectin, Alizarin Red Solution
ECM815	Osteogenesis Quantitation Kit	Kit	Alizarin Red S Stain Solution, 10% Acetic Acid, 10% Ammonium Hydroxide, 10X ARS Dilution Buffer
ECM810	In Vitro Osteogenesis Assay Kit	Kit	Ascorbic Acid 2-Phosphate Solution (500X), Glycerol 2- Phosphate Solution (100X), Melatonin Solution, Alizarin Red S Stain Solution (1X), 10% Acetic Acid, 10% Ammonium Hydroxide, 10X ARS Dilution Buffer



另有以下試劑 / 抗體品牌，請洽當區業務

MERCK

TAKARA
Clontech Takara cellartis

BD

biotechne / TOCRIS

BD Stemflow™ Kit

流式細胞術應用

- 貼心套組組合：Pluripotent Stem cell 套組附 Compbead(螢光補償調整) 及 Isotype control
- 胞內染色 so easy：含胞內抗原的套組皆附固定打洞液
- 不挑機款：2 雷 4 色流式細胞儀，即可上機

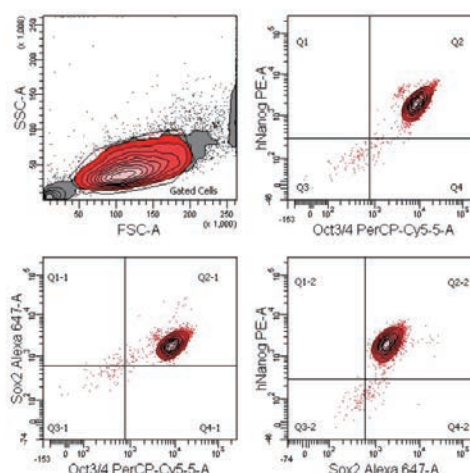


特別
推薦

Human Pluripotent Stem Cell Transcription Factor Analysis Kit #561527

- 偵測 Oct3/4, Nanog, Sox2
- 胞內染色，套組提供細胞固定液及打洞液
- 適用 "drop-in" 額外的 marker 一起偵測
- 完整操作手冊

Undifferentiated human ESC from the H9 cell line stained using the BD Stemflow Human Pluripotent Stem Cell Transcription Factor Analysis Kit.



更多推薦產品

貨號	產品	標誌	內含物	包裝
562626	Human Induced Pluripotent Stem Cell Analysis and Sorting Kit	CD13/SSEA-4/TRA-1-60	CD13 PerCP-Cy™ 5.5, SSEA-4 Alexa Fluor® 647, TRA-1-60 PE, isotype control antibodies, BD™ CompBead Plus compensation particles	50 Tests
560461	Human Pluripotent Stem Cell Sorting And Analysis Kit	TRA-1-81/SSEA-1/SSEA-3	TRA-1-81 Alexa Fluor® 647, SSEA-1 FITC, SSEA-3 PE; isotype controls; BD™ CompBead Plus compensation particles	50 Tests
560477	Human And Mouse Pluripotent Stem Cell Analysis Kit	SSEA-4/Oct3/4/SSEA-1	SSEA-4 Alexa Fluor® 647, Oct3/4 PerCP-Cy™ 5.5, SSEA-1 PE; isotype control antibodies; BD Cytofix™ fixation buffer; BD Perm/Wash™ buffer; BD™ CompBead Plus compensation particles	50 Tests
560589	Human Pluripotent Stem Cell Transcription Factor Analysis Kit	Nanog/Oct 3/4 /Sox2	Nanog PE, Oct 3/4 PerCP-Cy™ 5.5, Sox2 Alexa Fluor® 647; isotype control antibodies; BD™ CompBead Plus compensation particles; BD Cytofix™ fixation buffer; BD Perm/Wash™ buffer	50 Tests
560585	Mouse Pluripotent Stem Cell Transcription Factor Analysis Kit	Nanog/Oct 3/4 /Sox2	Nanog PE, Oct 3/4 PerCP-Cy™ 5.5, Sox2 Alexa Fluor® 647; isotype control antibodies; BD™ CompBead Plus compensation particles; BD Cytofix™ fixation buffer; BD Perm/Wash™ buffer	50 Tests
562496	Human Definitive and Pancreatic Endoderm Analysis Kit	Pax-6/PDX-1/ FoxA2/ Sox2/ Sox17/Nanog	Pax-6 Alexa Fluor® 488, PDX-1 PE, FoxA2 PE, Sox2 PerCP-Cy™ 5.5, Sox17 PerCP-Cy™ 5.5, Nanog Alexa Fluor® 647; BD Phosflow™ perm buffer III; BD Cytofix™ fixation buffer	25 Tests
561526	Human Neural Lineage Analysis Kit	Sox2/GFAP/Sox2/ Doublecortin/Nestin/Ki-67/ Sox1/CD44	Sox2 PerCP-Cy™ 5.5, GFAP Alexa Fluor® 647, Doublecortin PE, Nestin Alexa Fluor 647, Ki-67 Alexa Fluor 488, Sox1 PerCP-Cy5.5, CD44 FITC; BD Cytofix™ fixation buffer; BD Phosflow™ perm buffer III	25 Tests

黃金鐵三角

Flow
周邊商品1 Accutase
solution2 ROCK
inhibitor3 FACS™
Buffer

Accutase cell detachment solution #561527

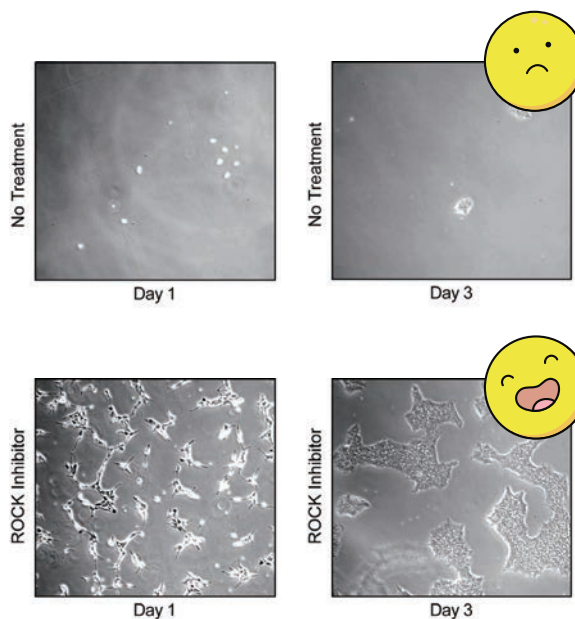
- 取代 trypsin 做細胞繼代作用溫和，可保留大部分細胞表面抗原，更適合用於 flow 分析或 sorting
- 適用於人類及小鼠的 iPSC/ESC



ROCK inhibitor (Y-27632) #562822

- 在分離成單細胞時，可提高胚胎幹細胞存活率
- 可增加分離細胞時的回收率

ROCK inhibitor, Y-27632, improves the recovery of human embryonic stem cells (hESC) after fluorescence activated cell sorting. ROCK Inhibitor was either omitted or added for 24 hours post-sort.



FACS™ Pre-Sort Buffer #563503

- 在細胞製備、染色、洗滌和分選時，可大量減少細胞結塊過程
- 不含酚紅，可減少背景值
- 不含 EDTA
- 兼容多種細胞類型，包括貼壁細胞和敏感細胞
- 含 FBS 以維持細胞活性



誘導性多能幹細胞整合方案

iPSC

Induced Pluripotent Stem Cell

