

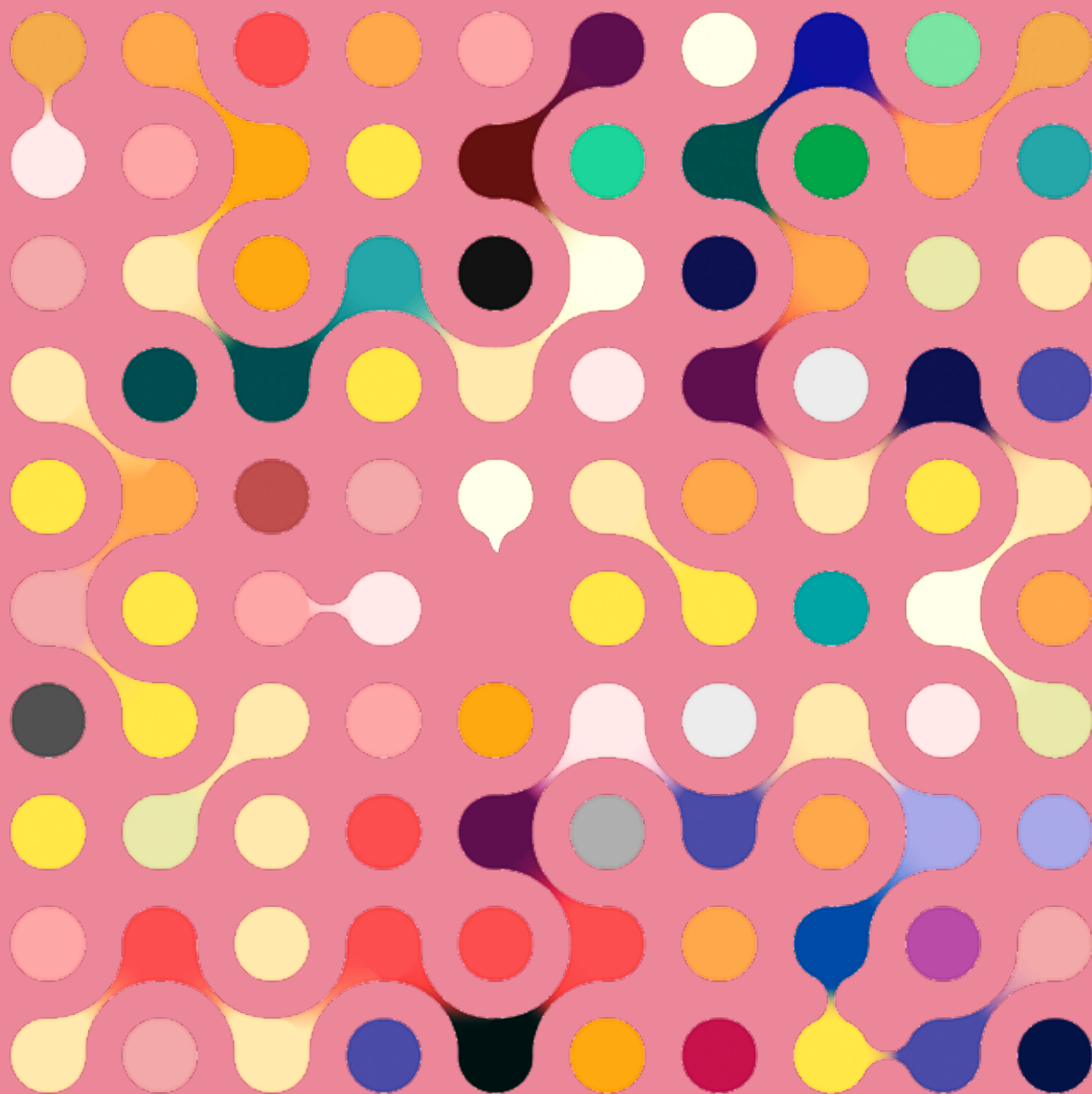


# Stem Cell

## RESEARCH

# 幹細胞

騰達行主要代理及經銷生命科學研究領域的產品，致力成為最專業的代理商，我們的核心價值是提供台灣生技及臨床醫學研究單位最優良的產品與最貼心的服務。騰達行近期更深耕細胞治療、大分子藥物開發與次世代定序領域，提供高品質試劑耗材與儀器，並建立整合平台，為研究人員帶來最優質的服務。




# 幹細胞 產品概要

● GMP grade  
● cGMP grade  
● Chemically Defined

● Xeno-free  
● Serum-free  
● IVD

## Isolation

### Enzyme & Wash

 Nordmark

適用於大部分組織

Collagenase NB 4, NB 5 ● P.04

適用於臨床分離

Collagenase NB 6 GMP Grade ● ●

使用於臨床組織工程與移植

Collagenase NB 1 GMP Grade ● ●

適用於敏感型細胞

Collagenase AF-1 GMP Grade ● ●

### ZENOGEN PHARMA

Cellotion ● P.05

**LONZA**

TheraPEAK™ PBS



## Cell Culture

### Medium

**LONZA**

TheraPEAK™ MSCGM™ BulletKit™ MSC ● ● ● ●

 ITRI

hMSC SF1 Complete Medium MSC ● ● ● ●

 CellGenix

CellGenix® GMP Stem Cell Growth Medium(SCGM) HSCs/CD34+ ● ● ● ●

 EliteCell

EliteCell 人類血小板裂解液

**Sigma-Aldrich.**

Stemline® XF MSC Basal Medium/Supplement ● ● ● ●

Stemline® II Hematopoietic Stem Cell Expansion Medium ● ●

 CELVIVO

CELVIVO Clinostar System 🖥️

### ECM

**CORNING**

Matrigel hESC-Qualified Matrix

BioLamina 

Laminin 521 ● ● ●

### Flask

 FALCON

Flask, Multi-layer Flask (3- & 5- layer) ●

## Cryopreservation

### CryoBags, CyroMedia & Cell Thawing System



### ZENOGEN PHARMA

STEM-CELLBANKER® ● ● ● ● P.25

STEM-CELLBANKER® DMSO Free ● ● ● ●

HSC-BANKER GMP grade ● ● ● ● P.26

STEM-CELLBANKER EX ● ● ● ●

### Freezer & Thermometer

 STIRLING  
ULTRACOLD

Stirling Ultracold System 🖥️ P.28

 CORNING

TPP 細胞凍存管 ● P.27

CORNING CoolCell 細胞漸凍盒



## Mycoplasma Detection

**LONZA**

MycAlert PLUS Mycoplasma detection kit 🖥️

**Sigma-Aldrich.**

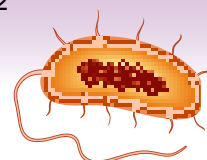
LookOut® Mycoplasma PCR/qPCR Detection Kit

 AZURE  
biosystems

Azure Cielo™ 3/6 即時螢光定量 PCR 系統 🖥️

 BLUE-RAY  
BIOTECH

Blue-Ray TurboCycler 2 🖥️



## Characterization

### MSC

**MERCK**

Human MSC Characterization Kit

P.16

**BD**

StemFlow hMSC Analysis Kit

P.17

### HSC

**BD**

BD Stem Cell Enumeration Kit



P.18

BD Stem Cell Control Kit

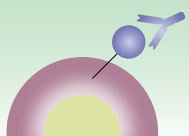


### Flow Cytometer

BD Accuri C6 Plus Flow Cytometer



P.19



## Genetic Engineering

### CRISPR / Cas9 Virus & Non-Virus System

P.32

**MERCK**

Benzonase



P.33

**TAKARA**

Guide-it™ sgRNA *In Vitro* Transcription Kit

P.34

Cas9 SmartNuclease mRNA

P.35

HR Targeting Vectors

P.36

### Lenti / AAV

**TAKARA**

Plasmid, Packaging, Concentration & Purification kits, Titration kits

P.37



### Electroporation

**LONZA**

AMAXA 4D

P.41



## Differentiation & Detection

### Adipocyte



**MERCK**

MSC Adipogenesis Kit

P.24

**LONZA**

Adipogenic Differentiation BulletKit™ Medium

P.19

AdipoRed™ Assay Reagent

### Osteocyte



**MERCK**

MSC Osteogenesis Kit

P.24

**LONZA**

Osteogenic Differentiation BulletKit™ Medium

P.22

OsteoImage™ Mineralization Assay

P.23

### Chondrocyte



**LONZA**

Chondrogenic Differentiation

P.21

BulletKit™ Medium

**CellGenix**

CellGenix TGF-beta1

P.19

## Multiplex Assay

**MERCK**

Milliplex® MAP



P.42



MESO V-Plex



P.44

**BD**

BD™ Cytometric Bead Array

P.45

## High sensitivity Assay

**MERCK**

SMCxPRO® Single Molecule Counting



P.46

# Nordmark Collagenase NB



- 採用最高規的安全規範來生產 GMP 等級 collagenase NB 包含嚴格的微生物監控、病毒與 TSE (transmissible spongiform encephalopathy) 安全檢測
- Animal Free GMP Collagenase 適用於胰島、肝臟與牙髓等敏感型細胞
- 提供適用各組織的 collagenase NB 型號與用量建議讓客戶輕鬆上手

\* Nordmark Arzneimittel GmbH & Co. KG 所生產的 collagenase NB 原由 SERVA 販售，至 2018 年回歸 Nordmark，只有產品包裝 LOGO 從 SERVA 改成 Nordmark，產品品質不會受到影響

## 原廠建議用量



Adipose tissue		
Species	Enzyme	Conditions
Human	Collagenase NB 4	0.2-0.3 PZ U / mL* 30-60 min, 37°C
Murine	Collagenase NB 4	0.2-0.3 PZ U / mL * 30-60 min, 37°C
Clinical applications*		
Species	Enzyme	Conditions
Human	Collagenase NB 6	0.2-0.3 PZ U / mL* 30-60 min, 37°C

\* 0.1 - 0.15 PZ U/ml final concentration after addition of adipose tissue

Wharton's jelly		
Species	Enzyme	Conditions
Human	Collagenase NB 4	0.13-0.15 PZ U / mL, 1-6 h, 37°C
Clinical applications		
Species	Enzyme	Conditions
Human	Collagenase NB 6	0.13-0.15 PZ U / mL 1-6 h, 37°C



榮獲美國與歐洲安全認證



CERTIFIED BY National Institutes of Health Schleswig Holstein



AUDITED BY FDA - U.S. Food and Drug Administration

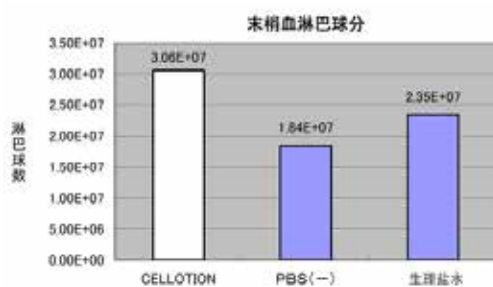
產品名稱	貨號	包裝	說明
Collagenase AF-1 GMP Grade	N0003554	≥ 2,000 U*	適用於敏感型細胞例如 胰島 肝臟與牙髓細胞
Collagenase NB 1 GMP Grade	N0002937	≥ 2,000 U	建議使用於臨床組織工程與移植
Collagenase NB 6 GMP Grade	N0002779	1 g	應用於臨床分離 human ADSCs, stem cells, chondrocytes, fibroblasts, neuronal and endothelial cells
Collagenase NB 6 GMP Grade	N0002880	100 mg	
Collagenase NB 4 Standard Grade	S1745402	500 mg	應用於大部分的組織細胞分離
Collagenase NB 4 Standard Grade	S1745401	1 g	
Collagenase NB 4 Standard Grade	S1745403	5 g	
Collagenase NB 5 Sterile Grade	N0002778	1 g	

# ZENOGEN PHARMA

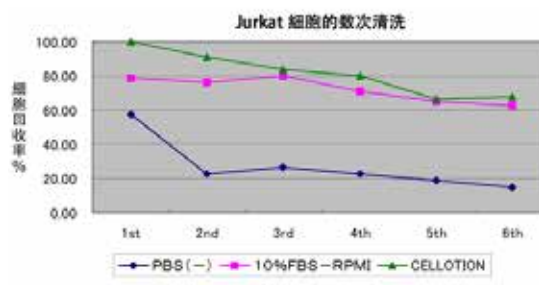
## ZENOAQ PHARMA CELLOTION®

### 高回收率細胞緩衝清洗液

- 限定化學成分細胞清洗液
- 使用國際藥典 (美、歐、日本) 成分
- 不含血清、動植物來源性蛋白和醣類
- 含獨特細胞膜保護配方，可減少細胞在清洗過程中流失細胞，有效提高細胞回收率
- 可應用於 Leukocyte/stem cell 回收，解凍後細胞清洗，一般細胞清洗



周邊血淋巴細胞分離。CELLOTION™ & 傳統細胞清洗緩衝液的對比測試。



Jurkat 細胞離心洗滌。CELLOTION™ & 傳統細胞清洗緩衝液 (多次清洗程序) 的對比測試。

貨號	產品	包裝
CELLBANKER CELLOTION	CELLBANKER CELLOTION	100 mL

## Lonza TheraPEAK™ PBS

- 使用高規格注射等級用水 WFI 製備
- 無動物來源成分
- 採用 USP 建議方式滅菌，保證無菌
- 無鈣鎂、Endotoxin level <0.01 EU/mL
- GMP Grade 適用於細胞療法、基因療法、蛋白質生產等應用的下游處理



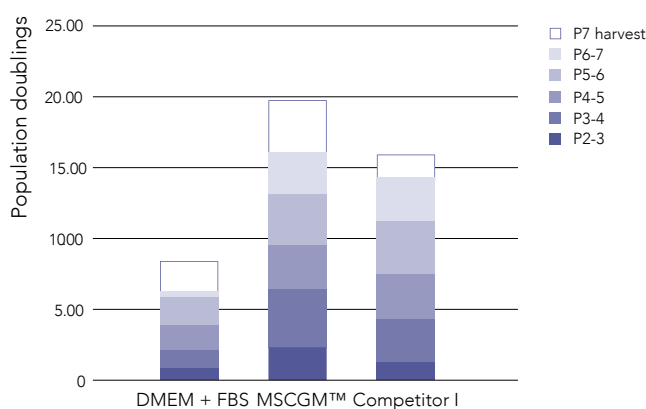
貨號	產品	包裝
BEBP17-516Q	TheraPEAK™ PBS, without Calcium and Magnesium, GMP grade	1 L

### References

1. Najar, M., Fayyad-Kazan, M., Meuleman, N. et al. Mesenchymal stromal cells of the bone marrow and natural killer cells: cell interactions and cross modulation. J. Cell Commun. Signal. 12, 673–688 (2018). <https://doi.org/10.1007/s12079-018-0448-4>
2. Chang, Z.L., Hou, A.J. & Chen, Y.Y. Engineering primary T cells with chimeric antigen receptors for rewired responses to soluble ligands. Nat Protoc 15, 1507–1524 (2020). <https://doi.org/10.1038/s41596-020-0294-8>

**Lonza****TheraPEAK™ MSCGM™****Mesenchymal Stem Cell Growth Medium BulletKit™**

- Serum-free
- List in DMF
- 無添加抗生素及 Phenol red
- 維持 MSC 正常的生長
- 不需額外 coat 細胞基質在 flask 上
- 細胞仍具有分化的能力
- 適用於後續產程及實驗分析

**TheraPEAK® MSCGM™ Medium Expansion****Figure 1**

hMSCs grown in TheraPEAK® MSCGM™ Medium exhibit better expansion over cells grown in serum-free MSC medium from Competitor I, as well as traditional DMEM with FBS. hMSCs were directly thawed into each respective medium and seeded at a density 2000 cells/cm<sup>2</sup> in T flasks. Cells were fed every 3 days and passaged at 95% confluence.

**Cell characterization in serum-free media conditions**

Cell Surface Marker	Positive (flow cytometry)	Negative (flow cytometry)
CD166	+	
CD105	+	
CD29	+	
CD44	+	
CD45		-
CD34		-
CD14		-

**Table 1.**

Cell surface antigen expression of hMSCs grown in TheraPEAK® MSCGM™ Medium.

貨號	產品	包裝
BEBP18-936	TheraPEAK™ MSCGM™ BulletKit™	1 L

**References**

Aussel, Clotilde, et al. "Quality assessment of a serum and xenofree medium for the expansion of human GMP-grade mesenchymal stromal cells." PeerJ 10 (2022): e13391.

# SF1 hMSC Medium GMP

第 2 類  
醫材等級

## 高效增殖人類間質幹細胞無血清培養基

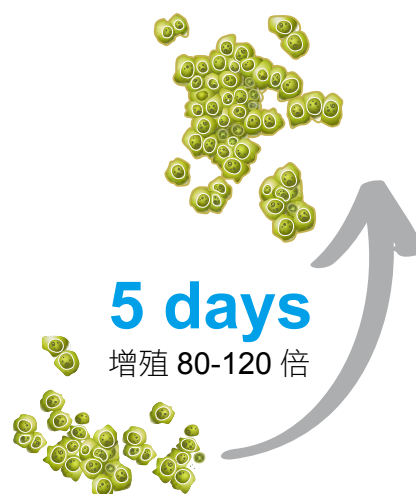
由工研院技轉的 SF1 hMSC Medium 是一款無血清且不含動物性來源的人類間質幹細胞培養基，可用於臍帶、骨髓、脂肪、Wharton's Jelly 等來源的間質幹細胞。其高效增殖的特性，可在短時間量產不同來源之間質幹細胞（例如脂肪來源之間質幹細胞，5 天約可增殖 80-120 倍）。



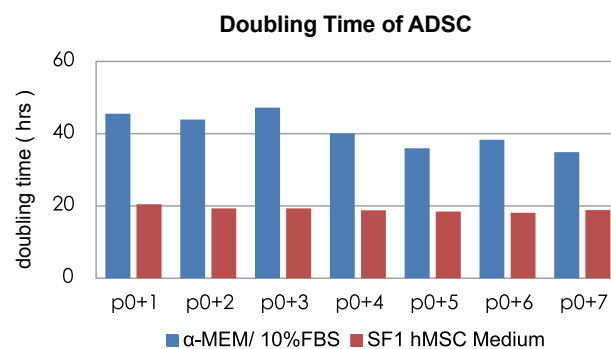
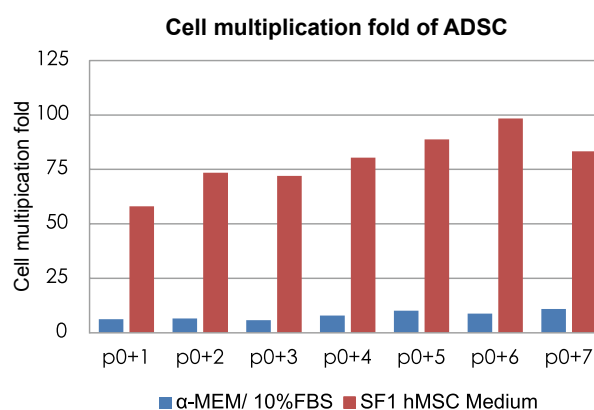
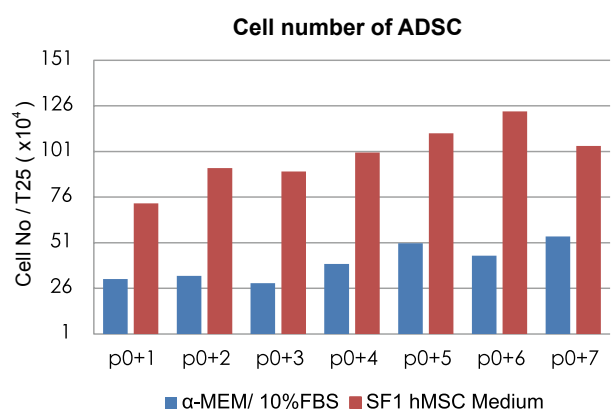
衛部醫器製字第 007363 號

- 培養皿不需先用細胞外基質 (ECM) 處理 \*
- Serum free, Animal-origin free, Chemically defined
- 低細胞種植密度 (  $0.325 - 1.0 \times 10^3 / \text{cm}^2$  )
- 高效增殖倍數

\* 培養耗材建議使用 Falcon Primaria 產品 ( 請見 P.10 )



### SF1 hMSC medium 的細胞增值效果優於傳統的含血清培養基



Culture human adipose-derived stem cells ( ADSC ) using a-MEM + 10% FBS ( SCM ) / SF1 hMSC medium. Seeding human ADSC  $2 \times 10^3$  cells /  $\text{cm}^2$  in a-MEM + 10% FBS, and  $5 \times 10^2$  cells /  $\text{cm}^2$  in SF1 hMSC medium respectively in T-25 flask. Cells were fed on 3<sup>th</sup> day and subcultured on 5<sup>th</sup> day. Human ADSC cultured in SF1 hMSC Medium expand faster than cells cultured in a traditional serum-base medium ( a-MEM + 10% FBS ).

Cat. No.	name	Content	size
MSC-SF-003	SF1 hMSC Medium	hMSC SF1 Basal Medium (4°C )+ hMSC	500 mL
MSC-SF-006	SF1 hMSC Medium (No Phenol Red)	SF1 Supplement (-20°C )	

Sigma-Aldrich®

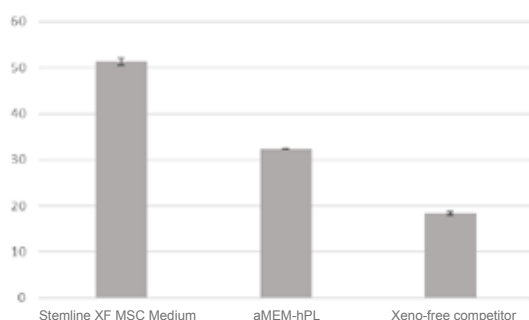
Stemline® XF MSC Basal Medium



Stemline® XF MSC Supplement

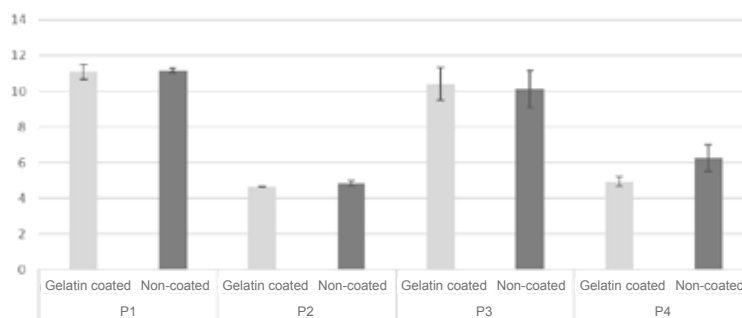
- 性能驗證
- 表徵
- 功能測定：( 流式細胞儀、IDO 測定以及可分化成脂肪細胞、軟骨細胞和骨細胞 ) 證實 Stemline XF MSC 培養基將 MSC 維持在適當的多能狀態
- Xeno-free, Serum-free
- ISO9001

Fold Expansion



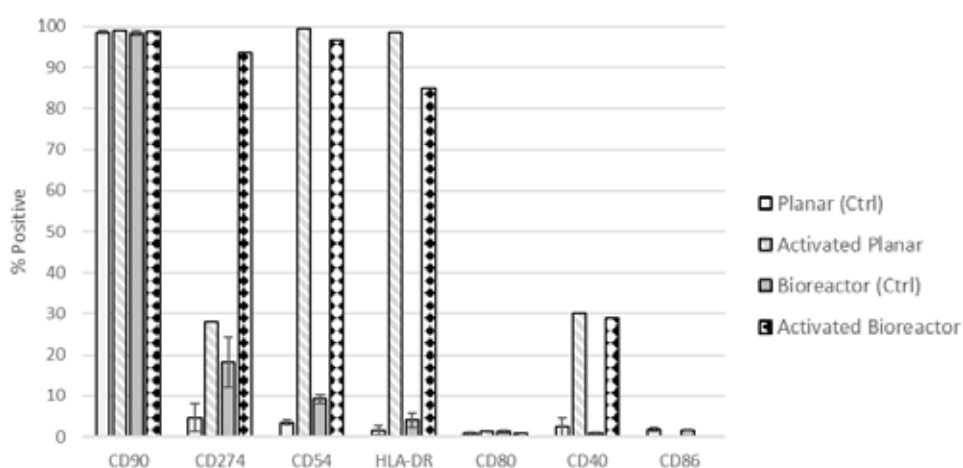
Cells were seeded in duplicate in a Mobius 3L Bioreactor containing either Stemline XF MSC Medium or the media indicated.

Fold Expansion



Cells were seeded in triplicate in gelatin-coated 6-well plates or tissue culture treated 6-well plates containing Stemline XF MSC Medium.

Surface Antigens



Cells expanded in Stemline XF MSC medium in planar or suspension-based formats retain characteristic ability to modulate presentation levels of immune-related surface antigens. "Activated" conditions were exposed to INF $\gamma$ , while control conditions were not.

貨號	產品	包裝
14371C-500ML	Stemline® XF MSC Basal Medium	500 mL
14371C-5B	Stemline® XF MSC Basal Medium	5 L
14372C-5ML	Stemline® XF MSC Supplement	5 mL
14372C-50ML	Stemline® XF MSC Supplement	50 mL



# EliteCell Human Platelet Lysate Supplement

## 人類血小板裂解液



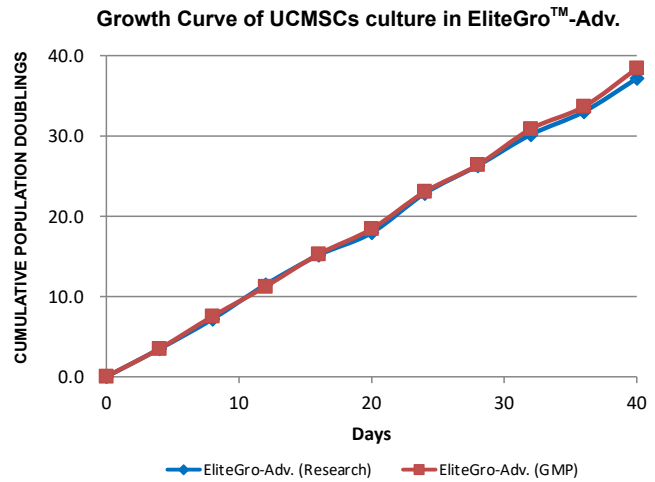
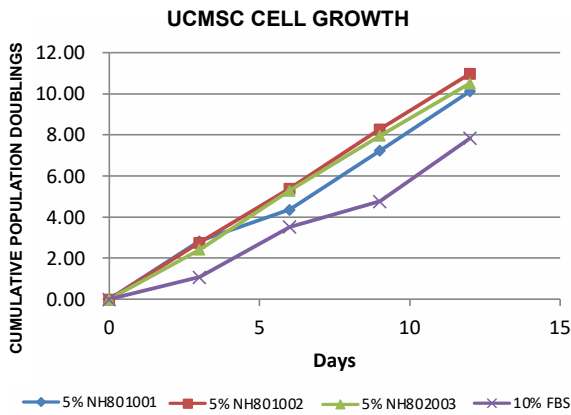
人類血小板裂解液 (hPL) 為動物血清 (FBS) 之替代品，適用於初代和繼代 MSC 幹細胞培養以及免疫細胞的培養。

- animal serum-free
- xenogenic -free
- 無須額外添加抗凝劑 (heparin)
- 遵循美國 FDA GMP 規範
- 符合美國藥典 (USP)
- 提供完整 CoA
- 提供美國原料藥主檔案備案號 (DMF)

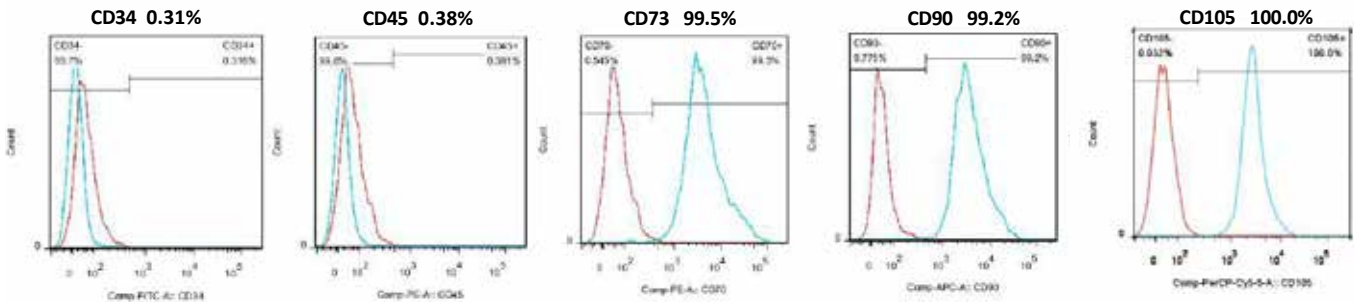


- 批次間穩定
- 5% EliteGro™-Adv. 即可達到 10%-20% FBS 培養效果 (或更佳)

- 從研究到生產，等級齊備無縫接軌



- 培養過程保持良好細胞特性



貨號	產品	包裝
EPA-500	EliteGro™-Adv.	500 mL
EPA-050	EliteGro™-Adv.	50 mL
EPAGMP-500	EliteGro™-Adv. (GMP Grade)	500 mL
EPAGMP-050	EliteGro™-Adv. (GMP Grade)	50 mL

**FALCON****Falcon® Primaria Surface Flask and Dish**

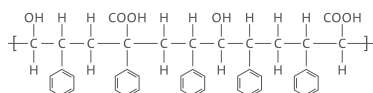
cGMP

■ 符合美國最高標準 USP Class VI Standard、EN ISO 9001, EN ISO 13485 及 FDA CFR 21 Part 820 標準

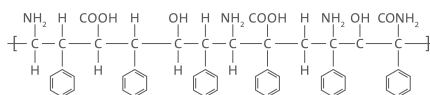
■ Primaria 表面處理：同時帶正負電荷，大幅提升細胞貼附及生長，尤其是幹細胞及 Primary culture



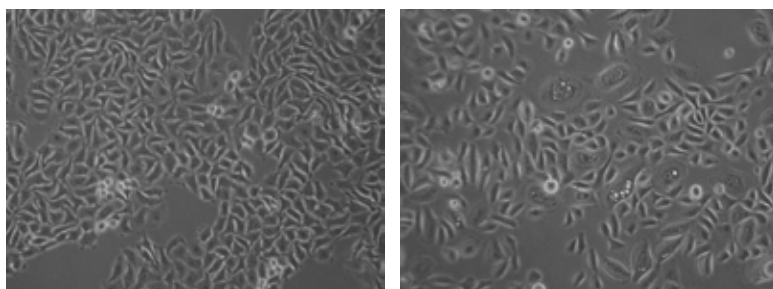
表面同時帶正負電荷，大幅提升細胞貼附及生長



Traditional Tissue Culture  
Surface Chemistry



Corning Primaria  
Surface Chemistry



At pH 7, carboxy groups may be slightly dissociated and assume a negative (anionic) charge. Amine groups may protonate and assume a positive charge (cationic).

Epithelial bladder cancer cells (KU19-19) 及 normal human urothelial cells (NHUC) 培養在 Primaria vessel 4 天

貨號	產品名稱	Qty / Cs
353813	T25 Primaria Flask	200
353808	T25 Primaria Flask (filter)	100
353824	T75 Primaria Flask	100
353810	T75 Primaria Flask (filter)	100
353801	35 x 10 mm Primaria Dish	200
353802	60 x 15 mm Primaria Dish	200
353801	100 x 20 mm Primaria Dish	200

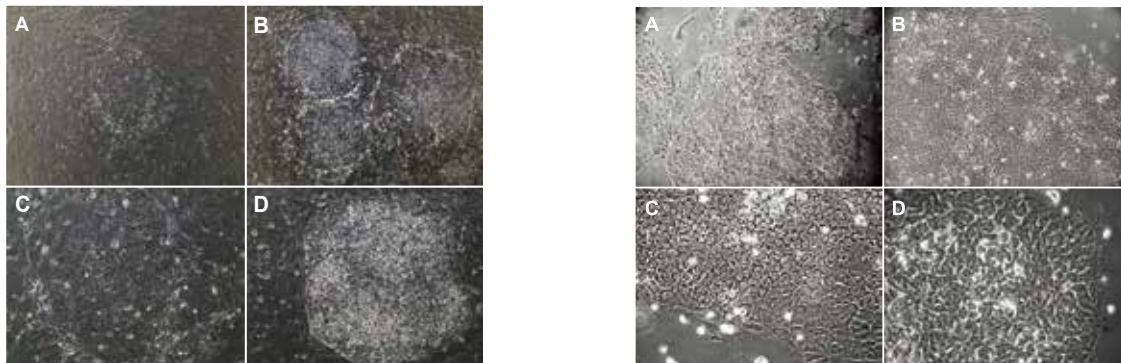
**References**

1. Barrera A. et al., Mapping of the Hepatitis B Virus Pre-S1 Domain Involved in Receptor Recognition, J. Virology 79(15):(2005).
2. Ludeman M.J., et al., Regulated Shedding of PAR1-N terminal Exodomain from Endothelial Cells. J. Biol. Chem. 279(18):18592(2004).
3. Blaszczyk N. et al., Osteoblast-Derived Factors Induce Androgen- Independent Proliferation and Expression of Prostate-Specific Antigen in Human Prostate Cancer Cells. Clinical Cancer Research 10:1860(2004).

# Corning® Biocoat Matrigel® hESC-Qualified Matrix

- 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

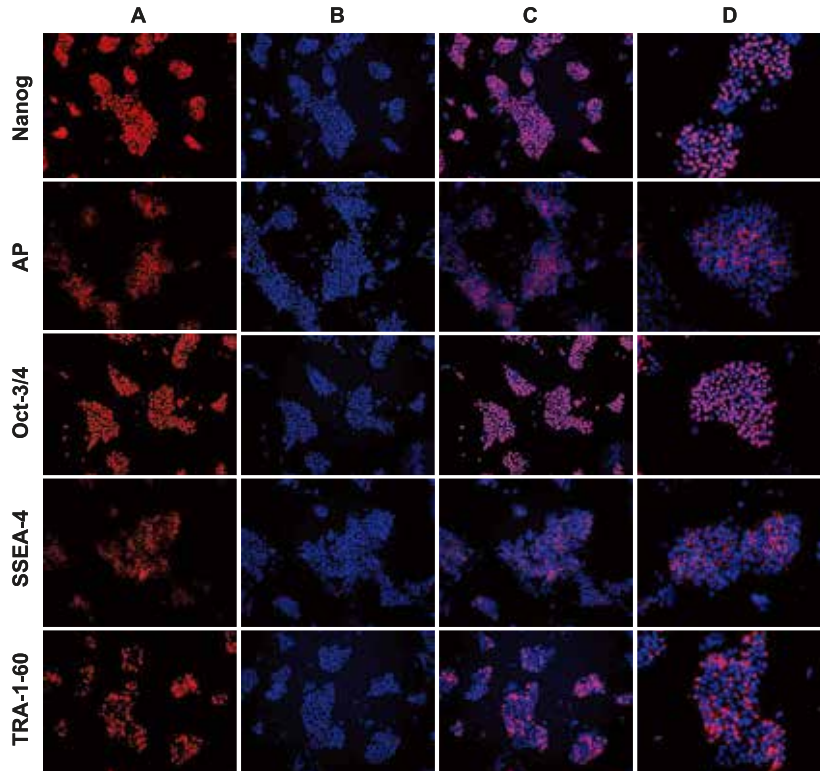
可提供 feeder layer-free 環境並維持 iPSC 型態，減少污染機率。



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).

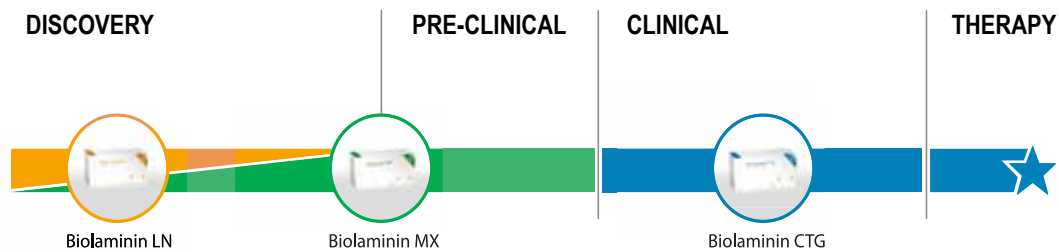
# Human Recombinant Laminin-521



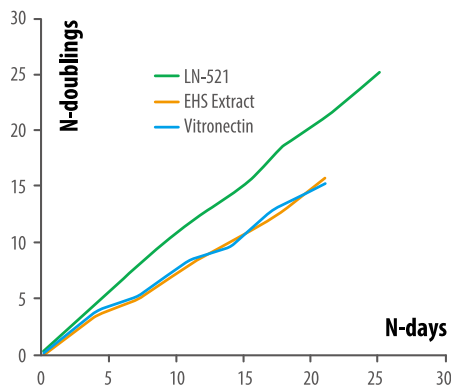
細胞治療等級  
Cell Therapy Grade  
新上市!

- 提供高度幹細胞生物相關性培養環境  
LN-521/MX-521 : Defined, xeno-free and biologically relevant  
CT-521 : Defined, animal component-free and biologically relevant
- 可用於培養 human embryonic stem cells (ESCs)  
與 induced pluripotent stem cells (iPSCs), 滿足基礎研究到臨床應用的需求
- Laminin-521 CTG 依照 FDA 與 EMEA 規範 (USP Chapter <1043>) 生產, 並符合 ISO 9001:2015
- 提供單細胞繼代培養, 無需加入任何凋亡抑制劑 (例如: ROCKi 等), 種下低密度細胞即可培養出大量細胞
- 靈活的培養系統, 易於控制: 適合與所有市售培養基搭配使用

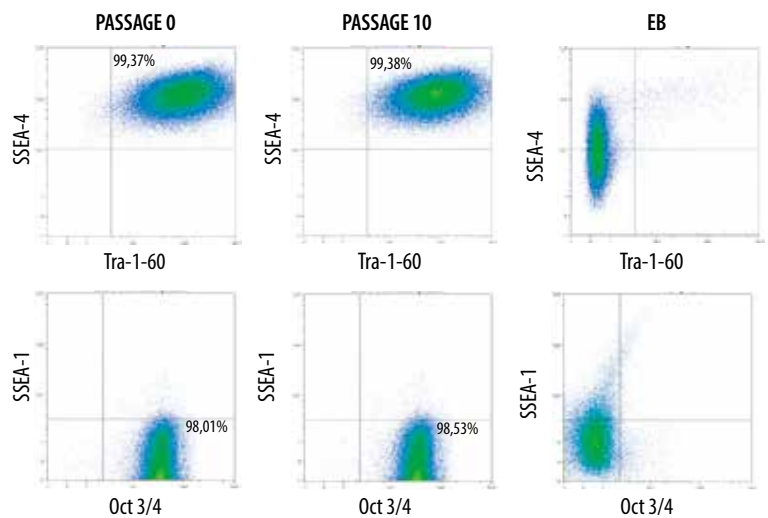
研究級產品 (LN-521 或 MX-521)  細胞治療等級 CTG (CT-521)  
無縫接軌



## FASTER CELL EXPANSION ON BIOLAMININ 521



## NO SPONTANEOUS DIFFERENTIATION



在 CT521 上培養的細胞, 在繼代 10 代之後, 仍保持多能性 & 具分化能力 (EB),  
Pluripotent marker: high Tra-1-60, SSEA-4 及 Oct-3/4 ; Differentiation marker: SSEA-1 .

貨號	產品名稱	規格
LN521-02/LN521-05	Biolaminin 521 LN <b>熱門商品</b>	100 µg / 500 µg
MX521-0501	Biolaminin 521 MX <b>Pre-clinical</b>	500 µg
CT521-0501	Biolaminin 521 CTG <b>Clinical</b>	500 µg

# CellGenix<sup>®</sup> GMP Stem Cell Growth Medium (SCGM) GMP

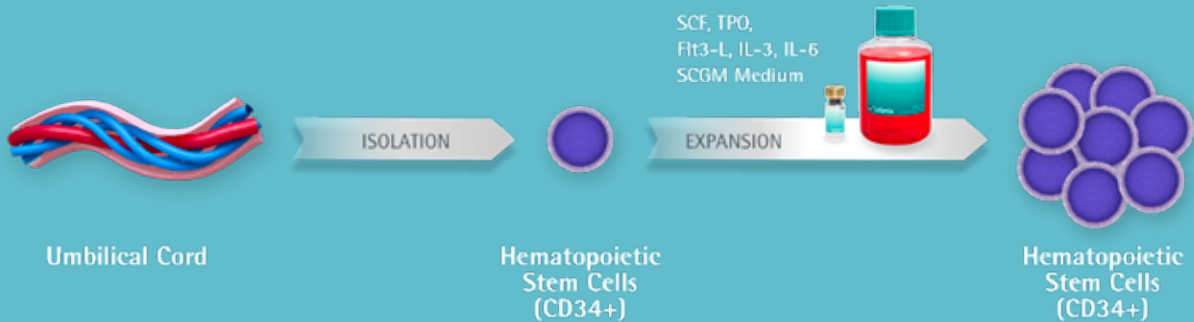
可用於人類造血幹細胞和前驅細胞 (HSCs / CD34+ 細胞) 的無血清培養。此外，SCGM 用於人類自然殺手細胞 (NK cell) 和細胞因子誘導的殺手細胞 (Cytokine-induced killer cells, CIK) 的擴增和培養非常有效。

- NK cells、CIK cells、HSCs 培養液
- Serum-free/Xeno-free medium
- FDA Drug Master File available



## Hematopoietic Stem Cells (HSC)

SCs are widely used for transplantation after high-dose chemotherapy of lymphoma, leukemia and certain immune-deficiency illnesses.



貨號	規格	包裝
20802-0500	Bottle	500 mL
20902-0500	Bag	500 mL
20806-0500	Bottle ( w/o phenol red)	500 mL

## References

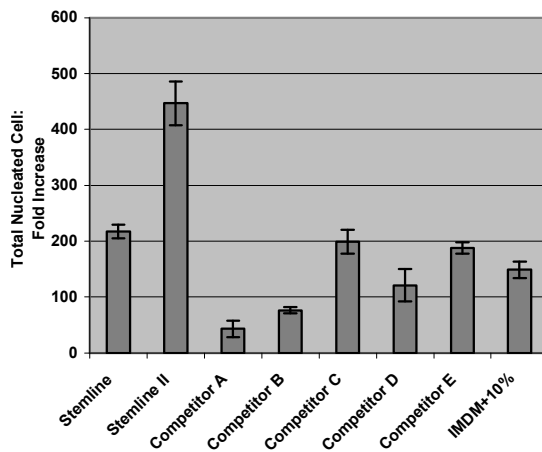
- Ribeil JA, et al. Gene therapy in a patient with Sickle Cell disease. N Engl J Med 2017; 376:848-855
- Shimasaki N, et al., Expanded and armed natural killer cells for cancer treatment. 2016, Cytotherapy
- Moreau T, et al. Large scale production of megakaryocytes from human pluripotent stem cells by chemically defined forward programming Cytotherapy. 2016;18(11):1422-1434
- Lapteva N, et al. Large-Scale Culture and Genetic Modification of Human Natural Killer Cells for Cellular Therapy. Methods Mol Biol. 2016;1441:195-202
- Pittari G, et al. Revving up natural killer cells and cytokine-induced killer cells against hematological malignancies. Front Immunol. 2015;13:6:230.

# Sigma-Aldrich®

## Stemline® II Hematopoietic Stem Cell Expansion Medium

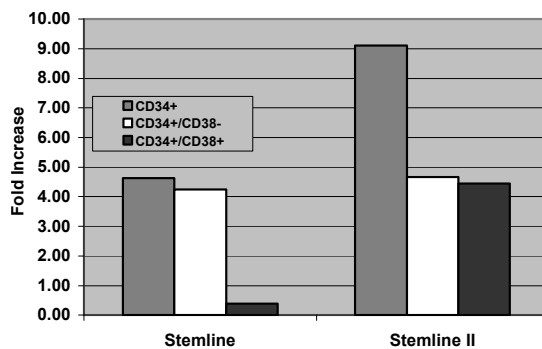


- 適用：bone marrow, cord blood, mobilized peripheral blood
- Serum-free
- 保留 Human Serum albumin，不含其他動物成份來源的物質

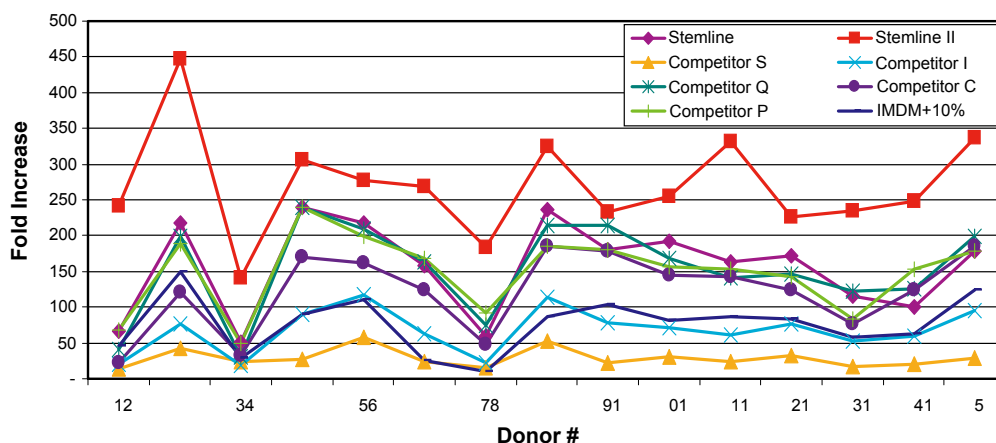


Comparison of Stemline Media to Commercially Available Products.

Cells were seeded in triplicate 24-well tissue culture plates. The wells were supplemented with 100 ng/ml each of SCF, G-CSF, and TPO. Each well was trituated and harvested after a 10-day expansion. TNC were counted using a hemacytometer and averaged for all 3 wells in each condition.



Flow Cytometric Analysis of CD34+ Cord Blood Cells from the Clinical-Scale Expansion in Teflon Bags. Cells were expanded as previously described and assayed for CD34 and CD38 using standard flow cytometry procedures.



Expansion of CD34+ cells from cord blood in Stemline™ II compared to other commercially available, serum-free, HSC media. The second graph depicts the fold increase for each medium in all 15 donors. This also shows that Stemline II consistently provides the maximum number of TNC.

貨號	產品名稱	規格
S0192-500ML	Stemline® II Hematopoietic Stem Cell Expansion Medium	500 mL
S0192-6X500ML	Stemline® II Hematopoietic Stem Cell Expansion Medium	6 X 500 mL
T1568-5UG	Thrombopoietin human	5 ug
S7901	Stem Cell Factor human	10 ug / 50 ug
G0407	Granulocyte colony-stimulating factor human	5 ug / 25 ug

# CELVIVO Clinostar System

## 全自動微重力 3D 細胞培養系統

體積小

操作簡單

遠端即時監測細胞生長狀態

CelVivo 致力於為細胞提供仿生物體內的生長條件，使之發展與完整生物體中的相似功能。此系統適用於 3D 細胞球體培養，尤其 Spheroid 及 Organoid 大量細胞需求的應用，最多可同時操作 6 個 Bioreactors；Clinostar System 主要藉由主動擴散為細胞球體或類器官提供更好的養份來源與氣體交換，獨特微重力 Low shear force 培養環境，優化傳統的實驗方法，並降低細胞團塊聚集。此平台實際應用包含疾病模型建立、藥物篩選與開發、藥物毒理測試、個人化醫療 / 精準醫療等。



### CLINOSTAR™

#CELVIVO 30002

- 6 個獨立式轉軸
- 平板電腦可調節 CO2, 溫度及獨立調控轉速
- 風扇確保均勻的培養環境
- 自動 UV 照射滅菌系統
- 6 個鏡頭可分別即時監控 6 個 Cinoreactors
- 即時監測細胞生長狀態
- 遠端監控及操作



### CLINOREACTOR™

#CELVIVO 10004-12

- 一次性 / 拋棄式 Bioreactor
- 單獨包裝
- 10 mL 培養體積
- 獨特加濕系統及 0.2 um 通透膜降低污染
- 透明上蓋可掀起類 petri-dish 操作模式及取樣
- 可站立方便操作
- 特殊開口設計以利置換 culture medium 及取樣確效



### CONTROL UNIT

#CELVIVO 31001

- 平板電腦控制 ClinoStar

## 國際細胞治療學會 (ISCT)

## 2006 年 MSC 鑑定標準化、簡單化，最基本的 3 項標準

International Society for Cellular Therapy  
ISCT

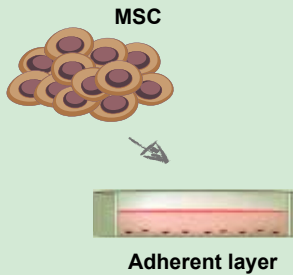
Cytotherapy (2006) Vol. 8, No. 4, 315-317

Taylor & Francis  
Taylor & Francis Group

## POSITION PAPER

Minimal criteria for defining multipotent  
mesenchymal stromal cells. The International  
Society for Cellular Therapy position statementM Dominici<sup>1</sup>, K Le Blanc<sup>2</sup>, I Mueller<sup>3</sup>, I Slaper-Cortenbach<sup>4</sup>, FC Marini<sup>5</sup>,  
DS Krause<sup>6</sup>, RJ Deans<sup>7</sup>, A Keating<sup>8</sup>, DJ Prockop<sup>9</sup> and EM Horwitz<sup>10</sup>

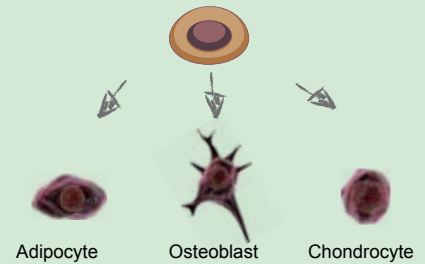
## ① adherence to plastic



## ② specific surface antigen expression

Positive  $\geq 95\% +$ CD105<sup>+</sup>  
CD73<sup>+</sup>  
CD90<sup>+</sup>Negative  $\leq 2\% +$ CD45<sup>-</sup>  
CD34<sup>-</sup>  
CD14<sup>-</sup> or CD11b<sup>-</sup>  
CD $\alpha$ <sup>-</sup> or CD19<sup>-</sup>  
HLA-DR<sup>-</sup>

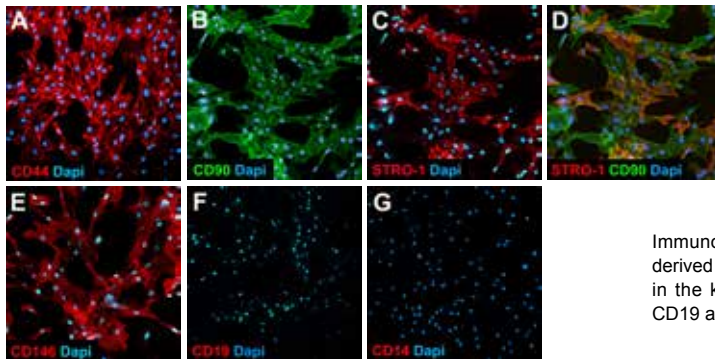
## ③ multipotent differentiation potential



MERCK

## Mesenchymal Stem Cell Characterization Kit

- 透過 ICC 染色方式鑑定 Human MSC
- 內含 positive (CD44, CD90, STRO-1, and CD146) and negative (CD14, CD19) 的抗體



Immunocytochemical staining of cultured human bone marrow-derived mesenchymal stem cells stained with antibodies provided in the kit. Nuclei of the cells were visualized with DAPI (blue). CD19 and CD14 staining were not present on hMSC.

貨號	產品	包裝
SCR067	Mesenchymal Stem Cell Characterization Kit	Kit

## References

1. Pittenger, M. F., and Marshak, D. R. in Stem Cell Biology (Eds Marshak, D., R., Gardner, R. L., & Gottlieb, D.) (Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2001).
2. Alhadlaq, A., and Mao, J. J. (2004). Mesenchymal stem cells: isolation and therapeutics. Stem Cells and Development 13: 436-448.
4. Pittenger, M. F., Mackay, A. M., Beck, S. C., Jaiswal, R. K., Douglas, R. (1999). Multilineage potential of adult human mesenchymal stem cells. Science 284: 143-147.
3. Kolf, C. M., Cho, E., Tuan, R. S. (2007). Mesenchymal stromal cells. Biology of adult mesenchymal stem cells: regulation of niche, self-renewal and differentiation. Arthritis Res. Ther. 9 (1): 204.





# BD Stemflow™ hMSC Analysis Kit

Cat. No. 562245/50 tests

BD Biosciences 以幹細胞領域 25 年的成功研究經驗，提供高品質的螢光抗體和相關試劑，透過專一性的標誌蛋白染色及 flow 分析，可鑑定幹細胞特性或分化狀態，而間質幹細胞具多向分化能力，在幹細胞治療中有著最大的潛能。

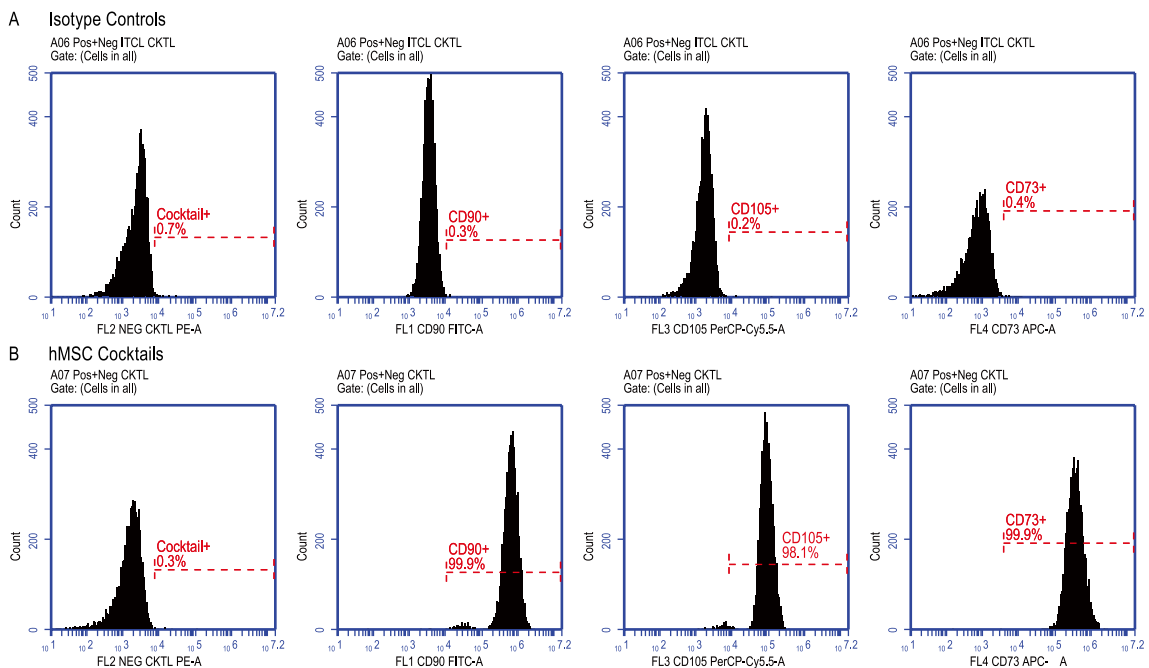
- 以 flow 方式鑑定 Human MSC
- cocktail 抗體，操作輕鬆，減少誤差
- 其中 MSC 表面抗原表現為 CD105、CD73、CD90 (≥ 95% positive) 以及 CD45、CD34、CD14、CD11b、CD79a、CD19、HLA-DR (≤ 2% positive)

適用鑑定  
不同來源的  
MSC

第 1 個符合  
ISCT\* 標準  
\* International Society  
for Cellular Therapy

Kit 包含高品質  
抗體

- Positive Marker Cocktail ( CD105 PerCP-Cy5.5/CD73 APC/CD90 FITC )
- Negative Marker Cocktail ( CD45/CD34/CD11b/CD19/HLA-DR PE )
- isotype control cocktail
- compensation controls ( 協助機器設定螢光補償 )



## BD Stemflow™ Human MSC Analysis Kit (Cat. No. 562245) analysis on the BD Accuri C6.

hBM-MSCs (Lonza) were dissociated using BD™ Accutase™ Cell Detachment Solution (Cat. No. 561527), stained according to kit instructions, and acquired on a BD Accuri C6 using the kit template.

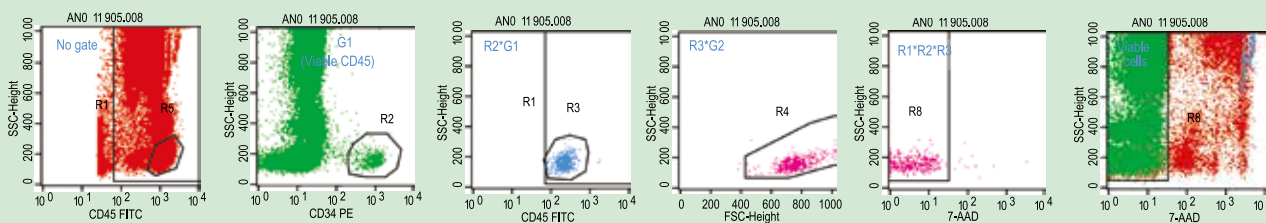
## 造血幹細胞生物性特色

CD34 的表現量為陽性，CD45 的表現量為弱陽性，幹細胞 DNA/RNA 含量較多，染色性較強，直徑約 8 ~ 10  $\mu\text{m}$ ，與大淋巴細胞前向散射光位置相同，也可伸入單核細胞區域。顆粒性與淋巴細胞、大淋巴細胞相似。

## ISHAGE 國際血液治療和移植工程學會的造血幹細胞規範

International Society of Hematotherapy and Graft Engineering

- 使用 class II 或 III 等級的 CD34 抗體
- 使用 PE-conjugated 的 CD34 螢光抗體
- 使用  $\text{NH}_4\text{Cl}$  lysis (不含固定液)
- 收集有效的細胞數： $>100$  顆  $\text{CD34}^+$ ， $>75,000$   $\text{CD45}^+$
- 絕對計數使用單平台  
(Absolutely count : single platform)



## BD™ Stem Cell Enumeration Kit

IVD

- 美國 FDA 核准 "IVD" 試劑
- 台灣衛署醫器輸字第 023644 號
- 符合 ISHAGE Guideline
- 無須 isotype control
- 可使用於多種檢體種類
- 適用於多種抗凝血劑
- 單平台計數系統



### Kit contents (50 tests/kit)

- CD34 PE/CD45 FITC
- 7-AAD viability dye
- $\text{NH}_4\text{Cl}$  Lysing Solution
- Trucount tubes

## BD™ Stem Cell Control Kit

Quality & Process Control

已知答案的血樣標準品，透過血樣標準品偵測分析，了解製備 ~ 分析過程是否無誤！  
每批產品隨著批號不同，標準數值的範圍會略有差異。



Levels	Lot Number	Total WBC / $\mu\text{L}$ *	$\text{CD34}^+$ / $\mu\text{L}$ (Range)	$\text{CD34}^+$ as % of CD45 (Range)
$\text{CD34}^+$ Low **	BC075L	4,411	1.5 (0.0-3.0)	0.035 (0.002-0.068)
$\text{CD34}^+$ High ***	BC075H	4,411	27.1 (21.8-32.4)	0.614 (0.494-0.734)

\* For use with flow cytometry dual-platform method.

\*\* CD34 Low (approximately 10 cells /  $\mu\text{L}$ )

\*\*\* CD34 High (approximately 35 cells /  $\mu\text{L}$ )

Cat.#	Name	Status	Size
344563	BD™ Stem Cell Enumeration Kit	IVD	50 Tests
340991	BD™ Stem Cell Control $\text{CD34}^+$ Whole Blood Process Control	IVD	2 mL



# BD Accuri™ C6 Plus Flow Cytometer

- 兩支雷射，一次可看四色螢光參數
- 使用二次水當 sheath buffer，方便省錢
- 開放式上樣系統，可用 eppendorf 直接上機
- 可直接進行細胞計數 (absolute counting)
- 固定電壓值，無需浪費時間及 sample 設定參數
- 自動化 QC 系統，快速檢測追蹤儀器效能
- 可搭配自動上樣裝置，盤式管式，皆可上樣



## 選擇性濾片模組 顏色選擇更多元

Excitation Wavelength	Fluorochromes/Dyes	Standard Filter	Optional Filter
488 nm	FITC, BB515, Alexa Fluor® 488, CFSE	533/30	–
	GFP	533/30	510/15
	JC-1, Fluo-4 AM, SYBR® Green	533/30	–
	YFP	533/30	540/20
	PE, JC-1, BD™ MitoStatus TMRE	585/40	–
	OFP	585/40	565/20
	Propidium Iodide	585/40, 670 LP	610/20
	BD Horizon™ PE-CF594	670 LP	610/20
	RFP, mCherry, dsRed	670 LP	610/20
	PerCP, PE-Cy™ 5	670 LP	–
	PerCP-Cy™ 5.5	670 LP	–
	7-AAD	670 LP	–
	PE-Cy™ 7	670 LP	780/60
640 nm	APC, BD™ MitoStatus Red, Alexa Fluor® 647	675/25	–
	APC-H7, APC-Cy7	670 LP	780/60

### BD Accuri C6 Plus fluorochrome support

All fluorochromes in the table can be detected by the BD Accuri C6 Plus equipped with standard filters. Optional filters can be used to increase resolution or to separate fluorochromes with overlapping signals, like GFP and YFP.

Selectable Laser Configuration	Detector Position	Laser Excitation Wavelength
3-Blue / 1-Red	FL1	488 nm
	FL2	488 nm
	FL3	488 nm
	FL4	640 nm
*2-Blue / 2-Red	FL1	488 nm
	FL2	488 nm
	FL3	640 nm
	FL4	640 nm
4-Blue	FL1	488 nm
	FL2	488 nm
	FL3	488 nm
	FL4	488 nm

### Selectable Laser alternate configurations

The optional Selectable Laser Module allows two or four fluorescence channels to be assigned to the blue laser, vs three in the standard configuration. The remaining channels (if any) are assigned to the red laser.

BD Accuri™ C6 Plus

BD Pharmingen™ Kits

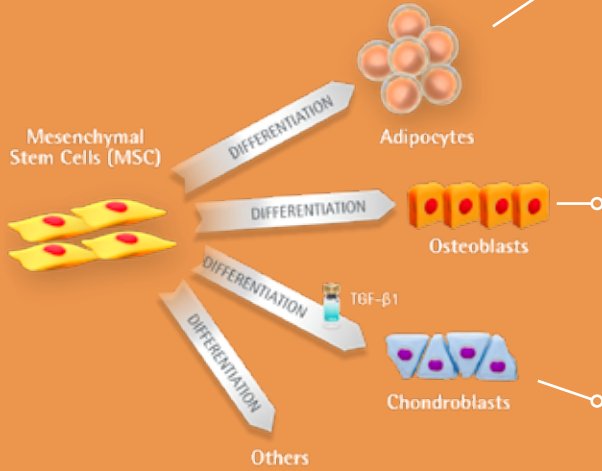
最佳化軟體應用模組 Templates Tools



貨號	產品	敘述
660517	BD Accuri C6 Plus Flow Cytometer System	Includes standard optical filters, reagent containers, computer work station and one-year warranty.
660519	BD CSampler™ Plus	For 24-Tube Rack and 96-Well plate automated sample loader.

更多產品訊息 <http://www.bdbiosciences.com/us/instruments/research/cell-analyzers/bd-accuri/m/1294932/overview>.

# Differentiation & Detection



**MERCK**  
MSC Adipogenesis Kit

**Lonza**  
Adipogenic Differentiation BulletKit™ Medium  
AdipoRed™ Assay Reagent

**MERCK**  
MSC Osteogenesis Kit

**Lonza**  
Osteogenic Differentiation BulletKit™ Medium  
OsteoImage™ Mineralization Assay

**Lonza**  
Chondrogenic Differentiation BulletKit™ Medium  
**CellGenix**  
CellGenix TGF-beta1



## CellGenix® Cytokines & Growth Factors

GMP

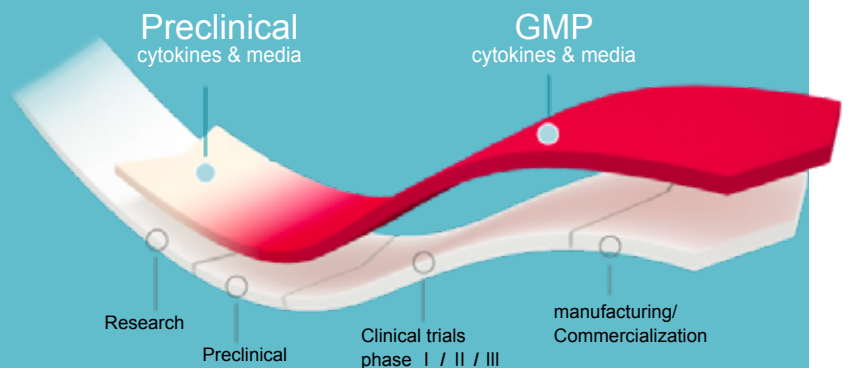
CellGenix 為 *ex vivo* 培養提供了多種細胞因子和生長因子，這些原料廣泛應用於細胞和基因治療以及再生醫學領域。

- Animal-Derived Component-Free (ADCF)
- 產品有 GMP 及 Preclinical grade
- 高品質，批次間具一致性
- FDA Drug Master File available



### From Research to ATMP - Your Dedicated Partner in Cell and Gene Therapy

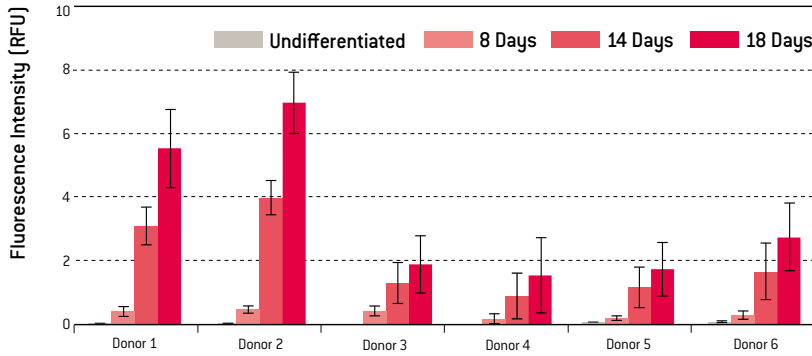
CellGenix 產品生產符合 ATMPs (advanced therapeutic medicinal products) 規範的無血清培養基與臨床前等級以及 GMP 等級的細胞因子，為全球領先的高品質細胞和基因治療輔助材料供應商



Cytokines, Serum-free Media & More

# Adipogenic Differentiation BulletKit™ Medium

- All in one
- 最短 19 天即可看到分化效果
- 適用於多種幹細胞種類



Adipogenic Differentiation hMSC were differentiated with the hMSC differentiation BulletKit™-adipogenic (LONZA PT-3004). Cell differentiation was monitored on the indicated days with the adipoRed assay (LONZA PT-7009) containing the hydrophilic stain Nile Red. A. Fluorescence intensity was measured with the Fluoroskan Ascent. B Exemplary fluorescence microscopy overlay.

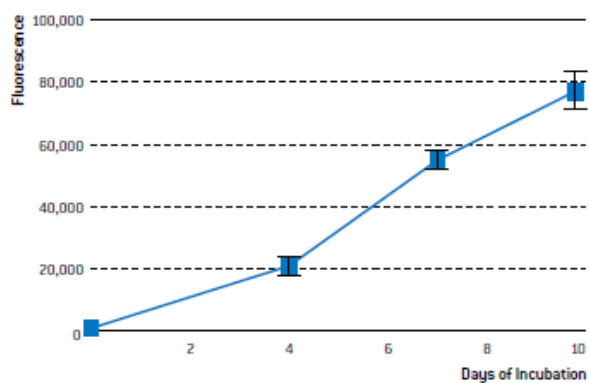
貨號	產品	包裝
PT-3004	hMSC Adipogenic BulletKit (PT3102B, 3102A, 4122, 4135)	Kit

## References

1. Chen, Peng; Aso, Toshihiro; Sasaki, Ryuichiro; Tsutsumi, Yusuke; Ashida, Maki; Doi, Hisashi; Hanawa, Takao. Micron/Submicron Hybrid Topography of Titanium Surfaces Influences Adhesion and Differentiation Behaviors of the Mesenchymal Stem Cells. Journal of Biomedical Nanotechnology, Volume 13, Number 3.
2. Spencer T. Coffin; Glenn R. Gaudette. Aprotinin extends mechanical integrity time of cell seeded fibrin sutures. Journal of Biomedical Materials Research. Volume 104, Issue 9, Sep 2016, P2271~2279.

# AdipoRed™ Assay Reagent

- 可同時定性及定量
- 操作簡便
- 快速，96 well 只需 20min
- 螢光試劑檢測 intracellular triglycerides，靈敏度高於一般 Oil red 染色



## Quantitation of triglyceride accumulation

Poietics™ Primary Human Preadipocytes were induced to differentiate and assayed using the AdipoRed™ Assay Reagent.

貨號	產品	包裝
PT-7009	AdipoRed™ Assay Reagent	5 x 4 mL Vials

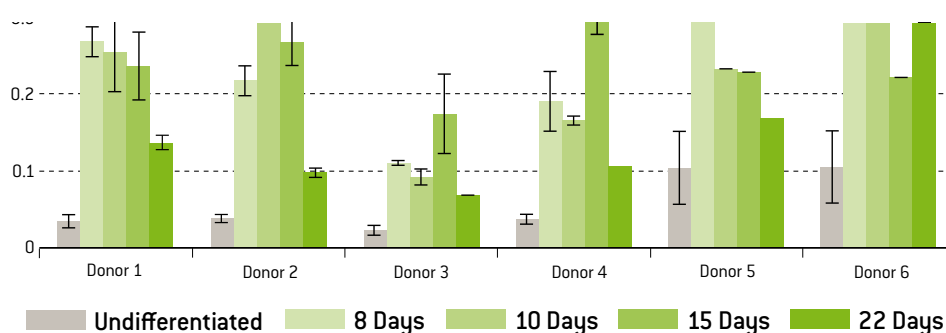
## References

1. Martin Oberringer et al. The role of adipose-derived stem cells in a self-organizing 3D model with regard to human soft tissue healing. Molecular and Cellular Biochemistry; 05 January 2018 P1-16.
2. Agustin Vega Crespo, Jason P. Awe, Renee Reijo Pera, and James A. Byrne; Human Skin Cells That Express Stage-Specific Embryonic Antigen 3 Associate with Dermal Tissue Regeneration; BioResearch Open Access Vol. 1, No. 1

**Lonza****Chondrogenic Differentiation BulletKit™ Medium**

- 搭配 TGF-β 3, 可於 14 天即可看到分化效果
- 適用於多種幹細胞種類

Human bone marrow derived stem cells; Human umbilical cord blood derived stem cells  
 Human umbilical cord matrix derived stem cells; C57BL/6 mice bone marrow derived stem cells  
 Human adipose derived stem cells; Human hamstring tendon derived stem cells



hMSC were differentiated with the hMSC differentiation BulletKit™-Chondrogenic (LONZA PT-3003) in the presence or absence (undifferentiated control) of 10ng/ml TGF-β3 (LONZA PT-4124). Chondrogenic differentiation was monitored on the indicated days using Alcian blue 8GX staining,

貨號	產品	包裝
PT-3003	hMSC Chondrogenic BulletKit (PT-3925 & PT-4121)	Kit
PT-4124	TGF Beta 3 for hMSC chondrogenic differentiation	Vial

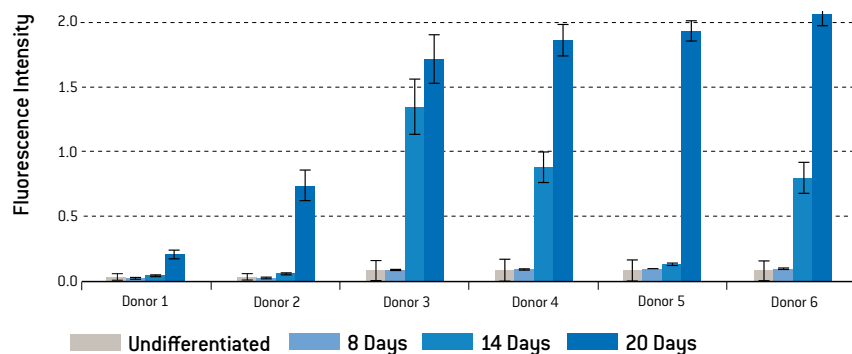
**References**

1. Young H. Choi et al. Human circulating fibrocytes have the capacity to differentiate osteoblasts and chondrocytes The International Journal of Biochemistry & Cell Biology; Volume 42, Issue 5, May 2010, Pages 662-671.
2. Lin Gao, Rowena McBeath, Christopher S. Chen; Stem Cell Shape Regulates a Chondrogenic Versus Myogenic Fate Through Rac1 and N Cadherin. Stem Cells Journals. Volume 28, Issue 3, March 2010 P564-572.
3. Chen, Peng; Aso, Toshihiro; Sasaki, Ryuichiro; Tsutsumi, Yusuke; Ashida, Maki; Doi, Hisashi; Hanawa, Takao. Micron/ Submicron Hybrid Topography of Titanium Surfaces Influences Adhesion and Differentiation Behaviors of the Mesenchymal Stem Cells. Journal of Biomedical Nanotechnology, Volume 13, Number 3.

# Lonza

## Osteogenic Differentiation BulletKit™ Medium

- All in one
- 最短 14 天即可看到分化效果
- 適用於多種幹細胞種類



hMSC were differentiated with the hMSC differentiation BulletKit™-osteogenic according to the manufacturer's instructions with exception of the seeding density (1.85x10<sup>3</sup> cells/cm<sup>2</sup>). It was monitored on the indicated days with OsteoImage Mineralization Assay (Lonza, PA-1503). All donors underwent osteogenic differentiation as measured by hydroxyapatite deposition of cells. Lot to lot dependent variability was observed with respect to total amounts of deposited hydroxyapatite per well as well as the time required for detectable hydroxyapatite deposition.

貨號	產品	包裝
PT-3002	hMSC Osteogenic BulletKit (PT-3924 & PT-4120)	Kit

### References

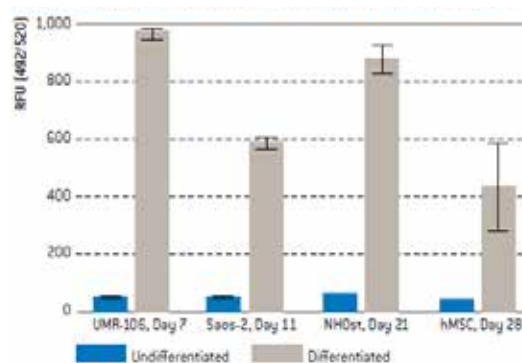
1. Sachin Kadam<sup>1</sup>, Sudhakar Muthyala<sup>2</sup>, Prabha Nair<sup>2</sup>, and Ramesh Bhonde. Human Placenta-Derived Mesenchymal Stem Cells and Islet-Like Cell Clusters Generated From These Cells as Novel Sources for Stem Cell Therapy in Diabetes ; The Review of DIABETIC STUDIES Vol. 7 No. 2 2010.
2. Yahfi Talukdar et al. The effects of graphene nanostructures on mesenchymal stem cells; Biomaterials Volume 35, Issue 18, June 2014, Pages 4863-4877

## OsteoImage™ Mineralization Assay

- 可同時定性及定量
- 螢光試劑可檢測 hydroxyapatite, similar to real bone
- 可於 90 分鐘即完成檢測
- 適用於各式 culture plates

### Work with Stem Cells, Primary, and Cell Lines

Osteoblast cell lines, Clonetics™ NHOst-Normal Human Osteoblasts, and osteoblast-differentiated Poietics™ hMSC Human MSCs were evaluated for mineralization with the OsteoImage Mineralization assay on a 96-well plate reader.



貨號	產品	包裝
PA-1503	OsteoImage™ Mineralization Assay	5x96 Wells

### References

1. Niall Logan, Laurent Bozec, Alison Traynor, Peter Brett; Mesenchymal stem cell response to topographically modified CoCrMo; JOURNAL OF BIOMEDICAL MATERIALS RESEARCH DEC 2015 VOL 103A, ISSUE 12 .
2. Yali Li et al. Carfilzomib promotes the osteogenic differentiation potential of mesenchymal stem cells derived from myeloma patients by inhibiting notch1 activity in vitro. Leukemia Research Clinical and Laboratory Studies. August 2014 Volume 38, Issue 8, Pages 970-976.

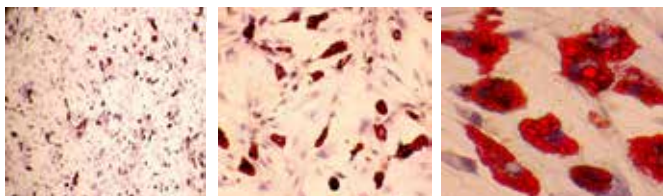
# Mesenchymal Stem Cell Adipogenesis Kit

誘導和偵測  
皆包含

■ Human 與 rodent MSC 皆可使用

■ All in one

- Inducing reagents : Dexamethasone, IBMX, Insulin, and Indomethacin
- Oil Red staining : staining mature adipocytes
- Hematoxylin : staining cell nucleus



Rat mesenchymal stem cells differentiated after 21 days to mature adipocytes. Lipid vacuoles (red) in the adipocytes were stained with Oil Red O solution. Cell nuclei (purple) were stained with Hematoxylin Solution. (A) 10X magnification (B) 20X magnification (C) 40X magnification

貨號	產品	包裝
SCR020	Mesenchymal Stem Cell Adipogenesis Kit	Kit

## References

- Pittenger M.F., Mackay A.M., Beck, S.C., Jaiswal, R.K., Douglas, R., Mosca, J.D., Moorman M.A., Simonetti D.W., Craig S., Marshak D.R., Multilineage potential of adult human mesenchymal stem cells. (1999) Science 284: 143-7.
- Zhang, J; Pan, T; Im, HJ; Fu, FH; Wang, JH.  
Differential properties of human ACL and MCL stem cells may be responsible for their differential healing capacity.
- Yin Yin Ooi, Rajesh Ramasamy, Zul'atfi Rahmat, Hemavathy Subramaia, Shi Wei Tan, Maha Abdullah, Daud Ahmad Israf, Sharmili Vidyadaran. Bone marrow-derived mesenchymal stem cells modulate BV2 microglia responses to lipopolysaccharide. International immunopharmacology 10 2010

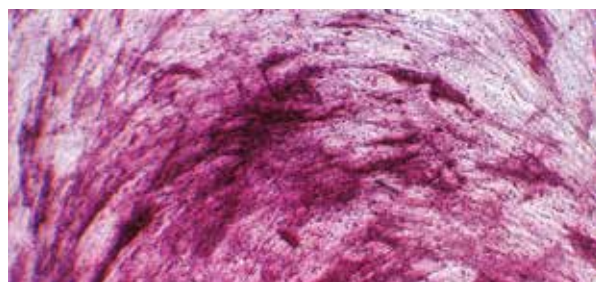
# Mesenchymal Stem Cell Osteogenesis Kit

誘導和偵測  
皆包含

■ Human 與 rodent MSC 皆可使用

■ All in one

- Inducing reagents: Dexamethasone, Ascorbic Acid 2-Phosphate, Glycerol 2- Phosphate
- Collagen Type I and Vitronectin : promote osteogenic differentiation
- Alizarin Red Solution : presence of calcium in bone



貨號	產品	包裝
SCR028	Mesenchymal Stem Cell Osteogenesis K	Kit

## References

- Alhadlaq, A., and Mao, J. J. (2004). Mesenchymal stem cells: isolation and therapeutics. Stem Cells and Development 13: 436-448.
- Pittenger, M. F., Mackay, A. M., Beck, S. C., Jaiswal, R. K., Douglas, R. (1999). Multilineage potential of adult human mesenchymal stem cells. Science 284: 143-147.
- Salasznyk, R. M., Williams W. A., Boskey, A., Batorsky, A., and Plopper, G. E. (2004). Adhesion to vitronectin and collagen I promotes osteogenic differentiation of human mesenchymal stem cells. J. Biomed. Biotechnol. 2004 (1): 24-34.





- 不須循序降溫過程，可直接儲存於 -80 度冰箱
- 使用此系列凍存液儲存，解凍後細胞存活率依然高於 90%
- 即用型凍存液，使用前不需配置
- 批次間差異小
- 已取得 美國 FDA Master file 及 日本 PMDA 的 Master file
- 使用日 / 美 / 歐洲藥典成分原料，成分安全
- 不會對凍存的細胞及組織內的 DNA 或 RNA 造成損害，細胞功能維持完整
- 不含血清和動物衍生成分，無動物原性成分汙染風險

### 可凍存所有幹細胞



#### Stem Cellbanker 熱銷

20 / 100 mL

Dr. Yamanaka 愛用！

Nature SCIENTIFIC REPORTS

| 4 : 3594 | DOI : 10.1038/srep03594



#### Stem Cellbanker DMSO free

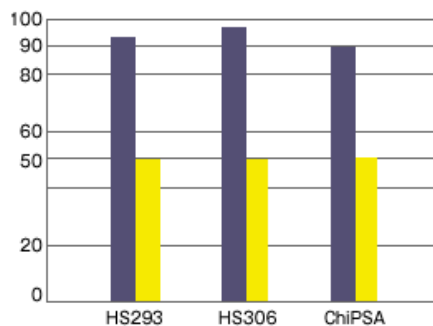
20 / 100 mL

不含 DMSO

對細胞傷害降到最低

### 細胞存活率測試

細胞存活率評估：使用 STEM-CELLBANKER® 凍存 stem cell & 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



■ 使用STEM-CELLBANKER® 凍存細胞  
■ 常規凍存液凍存細胞

存活率測試方式：

Trypan Blue 和 Live / Dead assay 試劑套組

資源來源：瑞典卡羅林斯卡醫學院附屬醫院婦產科  
臨床科學部 Outi Hovatta 教授

Cell type	Description
129SV	Mouse ES cell
UE6E7-16	Human Mesenchymal cell
UE7T-13	Human Mesenchymal Stem cell
201B7	Human iPS cell

#### 結果

使用 STEM-CELLBANKER® DMSO Free 凍存幹細胞，細胞觀察到 80-90% 的細胞存活率

### References

1. Shimazu et al. Serum- and xeno-free cryopreservation of human umbilical cord tissue as mesenchymal stromal cell source. *Cytherapy*, 2015; 17: 593 - 600.
2. Hata et al. Transplantation of cultured dental pulp stem cells into the skeletal muscles ameliorated diabetic polyneuropathy: therapeutic plausibility of freshly isolated and cryopreserved dental pulp stem cells *Nat Protoc.* 2014 ;9(10):2354-68
3. Nakagawa M et al. Miyamoto Y et al. Cryopreservation of Induced Pluripotent Stem Cells *Cell Medicine.* 2012;3(1-3):89-95.

## ZENOVEN PHARMA

## 凍存造血幹細胞、脂肪幹細胞、間質幹細胞效果好

## STEM-CELLBANKER EX 成份相同於 HSC BANKER

**HSC Cellbanker**

15 mL

安瓶包裝，不易汙染

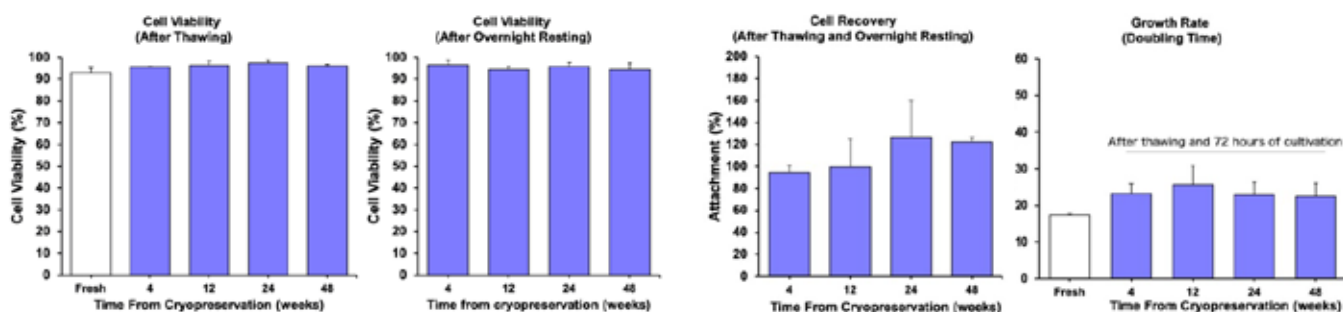
1:1 等比添加

**STEM-CELLBANKER EX**

100 mL

其成份經驗證可靜脈注射，  
適合作為賦形劑。

## 凍存人類脂肪幹細胞 (ADSC) 4、12、24、48 週時間觀測



## 細胞存活率評估

四個時間點在解凍後和解凍後的隔天進行活性評估，  
都有很高的存活率

## 長期安定性評估

在解凍後和解凍後的隔天進行活性評估，細胞貼盤率  
與增殖率沒有受到凍存影響

Cell recovery 細胞復甦率：以細胞附著力評估

## 結果

使用 HSC-BANKER® 凍存  
hematopoietic stem cells 結果  
優於使用 DMSO 和 DEXTRAN 凍存

	8%DMSO+0.8% DEXTRAN (N=11)	HSC-BANKER 5%DMSO (N=11)
Total Nucleated Cell recovery rate	101.0±5.4	101.9±6.9
CD34 positive cell recovery rate	80.0±8.8	95.0±14.8
Total-colony forming unit recovery rate	85.8±12.4	95.7±16.8
colony forming unit-granulocyte macrophage recovery rate	92.7±17.9	92.3±21.5
Viable cells recovery rate (by fluorescence microscope) AO/EB	88.6±7.9	86.8±2.9
Viable cells recovery rate (Flow Cytometry) CD45	71.4±9.8	74.0±6.1
Viable cells recovery rate (Flow Cytometry) CD34	99.1±0.8	99.4±0.7

貨號	產品	包裝
CELLBANKER STEM-CELL	STEM-CELLBANKER® GMP grade	20 mL
CELLBANKER STEM-100M	STEM-CELLBANKER® GMP grade	100 mL
CELLBANKER STEM-DF	STEM-CELLBANKER® DMSO Free GMP grade 不含 DMSO	20 mL
CELLBANKER STEMDF100	STEM-CELLBANKER® DMSO Free GMP grade 不含 DMSO	100 mL
CELLBANKER HSC-BANKE	HSC-BANKER® GMP grade	15 mL
CELLBANKER STEM-EX	STEM-CELLBANKER® EX GMP grade (NEW) NEW!	100 mL



# TPP 細胞凍存管



- 適用於各種細胞、微生物或檢體儲存
- 材質通過以下測試：Non-toxic, USP VI, Non-pyrogenic, Sterility
- 外旋 & 可站立式冷凍小管
- 夾鏈袋包裝降低操作汙染
- 大面積書寫區方便標示
- 可搭配不同顏色環蓋區分樣品 (TPP 99020-1, 100 片 \*6 色 / 包)

細胞凍存  
好幫手

3 種型式  
0.9/1.5/4.5  
mL

內毒素  
<0.06 EU/mL  
PP 材質符合規範

來自瑞士頂級工藝  
高標準的品管控制  
獨特貼心的設計  
**ISO 9001:2015 認證**

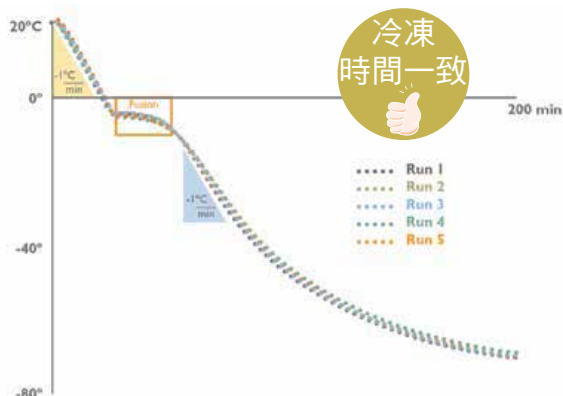
搭配 TPP 99016 凍存管架  
可單手開蓋

Type	Product No.	Volume max (mL)	Volume Recom. (mL)	Dimensions (mm)	Material	Qty / Bag	Qty / Case	Case (kg)
	89012	Grad. max 0.9	max 0.7	12 x 37	PP	100	800	1.7
	89020	Grad. max 1.5	max 1.3	12 x 48	PP	100	800	2.1
	89050	Grad. max 4.5	max 4.3	12 x 90	PP	100	400	1.8

## CORNING

### CORNING CoolCell 細胞漸凍盒 (12/30 管)

- 專利技術：專利鋁合金，微對流散熱技術，導冷熱快，散熱慢
- 不需預冷，不需填充 Isopropanol，提高細胞存活率
- 穩定降溫：於 -80°C 冰箱中可 1°C /min 降溫
- 最快只需 4 小時即可將細胞冷凍小管移至液態氮中
- 專利冷凍盒，不會凍傷雙手



	Cat. No.	Description	Color
12 管	432001	For 1.0 ~ 2.0 mL 凍管	Blue
	432002		Green
	432003		Orange
	432004		Pink
	432005		Purple
30 管	432006	For 1.0 ~ 2.0 mL 凍管	Blue
	432007		Orange
	432008		Green
	432009		Pink

# STIRLING 航太生物樣品保存系統

- 搭載人造衛星使用的史特林引擎，淘汰壓縮機裝置的超低溫冷凍設備
- 能源之星首獎肯定，每天僅需 7 度用電量
- 溫度範圍 -20°C 至 -86°C，可穩定維持  $\pm 1^\circ\text{C}$  之間，妥善保護樣品
- 自動電壓調整：100V – 240V，通行世界零阻礙



**Upright Ultra-Low  
Temperature Freezer  
SU780XLE**  
(不含樣品架)



**Portable Ultra-Low  
Temperature Storage  
ULT25NEU**

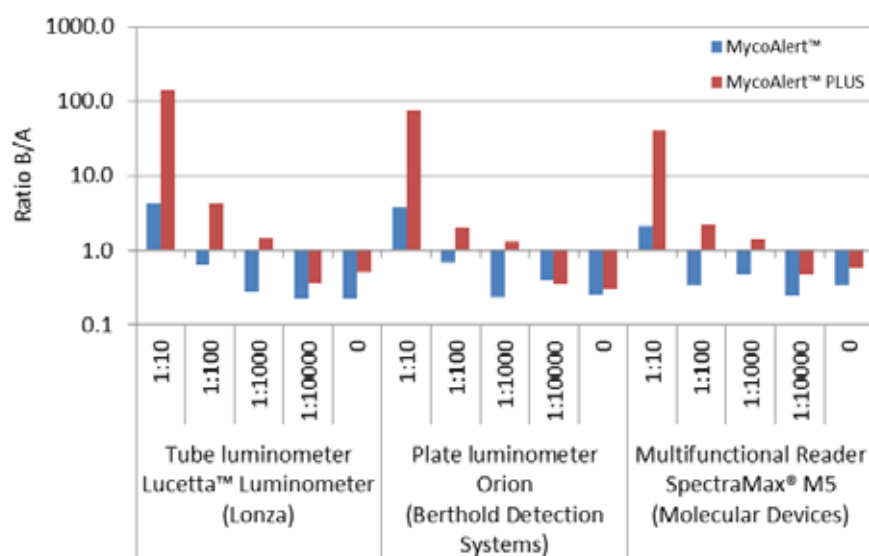
## 產品規格

型號	容量 (升)	2 英寸 冷凍盒 (個)	電源要求	認證	內部尺寸 高 X 深 X 寬 (公分)	外部尺寸 高 X 深 X 寬 (公分)	產品淨重 (公斤)
<b>SU780XLE</b>	780	600	120-240VAC at 50/60Hz (automatically adjusts)	cULus, CE, and ENERGY STAR®	154.2 X 70.5 X 74.0	199.4 X 87.0 X 91.5	284
<b>ULT25NEU</b>	25	18	100V to 240VAC at either 50 or 60Hz or 12V DC from mobile source	CE, cTÜVv	33.2 X 22.1 X 34.0	69.25 X 35.0 X 46.0	21

# Lonza

## MycoAlert™ PLUS Mycoplasma Detection Kit

- 快速：20 分鐘內，即可完成檢驗
- 方便：只需加入兩瓶試劑，偵測兩次的冷光
- 高敏感：能避免 PCR 或螢光檢測時偽陰性的問題
- 偵測範圍：能有效偵測到常見的黴漿菌污染，包括所有 *Acholeplasma* 及 *Mycoplasma*
- 高準確度：與一般使用培養基偵測方式結果一致



MycoAlert™ PLUS (二代) 比 MycoAlert™ (一代) 靈敏度高，在不同冷光儀可得到一致的結果。

	Culture	PCR	Fluorescence Staining	MycoAlert™
時間	2~4 week	4~5 hr	2 hr	<b>20 min</b>
操作步驟	複雜	普通	普通	<b>簡單</b>
專一性	高	低	低	<b>高</b>
缺點	<ul style="list-style-type: none"> <li>■ 易產生污染</li> <li>■ 易危及操作者安全</li> </ul>	<ul style="list-style-type: none"> <li>■ 只能針對特定菌種，偵測無法全面性涵蓋</li> <li>■ 採偵測 DNA 方式，易有偽陽、陰性的結果</li> <li>■ 易偵測到污染源來自血清中的死菌 DNA</li> <li>■ 培養液如含抗生素，靈敏度及準確度大幅降低</li> </ul>	<ul style="list-style-type: none"> <li>■ 間接偵測方法</li> <li>■ 判讀不易</li> </ul>	

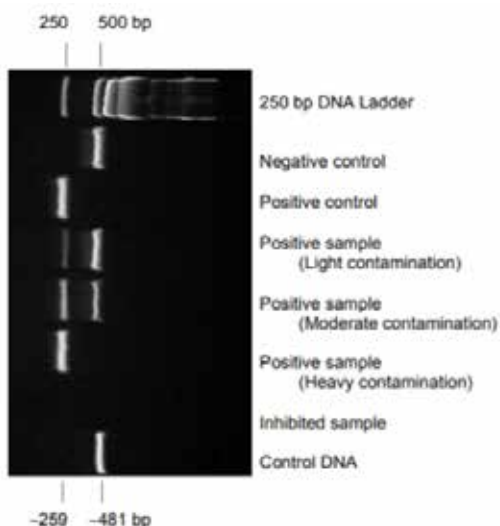
貨號	產品	包裝
LT07-701	MycoAlert™ PLUS detection kit	10 Tests
LT07-703	MycoAlert™ PLUS detection kit	30 Test
LT07-705	MycoAlert™ PLUS detection kit	50 Tests
LT07-710	MycoAlert™ PLUS detection kit	100 Tests
LT07-518	MycoAlert™ Assay Control Set	10 Tests

### References

1. Eun Ah Chang, et al. Derivation of Ethnically Diverse Human Induced Pluripotent Stem Cell Lines. *Sci Rep.* 2015; 5: 15234.
2. Michael A. Menze, Leaf Boswell, Mehmet Toner and Steven C. Hand. Occurrence of Mitochondria-targeted Late Embryogenesis Abundant (LEA) Gene in Animals Increases Organelle Resistance to Water Stress. *JBC*, 2009, 284, 10714-10719.
3. Yuanyuan Yang. et al. Acquisition of new tumor cell properties by MSC-derived exosomes. *International Journal of oncology. Int J Oncol.* 2015;47(1):244-52.

**Sigma-Aldrich®****LookOut® Mycoplasma PCR Detection Kit** #MP0035-1KT

- 預混型式：管子中內含 primers, dNTPs, internal control DNA, and gel loading buffer/dye，只需添加樣品、Taq (不含在試劑組中) 及回溶 buffer，即可進行反應
- 貼心：內含不具感染力的 DNA 可當作 Positive Control
- 靈敏度：偵測 >20 *Mycoplasma* genomes
- 可區分汙染程度

**Species specificity includes the following**

<i>A. laidlawii</i>	<i>M. agalactiae</i>
<i>M. arginini</i>	<i>M. arthritis</i>
<i>M. bovis</i>	<i>M. cloacale</i>
<i>M. falconis</i>	<i>M. faucium</i>
<i>M. fermentans</i>	<i>M. hominis</i>
<i>M. hyorhinis</i>	<i>M. hyosynoviae</i>
<i>M. opalescens</i>	<i>M. orale</i>
<i>M. primum</i>	<i>M. pulmonis</i>
<i>M. salivarium</i>	<i>M. spermatophilum</i>
<i>M. timone</i>	

**LookOut® Mycoplasma qPCR Detection Kit** #MP0040A-1KT

- 準確度高：使用黴漿菌 23S rRNA operon coding region 高度保留區來設計 Primer，不只可偵測所有不同菌種的黴漿菌，也不會偵測到真核生物
- 預混型式：管子中內含 primers, probe, dNTP, Taq，只需加入回溶溶液以及添加樣品，即可進行反應
- 貼心：內含 Positive Control 以及 Internal Control
- PTFE (paraffin embedded) 的檢體經過萃取後亦可使用

**Species specificity includes the following**

<i>A. laidlawii</i>	<i>M. agalactiae</i>	<i>M. glycyphilum</i>	<i>M. gypis</i>
<i>M. agassizii</i>	<i>M. alkalescens</i>	<i>M. hominis</i>	<i>M. hyopharyngis</i>
<i>M. anseris</i>	<i>M. arginini</i>	<i>M. hyorhinis</i>	<i>M. hyosynoviae</i>
<i>M. arthritis</i>	<i>M. bovigenitalium</i>	<i>M. iguanae</i>	<i>M. indienne</i>
<i>M. bovirhinis</i>	<i>M. bovis</i>	<i>M. iners</i>	<i>M. lagogenitalium</i>
<i>M. buccale</i>	<i>M. buteonis</i>	<i>M. lipofaciens</i>	<i>M. maculosum</i>
<i>M. californicum</i>	<i>M. canadense</i>	<i>M. melegridis</i>	<i>M. moatsi</i>
<i>M. capricolum</i>	<i>M. caviae</i>	<i>M. opalescens</i>	<i>M. orale</i>
<i>M. citelli</i>	<i>M. cloacale</i>	<i>M. pneumoniae</i>	<i>M. pulmonis</i>
<i>M. collies</i>	<i>M. columbinasale</i>	<i>M. salivarium</i>	<i>M. simbae</i>
<i>M. columbinum</i>	<i>M. columborale</i>	<i>M. sp. ovine/caprine</i>	<i>M. spermatophilum</i>
<i>M. cricetuli</i>	<i>M. cynos</i>	<i>M. sphenisci</i>	<i>M. spumans</i>
<i>M. edwardii</i>	<i>M. equirhinis</i>	<i>M. sualvi</i>	<i>M. subdolum</i>
<i>M. falconis</i>	<i>M. faucium</i>	<i>M. synoviae</i>	<i>M. testudineum</i>
<i>M. felifaucium</i>	<i>M. fermentans</i>	<i>M. timone</i>	<i>M. turnidae</i>
<i>M. gallinaceum</i>	<i>M. gallinarum</i>	<i>M. verecundum</i>	<i>M. zalophi</i>
<i>M. gallopavonis</i>	<i>M. gateae</i>		

## Azure Cielo™ 3/6 即時螢光定量 PCR 系統

- 96 孔盤式，搭載 3 色或 6 色螢光通道
- 10.3 吋高靈敏觸控螢幕，設定操作簡易，即看即上手
- 創新 16 well 光纖檢測系統提高靈敏度和速度
- 可進行 Fast 或 Standard qPCR 試驗流程
- 儀器性能超穩定，絕佳 inter-well 均勻度和批次數據再現性
- 不需額外連接電腦，配合使用 wifi 及 USB，輕鬆存取數據
- 內建數種試驗分析模板



## Blue-Ray TurboCycler 2 PCR 梯度溫度聚合酶連鎖反應儀

- 獨特設計高效率進行 PCR 實驗，快速升降溫速率 (升溫 5.5°C /sec ; 降溫 3.3°C /sec)，優化 PCR 效率及精準度
- 精確溫度控制及均一性介於  $\pm 0.3^{\circ}\text{C}$
- 橫跨 1~30°C 的梯度溫度控制，最佳化 PCR 反應過程
- 7 吋高靈敏電容式觸控螢幕以及圖形顯示，提供操作上更完整、直觀的簡易操作介面
- 內建工具列，輕鬆計算 Tm 值、DNA 複製數、混合劑備製
- 可配合使用 wifi，提供使用者隨時遠端監控實驗進度



臺灣精品  
2019



彈性升降溫  
速率控制

可調節  
上蓋溫度

梯度  
溫度優化



# 各種不同的 CRISPR/Cas9 system 符合您的實驗需求



CRISPR/Cas9 專刊

## Virus

Lentiviral CRISPR/Cas9 Systems

Lentiviral CRISPR/Cas9 All-in-One System

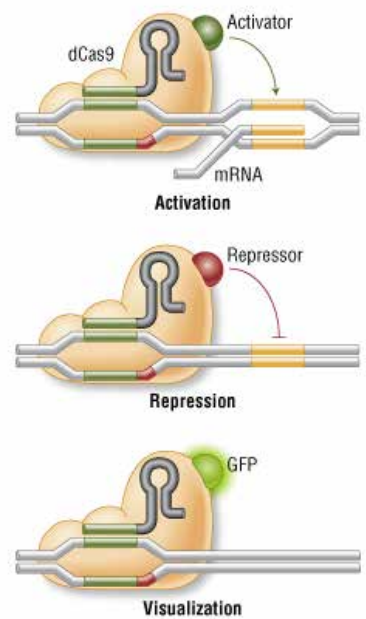
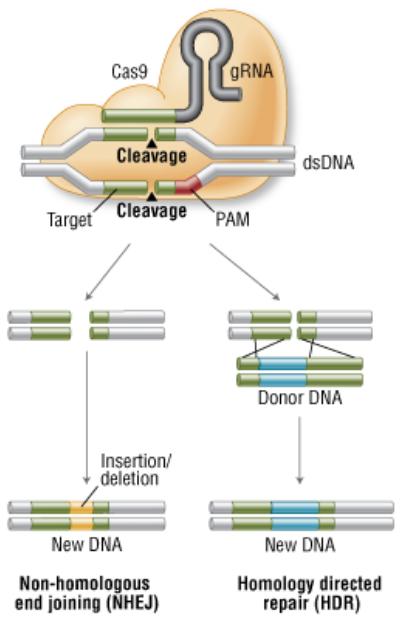
AAV CRISPR/Cas9 Systems

## Non-Virus

Cas9 RNA Protein system

Guide-it sgRNA *In Vitro* Transcription Kit

Nucleofector™



HR donor vector

Knock-in  
Knock-out  
Tagging



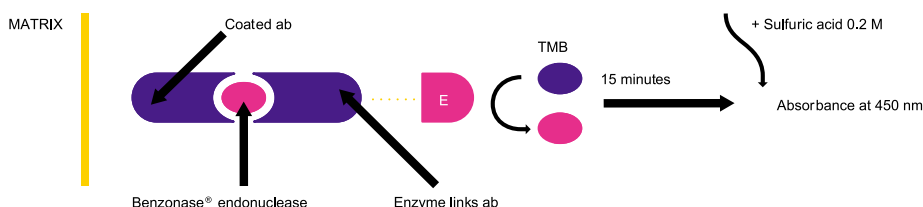
- 移除宿主細胞核酸干擾：在病毒載體或疫苗生產過程中，使用來消除所有宿主細胞核酸和 plasmid DNA
- 增加產率：可移除樣品中的核酸，並有效的降低樣品粘度，讓產量增加
- 有效降低粘度，讓後續純化流程更加便利操作
- 防止細胞團塊
- 二維電泳或進行層析樣品前置備
- 具有極高的比活性 (specific activity)，需搭配  $Mg^{2+}$  (1–2 mM) 一起使用
- 提供 RUO & GMP grade 等級產品
- FDA File (FDA Reg. No. BBMF 5403)
- 符合 ISO 9001 and 14001
- 方便：提供兩種純度等級（純度 > 99% 和純度 > 90%）

Features / Application	Benzonase <sup>®</sup> endonuclease (purity grade II => 90%)	Benzonase <sup>®</sup> endonuclease Emprove <sup>®</sup> Expert	Benzonase <sup>®</sup> endonuclease Safety Plus Emprove <sup>®</sup> Expert
Origin	Serratia marcescens, Production: E. coli K12 strain W3110; 30 kDa; PI 6.85; sequence homology proven		
Purity	=> 90%	=> 99%	=> 99%
GMP manufacturing according to ICH Q7	No	Yes	Yes
FDA Bulk Biological Master File (US-BBMF)	No	Yes	Yes
Non-Animal-Origin (NAO)	No	No	Yes
Shipment with temperature strips	No	No	Yes
Tailgate samples for large pack size	No	No	Yes (with 5M unit size)
Lot release in vitro test for absence of adventitious viruses (3 cell lines) and Mycoplasma test	No	No	Yes
Endotoxins (LAL) microbial testing	Not specified < 10 CFU/100,000 U	< 0.25 EU/1,000 U < 10 CFU/100,000 U	< 0.25 EU/1,000 U < 10 CFU/100,000 U
Target customer	Research	Viral Vaccines	Viral & Gene Therapy
Cat No.	1.01654.0001 1.01656.0001	1.01695.0001 1.01697.0001 1.01697.0010	1.03773.1010 1.03773.0001 1.03773.0010

## MERCK Benzonase<sup>®</sup> ELISA kit II

#1.01681.0001

- 經濟實惠：一組可偵測五盤
- 靈敏度：Low detection limit (0.2 ng/mL)
- 彈性包裝：strip 包裝型式



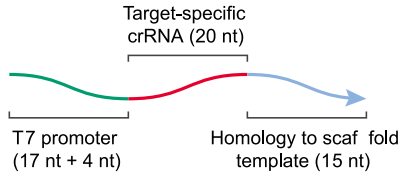
操作  
簡單快速



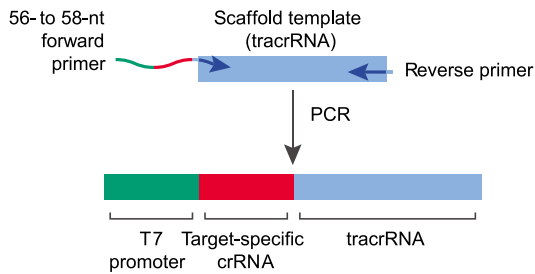
# Guide-it™ sgRNA In Vitro Transcription Kit

- 利用 *In Vitro* Transcription (IVT) 方式，以三個步驟產出 sgRNA
- 只需合成 forward primer，包含自行設計 20 nt 的 target-specific crRNA
- 附有高產量及高校正率的 PCR taq
- 附有 T7 polymerase 及 clean-up kit，完成 IVT 後再進行純化即可

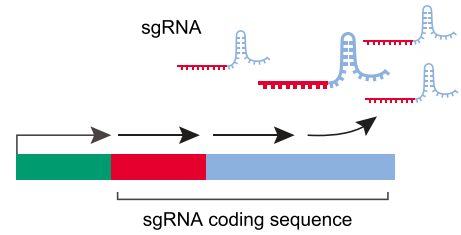
## 1 Design/purchase a 56- to 58-nt forward primer



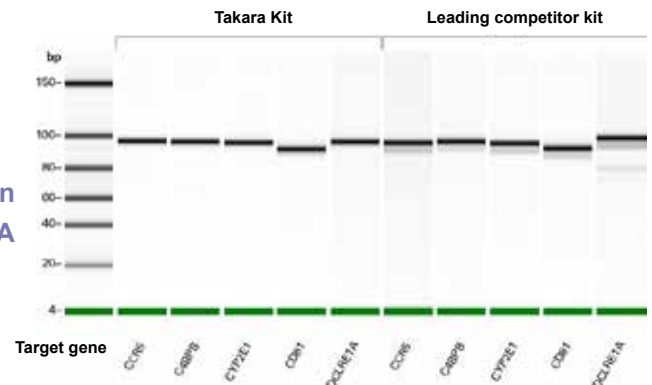
## 2 Create template for in vitro transcription of sgRNA



## 3 Production of sgRNA by in vitro transcription and purification with the provided Guide-it IVT RNA Clean-Up Kit (Cat. No. 632638)

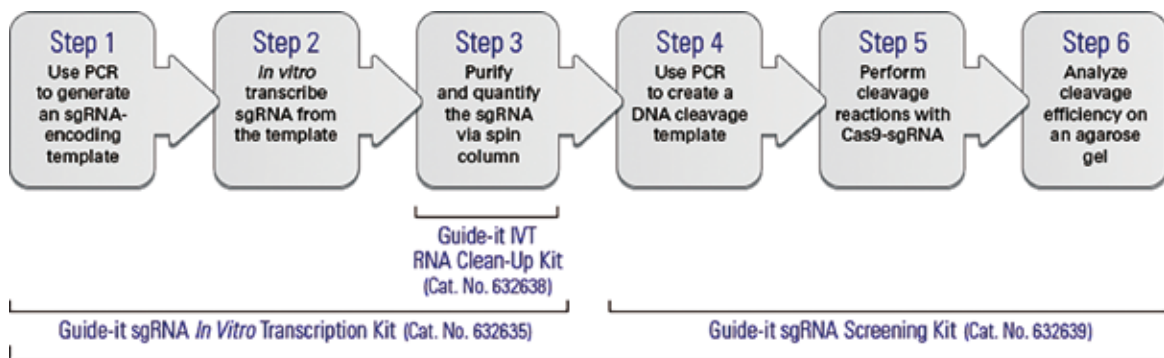


相較他牌，Takara Guide-it sgRNA *In Vitro* Transcription Kit 為 single band。高品質、高含量及高專一的 sgRNA 為 CRISPR 實驗成功的必要條件。



**Grab and Go 同步推薦!**

搭配 Guide-it™ sgRNA Screening Kit，在 CRISPR 實驗前預篩選高效率的 sgRNA，有利於提升基因編輯的成功率！

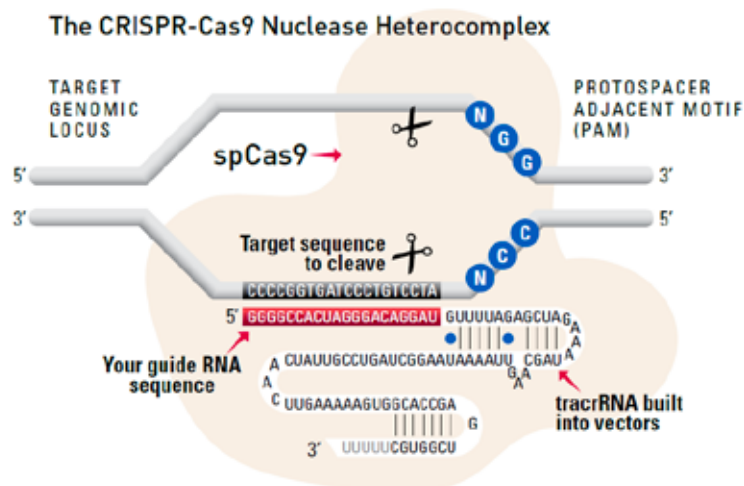


**Guide-it Complete sgRNA Screening System (Cat. No. 632636)**

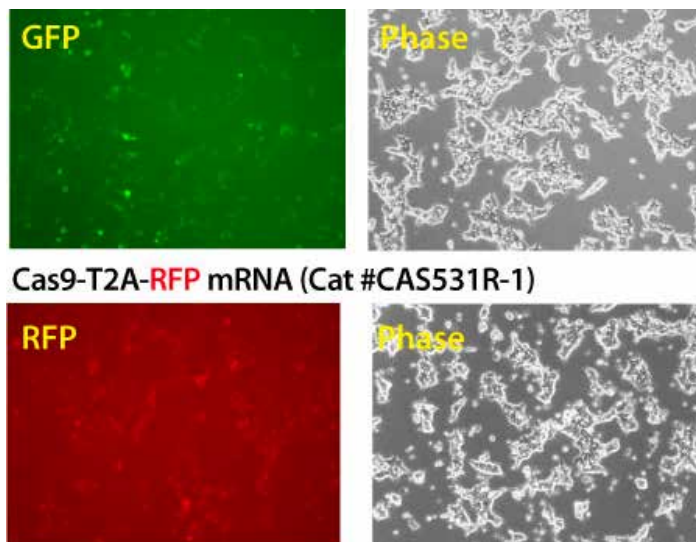
貨號	產品	包裝
632635	Guide-it™ sgRNA In Vitro Transcription Kit	50 Rxns
632636	Guide-it™ Complete sgRNA Screening System	50 Rxns
632638	Guide-it™ IVT RNA Clean-Up Kit	50 Rxns
632639	Guide-it™ sgRNA Screening Kit	50 Rxns

# Cas9 SmartNuclease mRNA, Injection- and Transfection-ready

- 結合 IVT gRNA production 系統，有效降低 CRISPR off-target
- Cas9 mRNA，較 Cas9 protein 更容易被送入細胞內
- 帶有 GFP 或 RFP，方便觀察 transfection 效率
- 另有 Nickase mRNA 及 Purified Cas9 Protein 可選擇



HEK293 細胞送入 SmartNuclease mRNA 後，觀察細胞的螢光表現量



貨號	產品	包裝
CAS500A-1	Transfection-ready Cas9 SmartNuclease mRNA (Eukaryotic version)	20 ug
CAS530G-1	hspCas9-T2A-GFP SmartNuclease™ mRNA, Injection- and Transfection-ready	10 ug
CAS531R-1	hspCas9-T2A-RFP SmartNuclease™ mRNA, Injection- and Transfection-ready	10 ug
CAS504A-1	Transfection-ready Cas9 SmartNickase mRNA (Eukaryotic Nickase mutant version)	20 ug
CAS534G-1	Transfection-ready hspCas9-nickase-T2A-GFP SmartNickase mRNA (Cas9 Nickase mutant with GFP marker)	10 ug
CAS535R-1	Transfection-ready hspCas9-nickase-T2A-RFP SmartNickase mRNA (Cas9 Nickase mutant with GFP marker)	10 ug

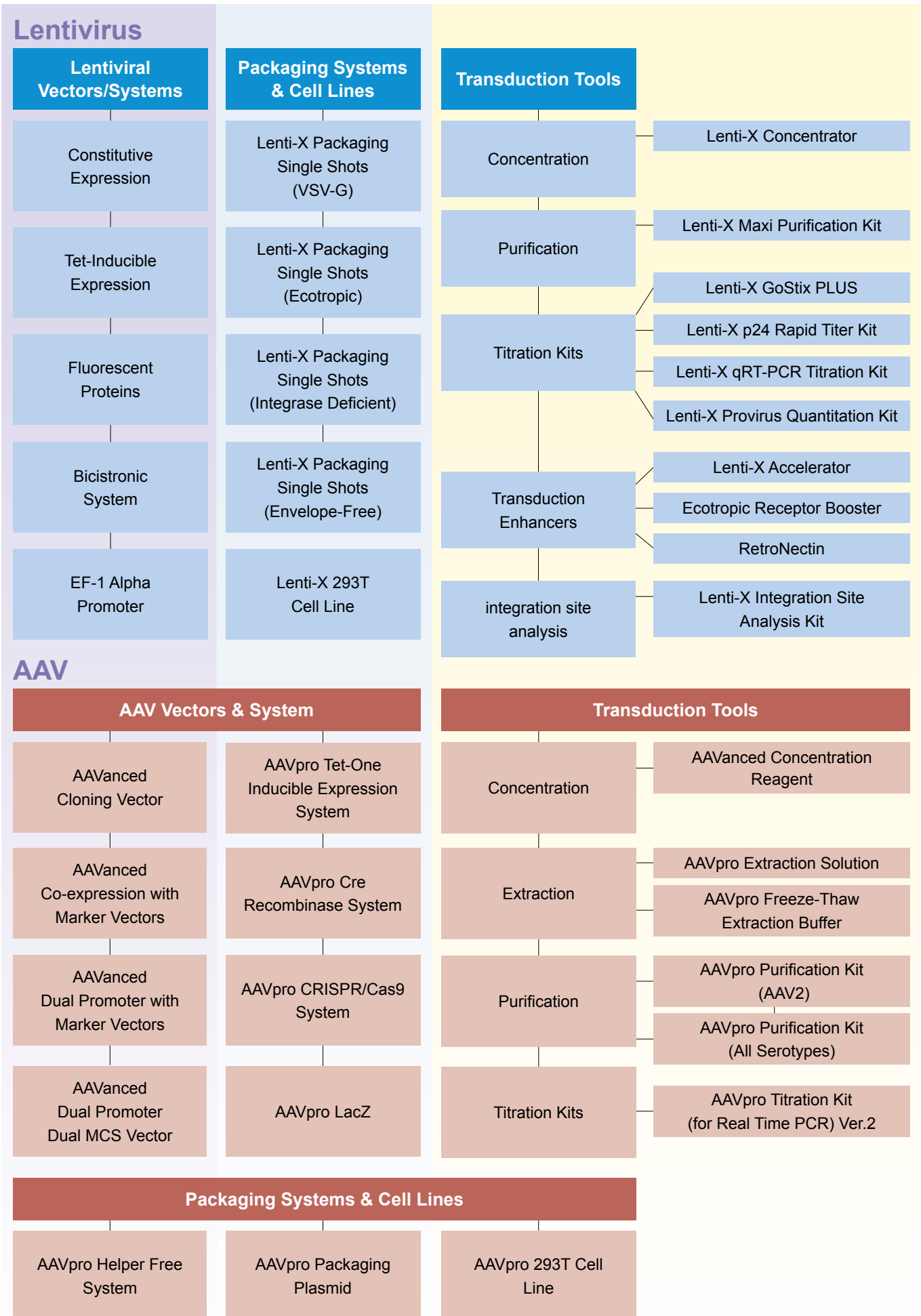
# HR Targeting Vectors

- 完成 gene knock-out 後，送入 homologous recombination template，即可插入任何想表現的基因
- 可進行 gene knock-out 篩選、knock-in GOI 等 editing 實驗
- 多種 selection marker 及螢光蛋白可選擇



以 CRISPR 完成 double strand break 後，將 GOI 左右加上 homology arm，即可以 homologous recombination 方式插入至 genome 缺口。

貨號	產品	特性
HR100PA-1	MCS1-LoxP-MCS2-MCS3-pA-LoxP-MCS4	Basic HR Donor
HR110PA-1	MCS1-EF1 $\alpha$ -RFP-T2A-Puro-pA-MCS2	Removable RFP marker and puromycin selection
HR120PA-1	GFP-pA-LoxP-EF1 $\alpha$ -RFP-T2A-Puro-pA-LoxP-MCS	Tag with GFP fusion Removable RFP marker and puromycin selection
HR130PA-1	T2A-GFP-pA-LoxP-EF1 $\alpha$ -RFP-T2A-Puro-pA-LoxP-MCS	Co-express GFP with "tagged" gene via T2A Removable RFP marker and puromycin selection
HR150PA-1	GFP-T2A-Luc-pA-loxP-EF1 $\alpha$ -RFP-T2A-Puro-pA-LoxP-MCS	Tag with GFP fusion and co-express luciferase via T2A Removable RFP marker and puromycin selection
HR180PA-1	IRES-GFP-pA-loxP-MCS1-EF1 $\alpha$ -RFP-T2A-Puro-pA-LoxP-MCS2	Co-express GFP with "tagged" gene via IRES Removable RFP marker and puromycin selection
HR210PA-1	MCS1-LoxP-EF1 $\alpha$ -GFP-T2A-Puro-P2A-hsvTK-pA-LoxP-MCS2	Removable GFP marker, puromycin selection, and TK selection
HR220PA-1	GFP-pA-LoxP-EF1 $\alpha$ -RFP-T2A-Hygro-pA-LoxP-MCS	Tag with GFP fusion Removable RFP marker and hygromycin Selection
HR410PA-1	MCS1-EF1 $\alpha$ -GFP-T2A-Puro-pA-MCS2	Removable GFP marker and puromycin selection
HR510PA-1	MCS1-EF1 $\alpha$ -RFP-T2A-Hygro-pA-MCS2	Removable RFP marker and hygromycin selection
HR700PA-1	MCS1-EF1 $\alpha$ -GFP-T2A-Puro-pA-MCS2-PGK-hsvTK	Enrich for on-target integration with negative TK selection Removable GFP marker and puromycin selection
HR710PA-1	MCS1-EF1 $\alpha$ -RFP-T2A-Hygro-pA-MCS2-PGK-hsvTK	Enrich for on-target integration with negative TK selection Removable RFP marker and hygromycin selection
HR720PA-1	MCS1-EF1 $\alpha$ -Blasticidin-pA-MCS2-PGK-hsvTK	Enrich for on-target integration with negative TK selection Removable blasticidin selection

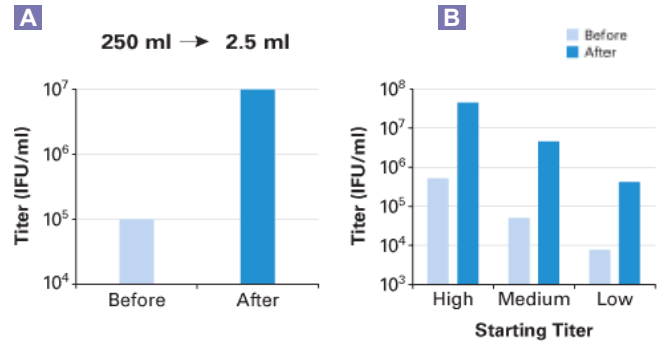
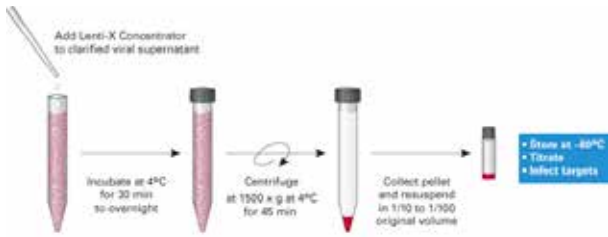


# CLONTECH Lenti-X™ Concentrator

- 4 倍無菌濃縮液，使用方便
- 操作簡單：只要混合、等待、離心
- 無需超高離心機，使用一般離心機即可
- 90 分鐘完成 100 倍的濃縮，9 成的回收率

## Lentivirus

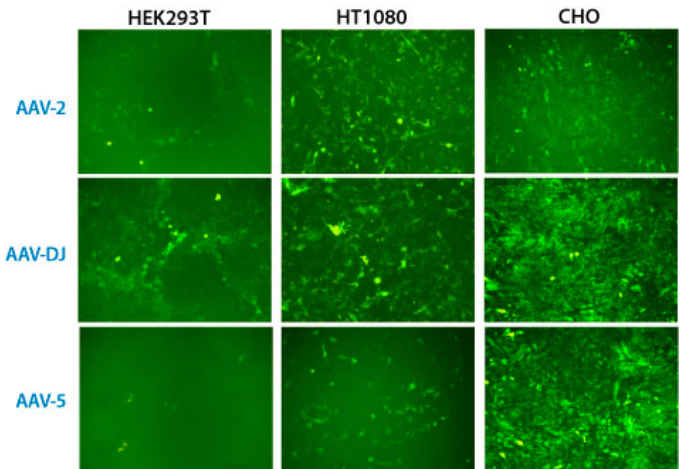
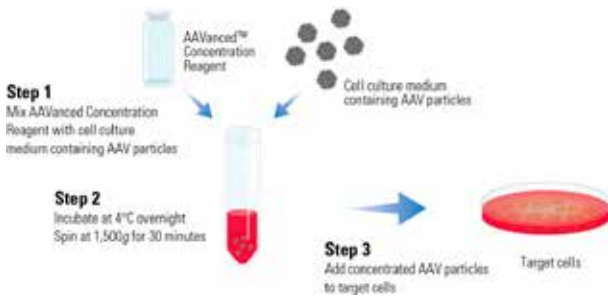
濃縮後提升 感染效價 (titer)



# SBI AAVanced™ Concentration Reagent

## AAV

AAVanced Concentration Reagent 可與多種血清型配合使用



貨號	產品	包裝
631231	Lenti-X™ Concentrator	100 mL
631232		500 mL
AAV100A-1	AAVanced™ Concentration Reagent	100 mL
AAV110A-1		250 mL

## References

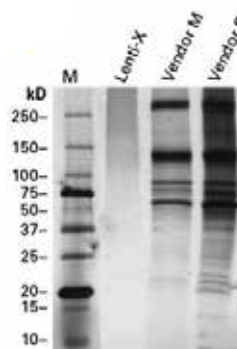
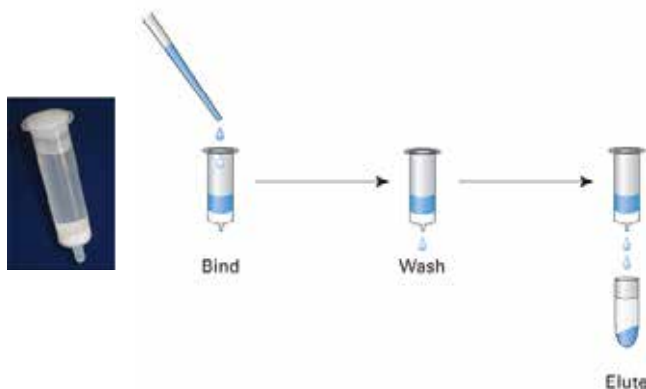
1. Scott B. Biering, et al. (2022) Genome-wide bidirectional CRISPR screens identify mucins as host factors modulating SARS-CoV-2 infection. *Nat Genet.* 2022; 54(8): 1078–1089.
2. HK Liao, et al. (2015) Use of the CRISPR/Cas9 system as an intracellular defense against HIV-1 infection in human cells. *Nat Commun.* 2015 Mar 10;6:6413.
3. X Lin, et al. (2015) Heme oxygenase-1 suppresses the apoptosis of acute myeloid leukemia cells via the JNK/c-JUN signaling pathway. *Leuk Res.* 2015 May;39(5):544-52.

# CLONTECH Lenti-X™ Maxi Purification Kit

- 以 gravity-flow 的方法進行純化
- 將病毒濃縮 10 倍
- 不會破壞病毒顆粒的結構
- 有效除去病毒上清液中的雜質，使後續的 transduction 更有效率



簡單三步驟：Bind, Wash, and Elute



相較於 filter-based systems (Vendor M & Vendor S), Lenti-X Maxi Purification Kit 純化的產物幾乎沒有污染物的干擾

貨號	產品	包裝
631233	Lenti-X™ Maxi Purification Kit	2 Preps
631234		5 Preps

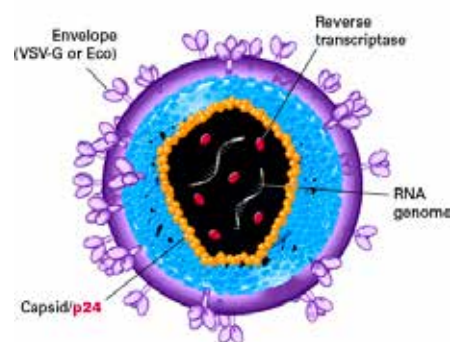
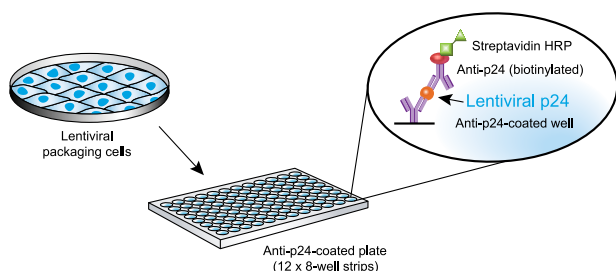
## References

1. Kuo MC, et al. (2017) Cancer stemness in bone marrow micrometastases of human breast cancer. *Surgery*. 2017 Oct 5. pii: S0039-6060(17)30526-3.
2. Tanabe K, et al. (2017) Filamin C promotes lymphatic invasion and lymphatic metastasis and increases cell motility by regulating Rho GTPase in esophageal squamous cell carcinoma. *Oncotarget*. 2017 Jan 24;8(4):6353-6363.

# CLONTECH Lenti-X™ p24 Rapid Titer Kit

- ELISA 型式，4.5 小時完成定量
- p24 蛋白表現量與病毒 titer 成正比
- 適用所有 HIV-1 系統的病毒 (*gag gene*)
- 內附 p24 control

只需要收集病毒上清液、lyse、bind、wash 和 detect



貨號	產品	包裝
632200	Lenti-X™ p24 Rapid Titer Kit	96 Rxns

## References

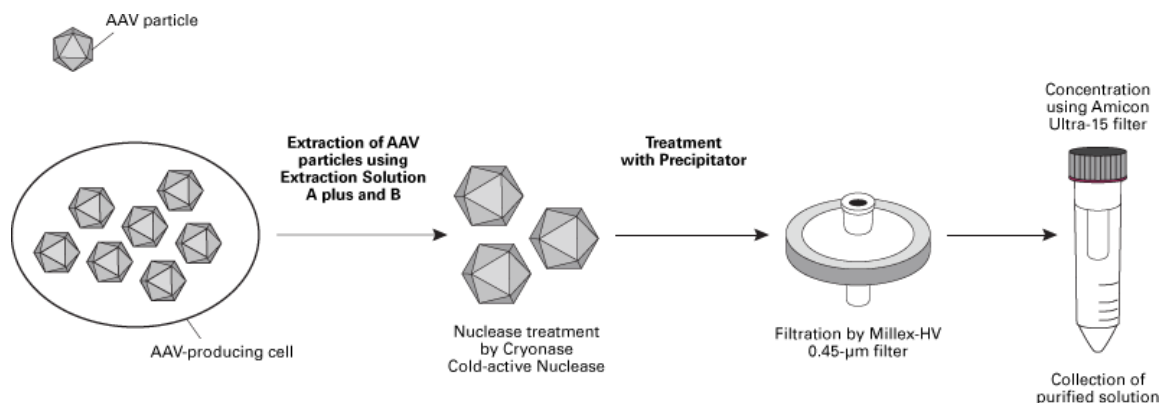
1. Chandel N, et al. VDR hypermethylation and HIV-induced T cell loss. *J Leukoc Biol*. 2013;93(4):623-31.
2. Ren X, et al. Modification of cytokine-induced killer cells with chimeric antigen receptors (CARs) enhances antitumor immunity to epidermal growth factor receptor (EGFR)-positive malignancies. *Cancer Immunol Immunother*. 2015;64(12):1517-29.

# TAKARA AAVpro<sup>®</sup> Purification Kit (All Serotypes)

- Column-based 純化方法，不再需要超高速離心機
- 4 個小時就能得到高純度、高產量的 AAV 病毒顆粒
- 純化後的病毒顆粒可以直接應用於細胞或活體的感染

## AAVpro Purification Kit (All Serotypes)

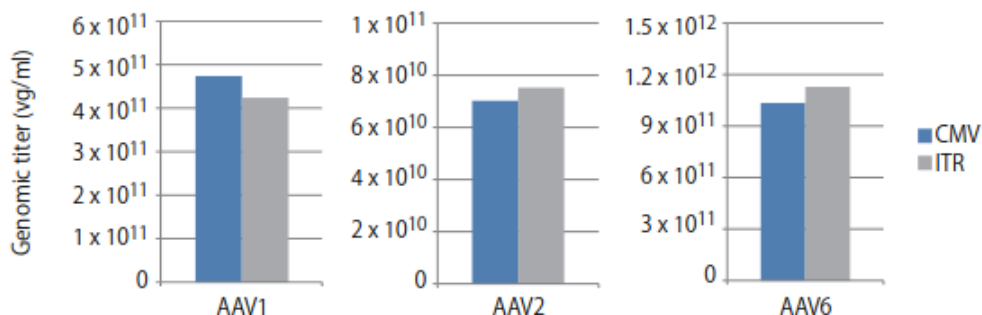
Four-prep kit，包含 Cryonase Cold-Active Nuclease



# TAKARA AAVpro<sup>®</sup> Titration Kit (for Real Time PCR) Ver.2

- 利用 qPCR 原理，2.5 小時內準確定量出 AAV 的效價
- 適用於各種 AAV 血清型 (serotype)：定量原理是針對 AAV2 的 ITR (inverted terminal repeat) 做放大偵測，ITR 是大部分 AAV vectors 的常見區域
- 較傳統的 DNA blot 或 ELISA 更為精準
- Kit 內包含 AAV Extraction、Simplified AAV Genome Extraction、Real Time PCR 的試劑

以病毒 ITR 和 CMV promoter 序列作為目標進行病毒效價偵測



貨號	產品	包裝
6666	AAVpro <sup>®</sup> Purification Kit (All Serotypes)	1 Kit
6233	AAVpro <sup>®</sup> Titration Kit (for Real Time PCR) Ver.2	100 Rxns

## References

1. Eguchi T., et al. (2016) Postnatal knockdown of dok-7 gene expression in mice causes structural defects in neuromuscular synapses and myasthenic pathology. *Genes Cells*. 2016 Jun;21(6):670-6.



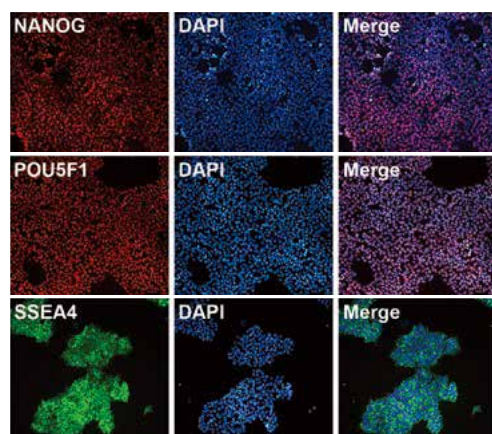
# Lonza

## 4D-Nucleofector™ System

- 高轉殖率
- 高存活率：Conductive polymer 材質，降低金屬離子對細胞的傷害
- 選擇性多：可依細胞特性，選擇不同 function unit 如：對不易貼附的細胞，可選擇 Y unit，僅需將細胞種植在 24-well plate 中直接電擊，而不需將細胞打下
- 彈性大：相同的試劑、程式，可適用不同的反應體積
- 高品質：可照射 UV 殺菌

### iPSC generate from PBMC

PBMC418 iPS1506 cells were positively stained with biomarkers (NANOG, POU5F1 and SSEA4) for cellular pluripotency



#### Core unit

4D-Nucleofector® 系統的指揮中心，操作所有功能模組

#### X unit

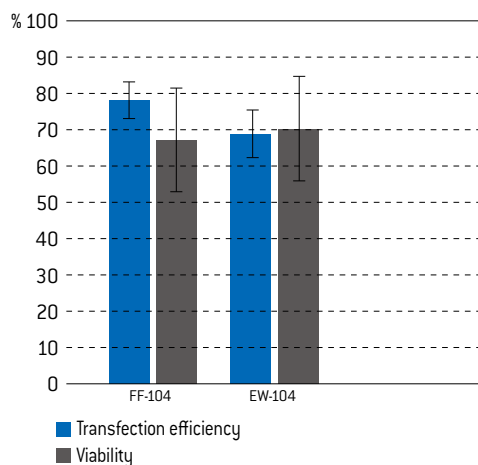
適用於懸浮細胞的功能模組  
電擊細胞數  $2 \times 10^4 \sim 2 \times 10^7$

#### 96 well shuttle

高通量模組  
一次進行 96 個核轉染反應

#### Y unit

適用於貼附細胞的功能模組



### Example for Nucleofection™ of human mesenchymal stem cells

Average transfection efficiency and viability of human mesenchymal stem cells (hMSC) 24 hours post Nucleofection™. Expanded  $5 \times 10^4$  hMSC [Lonza, Cat. No. PT-2501] were transfected with program FF-104 or EW-104 and 0.4  $\mu$ g of pmaxGFP™ Vector in 20  $\mu$ l Nucleocuvette™ Strips. 24 hours post Nucleofection™ cells were analyzed on a FACSCalibur™ (Becton Dickinson). Cell viability was determined as a relative portion of untreated control (measured with the Vialight™ Plus Bioassay Kit; Lonza, Cat. No. LT07-221).

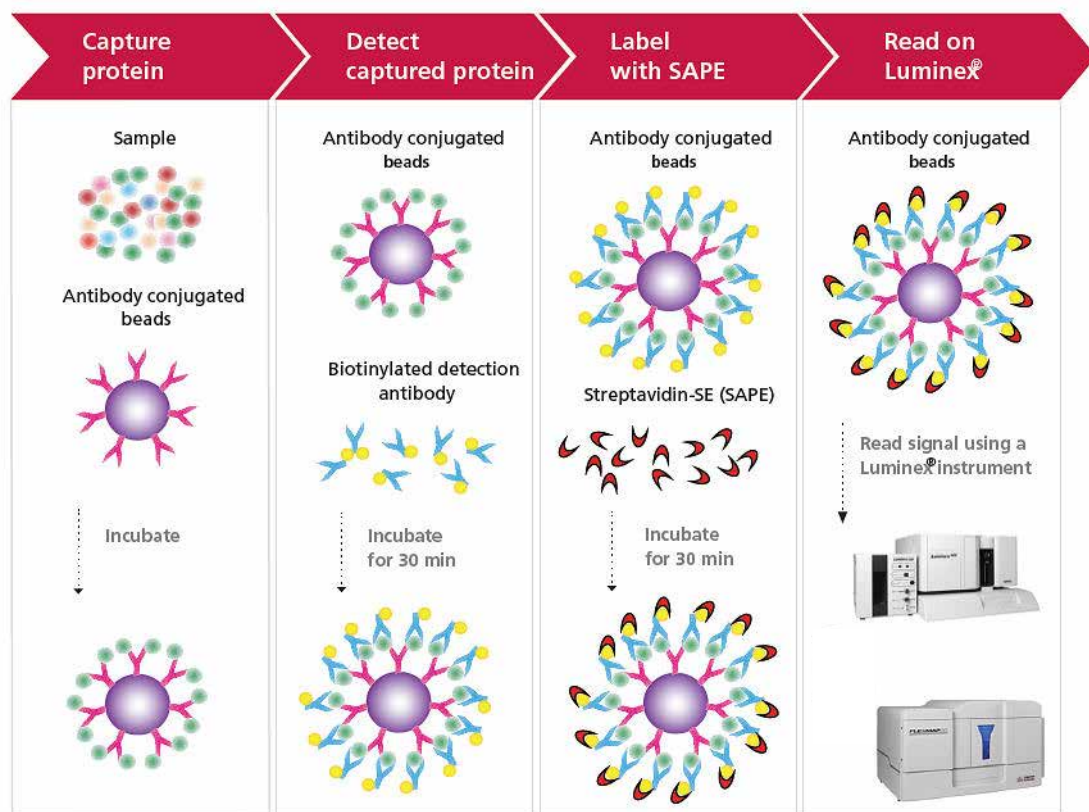
貨號	產品	規格
AAF-1003B	4D-Nucleofector™ Core Unit	1 EACH
AAF-1003X	4D-Nucleofector™ X Unit	1 EACH
AAF-1003Y	4D-Nucleofector™ Y Unit	1 EACH
AAF-1003S	4D-Nucleofector™ 96-well Unit	1 EACH

### References

- Zhang Y, et al. CRISPR-Cas9 mediated LAG-3 disruption in CAR-T cells. Front Med. 2017;11(4):554-562.
- Audzeyenka I, et al. Viability of primary cultured podocytes is associated with extracellular high glucose-dependent autophagy downregulation. Mol Cell Biochem. 2017;430(1-2):11-19
- Agudelo D, et al. Marker-free coselection for CRISPR-driven genome editing in human cells. Nat Methods. 2017;14(6):615-620.
- Liu X, et al. CRISPR-Cas9-mediated multiplex gene editing in CAR-T cells. Cell Res. 2017;27(1):154-157
- Rupp LJ, et al. CRISPR/Cas9-mediated PD-1 disruption enhances anti-tumor efficacy of human chimeric antigen receptor T cells. Sci Rep. 2017; 7(1):737.



## 實驗流程



貨號	產品	檢測類別
HCYTA-60K	Human Cytokine/Chemokine/ Growth Factor Panel A	sCD40L, EGF, Eotaxin, FGF-2, Flt-3 ligand, Fractalkine, G-CSF, GM-CSF, GRO $\alpha$ , IFN $\alpha$ 2, IFN $\gamma$ , IL-1 $\alpha$ , IL-1 $\beta$ , IL-1ra, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-12 (p40), IL-12 (p70), IL-13, IL-15, IL-17A, IL-17E/IL-25, IL-17F, IL-18, IL-22, IL-27, IP-10, MCP-1, MCP-3, M-CSF, MDC (CCL22), MIG, MIP-1 $\alpha$ , MIP-1 $\beta$ , PDGF-AA, PDGF-AB/BB, RANTES, TGF $\alpha$ , TNF $\alpha$ , TNF $\beta$ , VEGF-A
HCD8MAG-15K	Human CD8+ T Cell	GM-CSF, sCD137, IFN $\gamma$ , sFas, sFasL, Granzyme A, Granzyme B, IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, MIP-1 $\alpha$ , MIP-1 $\beta$ , TNF- $\alpha$ , Perforin
HCKPMAG-11K	Human Immuno-Oncology Checkpoint	BTLA, CD27, CD28, CD40, CD80/B7-1, CD86/B7-2, CTLA-4, GITR, GITRL, HVEM, ICOS, LAG-3, PD-1, PD-L1, TIM-3, TLR-2
HSTCMAG-28SK	Human High Sensitivity T Cell	TNF- $\alpha$ , Fractalkine, GM-CSF, IFN $\gamma$ , IL-1 $\beta$ , IL-2, IL-4, IL-5, IL-6, IL-7, IL-8, IL-10, IL-12 (p70), IL-13, IL-17A, IL-21, IL-23, ITAC, MIP-1 $\alpha$ , MIP-1 $\beta$ , MIP-3 $\alpha$
HTH17MAG-14K	Human Th17	TNF $\beta$ , GM-CSF, IFN- $\gamma$ , IL-1 $\beta$ , IL-2, IL-4, IL-5, IL-6, IL-9, IL-10, IL-12 (p70), IL-13, IL-15, IL-17A, IL-17F, IL-17E/IL-25, IL-21, IL-22, IL-23, IL-27, IL-28A, IL-31, IL-33, MIP-3 $\alpha$ /CCL20, TNF- $\alpha$

## References

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2. Monica K., et al. 2018. IL17/IL17RA as a Novel Signaling Axis Driving Mesenchymal Stem Cell Therapeutic Function in Experimental Autoimmune Encephalomyelitis. Front. Immunol. 2018; 9: 802.
3. Nishimura CD., et al. c-MPL provides tumor-targeted T-cell receptor-transgenic T cells with costimulation and cytokinesignals. Blood.2017;130(25):2739-2749.



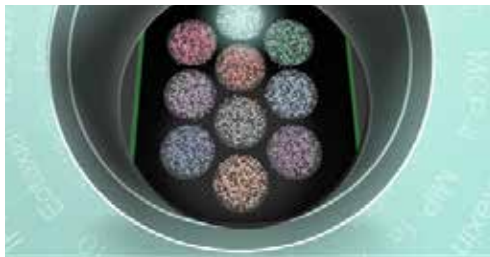
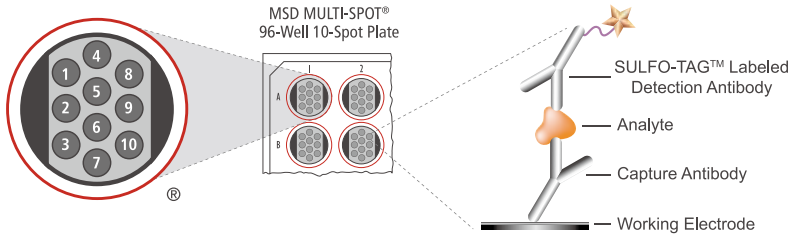


# Meso Scale Discovery ECL Multi-Array System

- 電化學發光 (Electrochemiluminescence; ECL) 原理，有低背景值、高訊號雜訊比特性
- 620 nm 放射光，減少消光現象干擾
- 有結合才有訊號，最小基值效應，實驗可不須額外清洗步驟
- 石墨電極特殊表面處理，適合鍵結大部分生物分子，且可結合量遠大於 Polystyrene 材質
- 可客製化自己所需、對特定生物分子有專一性結合的石墨電極盤
- 一個檢體同時偵測不同 Biomarker
- MSD 是目前唯一可同時進行細胞因子檢測與 CarT 細胞免疫原性分析的系統
- MSD 擅長客製化 U-Plex 多因子檢測服務



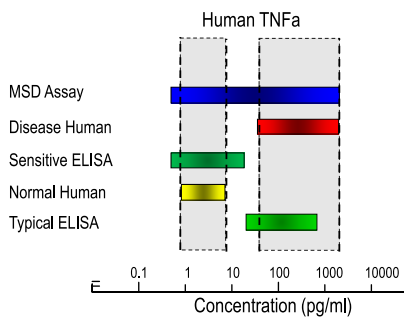
美國阿茲海默症協會  
(Alzheimer's Association, AA)  
建議檢測平台



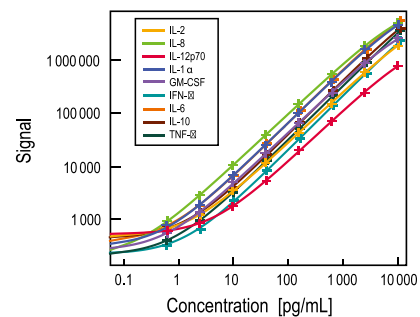
## MSD 電化學發光技術 (Electrochemiluminescence)

透過抗體抗原免疫結合鍵結於石墨電極上的含二價鈣離子配位化合物  $\text{Ru}(\text{bpy})_3^{2+}$ ，可與三丙基胺 (Tripropylamine; TPA) 進行氧化還原反應，並產生電化學發光現象。

### 動態範圍廣



### 高靈敏度



## References

1. McArthur HL., et al. A Pilot Study of Preoperative Single-Dose Ipilimumab and/or Cryoablation in Women with Early-Stage Breast Cancer with Comprehensive Immune Profiling. Clin Cancer Res. 2016;22(23):5729-5737
2. Locke FL., et al. Phase 1 Results of ZUMA-1: A Multicenter Study of KTE-C19 Anti-CD19 CAR T Cell Therapy in Refractory Aggressive Lymphoma; Molecular Therapy 2017; 25(1): 285-295
3. Hay KA., et al. Kinetics and biomarkers of severe cytokine release syndrome after CD19 chimeric antigen receptor-modified T-cell therapy; Blood. 2017;130(21):2295-2306.



# BD™ Cytometric Bead Array

- 一份檢體即可同時定性定量多種蛋白質，最多可達 30 種
- 一個 test 的檢體體積至多只需要 20-50  $\mu$ l
- 步驟簡單人人可上手，最後僅需清洗一次即可上機讀取 data
- 花費時間僅需要 3-4 小時，與他牌或傳統的 ELISA 相比相當省時
- CBA flex set 提供開放式的彈性實驗設計，可自由搭配想要偵測的項目
- CBA enhanced sensitivity flex set 最低可測至 0.274 pg/mL
- 搭配 FCAP array 軟體，5 分鐘完成數據分析

## CBA 實驗流程

順序	實驗步驟	圖例
A	<b>Capture beads 跟 sample 混合作用</b> 帶有 capture antibody 的螢光微球和樣本混合均勻，置於室溫、避光作用。	
B	<b>加入 Detection Antibody 作用</b> 將 PE-conjugated detection antibody 加入上述混合液，混合均勻。	
C	<b>複合物形成</b> Capture beads 抓住想要測定的蛋白質，蛋白質又跟 detection antibody 結合，這三者形成以“Sandwich”方式結合成複合物。	
D	<b>Incubation &amp; Wash</b> 置於室溫、避光作用。然後進行 Wash 步驟，一次即可。	
E	<b>測定跟分析</b> 以 BD FACS 機器測定後，將得到的數據用軟體 FCAP Array 來進行結果分析。	

貨號	產品	內容	包裝
561418	Human Anaphylatoxin Kit	C4a, C3a, C5a	80 Tests
552990	Human Chemokine Kit	IL-8, RANTES, MIG, MCP-1, IP-10	80 Tests
551811	Human Inflammatory Cytokine Kit	IL-8, IL-1b, IL-6, IL-10, TNF, IL-12p70	80 Tests
550749	Human Th1/Th2 Cytokine Kit	IL-2, IL-4, IL-5, IL-10, TNF, IFN- $\gamma$	80 Tests
551809	Human Th1/Th2 Cytokine Kit II	IL-2, IL-4, IL-6, IL-10, TNF, IFN- $\gamma$	80 Tests
560484	Human Th1/Th2/Th17 Kit	IL-2, IL-4, IL-6, IL-10, TNF, IFN- $\gamma$ , IL-17A	80 Tests

更多 CBA 相關產品 請參考騰達行網站 <http://www.unimed.com.tw/>



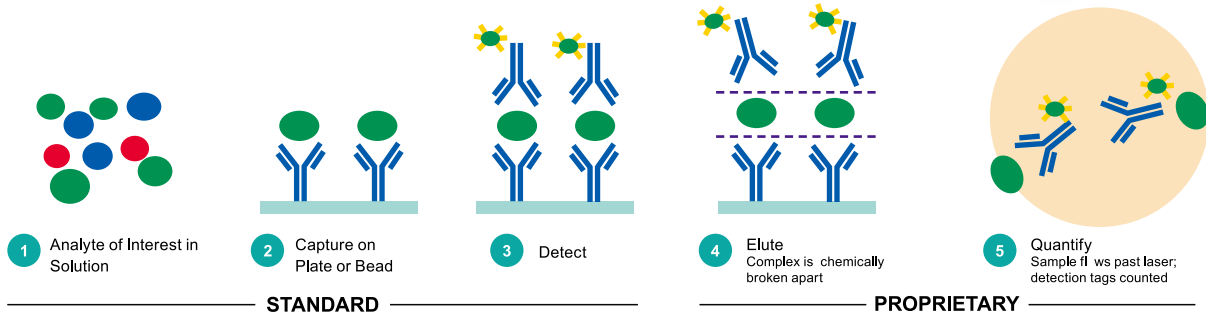
# SMCxPRO™ Single Molecule Counting

SMCxPRO™ 為一個可以檢測極低水平 (fg/mL) 的既定疾病生物標誌物、監測蛋白質濃度的微小變化與疾病相關的單分子檢測平台。研究者能進一步探討與監控 biomarker 在健康、高危險群與發病個體中的微量變化。可做為藥物研究、開發與找尋疾病生物標誌的新平台。



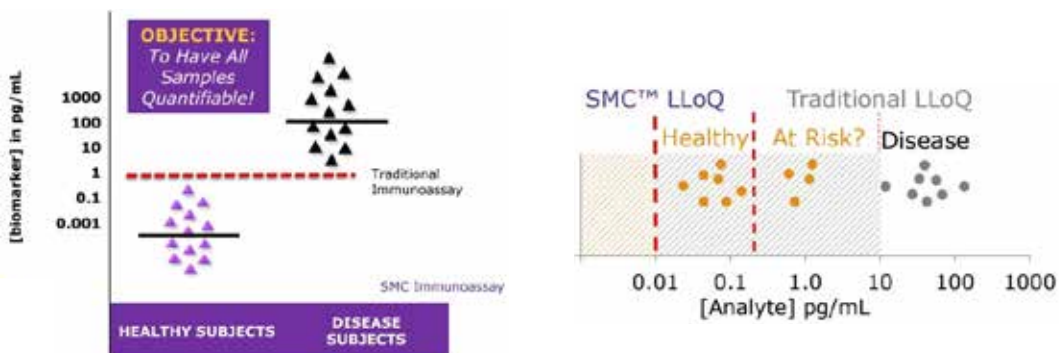
- 高信噪比 (Signal to noise ratio)
- 可偵測 fg/mL 的蛋白表現，靈敏度高於 ELISA 1000 倍
- 超過 600 種的抗體組對 (antibody pair) 驗證
- 無液流系統，不只操作方便也方便維護
- 符合 21 CFR Part 11
- 提供客製化試劑服務
- 提供代工服務

## Small Molecule Counting (SMC™) Technology



偵測的原理是以 sandwich ELISA 為基礎，搭配 SMCxPRO™ 獨特的 elution 步驟以及激發光聚焦的檢測技術，可將背景值降至最低，訊號提高。進而進行單一分子的精準檢測，靈敏度偵測可達 fg/mL。

## Reduce or eliminate "non-detectable" or "non-quantifiable" results



## References

1. J Hübener Schmid, K Kuhlbrodt et al. Reply to: "Comment on: Polyglutamine Expanded Ataxin 3: A Target Engagement Marker for Spinocerebellar Ataxia Type 3 in Peripheral Blood", Movement, 2022
2. ND Osier et al. Ultrasensitive Quantification of Inflammatory Biomarkers in Breast Cancer Survivors, J Immunol 2018, 174.41
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4. K Hwang, SY Ji et al. Serum amyloid beta-42 as a noninvasive biomarker for the prognosis and histologic features of glioma, researchsquare, 2021



BD Biosciences 是流式細胞儀的世界領導品牌，所生產的流式細胞儀為臨床及研究單位分析樣品的一項利器。BD Biosciences Immunocytometry Systems 為 BD 公司的一個產品線，主要提供 IVD 或 ASR 等級的臨床檢測用和研究用流式細胞儀螢光抗體、流式細胞儀以及分析軟體，近年更積極切入 NGS 領域，提供更全面的產品與服務。

## Lonza

LONZA 集團超過百年歷史，以生命科學為主導，在生物化學、精細化工、功能化學等領域均處於領先地位的全球性跨國公司。2006 年跨足生命科學領域，收購 Cambrex 公司生物及分生產品部門，包括 FMC agarose 及專注於 Primary cell application 的 Clonetics 產品等。2008 年，收購研發細胞轉染工具的德國生物技術公司 Amaxa。



來自德國的 CellGenix 擁有超過 25 年在臨床相關產品上的經驗，為歐洲第一家獲得 GMP 認證生產細胞治療相關的 cytokines 及 serum-free media 的製造商，提供高品質 ex vivo 細胞培養相關試劑。

## ZENOGEN PHARMA

Zenoaq 為日本全藥工業（株）專門設計給細胞使用的凍存液。CELLBANKER<sup>®</sup> 系列產品，產品品質穩定可靠，細胞經過凍存後，依然維持大於 90% 的存活率。同時此經過改良的凍存液，適用於任何的細胞，並可直接於 -80°C 儲存。



工研院生醫所致力於建立無血清培養基研發技術，進而成為臺灣培養基研發及生產中樞，協助國內生技醫藥產業建立自有培養基，提升臨床應用之安全性與可行性。目前已成功開發出高效增殖人類間質幹細胞的無血清培養基 SF1，應用於幹細胞治療領域。騰達行於近年正式取得 SF1 無血清培養基授權，並開始市場推廣與銷售。



System Biosciences 為美國加州灣區生技公司，擁有超過三十名頂尖科學家，致力發展獨特、創新的生物技術。從一開始的 RNAi libraries、MicroRNA 相關產品，到現在的 iPS cells 研究、Minicircle 技術、Exosomes 濃縮及純化試劑，證明 SBI 永遠走在科學的最前端。



Meso Scale Discovery (MSD) 成立於 1995 年，為生物樣品分子檢測製造與開發的領導者。透過專利技術能在單一樣品分析多種生物標記，同時擁有靈敏度高、重複性佳、動態範圍廣等優勢，可應用於藥物開發與醫學研究，廣泛被藥廠、CRO 與研究單位採用。



Azure Cielo Real-Time PCR 提供最高的性能並為您帶來最佳數據！其具有無與倫比的靈活性、靈敏度、可再現性、速度與簡便性，並使用創新的高性能光學技術，提供卓越的特異性和精確度，實現在單個 well 中可以提供真正的多色 multiplexing，沒有任何螢光干擾！



於 2014 年創立，致力於研發將細胞在體外培養成立體結構，當細胞於立體空間生長時，會恢復生物體內原本的功能；Celvivo 的目標是為細胞提供仿生物體內的生長條件，使之能夠發展出與完整生物體中的相似反應。適合的應用領域包含：藥物開發、毒理學、再生醫學、感染分析、疾病和癌症、Embryogenesis、Epigenetics 及 Systems biology 等。



Clontech TAKARA cellartis

TAKARA Bio 公司為亞洲區最大的生物科技企業，其研發和生產的生化產品在日本市場佔有率達 60% 以上，並暢銷國際市場；包括限制酶、修飾酶、反轉錄酶、qPCR 及 NGS 相關試劑，同時也販售細胞治療相關培養液與培養袋。過去合併美國 Clontech 以及收購瑞典的 Cellartis，產品涵蓋範圍更加全面。

## MERCK Sigma-Aldrich.

Merck 成立於 1668 年，提供工業或實驗室用的化學藥品。Merck (Calbiochem, Novagen) 秉持著製藥的規格，提供客戶各類優質 Inhibitor、Antibody、Growth Factor、Antibiotics、酵素及蛋白質萃取試劑等等。Merck 旗下包含 Millipore<sup>®</sup>、Sigma-Aldrich<sup>®</sup>、BioReliance<sup>®</sup>、Supelco<sup>®</sup>、SAFC<sup>®</sup> 以及 Milli-Q<sup>®</sup> 六大品牌，提供完整齊全的產品。

## CORNING | FALCON

為世界第一家開始生產拋棄式實驗室耗材公司，超過半世紀考驗，提供客戶多種細胞培養 surface，因應多種類的細胞培養。

## Nordmark

德國 Nordmark 公司以醫藥起家，其所生產的 collagenases NB 系列以優秀的批次穩定性與質量聞名世界。Nordmark 曾在 2002 年與生物化學相關試劑供應商 Serva 結盟，成為全球最大的 collagenases 製造與供應商，供應網路遍及全球。2018 年開始，Nordmark 因細胞治療和再生醫學領域大開，因應市場變化，正式改由自家販售 collagenase NB 產品。



BioLamina 是專注生產提供 ECM – laminin 系列蛋白的瑞典公司，致力於提供人類重組 laminin 蛋白，讓細胞培養更簡單可靠，並擁有高重複性。其中人類重組 Laminin 521 蛋白，完全適用於人類胚胎幹細胞 (hESC) 及人類 (hiPSC) 培養，近期更開始提供臨床等級 Biolaminin 521 CTG 產品，以及滿足日益增長的細胞療法需求。



Global Cooling Inc. 於西元 1995 年在美國成立，專注於將一系列史特林冷卻引擎商業化，提供給航空、電子、能源等各種不同領域的冷凍設備製造商。近年，由於看重生技製藥領域對於低溫存放設備的高規格要求以及日益蓬勃的市場，Global Cooling 決定建立自己的生產線，推出自有品牌 Stirling Ultracold。

Stirling Ultracold 為全球唯一製造史特林大型超低溫生物樣品存放系統的製造商，取代傳統雙壓縮機機型，採用航太用之冷卻核心，提供生物樣品最安全的保障。所上市的 SU780XLE，不僅取得能源之星 (ENERGY STAR<sup>®</sup>) 最低能耗認證，更獲得全球生物技術及製藥產品客戶高度評價。



EliteCell 專注於高效能、高品質細胞培養基開發與生產，提供全球快速成長的細胞治療市場，穩定、安全、合乎法規的臨床等級細胞培養材料。無塵室廠房建置在美國德州，依循 cGMP 規範，產品具有美國原料藥主檔案備案號 (DMF No.032759, MF 27525)。已經有美國、中國、台灣等客戶進入人體臨床試驗或是特管法應用。



藍光生物科技 (Blue-Ray Biotech) 為台灣在地優質品牌，超過十五年的生物實驗儀器專業製造與 ODM 經驗，致力於開發完全滿足用戶需求的高品質產品，且具有 ISO-9001 與 ISO-13485 品質認證。其 TurboCycler 2 聚合酶連鎖反應儀更獲得 2019 年台灣精品獎肯定。

# Accelerating Your Research!

