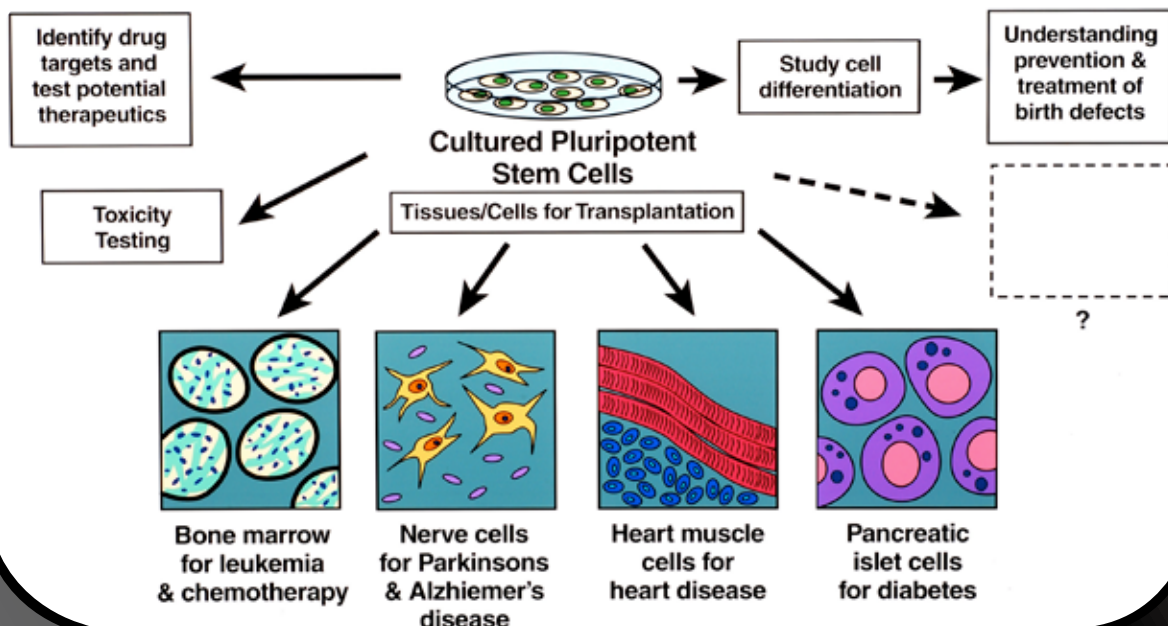




Discovery 探索生命的起源

The Promise of Stem Cell Research



淺談幹細胞

近年來，幹細胞的研究掀起一股熱潮，幹細胞迷人之處在於其獨特的能力-自我更新、自我增值，多向分化成各種細胞組織的能力，這些青春不老又有活力的細胞帶給科學家無限的想像，帶動再生醫學，組織工程，老人醫學的研究。對於新藥或毒物篩檢上，也提供一個絕佳的測試平台。有鑑於幹細胞所蘊含的醫療價值與龐大商機，越來越的生技公司投入幹細胞的研究。

幹細胞主要可以分成胚胎幹細胞與成體幹細胞兩大類，胚胎幹細胞，來源自胚胎，又稱為全能細胞，可分化為任一種細胞或是組織。成體幹細胞則發現於成人的器官或組織中，像是骨髓、周邊血，肝臟等等器官都可發現他們的蹤跡。相較於胚胎幹細胞，成體幹細胞的分化能力則受到局限，能分化的細胞或是組織種類較少。然而，胚胎幹細胞受限其倫理上的考量，使得成體幹細胞的研究有很大的進展。臨床上已可以使用造血幹細胞來治療白血病、地中海貧血、黏多醣症等疾病，近年來，更有臍帶血銀行的設立，專門保存造血幹細胞。也有許多生技公司，將分化後的細胞與生物可分解性材料結合，應用於軟硬骨的修復、心肌或肌腱的再生等，或是出售幹細胞提供給學術單位使用。

現正放映

P2 **新品上市**

hESC幹細胞標誌 VS 最火紅報導基金

P3 | 如何定義您的幹細胞 -

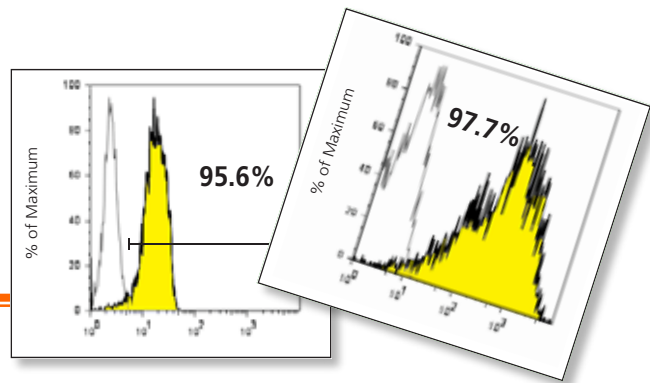
P4 | **Stem cell marker** 總整理

P5 | 如何培養您的幹細胞-想保持原
型或誘導分化 - **秘方大公開**

P6 **新品上市**

取代Fedder Layer Matrigel **革命性產品**

P7 | stem cell + Medium 專賣店



Overview of Stem Cell Markers

Embryonic Stem Cells

Embryonic Stem Cell Markers

<i>intracellular</i>	<i>surface</i>
c-Myc	CCR4
mouse Nanog	CD9
human Nanog	CD24
Oct3/4	CD29 (Integrin β 1)
SMAD2	CD30
Sox2	CD49f (Integrin α 6)
STAT3	CDw338 (ABCG2)
Stat3 (pS727)	E-Cadherin
Stat3 (pY705)	SSEA-1 (CD15, Lewis x)
Stat3-interacting protein 1	SSEA-3
	SSEA-4
	TRA-1-60 Antigen
	TRA-1-81 Antigen

Trophoblast Markers

<i>intracellular</i>	<i>surface</i>
CDX2	Trop-1
Cytokeratin 7	Trop-2

Induced Pluripotency Markers

<i>intracellular</i>	<i>surface</i>
c-Myc	Oct3/4
human Nanog	Sox2
mouse Nanog	

Germ Cell Markers

<i>intracellular</i>	<i>surface</i>
Oct3/4	CD15 (SSEA-1, Lewis X)
VASA (DDX4)	CD117 (SCF R, c-kit)

Ectoderm Markers

Early Ectoderm Markers

<i>intracellular</i>	<i>surface</i>
Nestin	Notch1

Neural Stem Cell Markers

<i>intracellular</i>	<i>surface</i>
Ki67	CD15 (SSEA-1)
Nestin	CD15s (Sialyl Lewis x)
Notch1	CD24
Sox2	CD29
Vimentin	CD49f
	CD54
<i>secreted</i>	CD81 (TAPA-1)
Noggin	CD95
	CD146
	CD184 (CXCR4)
	CD271 (p75, NGFR/NTR)
	CDw338 (ABCG2)

Neuronal Markers

<i>intracellular</i>	<i>secreted</i>
alpha-synuclein	Pax-5
alpha-synuclein (pY125)	PSD-95
Beta III Tubulin (TUJ1)	SMN
ChAT	Synapsin I
Doublecortin	Synaptophysin
GAD65	Synaptotagmin
Glutamine Synthetase	syntaxin
MAP2 (a+b)	Tau
MAP2B	Tubby
MASH1	Tyrosine Hydroxylase
N-Cadherin	Vimentin
Nestin	
Neurofilament NF-H	
Neurofilament NF-M	
p150 Glued	

Ectoderm Markers (continued)

Neuronal Markers (continued)

<i>surface</i>	
CD24	GluR2
CD56 (NCAM)	GluR4
CD81 (TAPA-1)	GluR5/6/7
CD90 (Thy-1)	Jagged1
CD90.1 (Thy-1.1)	mGluR1
CD90.2 (Thy-1.2)	mGluR1 α
CD112	Neuroglycan C
CD271 (p75, NGFR/NTR)	Neuropilin-2
Contactin	Nicastrin
GABA A Receptor	P-glycoprotein
GABA B Receptor	Serotonin Receptor 5-HT 2AR
GAP-43 (Neuromodulin)	Serotonin Receptor 5-HT 2BR
GluR δ 2	TrkB

Astrocytes

<i>intracellular</i>	
GFAP	S100B

Oligodendrocyte Markers

<i>surface</i>	
CD44	CD44H (Pgp-1, H-CAM)
CD140a (PDGF receptor α chain)	

Neural Crest Cell Markers

<i>intracellular</i>	<i>surface</i>
MASH1	CD271 (p75, NGFR/NTR)
Neurogenin 3	CD49d
	CD57 (HNK-1)
	Notch1

Skin Precursor Cell Markers

<i>intracellular</i>	<i>surface</i>	<i>secreted</i>
CRABP2	Sca-1	
Nestin		Fibronectin
Vimentin		

Endoderm Markers

Definitive Endoderm Markers

<i>intracellular</i>	<i>surface</i>
GATA4	CD184 (CXCR4)
HNF-1 β (TCF-2)	
N-Cadherin	
β -Catenin	

Primitive Gut Tube Markers

<i>intracellular</i>	
HNF-1 β (TCF-2)	

Intestinal Endoderm Markers

<i>intracellular</i>	
Cdx2	

Pancreatic Endoderm Markers

<i>intracellular</i>	
Gad65	Neurogenin 3
Gad67	Synaptophysin

<i>surface</i>	
CD49f (Integrin α 6)	Neuropilin-2

Hepatic Endoderm Markers

<i>intracellular</i>	
HNF-1 α	HNF-1 β
	Tat-SF1

<i>secreted</i>	
ApoE	

Mesoderm Markers

Early Mesoderm Markers

<i>intracellular</i>	<i>surface</i>
NF-YA	CD31 (PECAM-1)
	CD34
	CD325 (M-Cadherin)
	Sca-1 (Ly6A/E)

Skeletal Muscle Markers

<i>intracellular</i>	
Actin	μ -calpain
α -Actinin	MyoD
β -Enolase	Myogenin
Desmin	N-Cadherin
	Titin

<i>surface</i>	
M-Cadherin	MCAM

Smooth muscle markers

<i>intracellular</i>	
Desmin	Vimentin

Heart - Cardiogenesis Markers

<i>intracellular</i>	<i>surface</i>
α -Actinin	ALCAM (CD166)
Annexin V	CD31
Annexin VI	CD34
Caveolin-2	CD66
Caveolin-3	CD66c
Desmin	CD106 (VCAM-1)
GATA4	CD117
M-Cadherin	Connexin-43
Myogenin	FLK1
N-Cadherin	TIE2
NF-YA	VE-cadherin

Hemangioblast Markers

<i>surface</i>	
CD31	CD324 (E-Cadherin)
CD34	Fik-1 (VEGF-R2, Ly-73)
CD144	TIE2

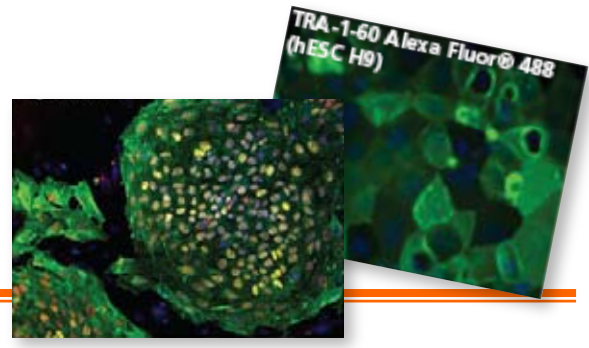
Hematopoietic Stem Cell Markers

Positive Markers

<i>intracellular</i>	
CaM kinase IV	NF-YA
N-Cadherin	
WASP	

<i>surface</i>	
CD31 (PECAM-1)	CD184 (CXCR4)
CD34	CD201/EPCR
CD44	CDw338/ABCG2/Bcrp1
CD59	Fik-1 (VEGF-R2, Ly-73)
CD84	G-CSF
CD90.1/Thy1.1	Ly-6A/E/Sca1
CD90/Thy-1	MRP1
CDw93 (C1qRp)	Notch1
CD105 (Endoglin)	P-glycoprotein
CD106 (VCAM-1)	TIE2
CD117/c-kit	TIE2 (pY1102)
CD164	TIE2 (pY992)

continued...



Overview of Stem Cell Markers (continued)

Mesoderm Markers (continued)

Hematopoietic Stem Cell Markers (cont'd)
Negative Markers

<i>intracellular</i>	
GATA3	
<i>surface</i>	
CD2	CD24
CD3	CD33
CD4	CD36
CD10	CD38
CD13	CD45
CD14	CD45R
CD15	CD48
CD15s	CD56
CD16	CD97
CD19	CD114
CD20	CD138 (Syndecan-1)

Hematopoietic Lineage Markers
Monoblast

<i>Surface</i>	
CD11c	CD33
CD13	CD115
CD15 (SSEA-1, Lewis X)	CD116 (GM-CSF R)

Megakaryoblast

<i>Surface</i>	
CD34	CD41
CD36	CD61
	HLA-DR

Proerythroblast

<i>Surface</i>	
CD71 (Transferrin R)	PU.1
CD105	Ter 119

Myoblast

<i>Surface</i>	
CD13	CD91
CD15 (SSEA-1, Lewis X)	CD114 (G-CSF Receptor)
CD33	CD116 (GM-CSF R)

Committed Lymphoid Progenitor

<i>Surface</i>	
CD10	CD117 (SCF R, c-kit)
CD34	CD124 (IL-4 Receptor-α)
CD38	CD127 (IL-7 Receptor α)
CD90 (Thy1)	HLA-DR
	TdT (Terminal Transferase)

Adipose-Derived Stem Cell Markers

Positive Markers

<i>intracellular</i>	
Vimentin	
<i>surface</i>	
CD9	CD55
CD10	CD59
CD13	CD73
CD29	CD90 (Thy-1)
CD44	CD105
CD49d	CD106
CD49e	CD146
CD54	CD166
	HLA I

secreted
Fibronectin

Negative Markers

<i>surface</i>	
CD11b	CD45
CD14	CD79a
CD19	c-Kit
CD34	HLA-DR

Endothelial Cell Markers

<i>intracellular</i>	
HIF-1α	STAT3 (pS727)
Nestin	STAT3 (pY705)
STAT3	STAT3-interacting protein 1
	Vimentin
<i>surface</i>	
CD14	CD120a
CD15	CD120b
CD18	CD121a (IL-1 Receptor)
CD29 (Integrin β-1)	CD124 (IL-4 Receptor-α)
CD31 (PECAM-1)	CD141 (Thrombomodulin)
CD34	CD144 (VE-Cadherin)
CD36	CD146 (MCAM, MUC18)
CD45	CD147 (Neurothelin)
CD45R	CD151
CD49d (Integrin α4)	CD152 (CTLA-4)
CD49e (Integrin α5)	CD157
CD49f	CD166
CD54 (ICAM-1)	CD184 (CXCR4)
CD56	CD192 (CCR2)
CD62E	CD201 (EPCR)
CD62L	CD202b (Tie2)
CD62P	CD209
CD93 (C1qRp)	CD209a
CDw93	CD252 (OX-40 Ligand)
CD102 (ICAM-2)	CD253
CD105 (Endoglin)	CD262
CD106 (VCAM-1)	CD325 (M-Cadherin)
CD109	Fli-1
CD112	IP-10
CD116 (GM-CSF Receptor)	Ly-6A/E (Sca-1)
CD117	MCAM
	TIE2

Mesenchymal Stem Cell Markers
(from bone marrow)

Positive Markers

<i>intracellular</i>	
Vimentin	
<i>surface</i>	
CD10	CD90 (Thy-1)
CD13	CD105 (Endoglin)
CD14	CD106 (VCAM-1)
CD15 (SSEA-1, Lewis X)	CD117 (SCF R, c-kit)
CD29 (integrin b1)	CD120a
CD44H (Pgp-1, H-CAM)	CD120b
CD49d-e	CD166
CD51	CD271 (p75, NGFR/NTR)
CD54 (ICAM-1)	CD318 (CDCP1)
CD71 (Transferrin Receptor)	Fli-1 (VEGF-R2, Ly-73)
CD73	Ly-6A/E (Sca-1)

Negative Markers

<i>surface</i>	
CD11a	CD34
CD11b	CD45
CD31	

Mesenchymal Stem Cell Differentiation Markers

Adipocyte (Fat) Markers

secreted
Acrp30 (Adiponectin)

Chondrocyte (Cartilage) Markers

<i>surface</i>	
CD44	CD151

Osteoblast (Bone) Markers

surface
Fibronectin IGFBP-3

Mesenchymal Stem Cell
Differentiation Markers

Myoblast (Muscle) Markers

<i>intracellular</i>	
actin	MyoD
desmin	titin
μ-Calpain	beta-Enolase
<i>surface</i>	
MCAM	N-Cadherin

Stem Cell Relevant Signaling

TGF beta Signaling

<i>intracellular</i>	
c-Myc	p16 INK4
DP-1	p107
E2F-1	p300
E2F-2	PP2A
E2F-3	ROCK-I
Id1	ROCK-II
Id2	Smad2/3
Id3	Smad4
	SP1
<i>surface</i>	
BMPPR-II	IFN-γ R, β chain

Wnt Signaling

<i>intracellular</i>	
14-3-3	β-Catenin (pS45)
14-3-3ε	δ-Catenin
CaM Kinase II	γ-Catenin
Casein Kinase I ε	CBP (CREB-Binding Protein)
Casein Kinase II α	GSK-3 Beta
Casein Kinase II β	GSK-3 Beta (pY216)
α-Catenin	HDAC3
β-Catenin	PP2A Catalytic

secreted
Wnt16

Notch Signaling

<i>intracellular</i>	
CBP (CREB-Binding Protein)	<i>surface</i>
Neurogenin 3	Jagged1
	Nicastrin
	Notch1

Erk-MAPK Signaling

<i>intracellular</i>	
C-Raf	ERK3
ERK	Mek1
ERK1	Mek1 (pS298)
ERK1/2(pT202/pY204)	Mek1/2 (pS222)
ERK2	Mek2
p38 MAPK (pT180/pY182)	Ras

secreted
basic FGF

Jak-STAT Signaling

<i>intracellular</i>	
STAT1	STAT4 (pY693)
STAT1 (pY701)	STAT5 (MGF)
STAT3	STAT5 (pY694)
STAT3 (pS727)	STAT6
STAT3 (pY705)	Stat6 (pY641)
STAT4	

surface
gp130 (pS782)

Extracellular Matrix (ECM) Molecules, Growth Factors, and other Factors Used to Promote Stem/Progenitor Cell Proliferation and Differentiation *In Vitro*

Stem Cell Type	Progenitor or Differentiated Cell Type	ECM, Growth Factor/Cytokine, and/or Other Factor
Embryo		
Embryonic stem cell	Expansion of undifferentiated ESC ^{8,9,41-43}	BD Matrigel™ Matrix, BD™ PuraMatrix™ Peptide Hydrogel, Gelatin, LIF
	Pancreatic endocrine progenitor ⁸	bFGF
	Pancreatic islet ⁸	bFGF, nicotinamide
	Expansion of Nestin+ neural progenitors ⁹	Laminin, bFGF, poly-ornithine
	Neuron ^{9,10}	Laminin, poly-ornithine, RA
	Survival of ES-derived motor neurons ¹¹	BD Matrigel™ Matrix, BDNF, NT-3, CNTF, GDNF
	Glial progenitor cells ¹²	bFGF, PDGF-AA
	Adipocyte ¹³	RA
	Chondrocyte ¹⁴	BMP-2, BMP-4
	Osteoblast ¹⁵	RA, dexamethasone, ascorbate, β-glycerol phosphate
	Dendritic cells ¹⁶	GM-CSF, IL-3
Endothelial cells ¹⁷	Collagen IV, VEGF	
Bone Marrow		
Mesenchymal stem cell	Osteoblast ¹⁸⁻²⁰	BMP-2, bFGF, dexamethasone, ascorbate, β-glycerol phosphate
	Chondrocyte ^{19,21}	TGF-β3, dexamethasone
	Neuron, Glial cells ²²	EGF, BDNF, RA
	Adipocyte ^{19,20}	Dexamethasone, insulin, indomethacin, 1-methyl-3-isobutylxanthine
Multipotent adult progenitor cell	Expansion of undifferentiated MAPCs ²³	Fibronectin, EGF, PDGF-BB, 2% FBS
	Osteoblast ²³	Fibronectin, dexamethasone, ascorbate, β-glycerol phosphate
	Chondrocyte ²³	TGF-β1
	Endothelial cells ²⁴	Fibronectin, VEGF
	Hepatocyte-like cells ²⁵	BD Matrigel™ Matrix, FGF-4, HGF
Hematopoietic stem cell	Platelets, red/white blood cells ²⁶	IL-3, IL-6, G-CSF, erythropoietin, thrombopoietin
	Expansion of undifferentiated progenitors	IL-3, IL-6, Stem cell factor, Flt3 ligand, thrombopoietin
	Megakaryocytes, Platelets	IL-3, IL-6, GM-CSF, thrombopoietin
	Reticulocytes, Erythrocytes	IL-3, IL-6, IL-9, erythropoietin, GM-CSF
	B lymphocytes	CXCL12, IL-3, Flt3 ligand, IL-7
	Granulocytes	G-CSF, GM-CSF, IL-3, IL-6
	Monocytes, Macrophages, Dendritic cells	GM-CSF, M-CSF, TNF-α
	Mast Cells	IL-4, IL-6
Thymus		
Multipotential thymic precursor	T lymphocytes	IL-7
	NK cells	Flt3 ligand, IL-7, IL-15, IL-2, IL-12, IL-18
	Dendritic cells	GM-CSF, IL-3, IL-6, Flt3 ligand
Adult Tissue		
Liver	Expansion of undifferentiated oval cells ²⁷	Fibronectin, SCF, Flt-3 ligand, IL-3, LIF
	Hepatocyte ²⁸	Fibronectin, HGF, EGF
	Pancreatic islet ^{27,28}	Fibronectin, SCF, Flt-3 ligand, IL-3, nicotinamide
	Hepatocyte Progenitor ²⁹	BD™ PuraMatrix™ Peptide Hydrogel
Neural stem cell/ Neural progenitor cell	Expansion of NPCs ²⁹	βFGF, EGF, LIF
	Neuron, Glial cells ³⁰⁻³⁴	Fibronectin, Laminin, βFGF, EGF, PDGF-AA, PDGF-AB, PDGF-BB, NT-4, CNTF
	Neural, Glial Progenitors ⁴⁰	BD™ PuraMatrix™ Peptide Hydrogel
Adipose stem cell	Osteoblast ³⁵	Dexamethasone, ascorbate, β-glycerol phosphate
	Chondrocyte ^{35,36}	TGF-β1, insulin, ascorbate
	Adipocyte ³⁵	Dexamethasone, insulin, indomethacin, 1-methyl-3-isobutylxanthine
Muscle-derived stem cell	Expansion of MDSCs ³⁷	Collagen, IGF-1, EGF, SCF, FGF2
	Osteoblast ³⁸	Collagen, BMP-2

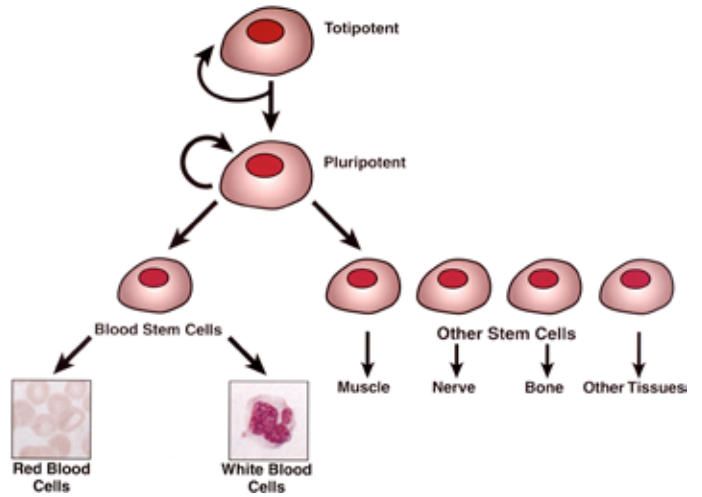
Key: BM - Bone Marrow; EB - Embryoid Bodies; MSC - Mesenchymal Stem Cells; ECC - Embryonal Carcinoma Cells; ESC - Embryonic Stem Cells; HSC - Hematopoietic Stem Cells; Hu - Human; Ms - Mouse; ECM - extracellular matrix; EGF - epidermal growth factor; LIF - leukemia inhibitory factor; SCF - stem cell factor; HGF - hepatocyte growth factor; PDGF - platelet-derived growth factor; VEGF - vascular endothelial growth factor; BMP - bone morphogenetic protein; BDNF - brain derived neurotrophic factor; NT - neurotrophin; CNTF - ciliary neurotrophic factor; bFGF - basic fibroblast growth factor; TGF-β - transforming growth factor-beta; IL - interleukin; G-CSF - granulocyte-colony stimulating factor; GM-CSF - granulocyte-macrophage colony stimulating factor; IGF - insulin-like growth factor; RA - retinoic acid; FBS - fetal bovine serum.

ECM molecules are denoted in blue; growth factors/cytokines in red; other factors in black

Media + Additives + Surfaces = Complete Cell Environments

幹細胞培養一直以來就是科學家關注的話題，幹細胞的培養主要可以分為兩個方向，一是維持其原貌，阻止幹細胞往下分化，二是誘導幹細胞分化成想要的細胞。而細胞生長的环境可由培養液(Medium)、添加物 (Medium Additives)和Feeder layer所組成。在培養液的部份，為了排除血清的可能帶來的污染、不同批號所含生長因子濃度不一以及成份複雜等因素，漸漸地走向無血清添加的方向，取而代之為添加成份明確的物質 (如Cytokine、Growth factor等等)，此外，利用MEF(mouse embryonic fibroblast) 作為feeder layer與人類幹細胞共同培養，面臨應用在臨床上時，幹細胞可能會被其他物種衍生病原菌感染的疑慮，所以科學家也逐漸走向Feeder-layer free的方向。最近研究指出，以細胞基質(Extracellular matrix)取代feeder layer，搭配feeder-conditioned細胞培養液和生長因子，胚胎幹細胞生長可以像在feeder layer一樣久，且仍然保持其獨特的能力。

Hierarchy of Stem Cells



新品快訊

BD Matrigel™ hESC-qualified Matrix

BD Matrigel為理想細胞基質的配方，不但擁有豐富的ECM(Extracellular Matrix)蛋白，更含有生長所需的因子，在室溫的狀態下，能聚合成具有活性膠狀物質，是模擬細胞生長環境最佳選擇，在2001年，知名幹細胞研究中心WiCell Research Institute比較以 BD Matrigel、Laminin、Fibronectin 以及 Collagen IV為培養皿上包覆的材質(surfaces)，培養胚胎幹細胞，結果發現BD Matrigel的效果最好。而最近，WiCell與 BD和Stem cell Technology共同開發出最適合胚胎幹細胞的配方 (mTeSR1 medium+BD Matrigel)，擁有 **Feeder-layer free, Serum- free, 無需添加生長因子**等多項優點喔

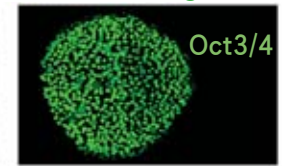
H9細胞在BD Matrigel+mTeSR1 Medium培養下，經48代培養後，能保有原始胚胎幹細胞的特性

- 維持正常的Karyotype
- 穩定增生速率和高表現量telomerase
- 細胞型態-細胞邊界明顯，高核質比
- Undifferentiated胚胎幹細胞標誌的表現- Oct3/4
- Teratomas assay：原始胚胎幹細胞具有分化三胚層(germ layer)的能力，將繼代過後的胚胎幹細胞打入SCID mice內，結果也具此一特性。

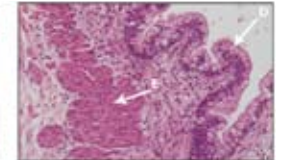
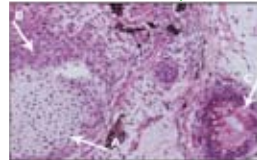
Morphology



Immunostaining



Teratoma Assay



Medium Additive

Description	Size	Cat. No.
Linoleic Acid/Albumin	2.5/500mg	354227
Hydrocortisone	50 mg	354203
Selenous Acid	100 mg	354201
Transferrin, human	10 mg	354204

Surface

Description	Size	Cat. No.
Matrigel hESC-qualified	5 ml	354277
Matrigel	10 ml	354234
Matrigel Growth Factor Reduced	10 ml	354230
Dispase	100 ml	354235
Collagen I, Rat Tail	100 mg	354236
Collagen IV, Human	0.25 mg	354245
Collagen IV, Mouse	1 mg	354233
Fibronectin, Human	1 mg	354008
Laminin, Mouse	1 mg	354232

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Description	Format	Size	Cat. No.	Description	Format	Size	Cat. No.
IL-1 Beta	Human recombinant	5 ug	554602	GM-CSF	Human recombinant	10 ug	550068
	Mouse recombinant	5 ug	554577		Mouse recombinant	10 ug	554586
IL-2	Human recombinant	10 ug	554603	IFN-r	Human recombinant	25 ug	554616
	Mouse recombinant	20 ug	550069		Mouse recombinant	10 ug	554587
IL-3	Human recombinant	10 ug	554604	TNF-alpha	Human recombinant	10 ug	554618
	Mouse recombinant	10 ug	554579		Mouse recombinant	10 ug	554589
IL-4	Human recombinant	5 ug	554605	TNF-Beta	Human recombinant	10 ug	354066
	Mouse recombinant	10 ug	550067	VEGF	Human recombinant	10 ug	551515
IL-5	Human recombinant	5 ug	554606	EPO	Mouse recombinant	5 ug	554597
	Mouse recombinant	5 ug	554581	EGF	Human recombinant	100 ug	354052
IL-6	Human recombinant	10 ug	550071	bFGF	Human recombinant	10 ug	354060
	Mouse recombinant	5 ug	554582	HGF/SF	Human recombinant	5 ug	354103
IL-7	Human recombinant	5 ug	554608	SCF	Human recombinant	10 ug	354105
	Mouse recombinant	2 ug	554583	IGF	Human recombinant	10 ug	354037
IL-8	Human recombinant	20 ug	554609	2.5S NGF	Mouse natural	10 ug	354005
	Human recombinant	5 ug	554611	7S NGF	Mouse natural	100 ug	354009
IL-10	Human recombinant	10 ug	550070	PDGF-BB	Human recombinant	10 ug	354051
	Mouse recombinant	10 ug	550070				
IL15	Human recombinant	5 ug	554630				

Lonza Cell 和 Medium 專賣店

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MSC 間葉幹細胞 小檔案

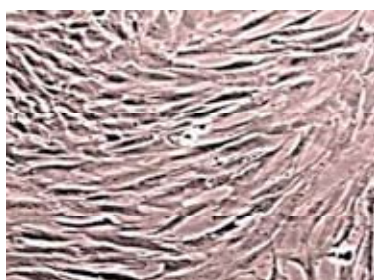
間葉幹細胞主要來自於骨髓，提供造血細胞生長所需的基質和生長因子，可被誘導分化成脂肪細胞、硬骨細胞、軟骨細胞等不同細胞的能力。



Human Mesenchymal Stem Cells and Media		
Cat. No.	Product Description	Size
PT-2501	hMSC Mesenchymal Stem Cells, Cryoamp	750,000 cells
PT-3001	MSCGM Mesenchymal Stem Cell Growth Medium Bulletkit	Kit
PT-3002	hMSC Mesenchymal Stem Cell Osteogenic Differentiation Bullkit	Kit
PT-3003	hMSC Mesenchymal Stem Cell Chondrocyte Differentiation Bullkit	Kit
PT-3004	hMSC Mesenchymal Stem Cell Adipogenic Differentiation Bullkit	Kit
CC-3232	Trypsin/EDTA for Mesenchymal Stem Cells	100 ml

Human Mesenchymal Stem cells and media

- 細胞純度高於傳統的基質培養。
- 細胞繼代培養數次後，依然能維持幹細胞的功能和特性。
- 比骨髓基質細胞有較好的繁衍及分化的能力。



可 用 在

心臟疾病

基因療法

藥物篩選

肥胖

關節炎

骨質疏鬆症