

Micro travel in
Extracellular Matrix

微旅行✈ 細胞外基質





細胞 悠遊自在的旅行 ~

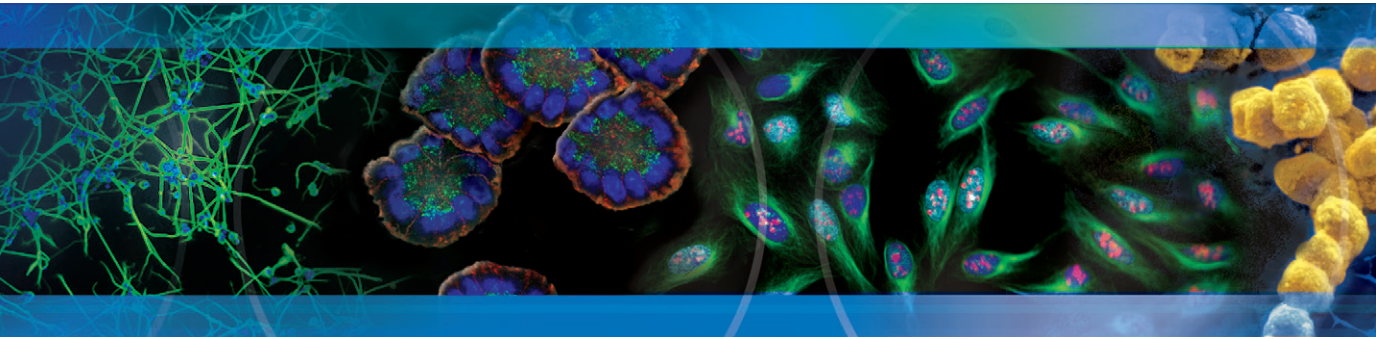
鑒於細胞外基質的多樣性，細胞外基質有多方面的功能。

例如，為細胞提供支持和固定、提供組織間的分離方法、調節細胞間的溝通。

所有細胞外基質調節細胞的動態行為，

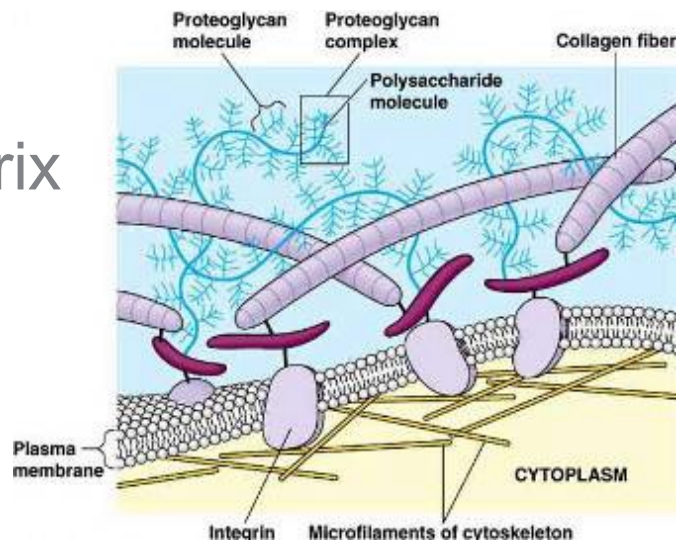
讓細胞悠遊自在的展開一場美好愜意的旅行。



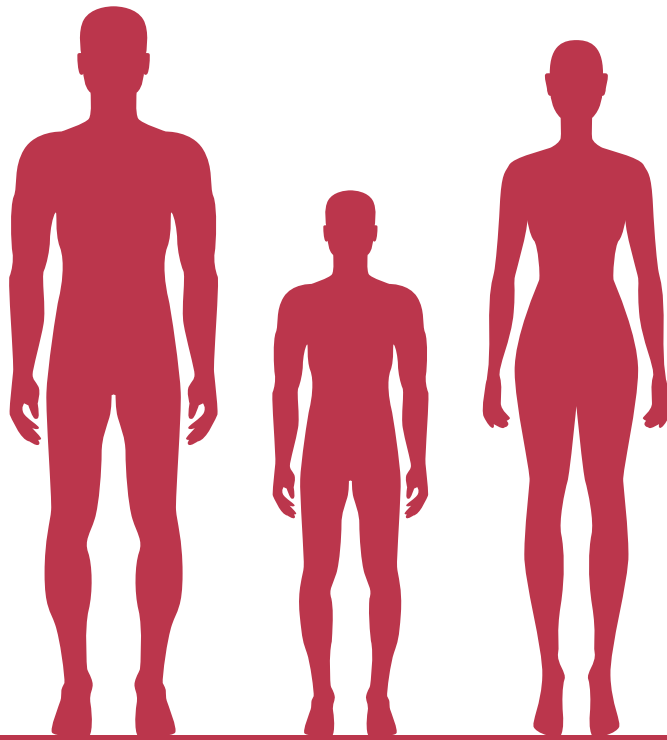


細胞外基質 Extracellular Matrix

- ❶ 讓所有細胞維持在一個組織中
- ❷ 提供骨頭軟骨皮膚等生理構造的特性
- ❸ 濾液及內含物質可以通過不同的組織
- ❹ 定位蛋白的移動告知組織的生長及修復
- ❺ 細胞外基質是傳遞訊息的重要管道

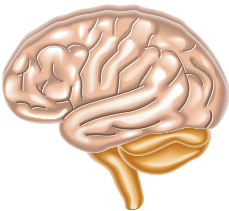


細胞外基質 (Extracellular Matrix, ECM) 是由動物細胞合成並分泌至胞外的大分子糖蛋白，和其所組成的複雜網狀結構；細胞外基質的成份決定結締組織的特性，常見的成份有 collagen、fibronectin、及 laminin 等等。細胞外基質具有多方面的功能，例如支持細胞生長、分化及貼附、做為組織間的區隔、調節細胞間的溝通與遷移。Matrigel 萃取自 Engelbreth-Holm-Swarm (EHS) 小鼠腫瘤之可溶性基底膜，含多種胞外基質蛋白及生長因子，提供研究人員作為體外模擬胞外基質很好的材料，可應用於平面及立體結構之細胞培養外，也常應用於細胞功能性分析，如血管新生相關實驗。

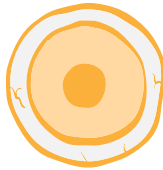


TYPES OF CELLS

Nervous system



Cornea cells



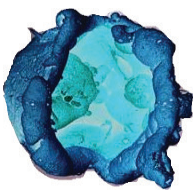
Endothelial cells



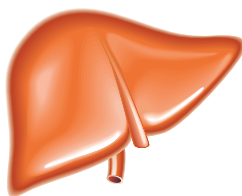
Cartilage



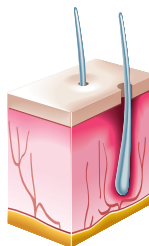
Embryonic stem cells



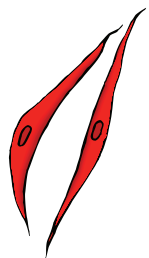
Hepatocytes



Epithelial cells



Skeletal muscle cells





1. Collagen

主要存在於多數的組織和器官中，如皮膚和骨骼。細胞培養的應用方面，可促進細胞貼附力、細胞分裂生長等。Collagen 一般被用來培養 endothelial cells, hepatocytes, muscle cells 等多種細胞，促使細胞貼附於細胞外基質中並提高 primary cells 的存活率，也可用於 Serum-free 或 reduced-serum culture。



2. Vitronectin

Vitronectin 屬於小分子蛋白，藉由 vitronectin receptors 讓細胞貼附於細胞基質中，促進細胞遷移、增加細胞貼附性、細胞分裂、生長及分化等，並協助細胞間的訊號傳遞。



3. Laminin

Laminin 是 Basement membranes 的主要成分之一，負責協助細胞進行多種生理功能，包括細胞貼附、遷移、生長與分化，以及 chemotaxis 等，neurite outgrowth 也都可刺激其生長。



4. Fibronectin

以二聚物 (dimer) 存在於血漿中，另以多聚體 (multimeric form) 形式存在於細胞外基質及細胞表面。fibronectin 最主要的功能是使細胞透過 fibronectin-specific cell surface receptors 與 fibronectin 之 cell binding domain 中的 Arg-Gly-Asp (RGD) 序列作用而促使細胞貼附於細胞外基質中並提高 primary cells 的存活率，也可用於 Serum-free 或 reduced-serum culture。



5. Poly-D-Lysine

Poly-D-Lysine 可以改善 primary neurons, glial cells, neuroblastomas 或是一些 transfected cells 的貼覆及生長，除此之外，還可降低因多次 wash 而造成的細胞脫落。

ECM 種類 & 建議濃度

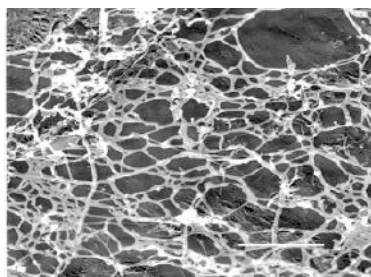
ECM	建議濃度	Endothelial Cells	Epithelial Cells	Neuronal Cells	Glial Cells	Cartilage Cells	Liver Cells	Cornea Cells	Skeletal Muscle Cells	Embryonic Stem Cells
Collagen I	0.2-10 ug/cm ²									
Collagen II	5 ug/cm ²									
Collagen III	0.2-1.0 ug/cm ²									
Collagen IV	1-10 ug/cm ²									
Collagen V	1-5 ug/cm ²									
Collagen VI	1-5 ug/cm ²									
Fibronectin	1-5 ug/cm ²									
Laminin	1-10 ug/cm ²									
Vitronectin	50 ng/cm ²									
Poly-D-Lysine	2.5-5 ug/cm ²									

產品明細

Cat. No.	Description	Size
354008	Fibronectin, human	1 mg
356008	Fibronectin, human	5 mg
356009	Fibronectin, human (25 mg)	5 x 5 mg
354231	Collagen I, bovine	30 mg
354243	Collagen I, human	0.25 mg
354265	Collagen I, human	10 mg
354236	Collagen I, rat tail	100 mg
356236	Collagen I, rat tail (1 g)	10 x 100 mg
354249	Collagen I, rat tail (High concentration)	100 ml
354254	Collagen I, human recombinant	0.25 mg
354257	Collagen II, bovine	5 mg
354244	Collagen III, human	0.25 mg
354255	Collagen III, human recombinant	0.25 mg
354245	Collagen IV, human	0.25 mg
354233	Collagen IV, mouse	1 mg
356233	Collagen IV, mouse (10 mg)	10 x 1 mg
354246	Collagen V, human	0.25 mg
354261	Collagen VI, human	0.5 mg
354232	Laminin, mouse	1 mg
354259	Laminin/Entactin Complex (High concentration), mouse	10.5 mg
354239	Ultrapure Laminin, mouse (Entactin-free)	1 mg
354210	Poly-D-Lysine	20 mg
354238	Vitronectin, human	0.25 mg
354250	PuraMatrix Peptide Hydrogel	5 ml

PuraMatrix Peptide Hydrogel

Cat. No. 354250 (5 ml)



Electron micrograph of BD PuraMatrix™ Peptide Hydrogel [bar, 100 nm]



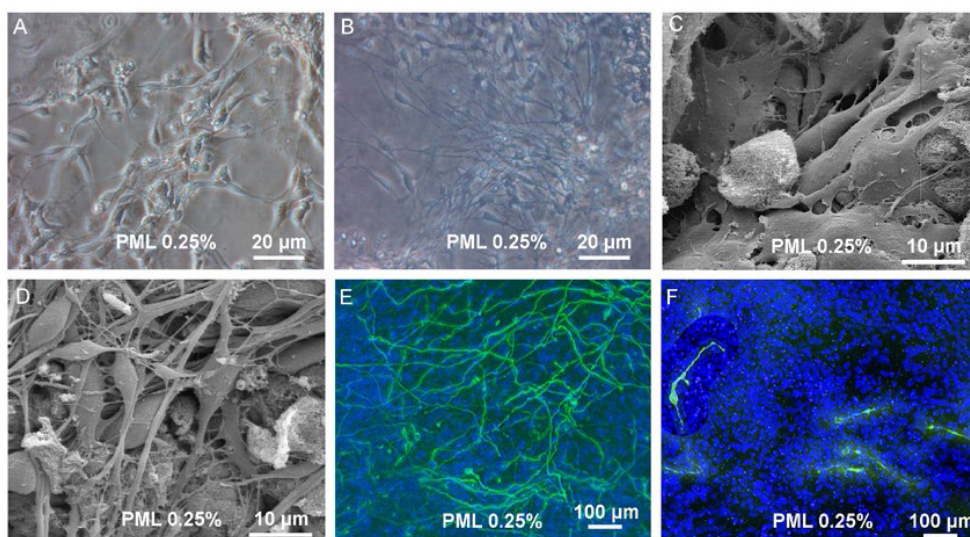
Hydrated 'Hydrogel' environment promotes effective diffusion of nutrients and macromolecules

非動物來源的水凝膠，提供高生物相容性的立體培養環境

- 為合成分子類
- 由 99% 的水以及 1% 合成多肽組成
- 利用酸鹼值及鹽類濃度變化使本產品成膠，孔徑約 50-200nm。
- 不含 growth factor，符合 Growth factor – free Matrigel 的實驗需求
- 生物相容性高，並摒除動物來源的成分及可能的感染源。
- 實驗證實可促進 Hepatocyte progenitor cells, rat PC12 cells, Hippocampal neurons, Endothelial cells 的分化。
- 支持多種初代細胞及轉型細胞的貼附。
- 也可應用在幹細胞生長，腫瘤細胞侵襲，血管新生，共同培養及組織再生等實驗。

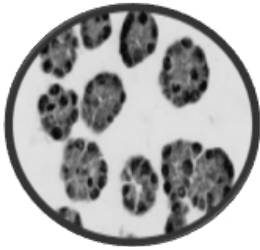
3D culture 最佳工具

使用 Corning PuraMatrix Peptide Hydrogel 培養細胞，可使培養期間拉長至一到兩週，對於 3D culture，部分細胞甚至可維持至六週。

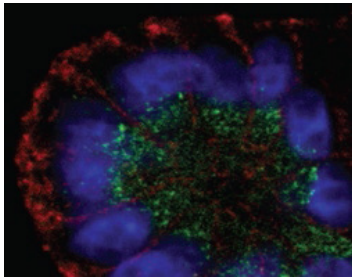


Proliferation and differentiation in 3D scaffold. (A, B) Transmission light picture of proliferating cells in Corning PuraMatrix peptide hydrogel with 0.25% laminin (PML) and differentiating cells in PML 0.25%. (C, D) Scanning electron microscope picture of proliferating cells and differentiated cells in PML 0.25%. (B, D) Upon induction of differentiation one observes the development of a dense 3 dimensional network of processes. (E) Immunocytochemistry for bIII-tubulin and TH of uninduced cells in PML 0.25% and (F) Cells after 7 days of differentiation revealed a dense network of bIII-tubulin positive cells. TH+ cells were

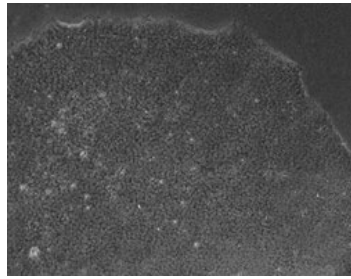
Matrigel



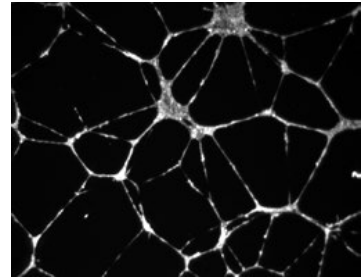
為一種可溶性的基底膜 (basement membrane)，萃取自富含胞外基質 (extracellular matrix) 蛋白的腫瘤細胞 --- Engelbreth-Holm-Swarm (EHS) mouse sarcoma。主成份為 laminin，collagen IV，entactin，以及 heparan sulfate proteoglycan。另外，還含有多種生長因子如 TGF- β 等。



In vitro 3D acinar formation on Matrigel Matrix. Malignant T4-2 mammary epithelial cells were grown in a 3D culture on Corning Matrigel Matrix GFR. Immunofluorescence was used to analyze cell polarity markers for basolateral (β -catenin-red) and apical (GM130-green) membrane domains.



Feeder-free expansion of pluripotent stem cells. Phase contrast images of H9 cells grown on Corning Matrigel hESC-qualified Matrix.



Endothelial Tube Formation. Corning HUVEC-2 cells grown on Matrigel Matrix demonstrating elongation, differentiation and endothelial cell tube formation.

小百科

1. 高濃度 Matrigel 較能維持小鼠皮下注射的腫瘤及血管新生藥物所形成的塊狀物 (plug) 的完整性，便於進一步進行組織切片或其他分析實驗如 hemoglobin 的定量等。
2. Phenol red-free Matrigel 適用於需 color detection assays，血管新生相關實驗如 cyan-metrohemoglobin method (檢測 hemoglobin 含量)，使用 phenol red-free Matrigel® 可避免 phenol red 對於螢光的干擾。
3. Invasion assay 一般建議濃度為 5 mg/ml
4. Tube formation assay 一般建議濃度為 10 mg/ml

Matrigel	Type	Cat. No.	Size	Applications
Standard 一般濃度 (8-11 mg/ml)	Standard 標準款	356234	5 ml	General cell culture
		354234	10 ml	
		356235	50 ml (5 x 10 ml)	
	Phenol red-free 無酚紅	356237	10 ml	General cell culture; assays that require color detection (e.g., fluorescence)
	Growth Factor Reduced (GFR) 低生長因子	356230	5 ml	General cell culture. The GFR product is useful for elucidating the role of growth factors, and gene expression studies.
		354230	10 ml	
	GFR, Phenol red-free 低生長因子，無酚紅	356231	10 ml	General cell culture
High Concentration (HC) 高濃度 (17-21 mg/ml)	Standard 標準款	354248	10 ml	In vivo applications: tumor formation, plug assay, angiogenesis; general cell culture
	Phenol red-free 無酚紅	354262	10 ml	
	GFR 低生長因子	354263	10 ml	
hESC-qualified	幹細胞專用款	354277	5 ml	hESC culture; iPSC culture

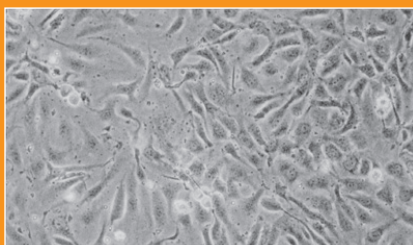
Cellware

不需試實驗條件，無需前置作業，實驗隨時都可做，節省時間超有效率！

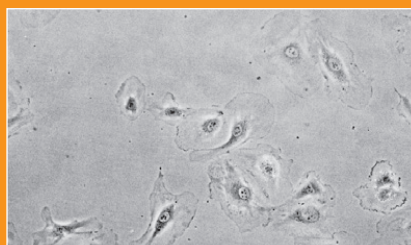
本公司提供 ECM - coated 之耗材，如 flasks, cell culture dishes, multiwell and assay plates, cultureslides 及 coverslips

EFFECTS OF CORNING BIOCOAT ENDOTHELIAL CELL GROWTH ENVIRONMENT ON HUVEC

Collagen I-coated



No coating



BioCoat Collagen I-Cellware
BioCoat Collagen IV-Cellware
BioCoat Fibronectin Cellware
BioCoat Gelatin Cellware
BioCoat Laminin Cellware

BioCoat Matrigel™ Matrix Cellware
BioCoat Poly-Lysine Cellware
BioCoat PDL/LM, PLO/LM and LM/HFN
BioCoat Plates for High Throughput Screening

Corning® BioCoat™ Poly-L-Lysine Cellware

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354515
6-well plates (10 sleeves of 5)	50	356515
96-well plates	5	354516
96-well plates (10 sleeves of 5)	50	356516
35 mm culture dishes	20	354518
35 mm culture dishes (5 sleeves of 20)	100	356518
60 mm culture dishes	20	354517
60 mm culture dishes (5 sleeves of 20)	100	356517
Coverslips 12 mm round No.1 German glass	80	354085

Corning BioCoat Laminin Cellware

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354404
12-well plates	5	354502
24-well plates	5	354412
48-well plates	5	354507
96-well plates	5	354410
35 mm culture dishes	20	354458
60 mm culture dishes	20	354405
100 mm culture dishes	10	354452
150 mm culture dishes	5	354553
25 cm ² plug-seal flasks	10	354533
75 cm ² plug-seal flasks	10	354522

Corning BioCoat Matrigel® Matrix – for Hepatocytes

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354510

Corning BioCoat Matrigel Matrix Plates for Embryonic Stem Cell Culture

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354671

Corning BioCoat Poly-D-Lysine/Laminin Cellware

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354595
24-well plates	5	354619
96-well plates	5	354596
100 mm culture dishes	10	354455
Coverslips 12 mm round No.1 German glass	80	354087
2-well CultureSlides	12	354687
8-well CultureSlides	12	354688

Corning BioCoat Poly-L-Ornithine/Laminin Cellware

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354658
24-well plates	5	354659
96-well plates	5	354657

Corning® BioCoat™ Collagen I Cellware

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354400
6-well plates (10 sleeves of 5)	50	356400
12-well plates	5	354500
12-well plates (10 sleeves of 5)	50	356500
24-well plates	5	354408
24-well plates (10 sleeves of 5)	50	356408
48-well plates	5	354505
48-well plates (10 sleeves of 5)	50	356505
96-well plates	5	354407
96-well plates (10 sleeves of 5)	50	356407
96-well plates	80	356698
96-well black/clear plates	5	354649
96-well black/clear plates (10 sleeves of 5)	50	356649
96-well black/clear plates	80	356700
96-well white/clear plates	5	354650
96-well white/clear plates (10 sleeves of 5)	50	356650
96-well white plates	5	354519
96-well white plates (10 sleeves of 5)	50	356519
96-well white plates	80	356699
96-well white/clear plates	80	356701
35 mm culture dishes	20	354456
35 mm culture dishes (5 sleeves of 20)	100	356456
60 mm culture dishes	20	354401
60 mm culture dishes (5 sleeves of 20)	100	356401
100 mm culture dishes	10	354450
100 mm culture dishes (4 sleeves of 10)	40	356450
150 mm culture dishes	5	354551
25 cm ² vented-cap flasks	10	354484
25 cm ² vented-cap flasks (5 sleeves of 10)	50	356484
75 cm ² vented-cap flasks	5	354485
75 cm ² vented-cap flasks (10 sleeves of 5)	50	356485
150 cm ² vented-cap flasks	5	354486
150 cm ² vented-cap flasks (8 sleeves of 5)	40	356486
Coverslips 22 mm round No.1 German glass	60	354089
4-well CultureSlides	12	354557
8-well CultureSlides	12	354630

Corning BioCoat Poly-D-Lysine Cellware

DESCRIPTION	QTY./CASE	CAT. NO
6-well plates	5	354413
6-well plates (10 sleeves of 5)	50	356413
12-well plates	5	354470
12-well plates (10 sleeves of 5)	50	356470
24-well plates	5	354414
24-well plates (10 sleeves of 5)	50	356414
48-well plates	5	354509
48-well plates (10 sleeves of 5)	50	356509
96-well plates	5	354461
96-well plates (10 sleeves of 5)	50	356461
96-well plates	80	356690
96-well black/clear plates	5	354640
96-well black/clear plates (10 sleeves of 5)	50	356640
96-well black/clear plates	80	356692
96-well white/clear plates	5	354651
96-well white/clear plates (10 sleeves of 5)	50	356651
96-well white/clear plates	80	356693
96-well white plates	5	354620
96-well white plates (10 sleeves of 5)	50	356620
96-well white/opaque plates	80	356691
35 mm culture dishes	20	354467
35 mm culture dishes (5 sleeves of 20)	100	356467
60 mm culture dishes	20	354468
60 mm culture dishes (5 sleeves of 20)	100	356468
100 mm culture dishes	10	354469
100 mm culture dishes (4 sleeves of 10)	40	356469
150 mm culture dishes	5	354550
25 cm ² vented-cap flasks	10	354536
25 cm ² vented-cap flasks (5 sleeves of 10)	50	356536
75 cm ² vented-cap flasks	5	354537
75 cm ² vented-cap flasks (10 sleeves of 5)	50	356537
150 cm ² vented-cap flasks	5	354538
150 cm ² vented-cap flasks (8 sleeves of 5)	40	356538
Coverslips 12 mm round No.1 German glass	80	354086
35 mm Coverslip-bottom dishes No. 1 German glass	20	354077
4-well CultureSlides	12	354577
8-well CultureSlides	12	354632

不同的細胞，都有各自適合的旅程
做好準備，下一趟旅程 ...

隨時再出發！



Micro travel in Extracellular Matrix

