

Exosome 方程式

ExoQuick

EXOCET/
EXOELISA

定量 **exosome**

Exo-Flow IP

抓住特定族群 **exosome**

Antibody

研究 **exosome** 蛋白質表現

SeraMir
+
miRNA qPCR

研究 **exosome** miRNA 表現



Exosome 方程式

ExoQuick + EXOCET/ELISA

定量 **exosome**

P.03

ExoQuick + Exo-Flow IP

抓住特定族群 **exosome**

P.08

ExoQuick + Antibody

研究 **exosome** 蛋白質表現

P.10

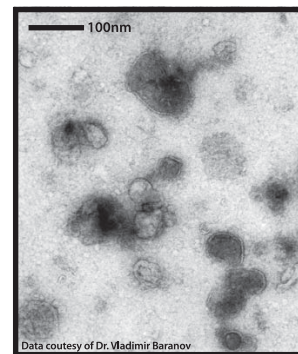
ExoQuick + SeraMir + miRNA qPCR

研究 **exosome** miRNA 表現

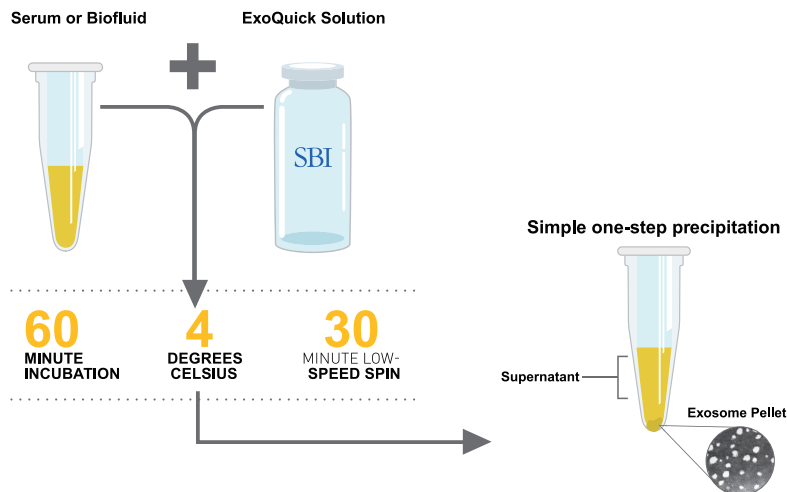
P.12

分離濃縮 exosome **ExoQuick™**

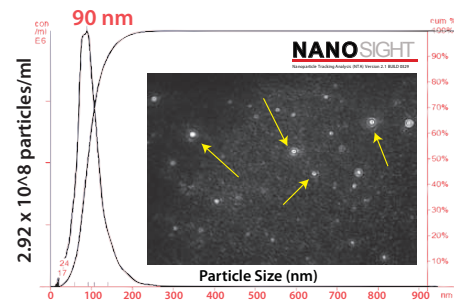
- 不需費時超高速離心
- 不需額外買 DynaBeads 及抗體
- 適用多種樣本：Serum、Ascites fluid、Urine、Spinal fluid、Culture media、Saliva, etc
- 操作簡單，一小時內搞定
- 回收 exosomes 量最多
- 分離完整且具有生物活性 exosomes，後續可進行 functional studies



以電子顯微鏡觀察 exosomes。



NanoSight Particle Analysis



以 NanoSight LM10 分析 ExoQuick 濃縮的 exosomes，確認其完整性及濃度。

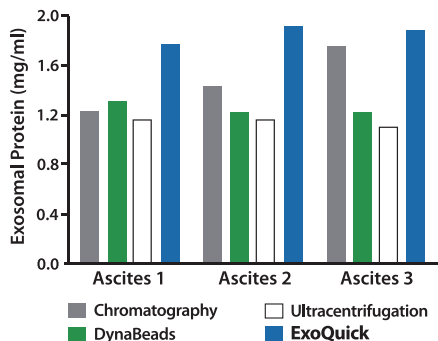


分離濃縮 exosome ExoQuick™

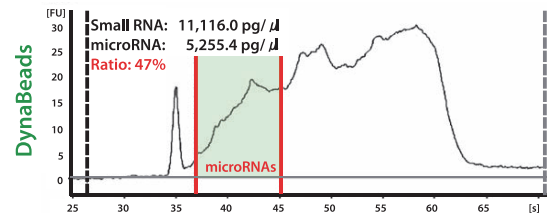
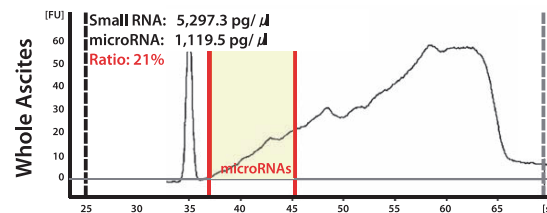
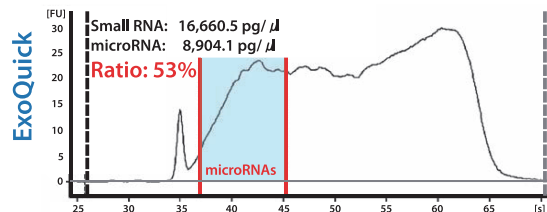
比較 exosomal protein、microRNA 產量

利用 ExoQuick、chromatography、ultracentrifugation 及 anti-EpCAM magnetic DynaBeads 純化 exosomes

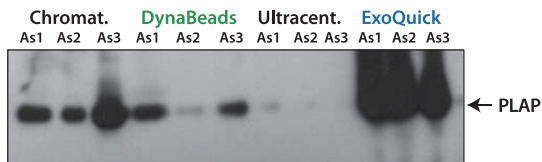
ExoQuick-萃取最多量的 exosomal proteins



ExoQuick-萃取最多量的 exosomal microRNAs



Placental Alkaline Phosphatase Biomarker Enrichment



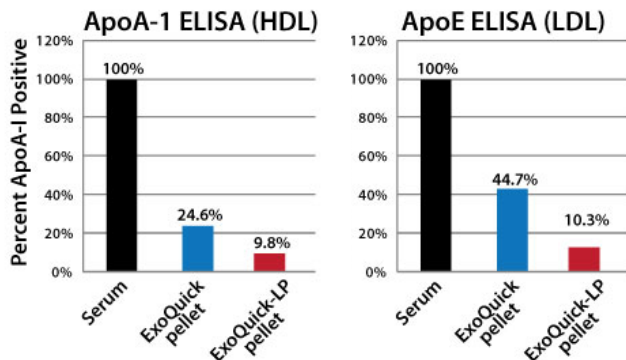
Placental Alkaline Phosphatase Biomarker Enrichment

分離濃縮 exosome ExoQuick-LP

ExoQuick-LP

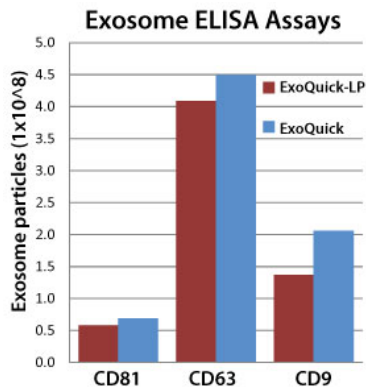
- 去除血清或血漿中的 lipoprotein，避免這些 particles 中 miRNA 干擾研究 exosome 相關的 miRNA
- 使用 pre-clearing reagents，有效移除血清或血漿中的 lipoprotein particles，再使用 ExoQuick，就能輕鬆分離其中的 exosomes

可大量去除 HDL 和 LDL 中的 lipoprotein particles



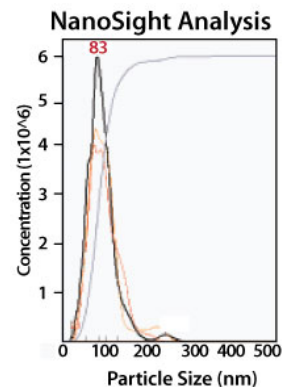
以 ELISA 證明 ExoQuick-LP 能大量去除 HDL 和 LDL 中的 lipoprotein particles。

不會造成 exosomes 的損失



以 ELISA 測量 exosomes 數目，證明 ExoQuick-LP 不會造成 exosomes 的損失。

不影響 exosomes 完整度



以 NanoSight tracking analysis 測量使用 ExoQuick-LP 分離的 exosomes 大小，證明 ExoQuick 不會影響 exosomes 完整度。

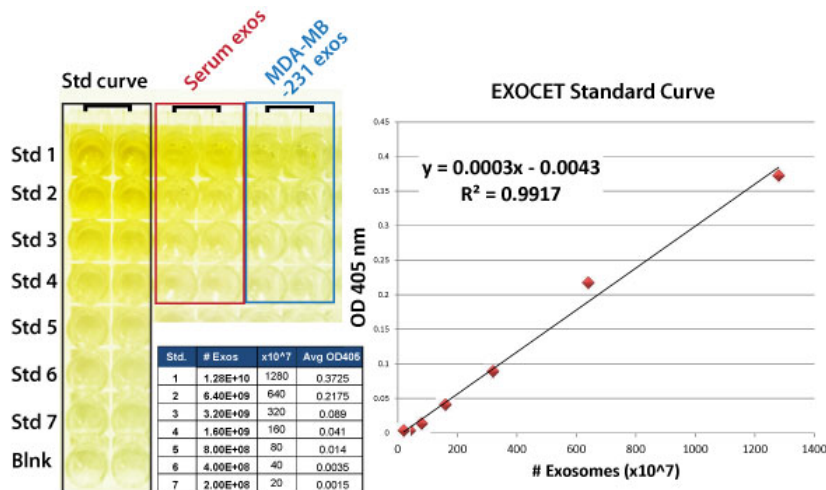


定量 exosome

ExoQuick™ + EXOCET/ExoELISA

EXOCET

- 直接測量 Acetyl-CoA Acetylcholinesterase (AChE) activity
- AChE 已被證實存在於 serum、stem cell、cancer cell line 及 MSC exosomes
- Human、mouse、rat exosomes 都適用
- 以 OD405 讀取數值，輕鬆定量
- 只需 20 分鐘即可完成
- 附有 standard (經 NanoSight 分析過)，準確定量

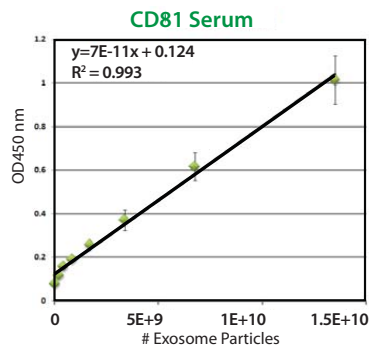
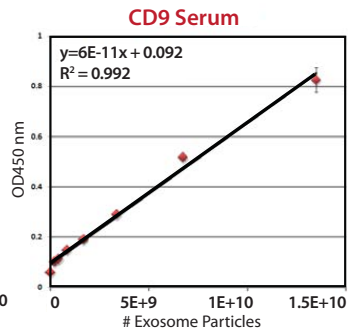
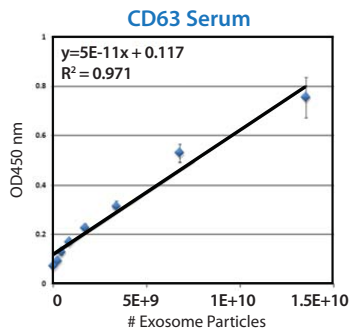
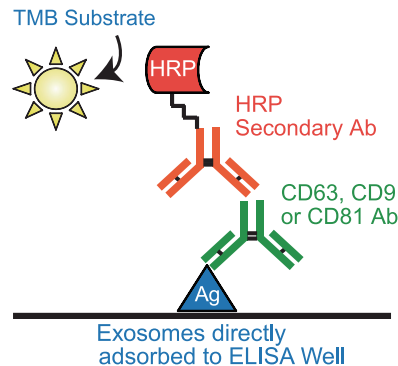


定量 exosome

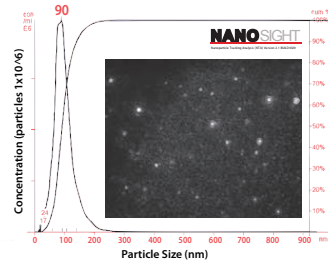
ExoQuick™ + EXOCET/ExoELISA

ExoELISA

- 提供三種 ELISA kits : CD63、CD9、CD81
- 每組均附 protein standard，可進行蛋白定量
- 為 96-well ELISA plate 型式 (12 條 8 連排)，操作方便



ExoELISA Standards
Calibrated by NanoSight

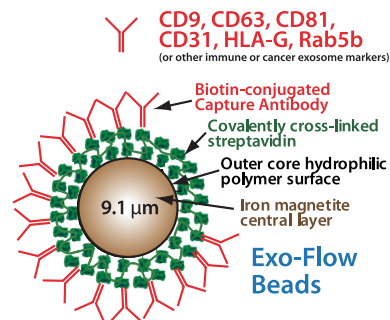


抓住特定族群的 exosome ExoQuick™ + Exo-Flow IP

Exo-Flow96 and 32 Exosome IP

- 利用 CD9、CD63、CD81 進行 exosome immunopurification
- 快速且高通量純化 exosomes (一次純化 32 或 96 個樣本)
- 磁珠表面積大，抓取 exosomes 的效率極高
- 能直接從血清或血漿純化 exosomes，不需事先濃縮或分離 exosomes
- 純化後的 exosomes 能再被完整 elute 出來，方便進行 functional studies 及 exoRNA 和 protein biomarker analysis

Structure and Gating of Exo-Flow Beads



可明顯觀察到結合於磁珠的 exosomes，操作方便。

Exosome Bead Capture Photo

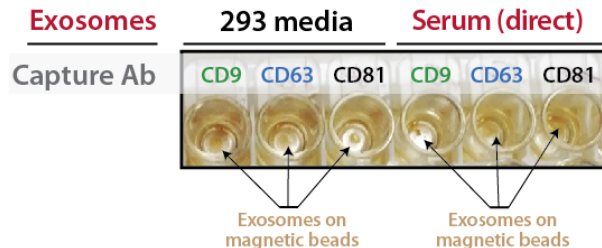
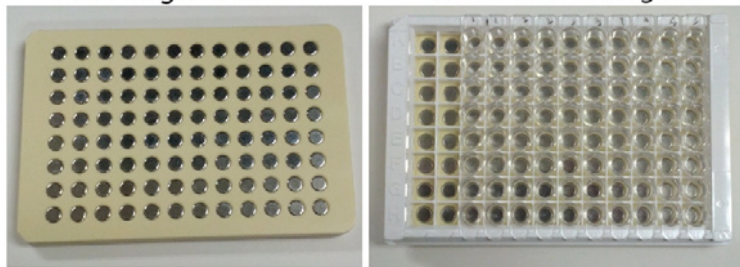


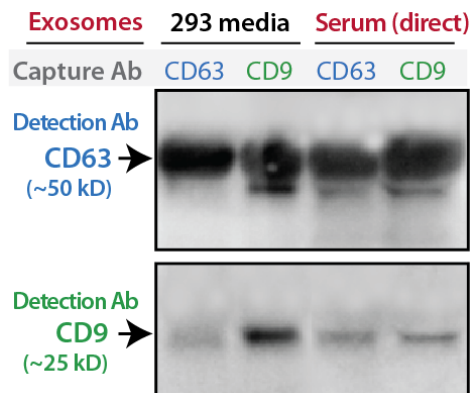
Plate Magnet alone

Clear Plate on Magnet



抓住特定族群的 exosome

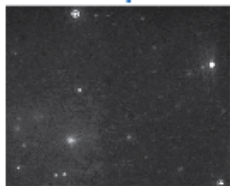
ExoQuick™ + Exo-Flow IP



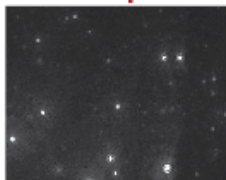
Western Blot Analysis

以 Western blot 分析使用 Exo-Flow IP kit 純化的 HEK 293 media exosomes 及 serum exosomes。

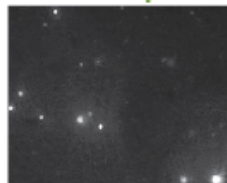
293 Exosomes
CD81 capture



Serum Exosomes
CD9 capture



Serum Exosomes
CD63 capture



NanoSight Exosome Analysis

使用 Exo-Flow IP kit 純化 HEK 293 media exosomes (concentrated by ExoQuick-TC) 及 serum exosomes，以 NanoSight analysis 分析 exosomes 大小及數目。



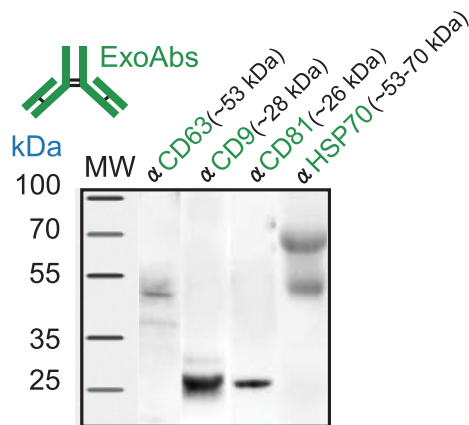
研究 exosome 蛋白質表現

ExoQuick™ + Antibody

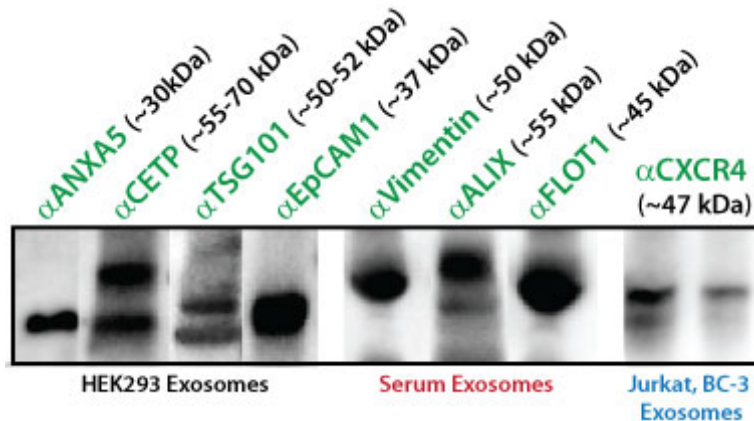
Exosome Antibody

- 提供 Western blots 專用的 anti-exosome marker antibody
- Exosome marker antibody : CD63、CD9、CD81、Hsp70、CETP、ANXA5-1、TSG101、EpCam、Vimentin、ALIX、FLOTILLIN-1 及 CXCR4
- 每組抗體均附二抗 (goat anti-rabbit IgG HRP)

exosome markers and tissue specific exosome markers



ExoQuick Exosome Serum Western Analysis

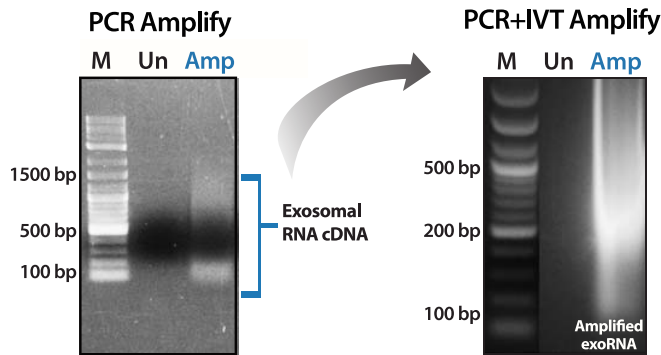


研究 exosome miRNA 表現

ExoQuick™ + SeraMir + miRNA qPCR

SeraMir™ Exosome RNA Amplification Kit

- 以 phenol-free lysis buffer 及 spin column 純化 exoRNA
- 降低變異性：以 ExoQuick 分離 exosomes
- 增加敏感度：放大 exoRNA，以進行 qPCR
- 獲得更多 data：以 T7 IVT amplified sense exoRNA 進行 microarrays 或 NextGen Sequencing



左圖：利用 PCR 反應放大 exoRNA cDNA 產量。

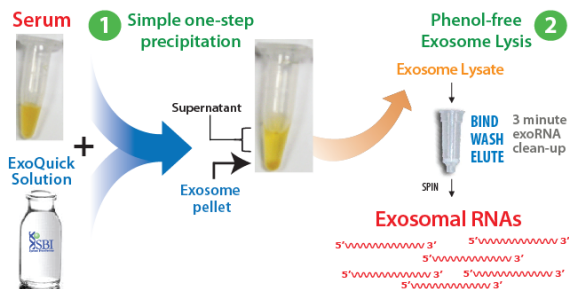
右圖：利用 T7 in vitro transcription 放大 sense exoRNAs，後續可做 Microarrays 以及 NextGen Sequencing。



研究 exosome miRNA 表現

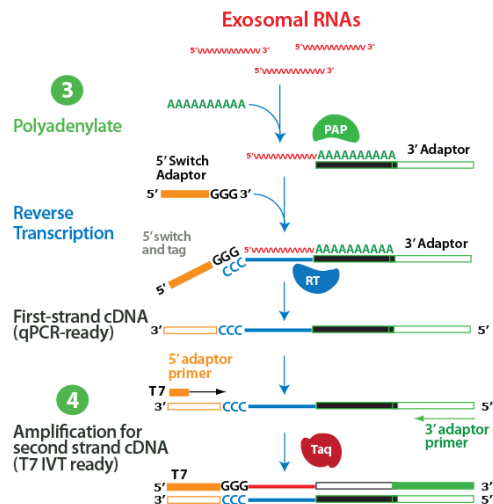
ExoQuick™ + SeraMir + miRNA qPCR

利用 **SeraMir Exosome RNA Purification Kit**
純化 **serum exoRNAs**



- 1 利用 ExoQuick one-step precipitation，濃縮 serum exosomes。
- 2 利用 phenol-free lysis buffer 及 spin columns，純化 exosome RNAs (exoRNAs)。
- 3 利用 polyA polymerase 於 exoRNA 3' end 添加 polyA tail；再添加 3' Adaptor、5' Switch Adaptor 及 RTase，進行反轉錄並形成 cDNA。此時的產物可進行 qPCR 相關實驗。
- 4 若想放大 cDNA 產量，可利用 SeraMir PCR amplification primer mix 以及 Taq polymerase，進行 PCR 反應。
若想放大 sense exoRNAs 產量，可利用放大後 cDNA 以及 T7 RNA polymerase，進行 *in vitro* transcription。

利用 **SeraMir Exosome RNA Amplification Kit**，
將 **exoRNAs** 反轉錄為 cDNA

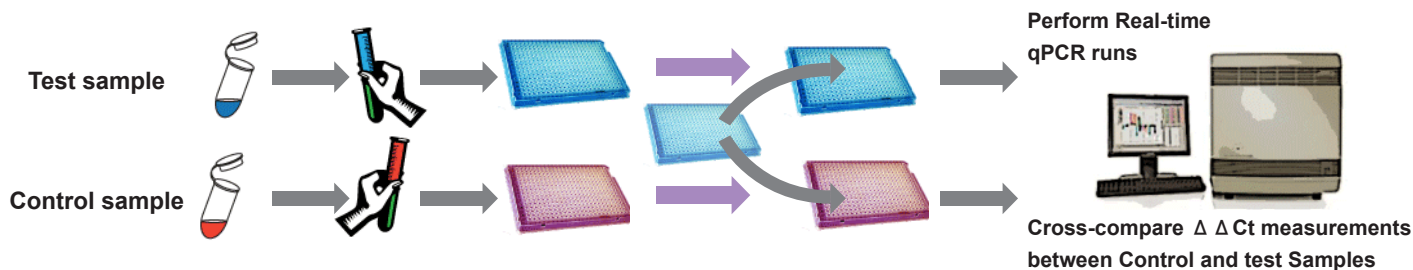


研究 exosome miRNA 表現

ExoQuick™ + SeraMir + miRNA qPCR

Exosome miRNA qPCR Profiling kit

- 利用 qPCR 反應，精準定量 miRNA 含量
- 內含 380 種 miRNAs，三種 control
- 內含 excel 版軟體，數據分析方便



準備 exoRNAs

將 exoRNAs 反轉
錄成 cDNA

與 SYBR qPCR premix, 3'
adaptor primer 混合，分裝
到 384 孔盤

從 miRNA qPCR profiler plate
取 1 μ l miRNA 5' primer，分裝
到相對應的孔洞

進行 qPCR reaction

Cat No		Description
Isolation		
ExoQuick	EXOQ5A-1	ExoQuick exosome precipitation solution (5 ml)
	EXOQ20A-1	ExoQuick exosome precipitation solution (20 ml)
	EXOQ5TM-1	ExoQuick Plasma prep and Exosome precipitation kit (5 ml ExoQuick plus 500 ul Thrombin at 500U/mL)
ExoQuick-TC	EXOTC10A-1	ExoQuick TC 10ml
	EXOTC50A-1	ExoQuick TC 50ml
ExoQuick-LP	EXOLP5A-1	ExoQuick-LP for lipoprotein pre-clear & exosome isolation
Purification		
Exo-Flow IP	EXOFLOW32A-CD63	Exo-Flow32 CD63 IP kit
	EXOFLOW32A-CD81	Exo-Flow32 CD81 IP kit
	EXOFLOW32A-CD9	Exo-Flow32 CD9 IP kit
	EXOFLOW32A-Tetra	Exo-Flow32 Tetra IP kit (CD9, CD63, CD81)
	EXOFLOW96A-CD63	Exo-Flow96 CD63 IP kit
	EXOFLOW96A-CD81	Exo-Flow96 CD81 IP kit
	EXOFLOW96A-CD9	Exo-Flow96 CD9 IP kit
	EXOFLOW96A-Tetra	Exo-Flow96 Tetra IP kit (CD9, CD63, CD81)
Quantitation		
EXOCET	EXOCET96A-1	EXOCET Exosome Quantitation Kit
ELISA	EXOEL-CD63A-1	Exosome ELISA Complete Kit (CD63 detection) 96 rxns
	EXOEL-CD81A-1	Exosome ELISA Complete Kit (CD81 detection)
	EXOEL-CD9A-1	Exosome ELISA Complete Kit (CD9 detection) 96 reactions



Cat No		Description
Detection		
Antibody	EXOAB-CD63A-1	Anti-CD63 Antibody (rabbit anti-human) with goat anti-rabbit HRP secondary antibody
	EXOAB-CD81A-1	Anti-CD81 Antibody (rabbit anti-human) with goat anti-rabbit HRP secondary antibody
	EXOAB-CD9A-1	Anti-CD9 Antibody (rabbit anti-human) with goat anti-rabbit HRP secondary antibody
	EXOAB-Hsp70A-1	Anti-Hsp70 Antibody (rabbit anti-human) with goat anti-rabbit HRP secondary antibody
	EXOAB-KIT-1	ExoAb Antibody Kit (CD9, CD63, CD81, Hsp70 antibodies, rabbit anti-human) with goat anti-rabbit HRP secondary antibody
	EXOAB-CETP-1	Anti-CETP Antibody (polyclonal rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-FLOT1-1	Anti-FLOT1 Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-EPCAM1-1	Anti-EpCam Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-TSG101-1	Anti-TSG101 Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-CXCR4-1	Anti-CXCR4 Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-VMTN-1	Anti-Vimentin Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-ALIX-1	Anti-ALIX Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-ANXA5-1	Anti-ANXA5 Antibody (rabbit anti-human, mouse, rat) with goat anti-rabbit HRP secondary antibody
	EXOAB-POS-1	Human Exosome lysate positive protein control (10ug/ul), Size 50 ul
Discovery		
SeraMir	RA800A-1	SeraMir Exosome RNA Amplification Kit
	RA800TC-1	SeraMir Exosome RNA Amplification kit from Media and Urine (10ml ExoQuick-TC and 10 exoRNA columns)
	RA806A-1	SeraMir Exosome RNA Purification kit (5ml ExoQuick and 20 exoRNA columns)
	RA806TC-1	SeraMir Exosome RNA Purification kit (10ml ExoQuick-TC and 10 exoRNA columns) 10 preps
miRNA qPCR	RA810A-1	SeraMir Exosome RNA 384 microRNA qPCR Profiler Assay Set
	RA811A-1	Mouse SeraMir Exosome RNA 384 microRNA qPCR Profiler Assay Set (20 assays)





Exosome 方程式

