

**Today,
the Genomics.**



**THE
FUTURE
IS
TODAY**

**Tomorrow,
the Lipidomics
Sustainable,
the MultiOmics.**



關於我們

台灣活性脂質股份有限公司 (Taiwan-BioActive Lipid ; T-BAL)，是台灣第一間以提供全脂質代謝體測量服務為主體的企業。獨家代理德國 Lipotype GmbH Ltd. 公司所發展之高端『機槍式質譜』 (Shotgun Mass Spectrometry) 技術，得以『高通量』 (High Through-put) 的方式，獲得全面的脂質代謝體分析。並與 Nightingale Health Plc. 公司合作，以核磁共振光譜法 (Nuclear Magnetic Resonance spectroscopy ; NMR) 提供『低成本』 High Through-put 的血液、尿液代謝體檢測服務，以該技術發表之數據更發表於英國生物樣本資料庫 (UK Biobank)。

除了獨家代理 Lipotype GmbH Ltd. 的分析技術之外，T-BAL 獨家開發的『全脂質大數據分析』的服務，以及『跨數據平台』之基因體數據串接服務，更豐富了精準醫學的內涵。

T-BAL 成員為一群熱愛生物醫學，努力推動新一代跨領域、跨平台、推動精準醫學的生物醫學家所組成。在基因體檢測風起雲湧的時代，T-BAL以提供精準健康檢測、定義精準健康指數、以及提供全方位的精準健康指導為服務內容。



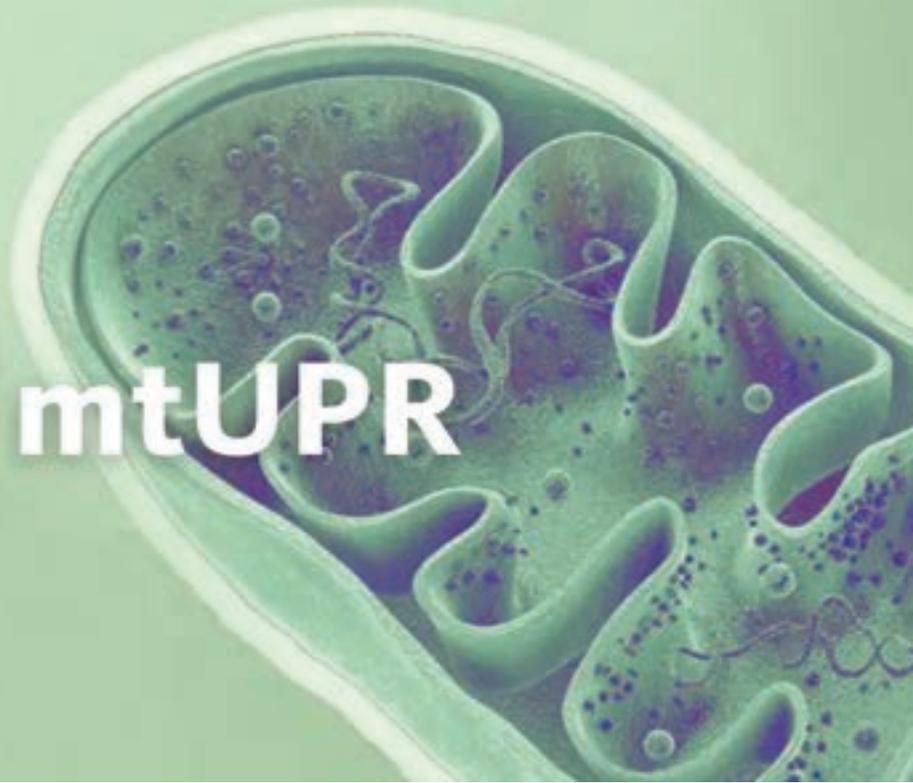
脂質體學

脂質體學為代謝體組學之一，公司技術為大規模定性和定量超過4200種脂質，在各種組織樣本提供脂質生理與病理上之變化，準確全面地提供生物樣品之全脂質信息圖譜。

脂質體學與代謝體學、基因體學乃至蛋白體學進行組合，可為脂質相關疾病的預警、診斷和治療提供新的觀點與方法。

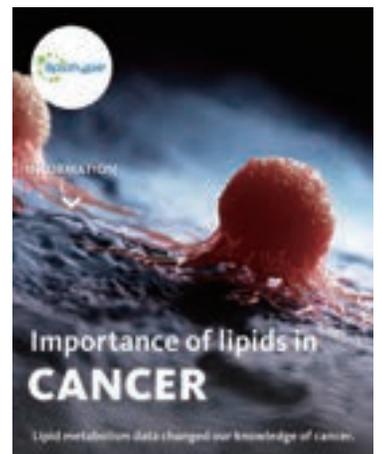
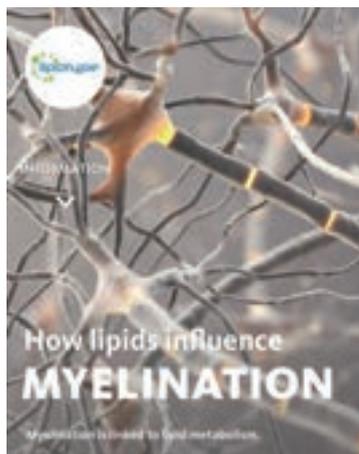
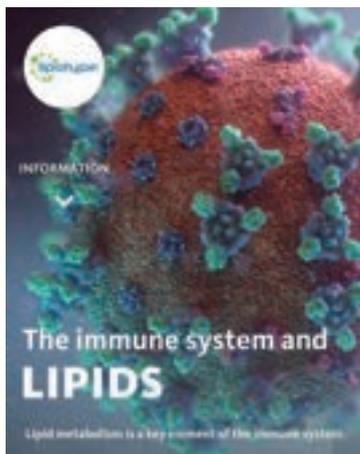


Phases of mtUPR



全脂質體分析研究項目

相關研究包括心血管疾病、神經科學、代謝症候群、癌症、幹細胞、免疫、疫苗、傳染病、食品科技、新農業、畜牧等研究項目。

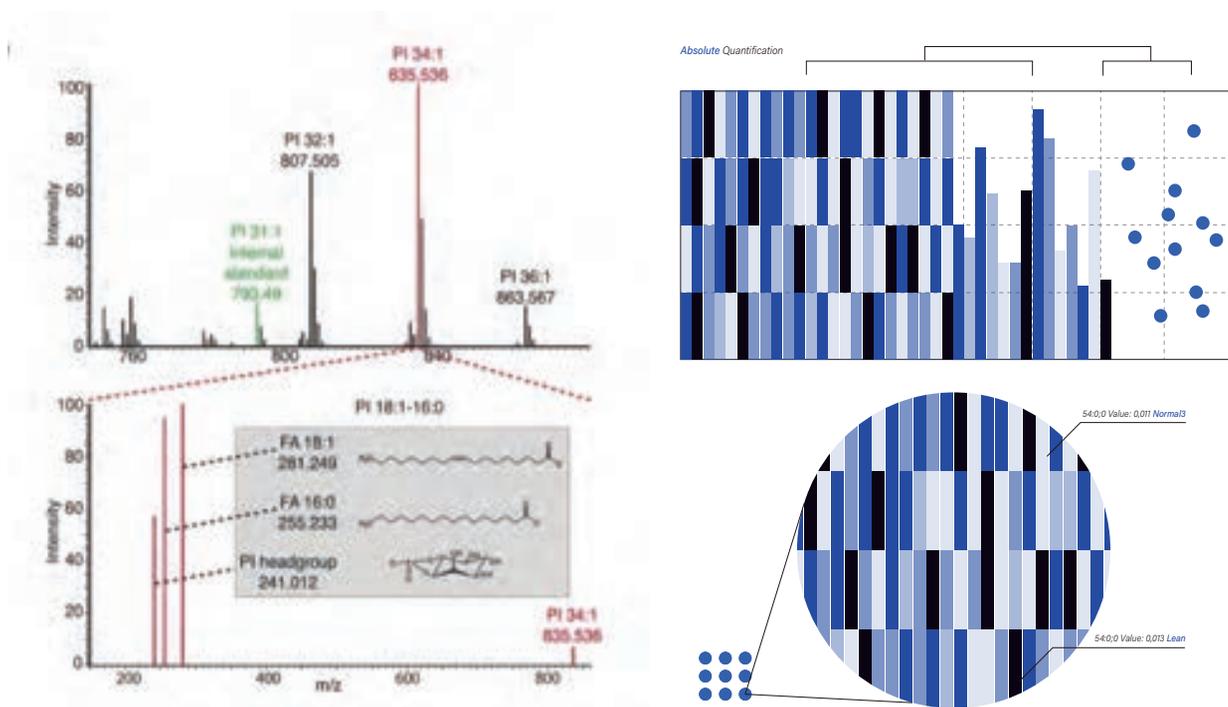


機關槍全脂質體掃描技術

經由獨家代理德國 Lipotype GmbH Ltd. 公司所發展之高端『機槍式質譜』(Shotgun MS) 技術，得以『高通量』(High Through-put) 的方式，獲得全面的脂質代謝體分析。此項技術優勢，遠遠領先全球同業。

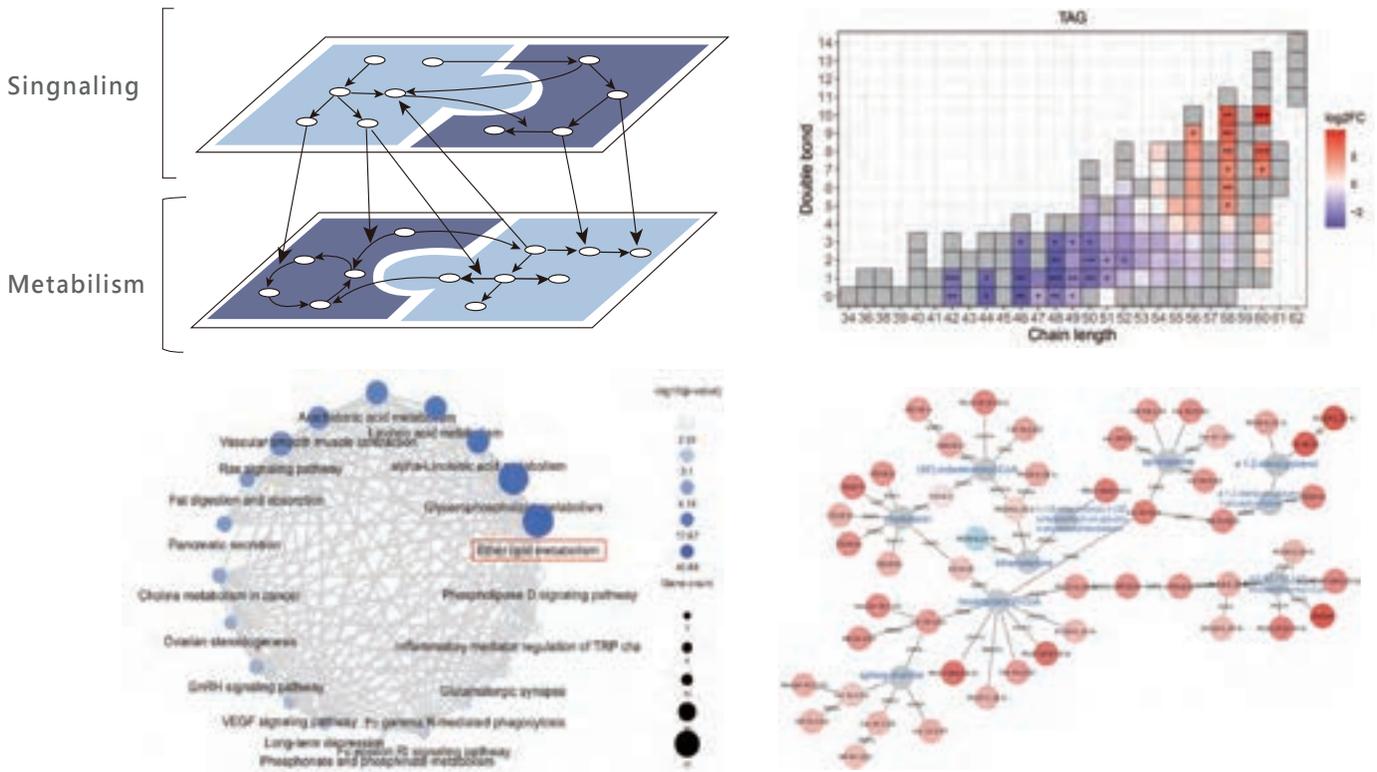
除了獨家代理 Lipotype GmbH Ltd. 的分析技術之外，T-BAL 獨家開發的『全脂質大數據分析』的服務，以及『跨數據平台』之基因體數據串接服務，豐富了精準醫學的內涵。

Shotgun Lipidomics Workflow

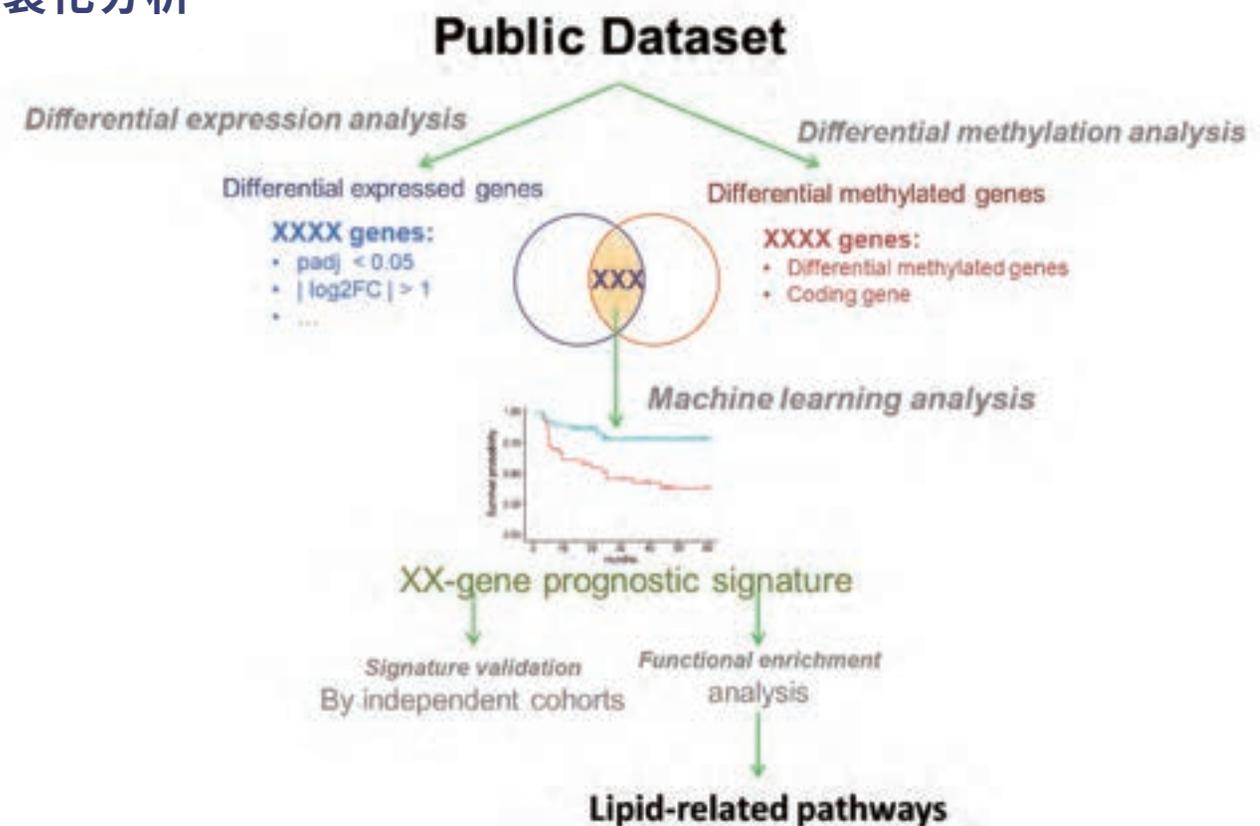


跨體學資訊分析

體學 (omics) 一直是當前系統性生物醫學的研發重點，不同體學代表不同層次的生物意義。T-BAL 擁有全脂質體、代謝體的分析技術，更整合了基因體，提供跨體學 (trans-omics) 的數據分析服務。藉由跨體學分析技術，找出不同生物訊號間的關聯性，將能更準確的標靶訊息，應用於精準醫療。



客製化分析



脂質數據呈現方式採系統串連平台

提供『Trans-Omics』數據分析服務，利用 NGS 與 Lipid profiling 整合性服務，從測量到數據整理提供客製化數據分析利於客戶精準的判讀數據。

生物資訊分析	全脂質體分析
測量數據質量分析	✓
脂質總量統計分析	✓
脂質類別表現量統計分析	✓
脂質類別組成分析	✓
脂質差異表現分析	✓
顯著脂質富集分析	✓
樣品分群分析 (Clustering, PCA...)	✓
脂質表現聚類分析	✓
脂質差異表現各組間對照分析	✓

GENOMICS

NGS次世代定序
Microarray 基因晶片

ANALYSIS

全脂質分析
大數據分析

LIPIDOMICS

High throughput Shotgun MS
Untarget analysis
Target analysis



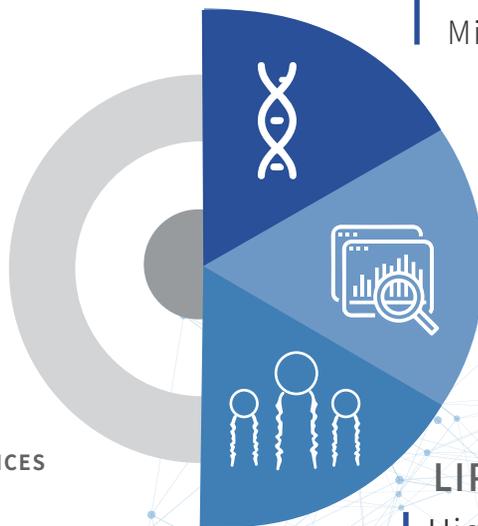
脂質體圖譜分析
LIPID PROFILING ANALYSIS



跨體學分析
TRANS-OMICS DATA ANALYSIS



客製化分析服務
CUSTOMIZED DATA ANALYSIS SERVICES



■ 高通量、高質量、高辨識度的檢測分析

全脂質測量服務含括膜脂質、儲存脂質等共『66種脂質種類』，超過『4200種脂質』。數據分析使用最新的辨識系統『LipotypeXplorer』，據此獲得快速以及非偏見式的之質變份及定量，而非使用過往內建式的標準曲線。

■ 檢測項目

CATEGORIES

Fatty Acyls

Glycerolipids

Phospholipids

Sphingolipids

Sterol Lipids

GROUPS

Fatty Acids

Fatty Esters

Fatty Amides

Octadecanoids

Eicosanoids

Docosanoids

Glycerol Esters

Esters Phospholipids

Ether Phospholipids

CDP-Glycerols

Diphosphatidylglycerols

Ceramide Lipids

Cerebrosides

Diglycosylceramides

Globosides

Gangliosides

Sulfoglycosphingolipids

Phosphosphingolipids

Cholesterol Lipids

Ergosterol Lipids

CLASSES

FFA

LiFA

SCFA

MCFA

LCFA

SFA

UFA

CAR

NAE

OxiOME

OxiODE

Pgd

LT

TX

LX

Isop

oxieTrE

OxiETE

OxiEPE

MaR

RvD

PD

oxiDPA

oxiDHA

TAG

DAG

PG

PI

PS

LPA

LPC

PA

PC

LPE

LPG

LPI

LPS

PE

PCO-

PEO-

LPC O-

LPE O-

CDP-DAG

CL

Cer

EOCer

NCer

ACer

HexCer

DiHexCer

Gb3

Gb4

GM

GD

GT

GQ

Sulf

SM

CerPE

IPC

MIPC

M(IP)₂C

Chol

CE

Erg

EE



高階測量

1. 絕對定量
2. 基本數據輸出
3. Free sterol (Yeast only)
4. Turbo Delivery
5. 基礎數據分析報告書
6. 最低檢測樣本數:20個

Supecies:14種
Subspecies:10種

五週~六週



標準測量

1. 絕對定量
2. 基本數據輸出
3. Free sterol (Yeast only)
4. 基礎數據分析報告書
5. 最低檢測樣本數:15個

Supecies:14種
Subspecies:10種

七週~八週



基本測量

1. 絕對定量
2. 基本數據輸出
3. 基礎數據分析報告書
4. 最低檢測樣本數:10個

Supecies:4種
Subspecies:7種

六週~七週

脂質種類 (樣本類型：提供細胞、微生物、血液、皮膚、組織與器官等生物檢體)

Lipid Class	基本測量	標準/高階測量	MS mode	Structure
CER(ceramide)神經醯胺		✓	MS	Species
CL(cardiolipin)心磷脂		✓	MS	Species
HEXCER(hexosylceramide)己糖基神經醯胺		✓	MS	Species
LPA(lyso-phosphatidate)溶血磷脂		✓	MS	Species
LPC(lyso-phosphatidylcholine)溶血磷脂醯膽鹼		✓	MS	Species
LPC O-(ether-linked LPC)溶血磷脂醯膽鹼		✓	MS	Species
LPE(lyso-phosphatidylethanolamine)溶血磷脂醯醇胺		✓	MS	Species
LPE O-(ether-linked LPE)溶血磷脂醯醇胺		✓	MS	Species
LPI(lyso-phosphatidylinositol)溶血磷脂醯肌醇		✓	MS	Species
LPS(lyso-phosphatidylserine)溶血磷脂醯絲胺酸		✓	MS	Species
SM(sphingomyelin)鞘磷脂	✓	✓	MS	Species
TAG(triacylglycerol)三甘酸磷脂	✓	✓	MS MS	Species
CE(cholesteryl ester)膽固醇酯	✓	✓	MS MS	subspecies
DAG(diacylglycerol)甘油二酯	✓	✓	MS MS	subspecies
PA(phosphatidate)磷脂酸	✓	✓	MS MS	subspecies
PC(phosphatidylcholine)磷脂醯膽鹼	✓	✓	MS MS	subspecies
PC O-(ether-linked PC)磷脂醯膽鹼		✓	MS MS	subspecies
PE(phosphatidylethanolamine)磷脂醯乙醇胺	✓	✓	MS MS	subspecies
PPE O-(ether-linked PE)磷脂醯乙醇胺		✓	MS MS	subspecies
PG(phosphatidylglycerol)磷脂醯甘油	✓	✓	MS MS	subspecies
PI(phosphatidylinositol)磷脂醯肌醇	✓	✓	MS MS	subspecies
PS(phosphatidylserine)磷脂醯絲胺酸	✓	✓	MS MS	subspecies

血液樣本

Lipid Class	基本測量	標準/高階測量	MS mode	Structure
PC (phosphatidylcholine)	✓	✓	MS MS	subspecies
PE (phosphatidylethanolamine)	✓	✓	MS MS	subspecies
PI (phosphatidylinositol)	✓	✓	MS MS	subspecies
DAG (diacylglycerol)	✓	✓	MS MS	subspecies
TAG (triacylglycerol)	✓	✓	MS MS	Species
SM (sphingomyelin)	✓	✓	MS	Species
CHOL (free cholesterol)	✓	✓	MS	Class
CE (cholesteryl ester)	✓	✓	MS MS	Species
CER (ceramide)	✓	✓	MS	Species
LPC (lyso-phosphatidylcholine)	✓	✓	MS	Species
LPE (lyso-phosphatidylethanolamine)	✓	✓	MS	Species
PC O-(ether-linked PC)	✓	✓	MS MS	subspecies
PE O-(ether-linked PE)	✓	✓	MS MS	subspecies
PA(phosphatidate)		✓	MS MS	subspecies
PG (phosphatidylglycerol)		✓	MS MS	subspecies
PS (phosphatidylserine)		✓	MS MS	subspecies
LPA (lyso-phosphatidate)		✓	MS	Species
LPI (lyso-phosphatidylinositol)		✓	MS	Species
LPS (lyso-phosphatidylserine)		✓	MS	Species
LPC O- (ether-linked LPC)		✓	MS	Species
LPE O- (ether-linked LPE)		✓	MS	Species
HEXCER (hexosylceramide)		✓	MS	Species

酵母菌樣本

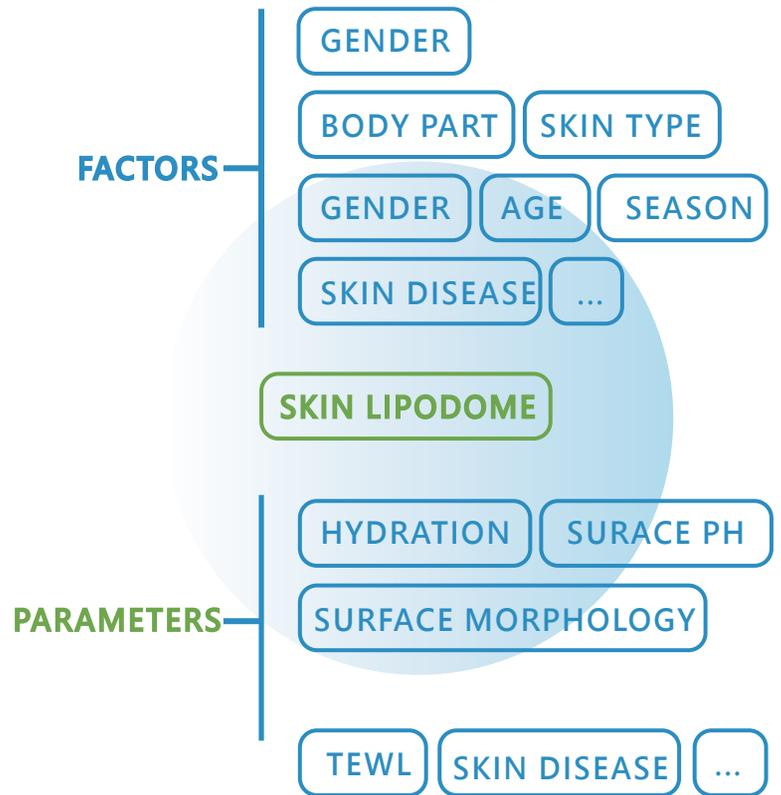
Lipid Class	基本測量	標準/高階測量	MS mode	Structure
PA (phosphatidate)	✓	✓	MS MS	subspecies
PC (phosphatidylcholine)	✓	✓	MS MS	subspecies
PE (phosphatidylethanolamine)	✓	✓	MS MS	subspecies
PG (phosphatidylglycerol)	✓	✓	MS MS	subspecies
PI (phosphatidylinositol)	✓	✓	MS MS	subspecies
PS (phosphatidylserine)	✓	✓	MS MS	subspecies
DAG (diacylglycerol)	✓	✓	MS MS	subspecies
TAG (triacylglycerol)	✓	✓	MS MS	Species
EE (ergosteryl ester)	✓	✓	MS	Species
LPA (lyso-phosphatidate)		✓	MS	Species
LPC (lyso-phosphatidylcholine)		✓	MS	Species
LPE (lyso-phosphatidylethanolamine)		✓	MS	Species
LPG (lyso-phosphatidylglycerol)		✓	MS	Species
LPI (lyso-phosphatidylinositol)		✓	MS	Species
LPS (lyso-phosphatidylserine)		✓	MS	Species
CER (ceramide)		✓	MS	Species
CL (cardiolipin)		✓	MS	Species
IPC (inositolphosphorylceramide)		✓	MS	Species
MIPC (mannosyl-inositol phosphorylceramide)		✓	MS	Species
M(IP)2C (mannosyl-di-(inositol phosphoryl) ceramide)		✓	MS	Species
CDP-DAG,(CDP-diacylglycerol)		✓	MS MS	subspecies

動物樣本

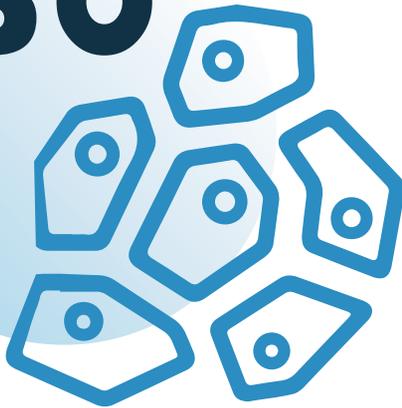
Lipid Class	基本測量	標準/高階測量	MS mode	Structure
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PC(phosphatidylcholine)	✓	✓	MS MS	subspecies
PE (phosphatidylethanolamine)	✓	✓	MS MS	subspecies
PG (phosphatidylglycerol)	✓	✓	MS MS	subspecies
PI (phosphatidylinositol)	✓	✓	MS MS	subspecies
PS (phosphatidylserine)	✓	✓	MS MS	subspecies
DAG (diacylglycerol)	✓	✓	MS MS	subspecies
TAG (triacylglycerol)	✓	✓	MS MS	
SM (sphingomyelin)	✓	✓	MS	Species
CE (cholesteryl ester)	✓	✓	MS MS	Species
LPA (lyso-phosphatidate)		✓	MS	Species
LPC (lyso-phosphatidylcholine)		✓	MS	Species
LPE (lyso-phosphatidylethanolamine)		✓	MS	Species
LPG (lyso-phosphatidylglycerol)		✓	MS	Species
LPI (lyso-phosphatidylinositoll)		✓	MS	Species
LPS (lyso-phosphatidylserine)		✓	MS	Species
PC O-(ether-linked PC)		✓	MS MS	subspecies
PE O-(ether-linked PE)		✓	MS MS	subspecies
LPC O-(ether-linked LPC)		✓	MS	Species
LPE O- (ether-linked LPE)		✓	MS	Species
CER (ceramide)		✓	MS	Species
HEXCER (hexosylceramide)		✓	MS	Species
CL (cardiolipin)		✓	MS	Species

Skin Lipidome

Lipids are central to skin metabolism. Characteristic skin lipid profiles depend on many factors. Structural skin parameters are linked to skin lipid composition.



250

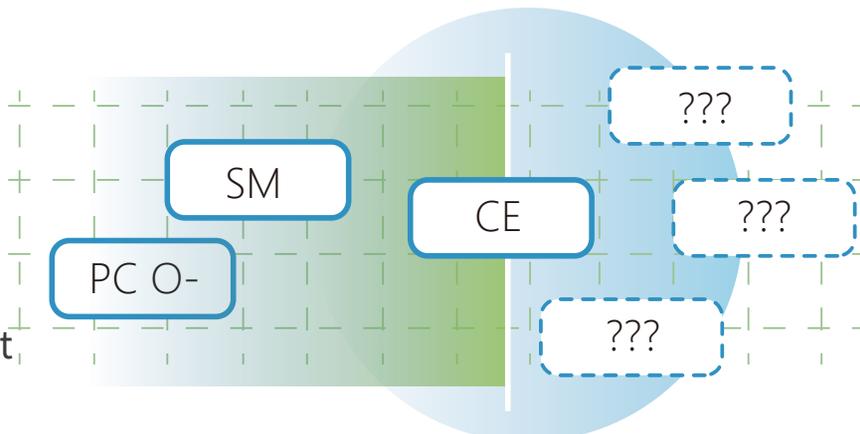


More Than 250 Skin Lipids

Our skin lipidomics services cover **16 different lipid classes** - in total more than 250 individual lipids.

Insights In Days

Our high throughput technology delivers lipidomics data and reports in **2 to 6 weeks** to provide you with insights in short time.



Skin Lipidomics Cosmetics

WIDE COVERAGE

- Covering 12 ceramide subclasses, tri- and diacylglycerol, cholesterol, cholesterol ester
- 250 individual lipid species per sample



EASY SAMPLING VIA TAPE-STRIPPING

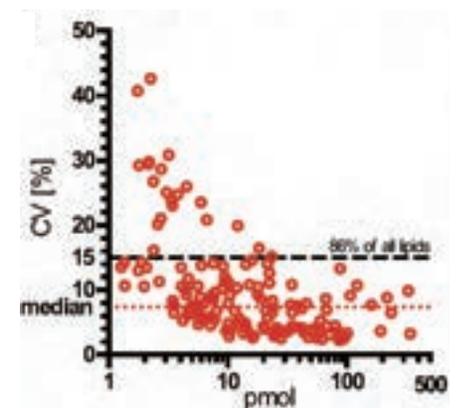
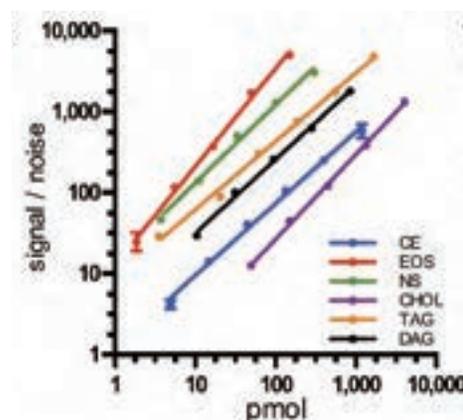
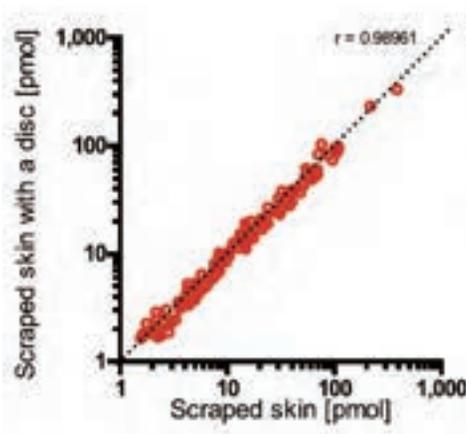
- Reproducible
- Controlled sampling site in all planes
- Non-invasive

FULL HIGH-THROUGHPUT

- Cutting-edge mass spectrometry, automated sample extraction, processing and data analysis
- 100 skin samples per day

ABSOLUTE QUANTIFICATION

- Qualification via internal standards
- Results in mol% and pmol
- Technical variation <10%

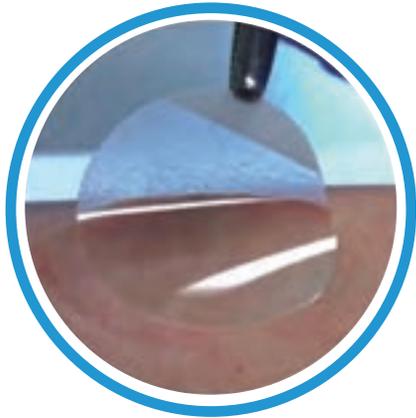


文獻參考:

Skin lipidome: Large-scale human skin lipidomics by quantitative, high-throughput shotgun mass spectrometry, Scientific Reports, 2017 (<https://doi.org/10.1038/srep43761>)

Skin Lipidomics Cosmetics

■ TAPE STRIPPING



Preparation of sampling site with larger DSquame D100 disc.



Sampling with prepared site (delineated by delicate pressing marks) with up to three smaller DSquame D101 discs.

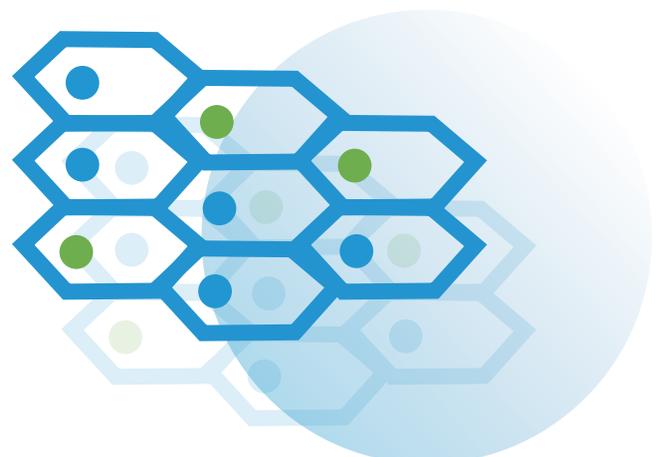


Cosmetics

Innovative **claim support** based on response of skin composition to product.

Dermatology

Lipid markers for **diagnosis or stratification** of skin disease.
Skin lipidome as suitable clinical end point for **drug development**.
In-depth understanding of **skin physiology** and pathophysiology.



文獻參考

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Ferroptotic cell death triggered by conjugated linolenic acids is mediated by ACSL1. *Nat Commun.* 2021 Apr 14;12(1):2244. (doi: 10.1038/s41467-021-22471-y.)

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Integration of epidemiologic, pharmacologic, genetic and gut microbiome data in a drug-metabolite atlas *Nat Med.* 2020 Jan;26(1):110-117. (doi: 10.1038/s41591-019-0722-x.)

- **OBESITY**

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CerS6-Derived Sphingolipids Interact with Mff and Promote Mitochondrial Fragmentation in Obesity, *Cell* 2019, (doi.org/10.1016/j.cell.2019.05.008) (doi.org/10.1016/j.cell.2019.05.008)

- **IMMUNE**

Modulation of Myelopoiesis Progenitors Is an Integral Component of Trained Immunity Cell. 2018 Jan 11;172(1-2):147-161.e12. (doi:10.1016/j.cell.2017.11.034.)

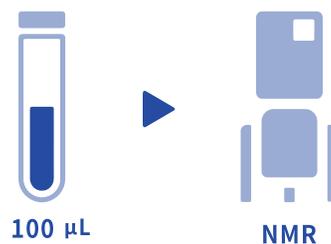
- **SKIN LIPIDOME**

Large-scale human skin lipidomics by quantitative, high-throughput shotgun mass spectrometry *Sci Rep.* 2017 Mar 7;7:43761. (doi: 10.1038/srep43761.)

代謝體分析

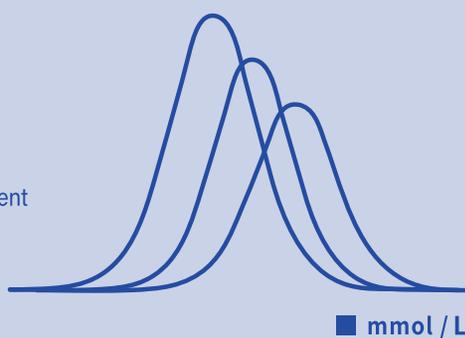
One sample, One test, Comprehensive metabolic profile

Nightingale's technology



The power of Nightingale's technology

- High-throughput (automated and fast)
- Scalability to large cohorts
- Quantitative results, easy to interpret
- Excellent accuracy and precision
- No batch effect
- High reproducibility
- Quality measures for sample quality assessment



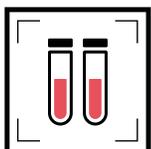
Routine lipids
14 lipoprotein subclasses
Particle size
Apolipoproteins
Fatty acids
Omega-3 and h
Amino acids
Ketones
Chronic inflammation
Fluid balance
Kidney function
Glycolysis

250 metabolic measures

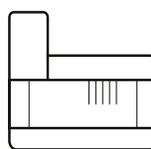
Blood sample



Research, clinic & consumer



Sample identification & quality control samples

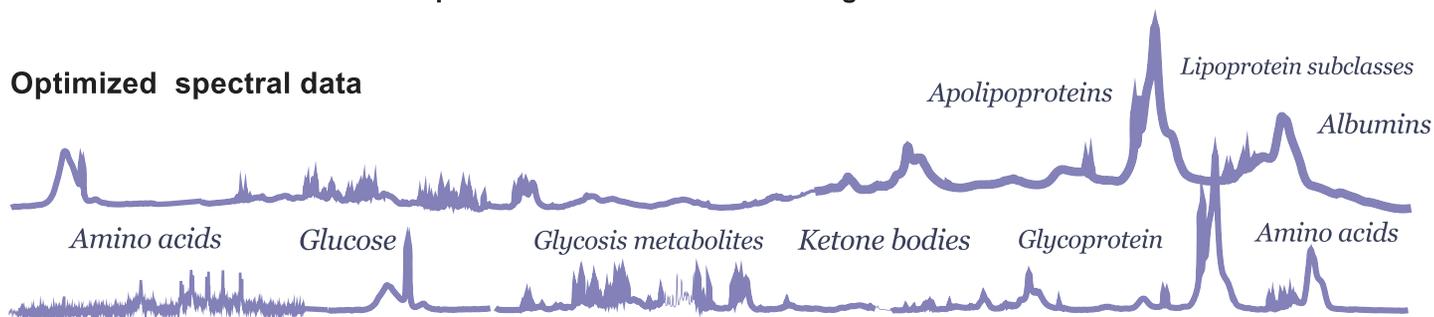


Automated sample preparation with reagents



NMR measurements

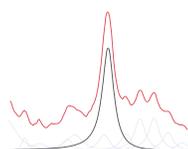
Optimized spectral data



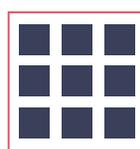
Automated data processing



Signal processing



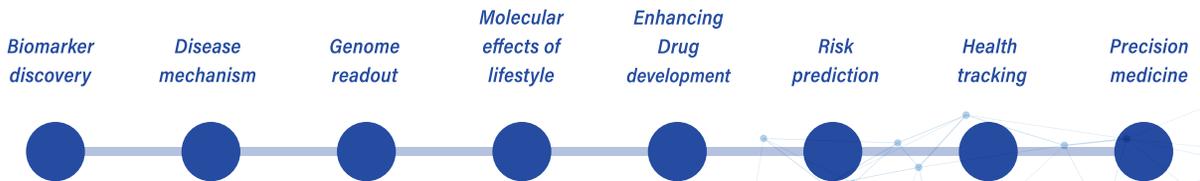
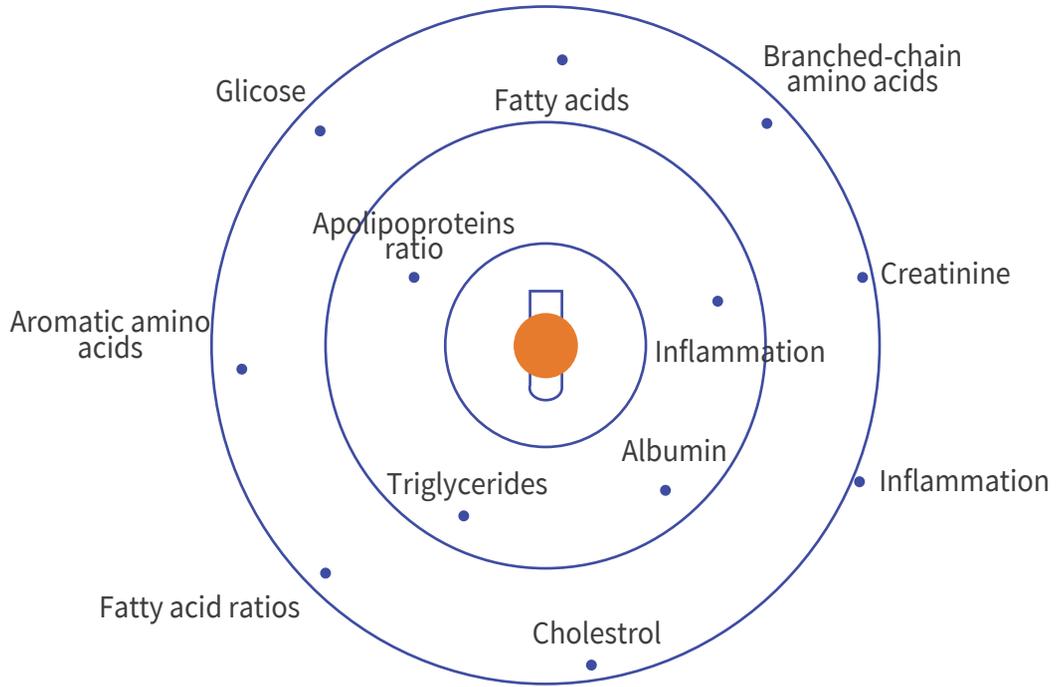
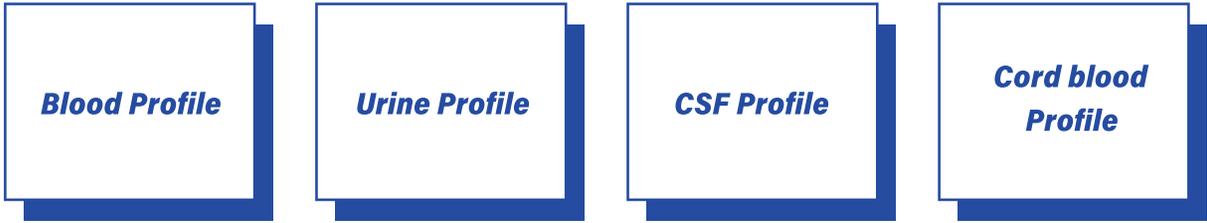
Metabolite identification & quantification



Data storage



250 qualified biomarkers



Quality
ISO 13485



脂質檢測常見問題

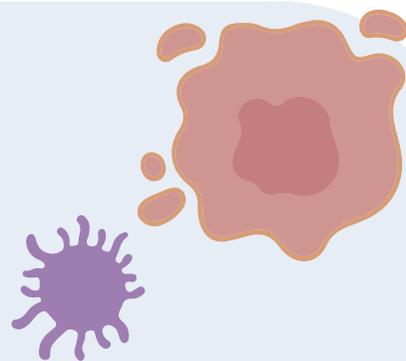
1 要如何評估 我現在的研究是否可以結合脂質體學？

T-BAL 擁有全脂質測量專家、藥物合成、分析化學及生物資訊的頂尖專家，可以依據你目前的現況提出最適合的研究方向。可同時結合全基因定序與全轉錄體定序數據與全脂質體圖譜同時分析。



2 我想進行脂質體學的研究， 請問貴公司可以接受哪些類型的樣品？

T-BAL可以對細胞、血液、組織、酵母菌、脂蛋白等多種類型的樣品進行檢測，若你不能確定是否可以檢測，歡迎來電進行諮詢。



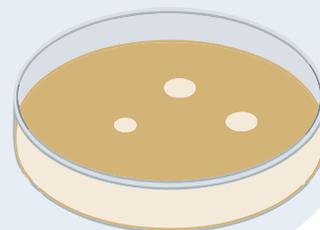
3 針對脂質體學分析資料的呈現我不甚了解該如何？

T-BAL 提供客製化的數據分析，以利於客戶精準的判讀數據，你可以與數據分析人員討論你需要的數據呈現方式。



4 我想進行全脂質測量服務， 貴公司可以接受哪些類型的樣品？

台灣活性脂質有限公司服務的樣本包含，細胞的胞器、微生物、細胞株、血液檢體、組織檢體、脂蛋白的全脂質分析。如您不確定是否可以檢測，您可以先來信E-mail t-bal@t-bal.com.tw進行諮詢。



文獻參考

- **METHOD DESCRIPTION**

Concerns regarding NMR lipoprotein analyses performed on the Nightingale heath platform - Focus on LDL subclasses , J Clin Lipidol May-Jun 2022;16(3):250-252. (doi: 10.1016/j.jacl.)

Assessment of reproducibility and biological variability of fasting and postprandial plasma metabolite concentrations using ¹H NMR spectroscopy
PLoS One. 2019 Jun 20;14(6):e0218549.
doi: 10.1371/journal.pone.0218549. eCollection 2019

- **METABOLIC RISK FACTORS**

Metabolic biomarker profiling for identification of susceptibility to severe pneumonia and COVID-19 in the general population Elife. 2021 May 4;10:e63033. (doi: 10.7554/eLife.63033.)

- **CARDIOVASCULAR DISEASES**

VLDL Cholesterol Accounts for One-Half of the Risk of Myocardial Infarction Associated With apoB-Containing Lipoproteins J Am Coll Cardiol. 2020 Dec 8;76(23):2725-2735. (doi: 10.1016/j.jacc.2020.09.610.)

- **DRUG DEVELOPMENT**

Metabolic profiling of angiotensin-like protein 3 and 4 inhibition: a drug-target Mendelian randomization analysis. Eur Heart J. 2021 Mar 21;42(12):1160-1169. (doi: 10.1093/eurheartj/ehaa972.)

- **CANCER**

Circulating Metabolic Biomarkers of Screen-Detected Prostate Cancer in the ProtecT Study Cancer Epidemiol Biomarkers Prev. 2019 Jan;28(1):208-216. (doi: 10.1158/1055-9965.EPI-18-0079.)

- **BIOINFORMATICS**

High-throughput multivariable Mendelian randomization analysis prioritizes apolipoprotein B as key lipid risk factor for coronary artery disease
Int J Epidemiol . 2021 Jul 9;50(3):893-901. (doi: 10.1093/ije/dyaa216.)

- **NUTRITION**

Genome-Wide Association Study for Serum Omega-3 and Omega-6 Polyunsaturated Fatty Acids: Exploratory Analysis of the Sex-Specific Effects and Dietary Modulation in Mediterranean Subjects with Metabolic Syndrome Nutrients. 2020 Jan 24;12(2):310. (doi: 10.3390/nu12020310.)

- **T1D/T2D**

Urinary metabolite profiling and risk of progression of diabetic nephropathy in 2670 individuals with type 1 diabetes Diabetologia. 2022 Jan;65(1):140-149. (doi: 10.1007/s00125-021-05584-3.)

Plasma fatty acids and the risk of vascular disease and mortality outcomes in individuals with type 2 diabetes: results from the ADVANCE study
Diabetologia. 2020 Aug;63(8):1637-1647. (doi: 10.1007/s00125-020-05162-z.)

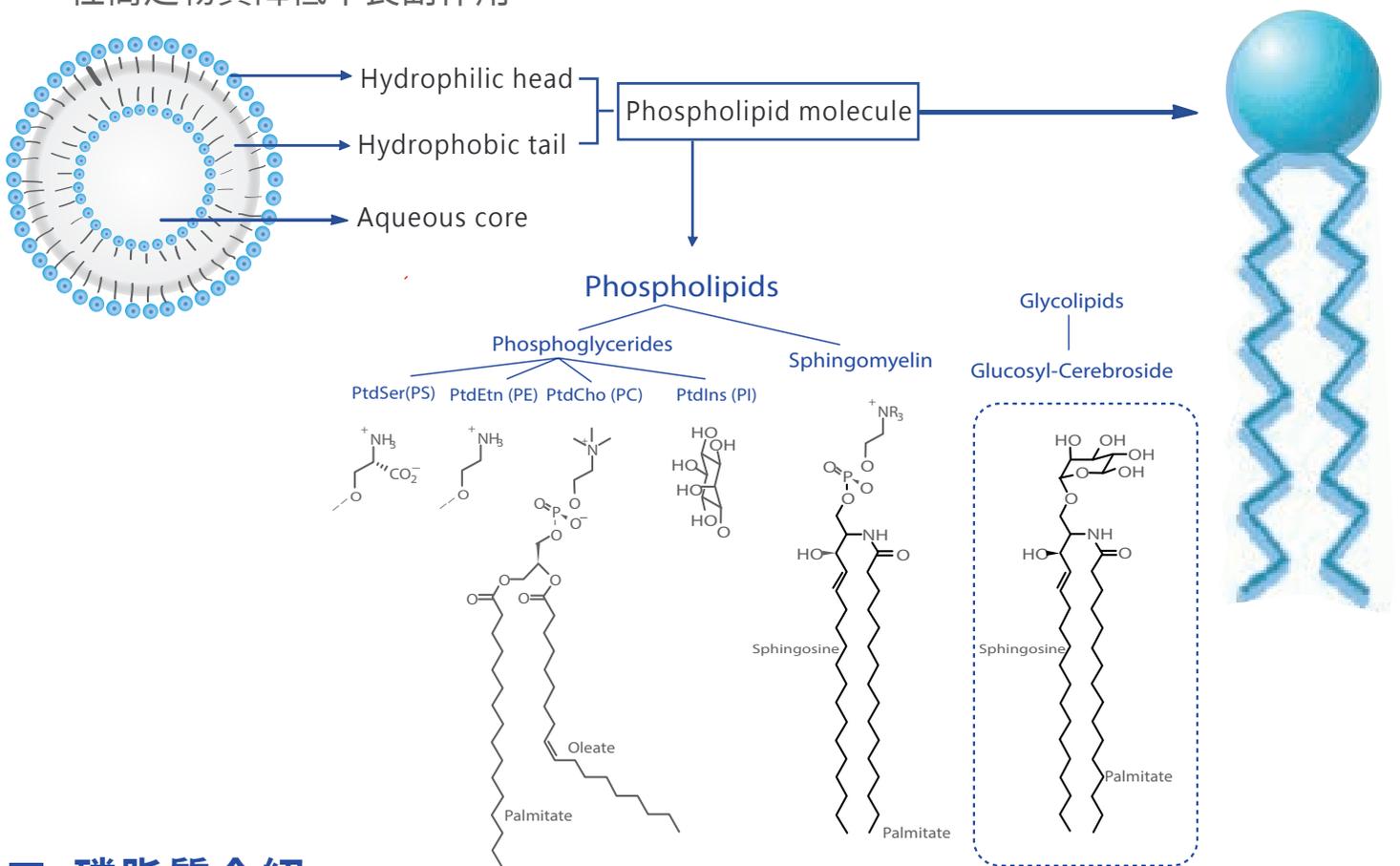
- **NEUROLOGICAL DISEASES**

The association of omega-3 fatty acid levels with personality and cognitive reactivity
J Psychosom Res. 2018 May;108:93-101. (doi: 10.1016/j.jpsychores.2018.02.016.)

微脂體

■ 微脂體的特性

微脂體是具有親水性與疏水性的空心微球，其中空具有包藏物質的能力，因此可做為載體部分，可攜帶水溶性或油性物質，具有很好的生物膜滲透性，而被廣泛應用與研究；微脂粒是由磷脂質構成，其成份與細胞膜相近，在生物體內能被分解，可控制物質釋放速率、保護內容物延長半衰期，在藥物應用上可包覆毒性高之物質降低不良副作用。

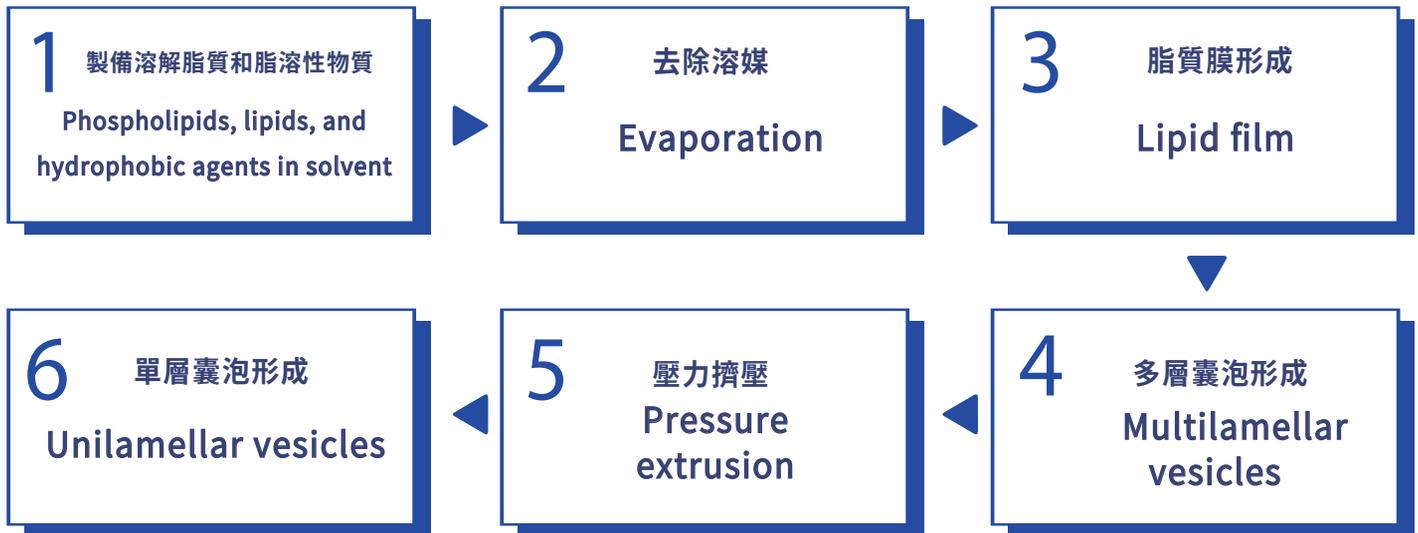


■ 磷脂質介紹

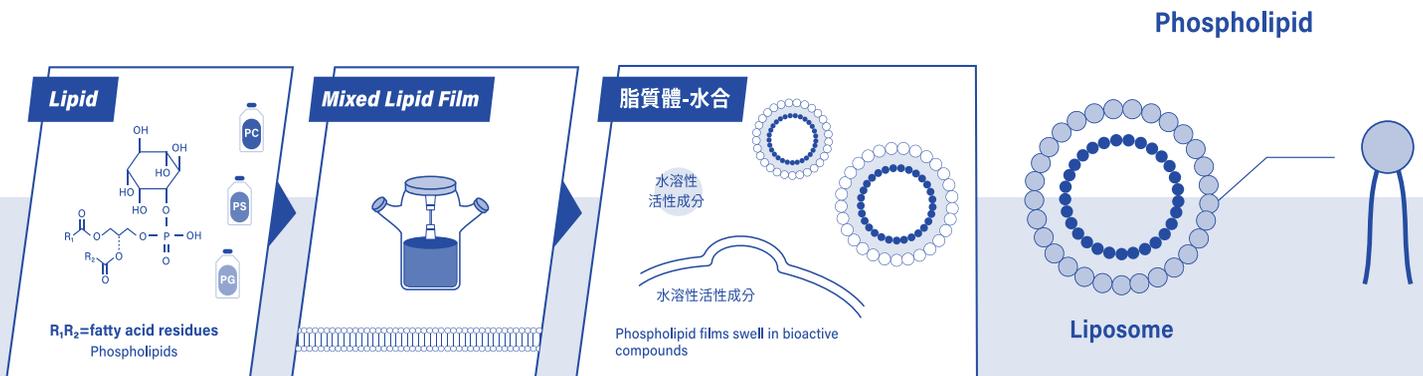
磷脂是附有磷酸基團的脂質分子。由於其親水基團頭部和疏水基團尾部的兩性性質，構成細胞膜的任何脂質雙層的最常見成分是磷脂，它們在細胞膜中高度豐富，形成脂雙層。有一個極性頭部和兩個非極性的碳氫化合物尾部。在哺乳動物細胞中發現的主要類型是磷酸甘油酯(phosphoglycerides)，例如磷脂酰膽鹼(phosphatidylcholine)、磷脂酰絲氨酸(phosphatidylserine)和磷脂酰乙醇胺(phosphatidylethanolamine)。

■ 微脂體的製備

溶劑注射法 (solvent-injection method) 先將磷脂質先溶於有機溶劑 (如：乙醚或乙醇) 中，接著注入至水相溶液中，混合以形成水包油乳狀液，再移除有機溶劑後所得到之單層微脂粒。

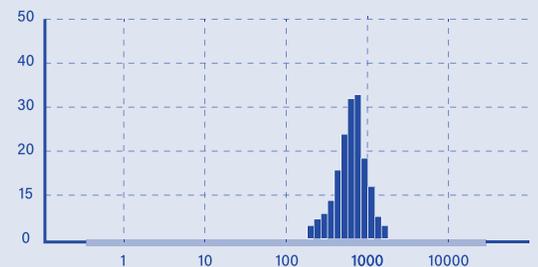


■ 客製化微脂體包覆流程



微脂體的大小可以從非常小的 (0.025 μm) 到大的 (2.5 μm) 囊泡。囊泡大小是決定脂質體循環半衰期的重要參數，雙層的大小和數量都會影響脂質體中藥物的包封量。一般製備方法都涉及四個階段：

1. 從有機溶劑中乾燥脂質
2. 將脂質分散在水性介質中
3. 純化所得脂質體
4. 分析最終產品



■ 微反應技術-微流道微脂體製備

MMRS使設備更高性能技術同時更有效的已被實驗室和研究機構採用。不僅僅是一種創新的研發工具。這是因為以微流道技術為特色的設備：已經證明可以確保批次生產過程運行得更快、更高效、更可靠。差不多一個兩種化學反應將受益於微反應技術的優勢：良好的前景尤其是對於您的流程。



MMRS



Mixers



Reactors



Heat exchangers



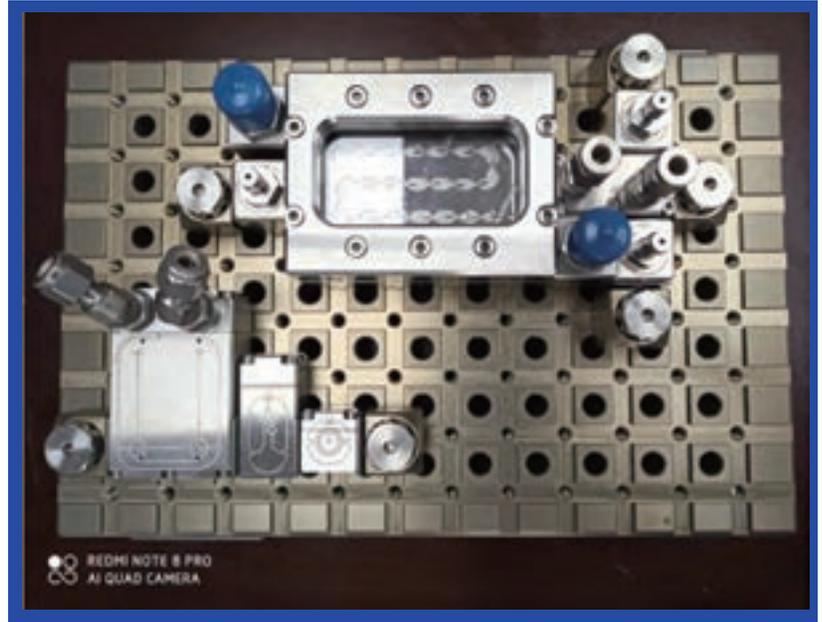
Sensors & actuators



Links & connections



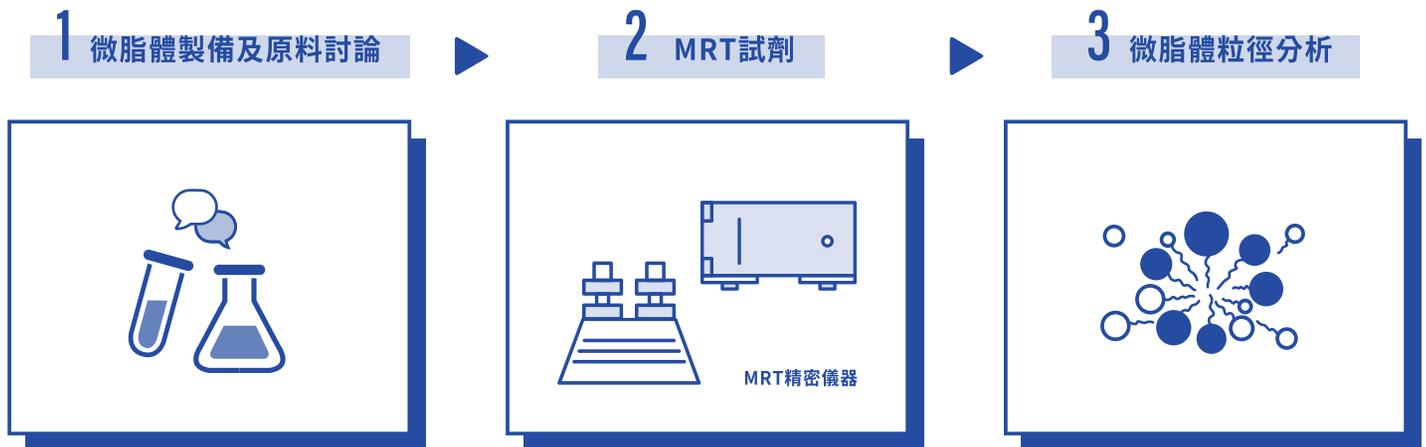
Clamping components



Mixer	Cascade Mixer 06, 10, 15	Slit-Plate Mixer LH 2, LH 25	Comb-Type Mixer	Valve Mixer 30
Art.-No.	0216	0113, 0109	0101	0111
Volume flows	06: from 0.1 L/h, 10: from 0.3 L/h, 15: from 0.9 L/h	0.1 – 6 L/h, 3 – 120 L/h	from 0.3 L/h	3 – 30 L/h
Scalable	Development stage	LH 1,000 up to 3,000 L/h	see Slit-Plate Mixer	Valve Mixer 300 up to 300 L/h
Mixing of liquids	✓	✓	✓	✓
Emulsification/Dispersion	✓	✓	✓	✓
Mixing of liquids and gases	-	✓	✓	-
Particle precipitation	-	-	-	✓
Suspensions	✓	-	-	-

■ 微混合器脂質包覆技術

微脂體是利用脂雙分子層膜所形成的囊泡包裹藥物分子而形成的製劑，在已知的微質體原料組成下，MMRS可經由不流速的調控下快速大量製造所需的微脂體，藉由粒徑分析檢測微脂體是否達到所需的尺寸大小。



■ Product characterization

- Morphology
- Size
- Polydispersity
- Zeta potential
- Drug loading rate
- Stability
 - (Time/temperature)-drug release
 - (Time/temperature)-PDI change
 - (Time/temperature)-size change

■ Optimal

- FTIR
- Electronic microscope
- Stability
- time-drug release; time-PDI change; time-size change
- Temperature-drug release; Temperature-PDI change; Temperature-size change (Surfactant resistance)



台灣活性脂質股份有限公司
Taiwan-BioActive Lipid Co., Ltd
TEL:(04)2247-6758
<https://www.t-bal.com/>



臉書粉絲專頁



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