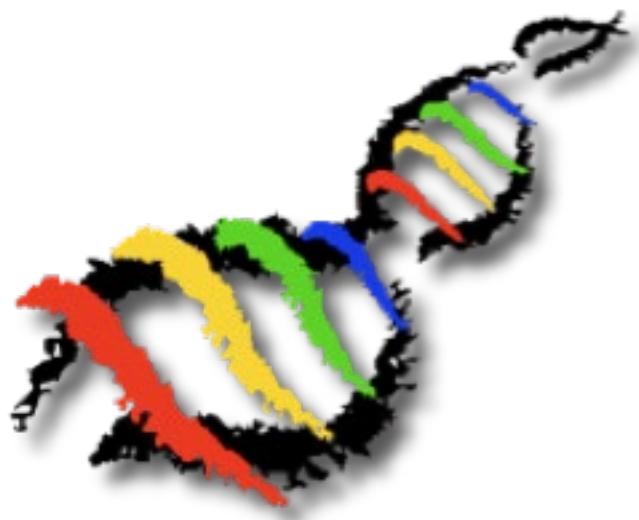


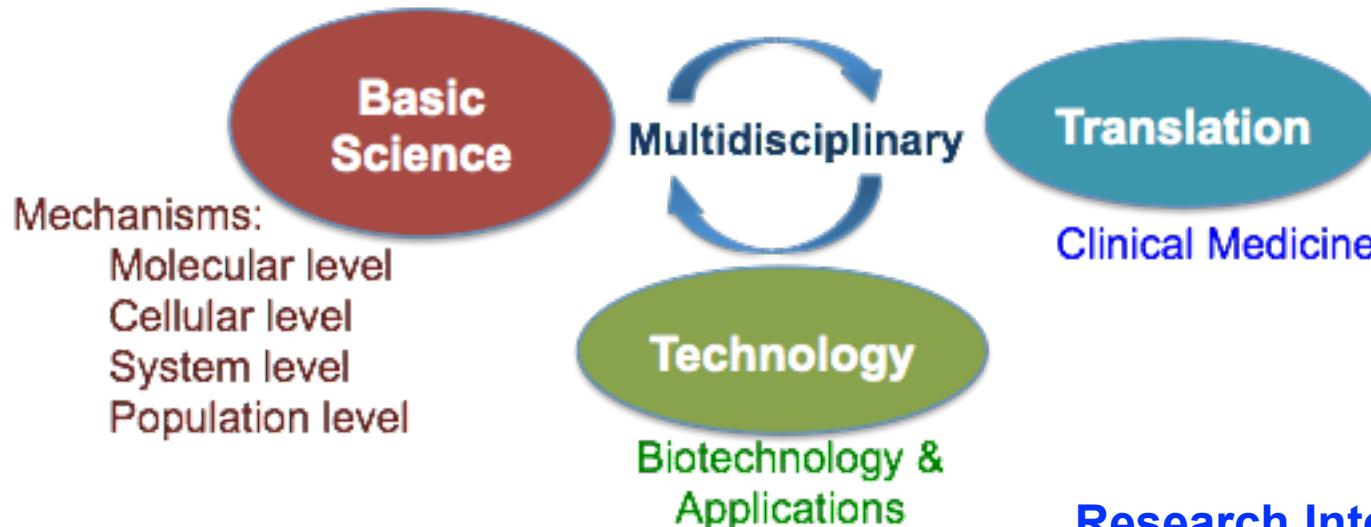
國立陽明交通大學生命科學院

生命科學系暨基因體科學研究所 簡介



民國114年11月

From Basic to Application and Translation Medicine

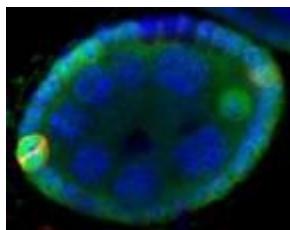


Approaches:

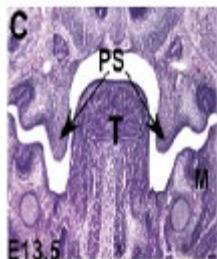
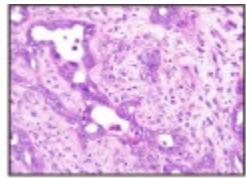
- | | |
|-----------------------|-------------------|
| Structural biology | Biochemistry |
| Molecular biology | Enzymology |
| Cell biology | Proteomics |
| Model organisms | Genomics |
| Evolutionary genomics | Imaging |
| Drug discovery | Biophysics |
| Computer simulation | Big data analysis |

Research Interests:

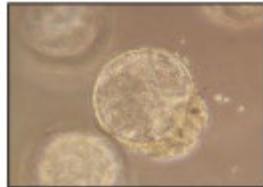
- Cancers
- Aging diseases
- Neural diseases
- Renal diseases
- Infective diseases
- Congenital diseases
- Reproduction
- Development



Organ level

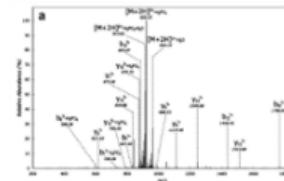
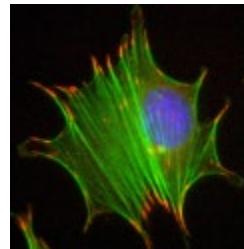
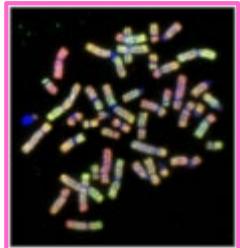


Tissue level

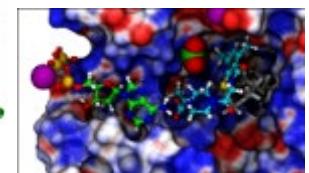
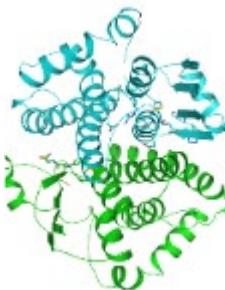


Organoids

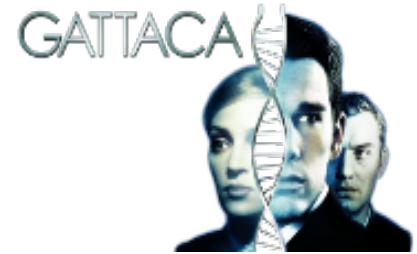
Cellular level



Molecular level



Population level



Organism level

Department of Life
Sciences & Institute of
Genome Sciences

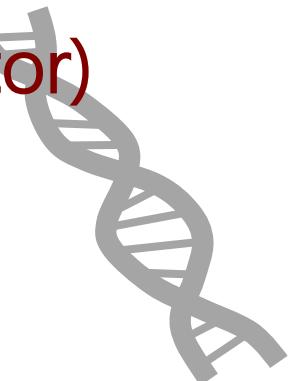
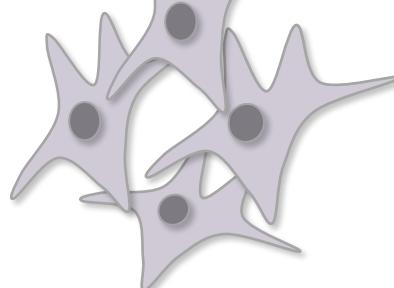


藥物發展與結構生物學組

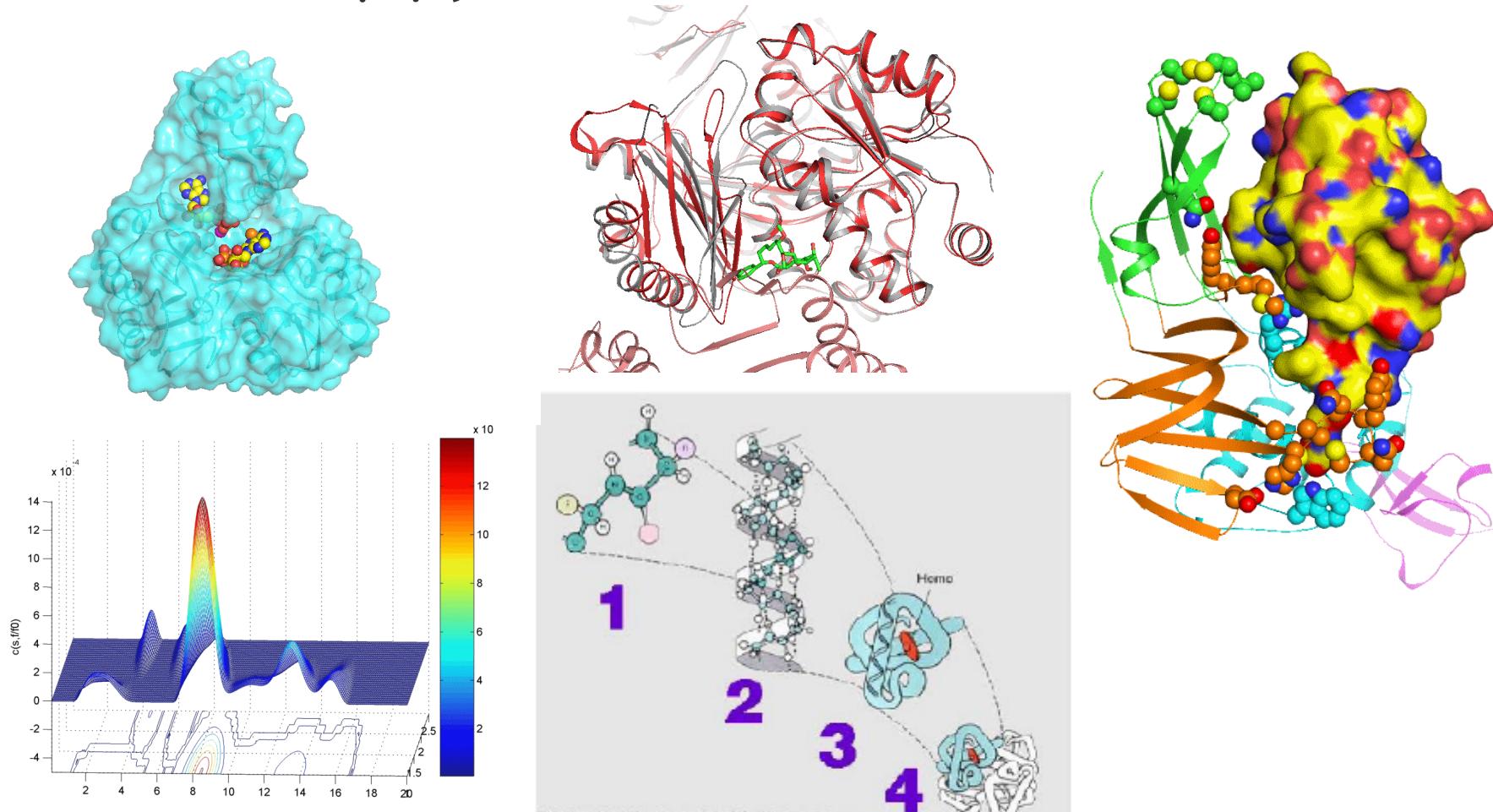
(The Drug Development and
Structural Biology sector)

基因與發育組

(The Genes and Development sector)



藥物發展與結構生物學組



Sequence

Mass

Structure

X-ray crystal
NMR
CD

Function & Activity

Fluorescence
ITC
AUC
Single molecule

Application

Drug design



張欣陽副教授簡歷

蛋白結構與功能研究室

現職：國立陽明交通大學基科所副教授

經歷：中研院生化所博士後（2013–15）

芝加哥大學生化分生所博士後（2011–13）

學歷：伊利諾大學香檳分校生化博士（2005–10）

聯絡方式：

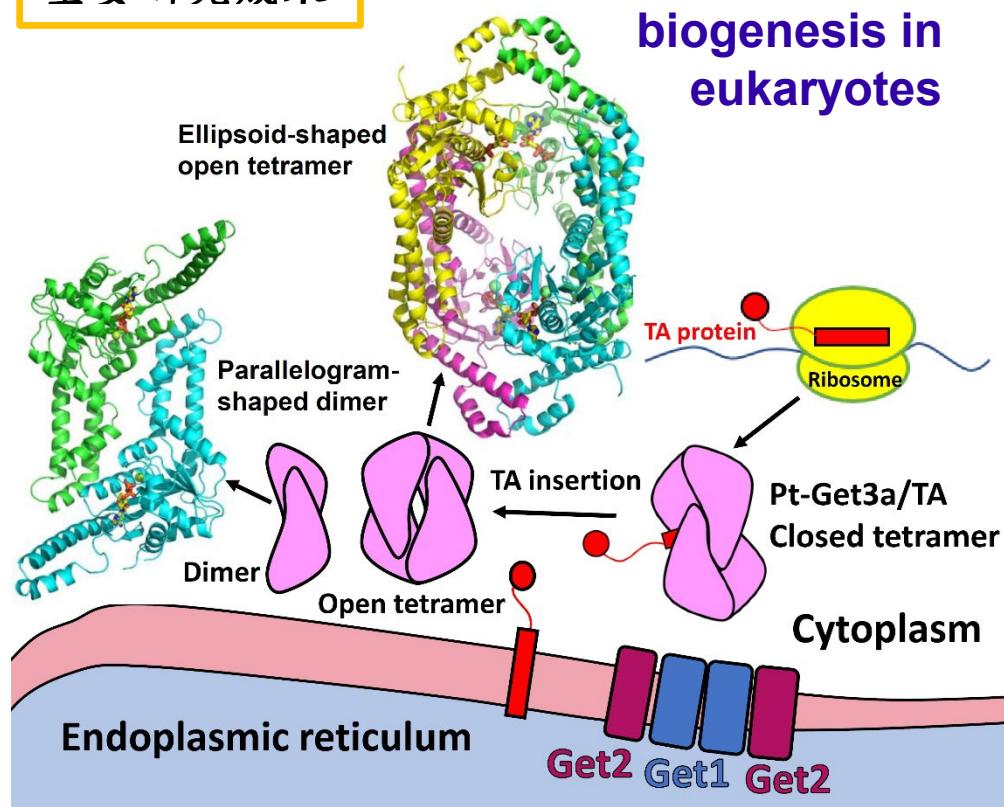
hychang5@nycu.edu.tw

02-28267168 學術專長：

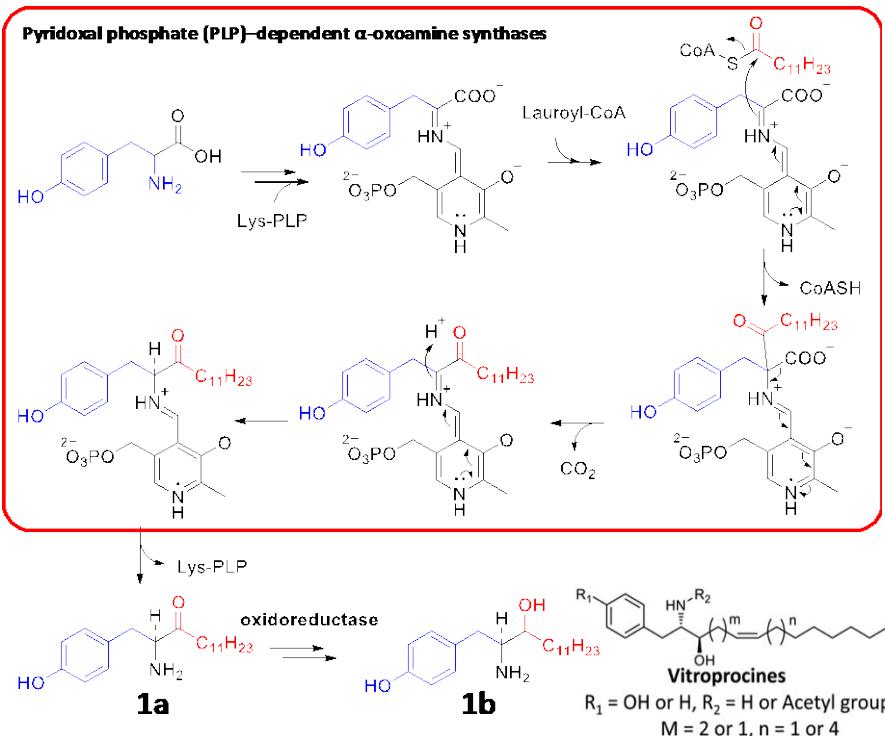
X-Ray 蛋白晶體學、酵素動力學、結構生物學、分子生物學、生物化學

重要研究成果

(1) TA membrane protein biogenesis in eukaryotes



(2) The biosynthesis pathway of vitroprocine antibiotics



巫坤品

生物醫學資訊所 教授

跨領域醫學博士學位學程 主任

kpwu@nycu.edu.tw 02-2826-7273 守仁樓 303 室

<https://sites.google.com/view/kpwu>

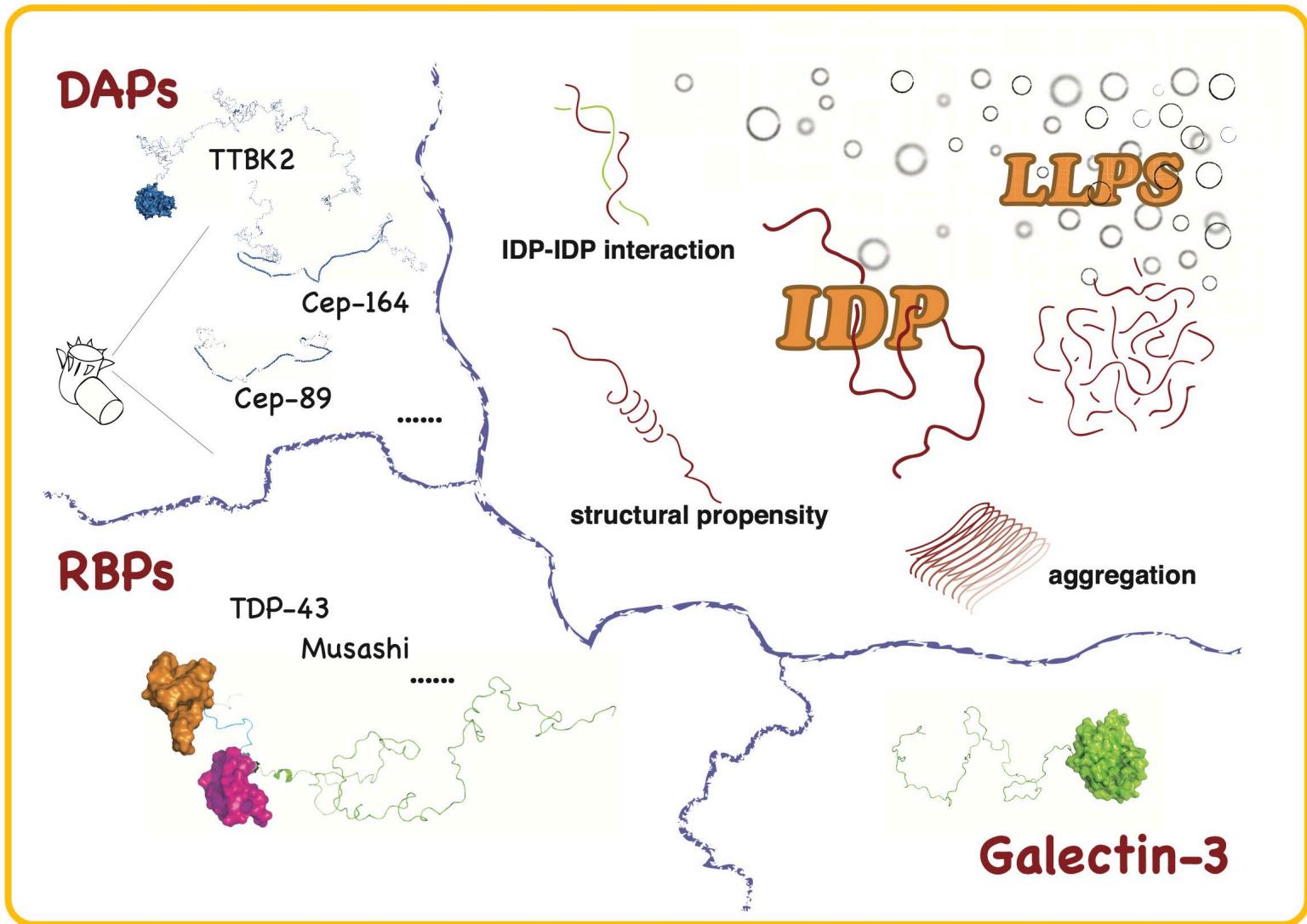


研究興趣：

- 實證醫學的文獻回顧
- 醫學資訊
- 計算運動醫學
- 生醫數據分析

研究方法：

- 人工智慧
- 資料探勘
- 數據分析
- 自然語言處理



黃介榮
老師

.....實驗室介紹短片

實驗室網頁.....



林照雄 教授

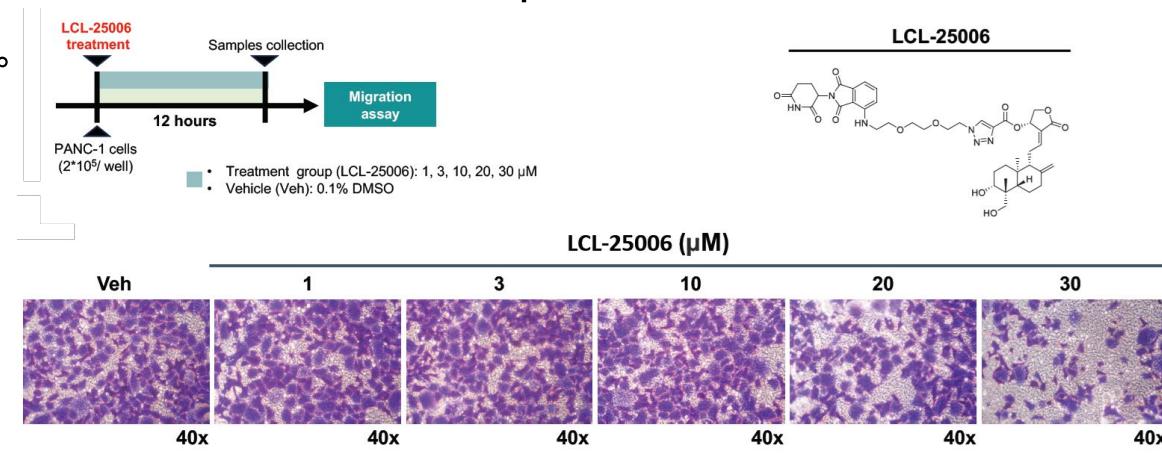
代謝體及蛋白質體學實驗室 @ 傳醫大樓甲棟一樓112室
chaohsiunglin@nycu.edu.tw; (O) 02-2826-7280
<https://dls.nycu.edu.tw/faculty/faculty-member/chlin2.html>



研究領域：抗癌藥物開發

研究方向：以天然物穿心蓮內酯(andrographolide)為主的抗癌策略

- 以andrographolide發展proteolysis targeting chimera (PROTACT)的新型藥物來調控癌細胞的重要蛋白如NF-κB、Hsp90及hnRNPK之降解，以抑制癌細胞的生長及轉移。

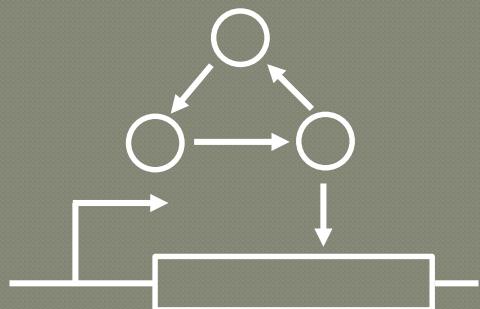


- 以蛋白體及代謝體學來釐清中草藥活性成分如穿心蓮內酯的胞內作用對象。

Laboratory of Synthetic Biology

陳瀅州老師實驗室

Engineering gene circuits for precision medicine of neurodegenerative disorders, including ALS, Parkinson's, and Alzheimer's diseases.



Synthetic transcriptional factor

Synthetic biosensor

Synthetic suppressor

Synthetic gene networks

Synthetic recorder & memory

Synthetic intelligence

Your Synthetic **creativity and participation**

Email: yjoechen@nycu.edu.tw



Lab. of Cytoskeleton and Cell Mechanics

李曉暉老師實驗室

Hsiao-Hui Lee

Email: hhl@nycu.edu.tw

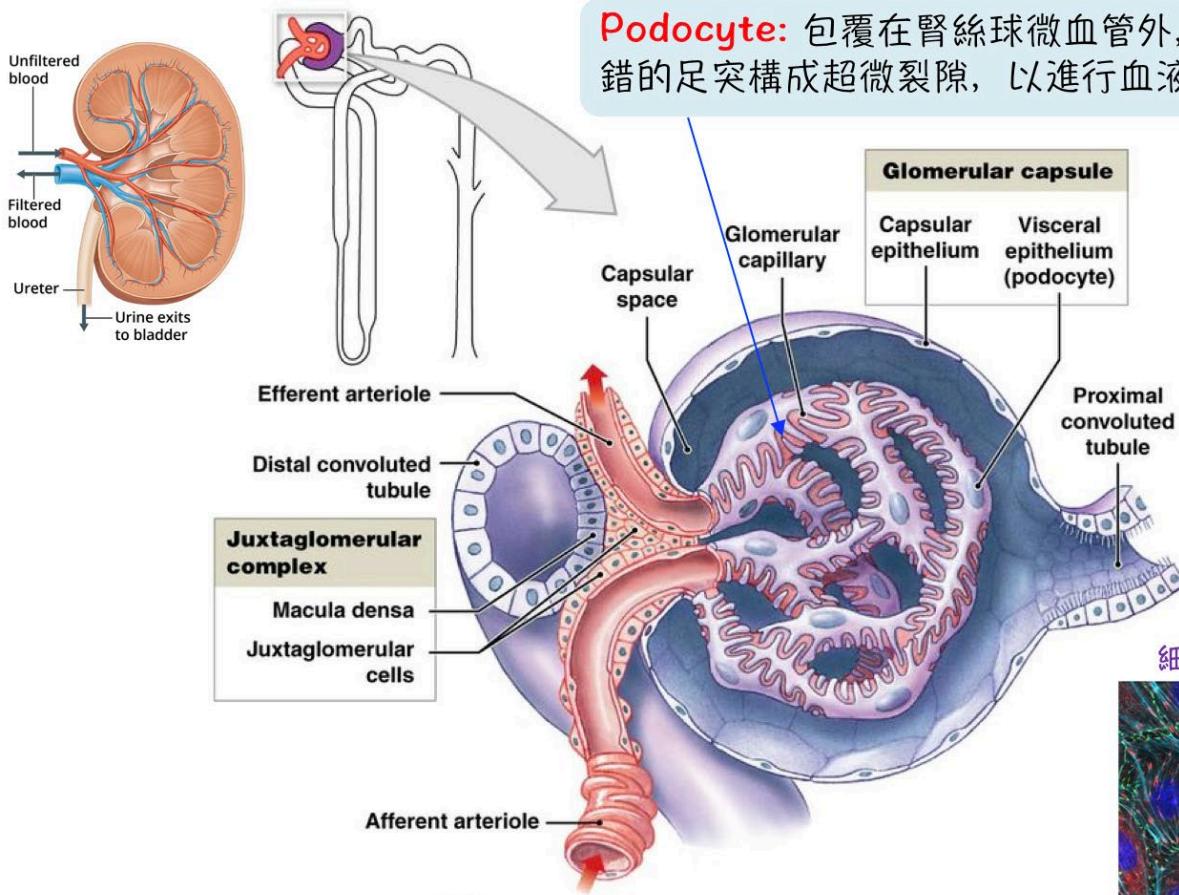
Tel: 02-28267205

Office: 圖資923室



(感謝陳俊銘老師實驗室提供)

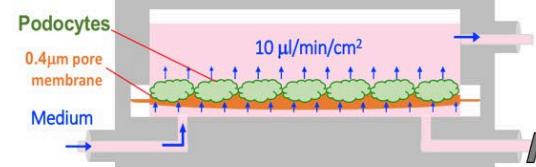
- 探討足細胞中細胞骨架訊息與基因表現的應力調控機制
- 建立足細胞實驗模式以發展藥物篩選平台



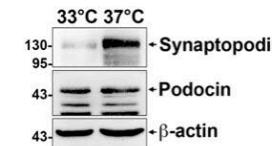
Podocyte: 包覆在腎絲球微血管外，其交錯的足突構成超微裂隙，以進行血液過濾。

利用溫度誘導分化的足細胞株，建立模擬過濾壓力的細胞模式，探討足細胞的生理與病理問題。

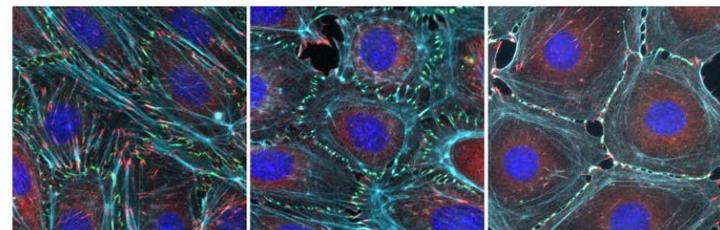
過濾模組



溫度誘導分化



細胞骨架、附著結構的變化



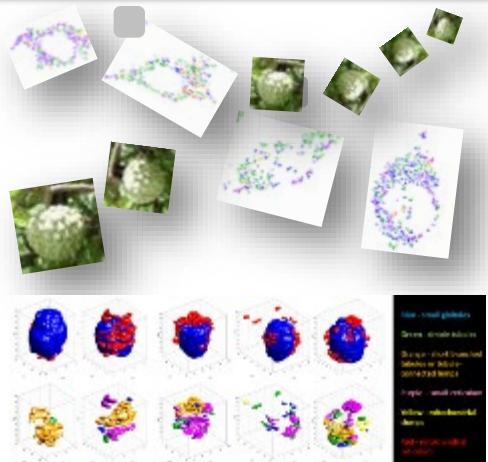
Lab of Cell Bioimage Informatics



Chung-Chih Lin 林 崇 智

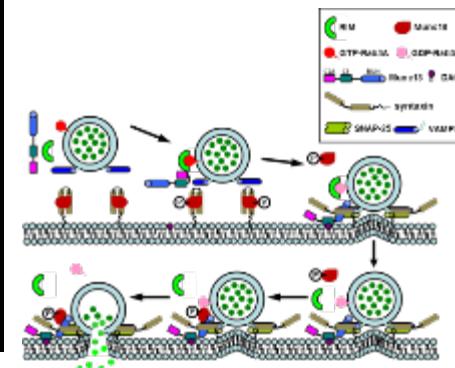
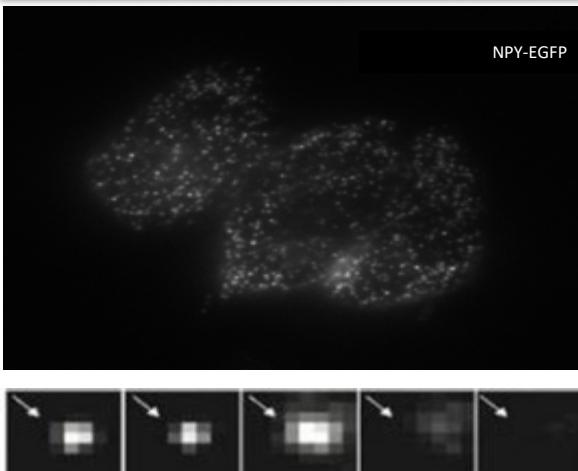
Department of Life Sciences and Institute of Genome Sciences , NYMU, Taiwan, Taipei

High content analysis of mitochondria dynamics for drug profiling and disease diagnosis



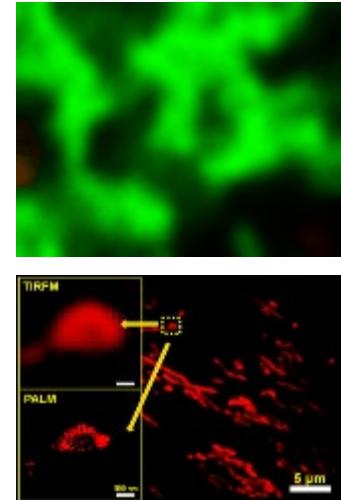
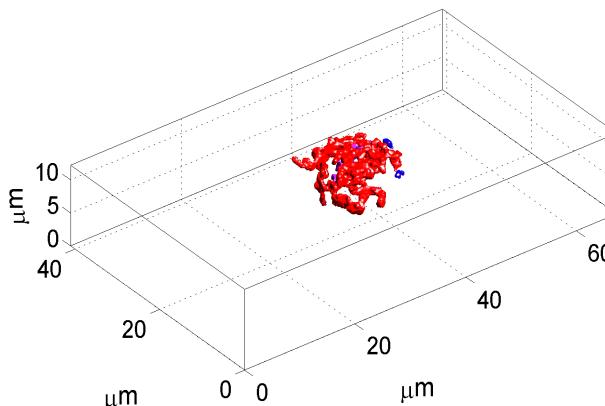
Peng, et al., PLoS Computational Biology 2011

Tracking dynamic bioimage informatics to understand the molecular mechanism of secretion



Huang et al., Traffic 2011
Huang et al., J. Cell Sci., 2018

The mechanism of mitochondria dynamics and inheritance during cell division

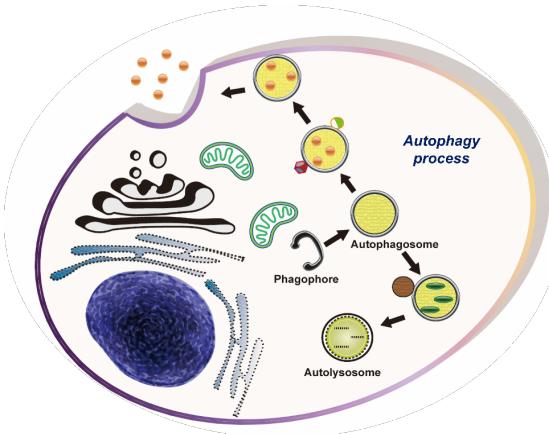


藍昇輝老師實驗室

研究主題:細胞自噬功能與調控

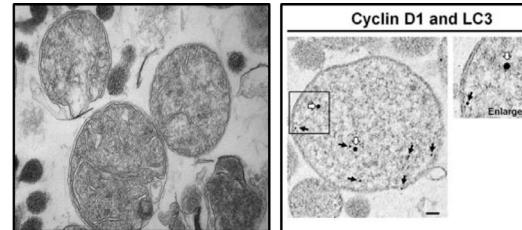
圖資大樓7樓 703室

shlan@nycu.edu.tw; 02-2826-7030 ext. 66210



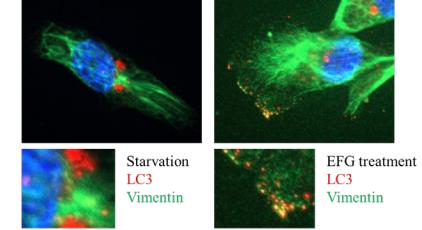
研究方向:

本實驗室研究方向是利用細胞與動物模式探討細胞自噬作用之創
新功能，且進一步於生理及病理中印證，並結合臨床醫學開發相
關之治療策略。



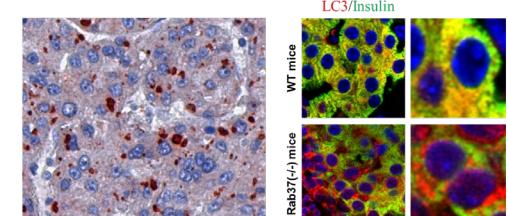
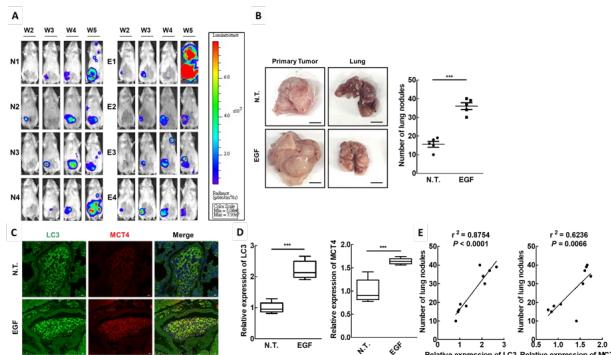
Degradative autophagy:

- To purified autophagosomes from cell lines and tissues
- To identify the novel cargos or regulatory proteins
- To manipulate the process of autophagy from initiation to degradation



Secretory autophagy:

- To monitor the kinetics of autophagy
- To clarify the novel biological function of secretory autophagy
- To manipulate the process of autophagy from initiation to secretion



The Role of Autophagy in physiology and pathology:

- To establish the animal model for diseases (e.g., cancer, type-II DM, aging)
- To regulate the autophagy activity *in vivo*
- To confirm the mechanisms *in vivo* and in clinical specimens (tissue array)



陳燕彰 副教授

研究主題:

發展遲緩兒童的基因異常偵測

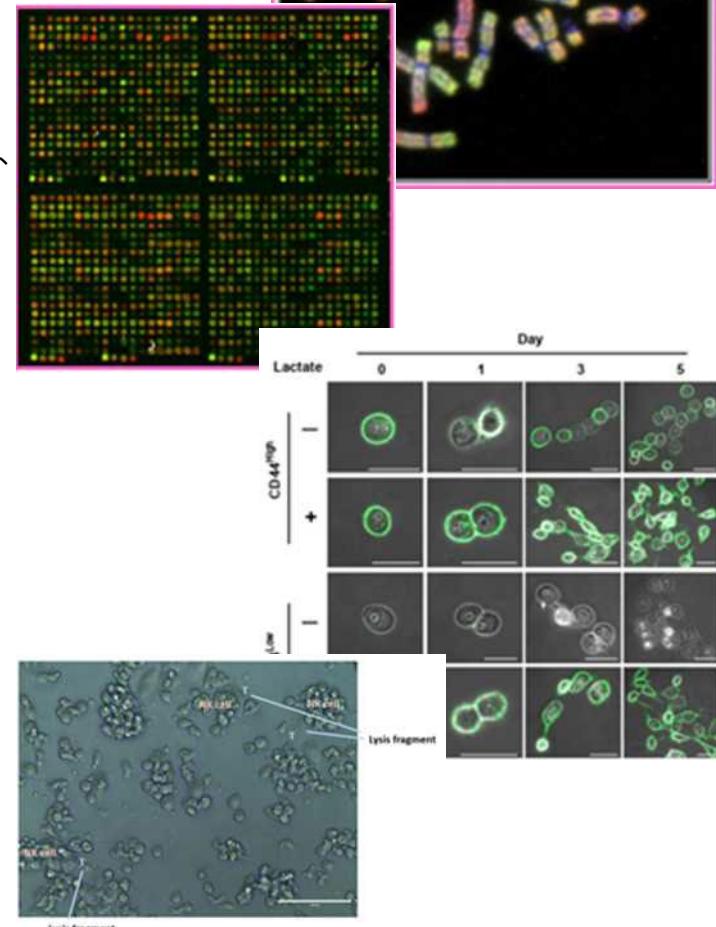
- 利用染色體晶片(array CGH)、次世代基因定序(NGS)、等技術，提供發展遲緩兒童遺傳變異分析的完整解決方案，藉此提升發展遲緩兒童正確的病因診斷。

先天代謝異常疾病基因治療的發展

- 以甲基丙二酸血症(Methylmalonic Acidemia，簡稱 MMA)為對象，預計建立小鼠MMA 模式，利用AAV 載體，發展可能的基因治療方法

癌症的研究

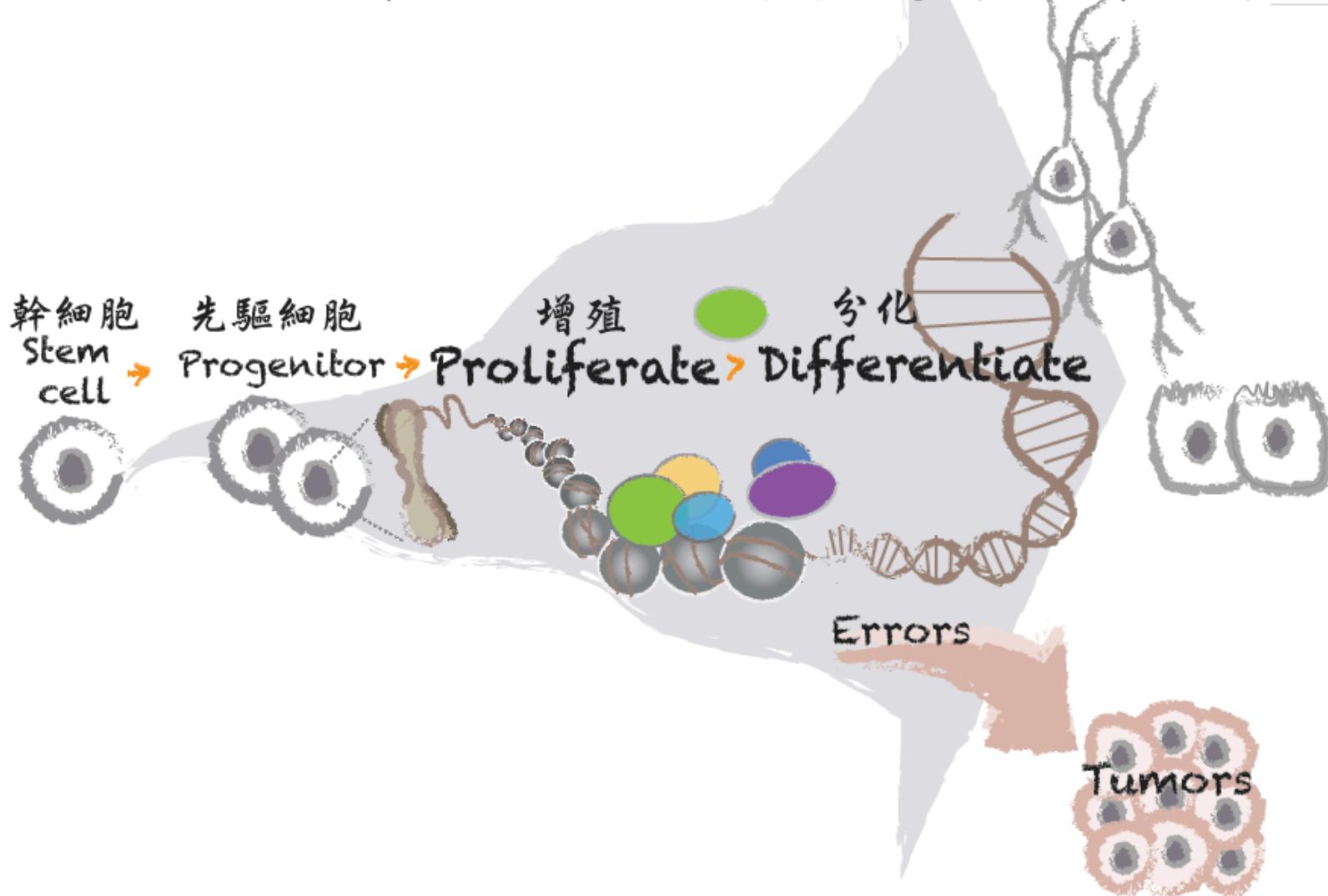
- 1. 探討乳酸對腫瘤微環境中免疫細胞的細胞毒殺能力下降的機轉，特別是對NK cell的影響。
2. 發展針對EpCAM的CAR-NK 92，評估其對食道癌(esophageal carcinoma)等相關表皮細胞來源之惡性腫瘤的毒殺能力，以及做為臨床癌症治療的可行性。





李敏嘉老師 (圖資904#67040)

Lab of Molecular Epigenetics 分子表觀遺傳學實驗室
探究細胞增殖與分化的表觀遺傳控制機轉

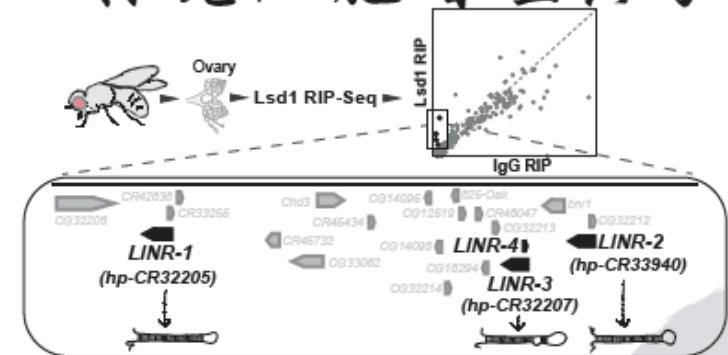




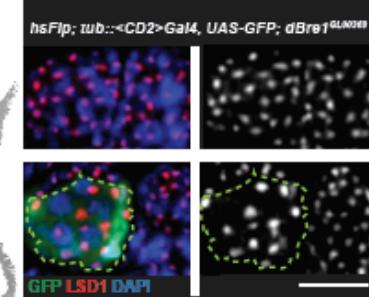
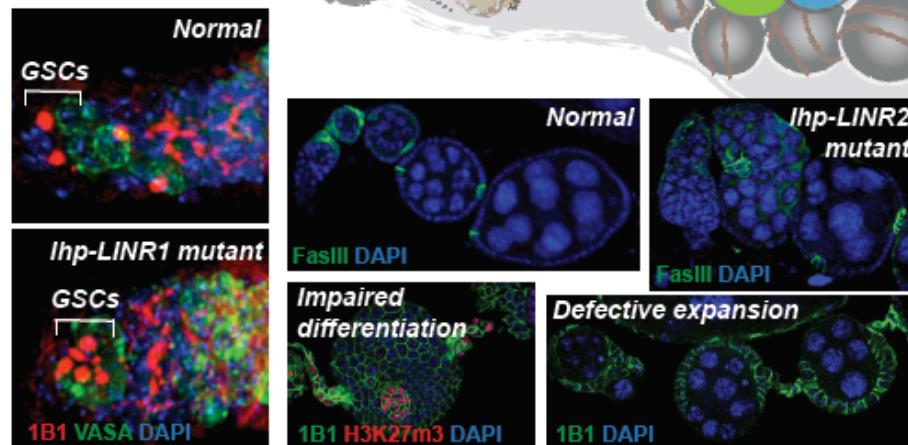
李敏嘉老師 (圖資904#67040)



Lab of Molecular Epigenetics 分子表觀遺傳學實驗室 探究細胞增殖與分化的表觀遺傳控制機轉



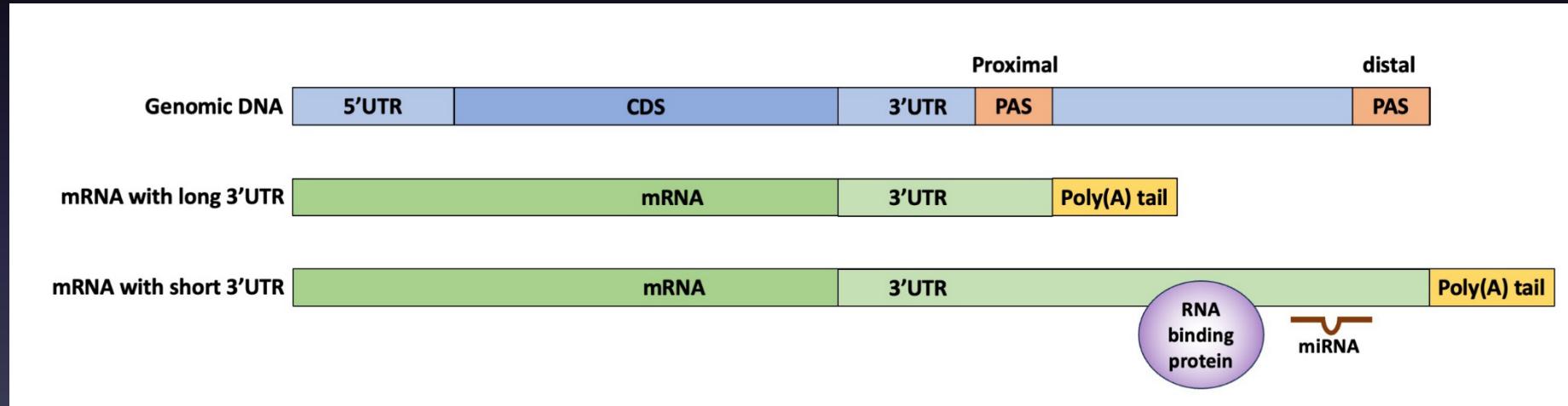
幹細胞 先驅細胞 增殖 分化
Stem cell → Progenitor → Proliferate > Differentiate



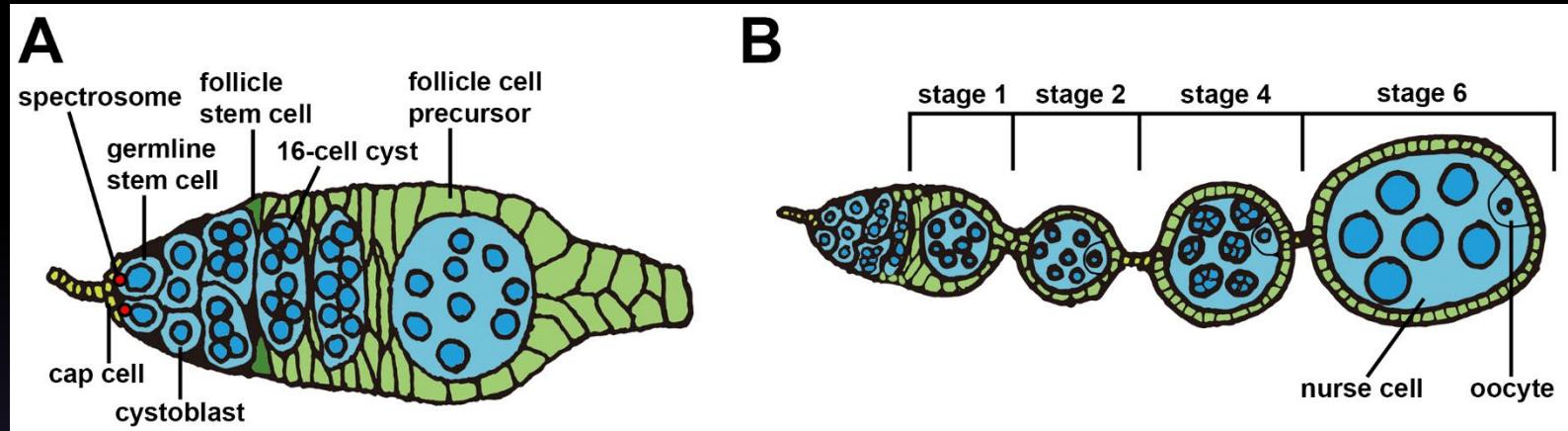
俞震亞

專長：幹細胞，發育生物學，基因表現調控

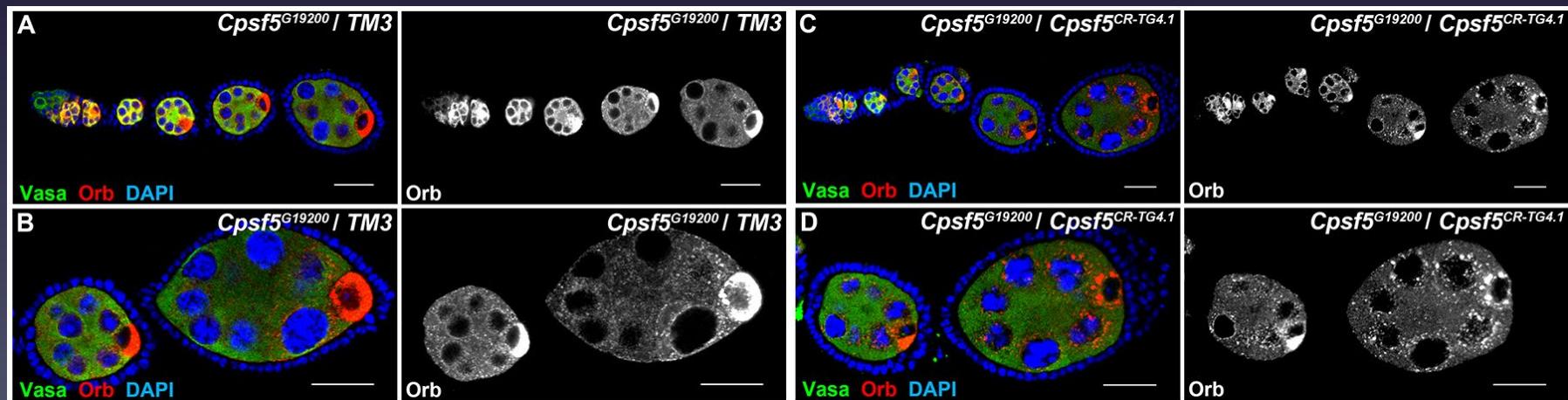
研究主題：超過70%的基因有不只一個多腺苷酸化位點，造成轉錄後的mRNA有不同長度的3'非轉譯區（3' untranslated region），此一過程稱為選擇式多腺苷酸化（alternative polyadenylation, APA）。3'非轉譯區是微型核糖核酸（miRNAs）與各種蛋白質結合調控的平台，所以3'非轉譯區的長度會影響mRNA的穩定性與轉譯，進而影響蛋白的產量或分布位置，而影響細胞的行為。APA是一種重要的轉錄後調控，但是目前APA及其功能的相關研究並不多。



我們以果蠅卵巢為模式，探討Cps f5/6, Cbc與Pcf11所調控的APA在卵子生成的功能。果蠅的卵來自卵巢中的生殖幹細胞與瀘泡幹細胞；這兩種幹細胞能進行自我更新與產生新的細胞；這些細胞進行分裂、分化、遷移、型態改變與細胞凋亡，最後生成成熟的卵。



Cps f5/6 調控APA，進而維持生殖幹細胞與瀉泡幹細胞，並影響生殖細胞與瀉泡細胞的分化與細胞週期。下圖為控制卵子分化重要基因Orb的免疫染色。左半邊為控制組，右半邊為*Cpsf5* mutant。Orb蛋白的量與分佈都有明顯改變。



YT Chen Laboratory

Genomic, Molecular and Laboratory Medicine

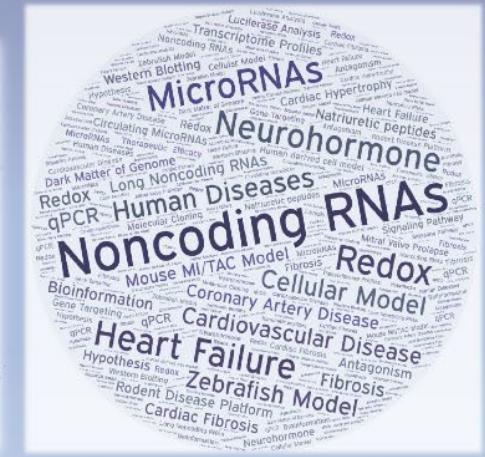
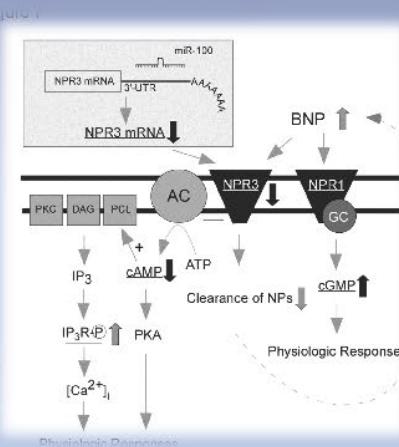
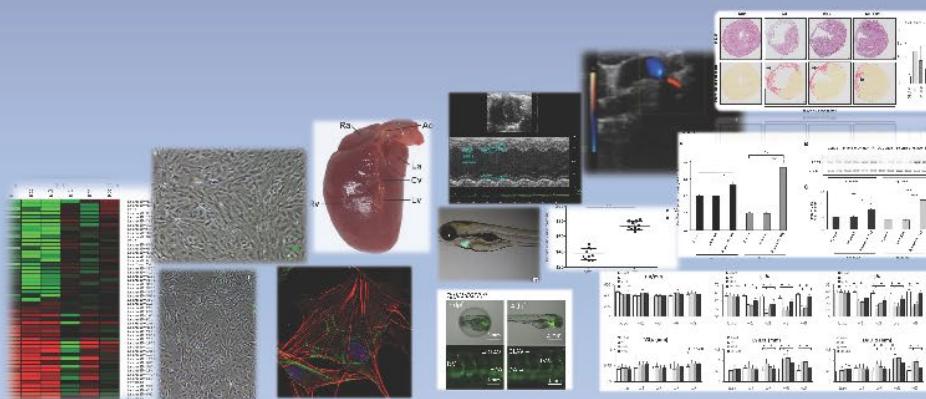


Department of Life Sciences & Institute of Genome Sciences
National Yang Ming Chiao Tung University, Taipei, Taiwan.

*To explore the underlying mechanisms of human diseases
from the dark side of genome.*

Research interests are,

1. MicroRNA and LncRNA in cardiovascular diseases.
 2. Orchestration between coding and noncoding RNAs.
 3. Throughput *in vitro* and *in vivo* disease platforms.



Student researcher positions are available! Please contact Yei-Tsung Chen Ph.D. for more information.

Location: Library and formation Building R924; E mail: veitsungchen@nvcc.edu.tw; Phone: X66249

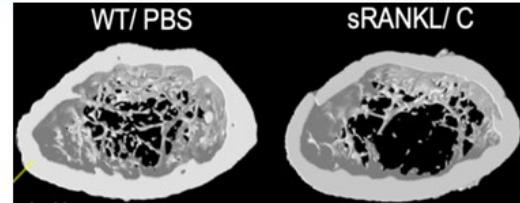
專長：分子內分泌學、訊息傳導、生殖相關癌症

(Visit our web page at <https://sites.google.com/nycu.edu.tw/luo-lab/>) →



• 主題一、TGF- β /BMP 訊息對於間質幹細胞的影響

- (1) 間質幹細胞 成骨化、軟骨化與脂肪化的機轉
- (2) 骨質疏鬆 (osteoporosis) 機轉與拮抗訊息



• 主題二、生殖生理與卵巢癌症惡化的機轉

- * 外泌蛋白訊息如何影響生殖系統的運作，以及卵巢癌的惡化與轉移機轉



• 主題三、開發長效型藥用蛋白



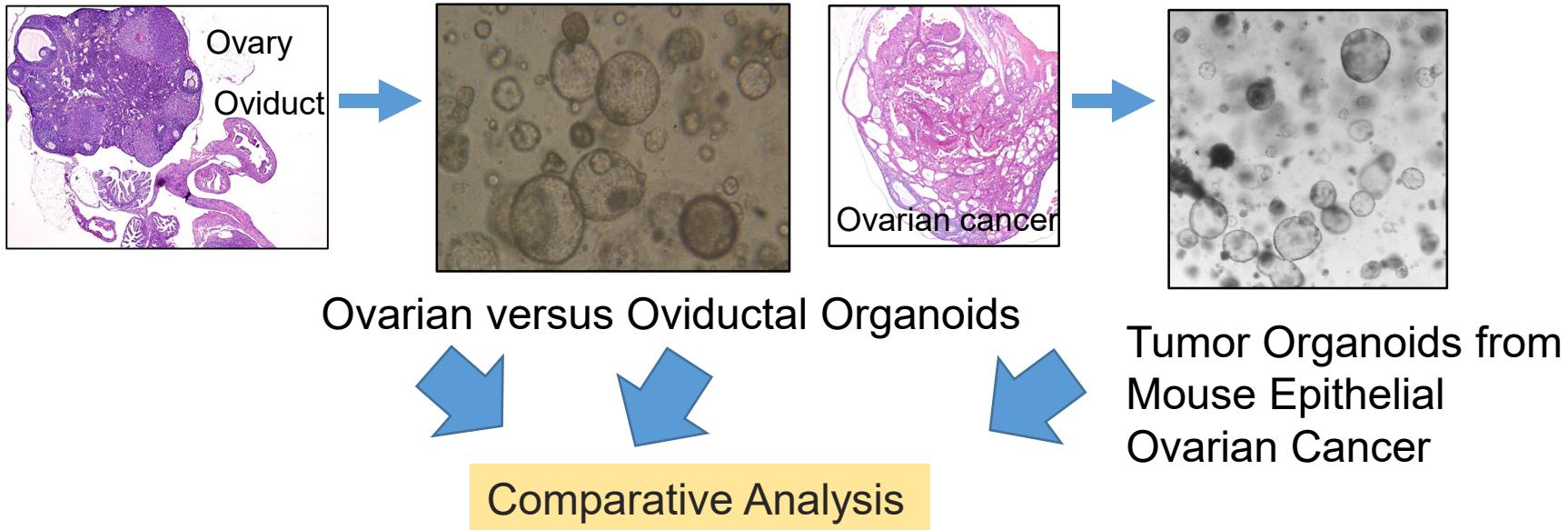
- * 使用蛋白重組工程延長外泌蛋白的生理半衰期，以開發其醫藥用途



陳俊銘老師實驗室

研究上皮細胞分化與癌化機制

1. Investigating a Novel Cell of Origin for Epithelial Ovarian Cancer: New Insights from Mouse Models and Organoid Culture



2. Investigating the Impact of Diphthamide Modification of eEF2 in Liver Carcinogenesis

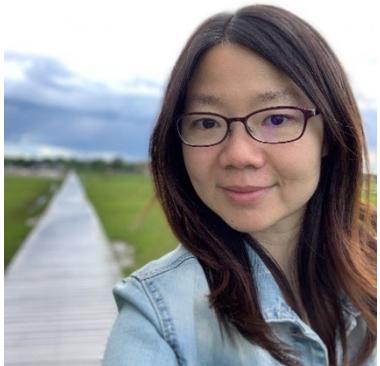
Pten/Trp53-DKO *Pten/Trp53/Dph1-TKO*



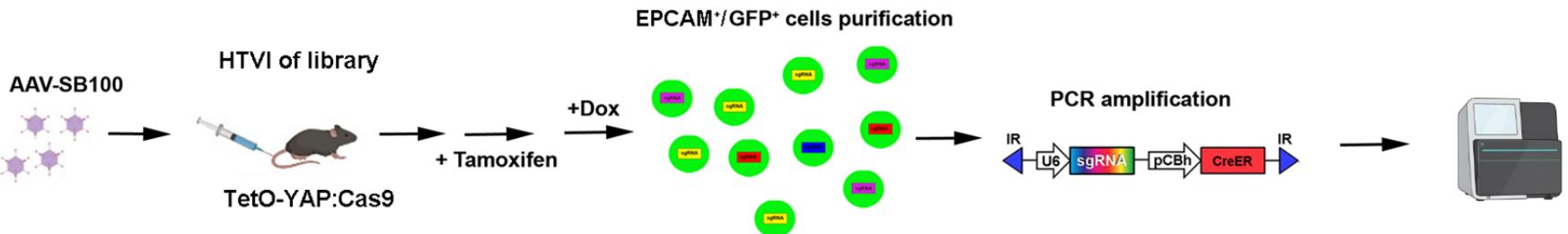
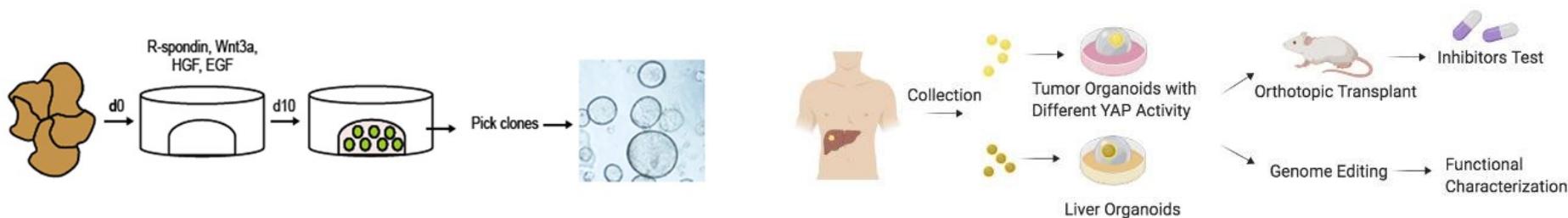
Laboratory of Tumorigenesis and Tissue Regeneration

袁維謙 Wei-Chien Yuan

wcyuan@nycu.edu.tw



研究主題：結合 *In Vivo* CRISPR 高篩選平台與 Patient Derived Tumor Orgnoids 來探討肝癌致病機轉以及肝臟再生相關控制機制，以提供新穎的臨床治療策略





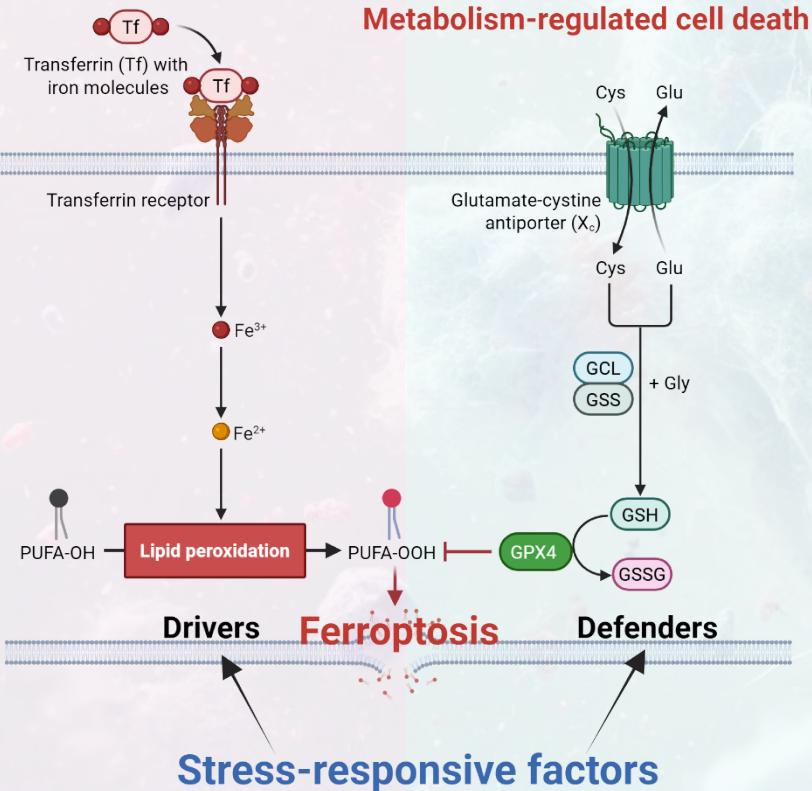
Laboratory of Cancer Metabolism

陳嘉霖 (Chia-Lin Chen, PhD)

Cancer is a type of metabolic disease

Research Topics :

- Identify the key (epi-)genetic regulators of ferroptosis to combat therapeutic resistance



■ Education

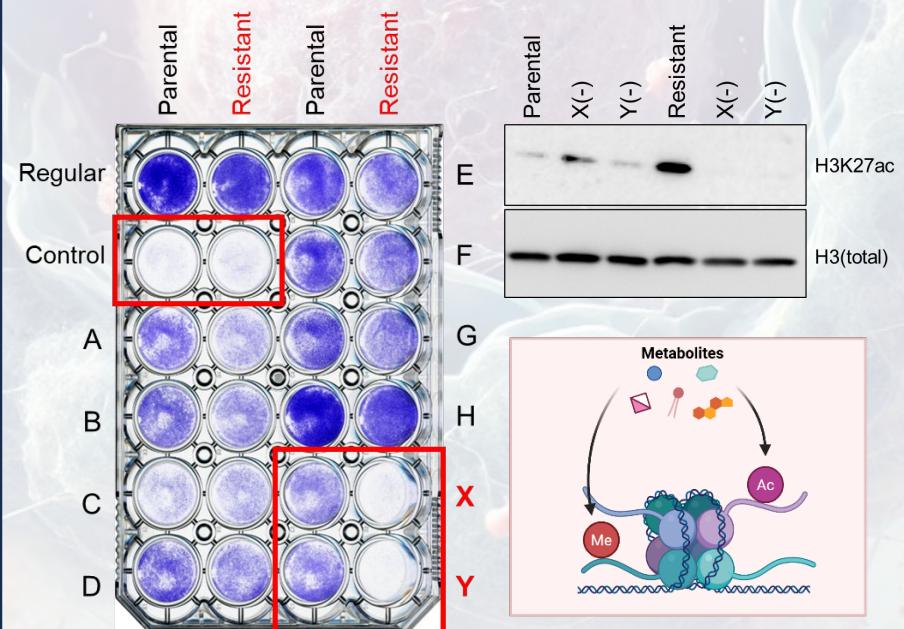
PhD in Genetic, Molecular and Cellular Biology at University of Southern California, USA (2016)

■ Research Experience

Visiting Scholar at University of British Columbia, Canada (2021)

Postdoctoral Research Fellow at NHRI (2016-2021)

- Targeting metabolic vulnerabilities and revealing the non-canonical functions of metabolites in drug-resistant cancer cells

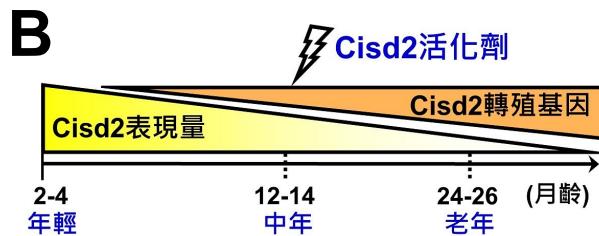
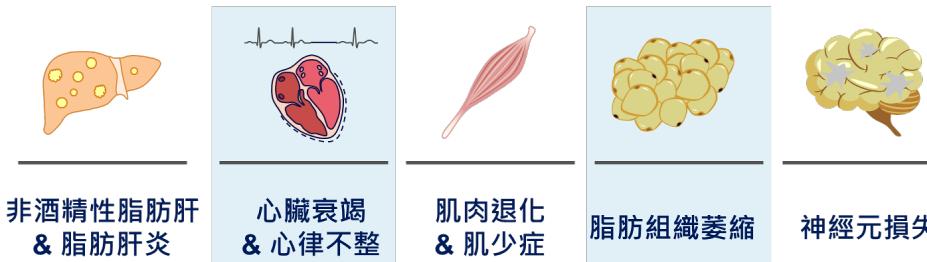


CISD2長壽基因、老化生物學、及抗老化新藥開發

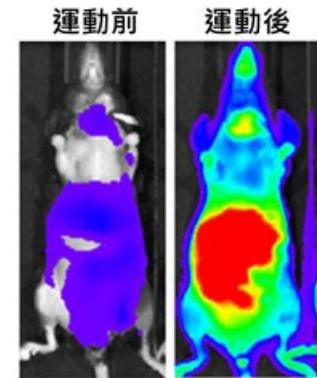


蔡亭芬 特聘教授

A CISD2表現不足，會導致多重器官功能衰退及老化

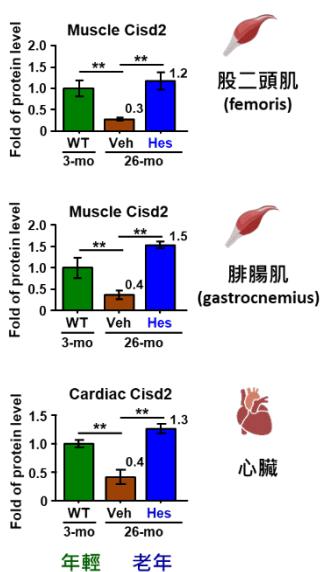
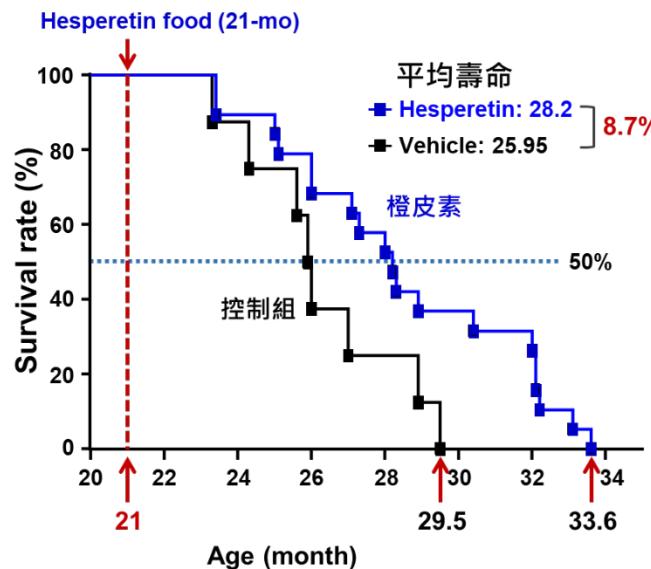


C 運動能有效提升 CISD2基因表現



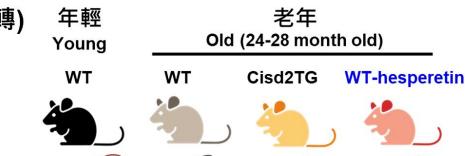
增強的冷光訊號表示
Cisd2長壽基因被活化

D 橙皮素



E

橙皮素延緩 (逆轉)
肌肉老化



Cisd2 level	100%	16-20%	180%	150%	改善肌少症
Sarcopenia	-	Loss	Improved	Improved	
Muscle mass	-	Loss	Improved	Improved	
Molecular & cellular levels					
Disturbance of triad architecture	-	++	+	+	改善肌肉損傷及纖維化、提升粒線體功能
Degenerated fibers	-	++	+	+	
Fibrosis	-	++	+	+	
Degenerated mitochondria	-	++	+	+	
長壽鼠		橙皮素處理			

The Ultimate Relief for Chronic Pain

孫維欣教授 (Wei-Hsin Sun, PhD)

分子神經生物實驗室 (Molecular Neurobiology Lab)

Email: weihsin@nycu.edu.tw

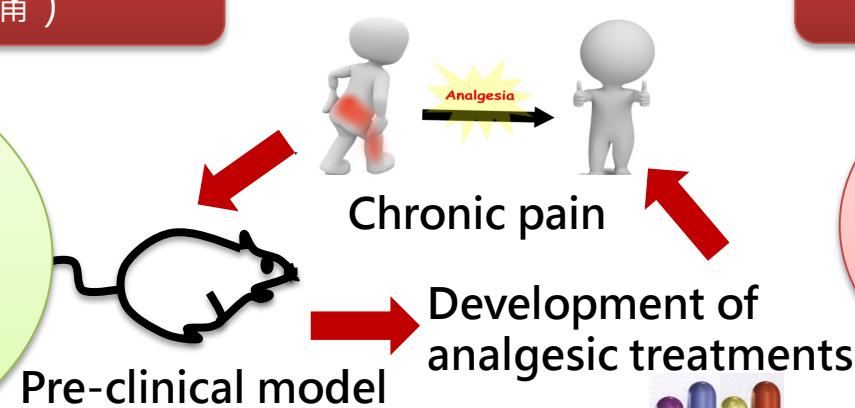
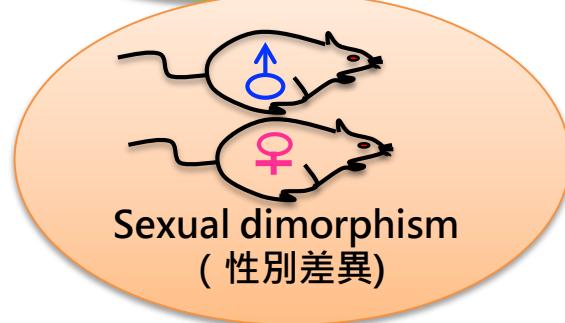
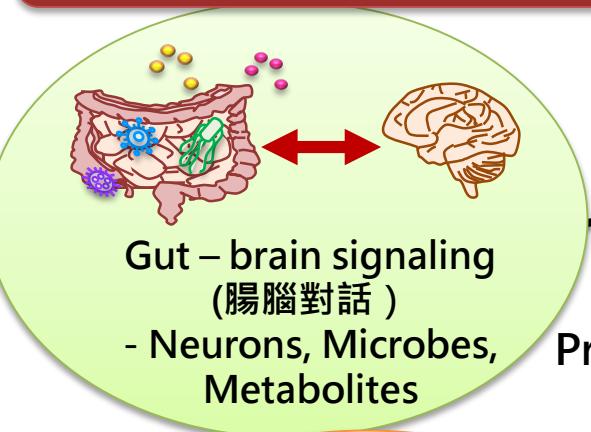
Tel: 02-28267268, 圖資708室



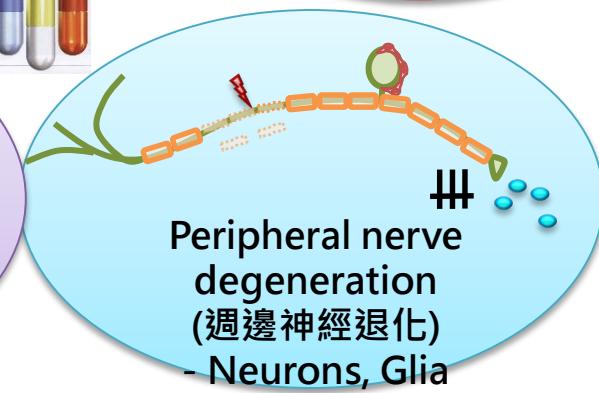
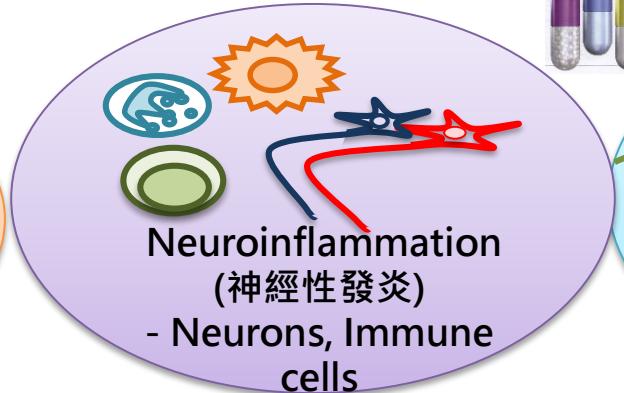
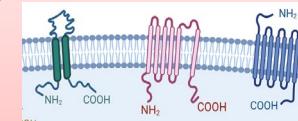
研究方向:

解析慢性疼痛的分子機制，且應用於開發有效且具選擇性的止痛藥，使多種持續性疼痛可以得到紓解。

Topic 1: Rheumatoid arthritis pain (類風濕關節炎性疼痛)



Topic 2: Neuropathic pain (神經病變性疼痛)



The Laboratory of Neuroimmunology



陳虹如老師
神經免疫學實驗室
生物醫學大樓R709



Research Disciplines:
Neuroimmunology, Neonatal Brain Injury,
Stroke, Autism, Neurodegeneration,
Tauopathy, Mitochondria, Brain
energetics, Neurodevelopment

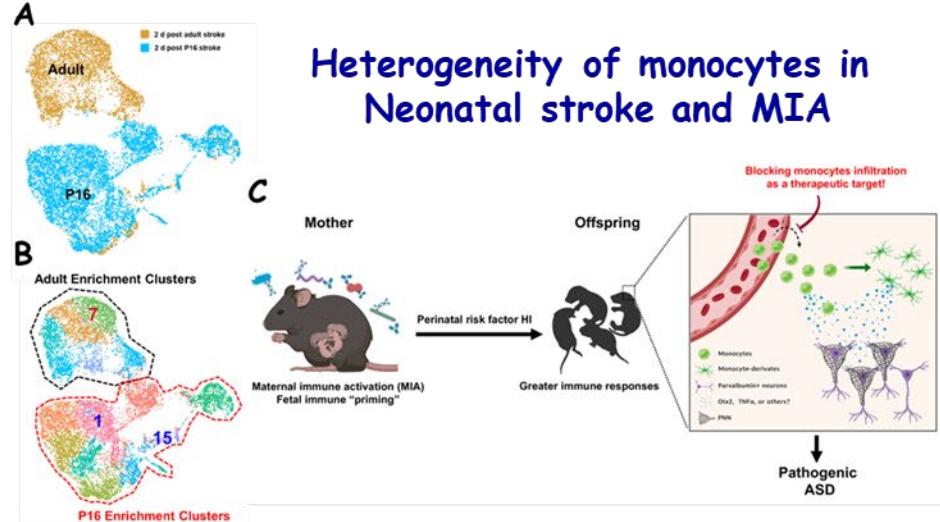


How does the immune system interact with the central nervous system?

#1 Monocytes in Neonatal Brain Injury

研究方向一：新生兒腦部損傷

- (1) 單核球分泌之otx2如何影響PNNs生成造成自閉症
- (2) 單核球作為新生兒腦中風治療標的之機轉

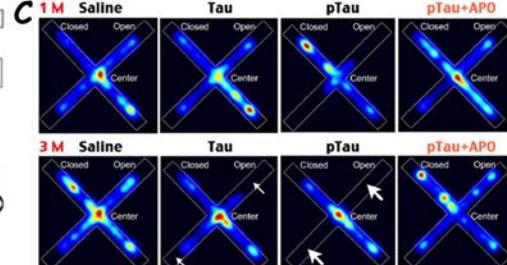
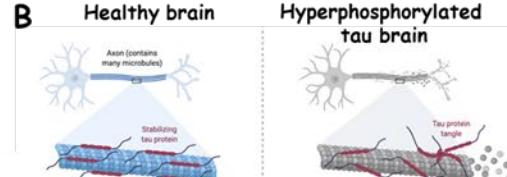
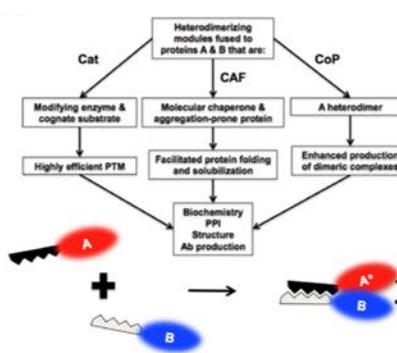


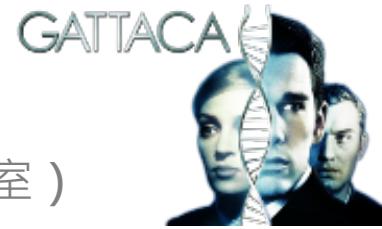
#2 Hyperphosphorylated tau in Neurodegeneration

研究方向二：神經退化

- (1) 探討單核球/微膠細胞在阿茲海默症中的疾病角色
- (2) 單核球/微膠細胞如何造成疾病模式小鼠之認知異常

p-tau produced by the PIMAX system





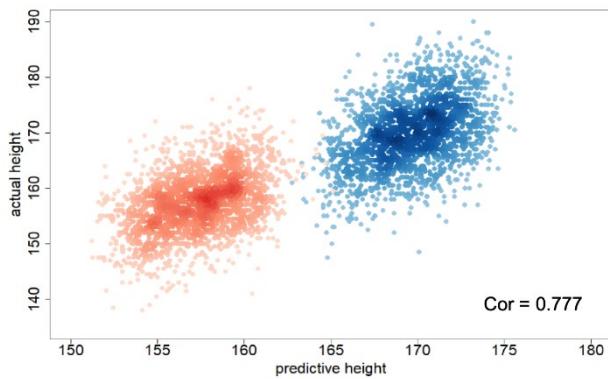
Population and evolutionary genomics lab

可文亞老師實驗室 (圖資629) (族群遺傳和演化基因體學實驗室)

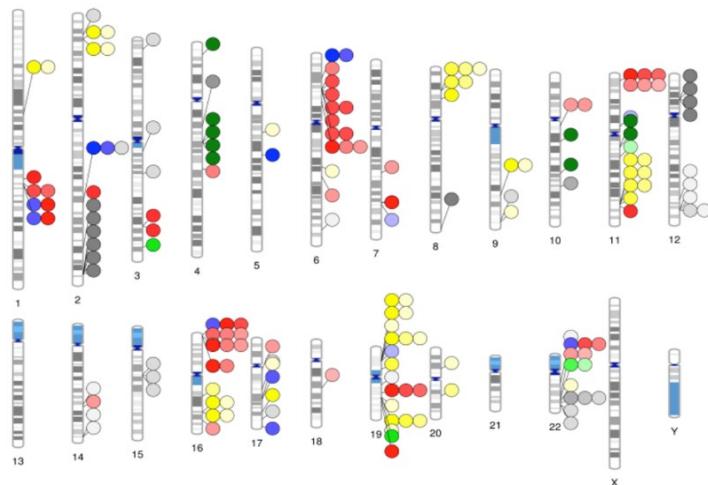
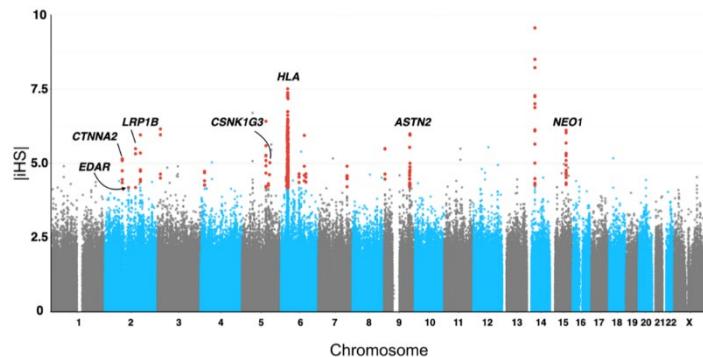
- Genetic origins and admixed ancestry characterization of human populations
(人類族群與其基因體的遺傳起源)



- Polygenic score risk prediction of disease susceptibility/complex traits
(疾病與數量性狀的多基因風險預測)



- Identifying genetic variants underlying evolutionary adaptation and/or disease susceptibility in humans
(尋找人類演化適應或與疾病相關的遺傳變異)



蔡宜芳：兼任教授，中研院分生所特聘研究員

美國國家科學院海外院士、中央研究院院士

中央研究院分子生物研究所N317室

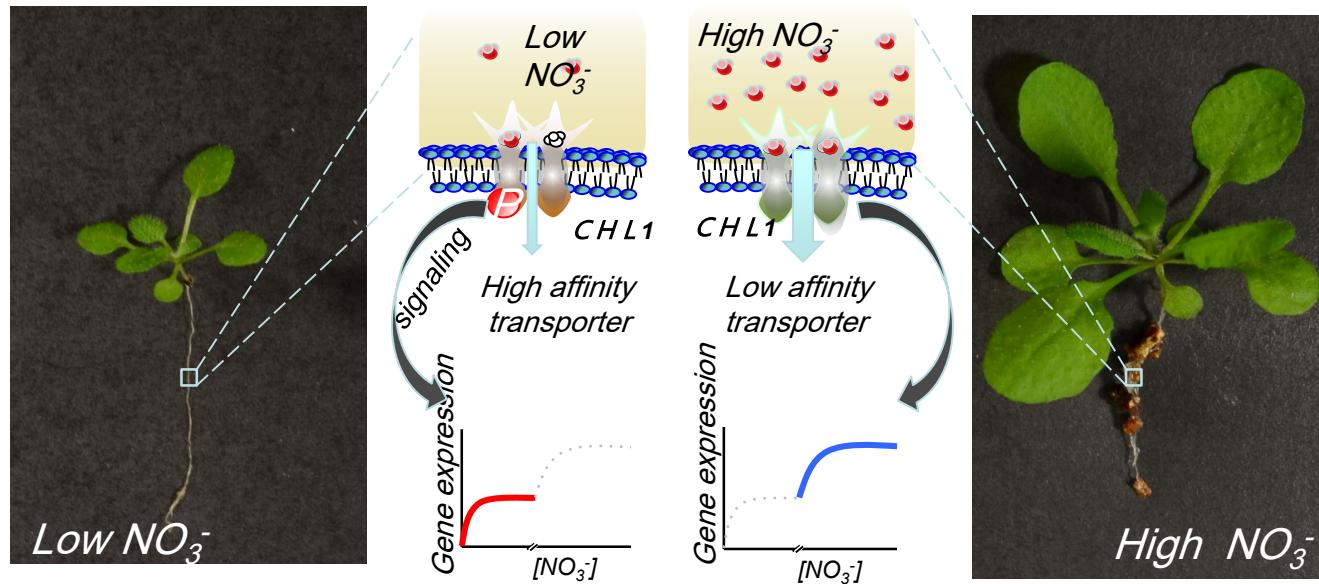
yftsay@gate.sinica.edu.tw · 27899198

<https://www.imb.sinica.edu.tw/ch/faculty/profile/mbyftsay.html>



研究領域：訊息傳導、膜蛋白功能、營養學

研究方向：硝酸鹽利用效率影響農作物產量甚大，我們從分子生物的角度來了解植物如何從土壤中吸取硝酸鹽、如何儲存硝酸鹽、如何偵測外在或體內的硝酸鹽含量而改變植物的生長與代謝，進而將基礎理論加以應用以增加水稻的氮利用效率。利用多元的實驗方法包含遺傳、分生、基因體、代謝質體、蛋白質體。



國家中醫藥研究所 盧重光 博士

天然藥物實驗室
傳醫大樓甲棟6樓652室
cklu@nricm.edu.tw
Tel. 02-28201999 ext.5441

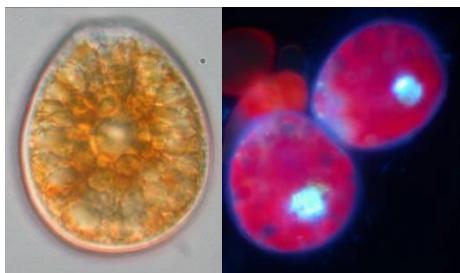
研究領域：天然藥物化學、藻類與微生物培養

利用生物學與化學相結合的篩選方法，由海洋與陸地特殊棲所篩選共生於其他生物體中的藻類與微生物，發展藥用新資源。以現代層析技術與代謝體學分析方法，配合活性篩選平台，發掘具有專利性的新穎化合物，以高解析的NMR與質譜等技術完成化合物的結構解析，進行新先導藥物的研究。

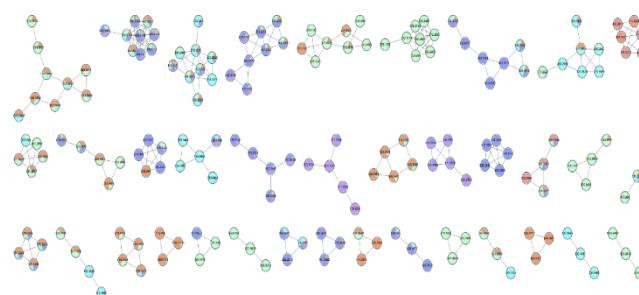


目前主要的研究主題包括：

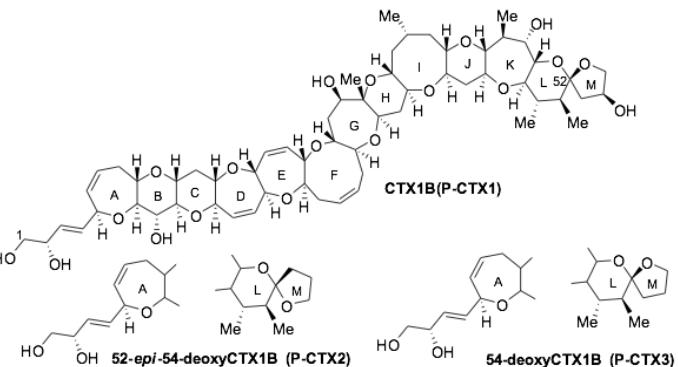
1. 由中草藥中找尋促進長壽、美容與神經再生之物質。
2. 調控海洋渦鞭毛藻 *Gambierdiscus* spp. 之生長條件，利用於量產 Na^+ channel activators。
3. 海洋微生物與藻類純化與培養、及其具生物活性天然物之結構解析，開發具潛力之先導藥物。



Prorocentrum lima



LC-MS/MS based molecular networking for finding the interested compounds.



林書葦 副研究員

神經迴路與行為實驗室 @ 中研院跨領域大樓8C03室

sueweilin@gate.sinica.edu.tw; (O) 02-2789-9315

<https://sueweilin.wixsite.com/linlab>



研究領域：動機與記憶的神經機轉、神經迴路的形成

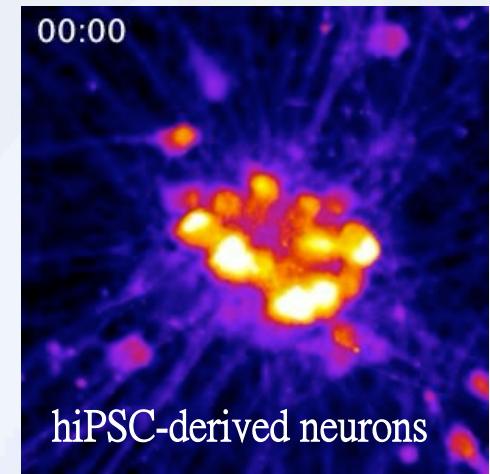
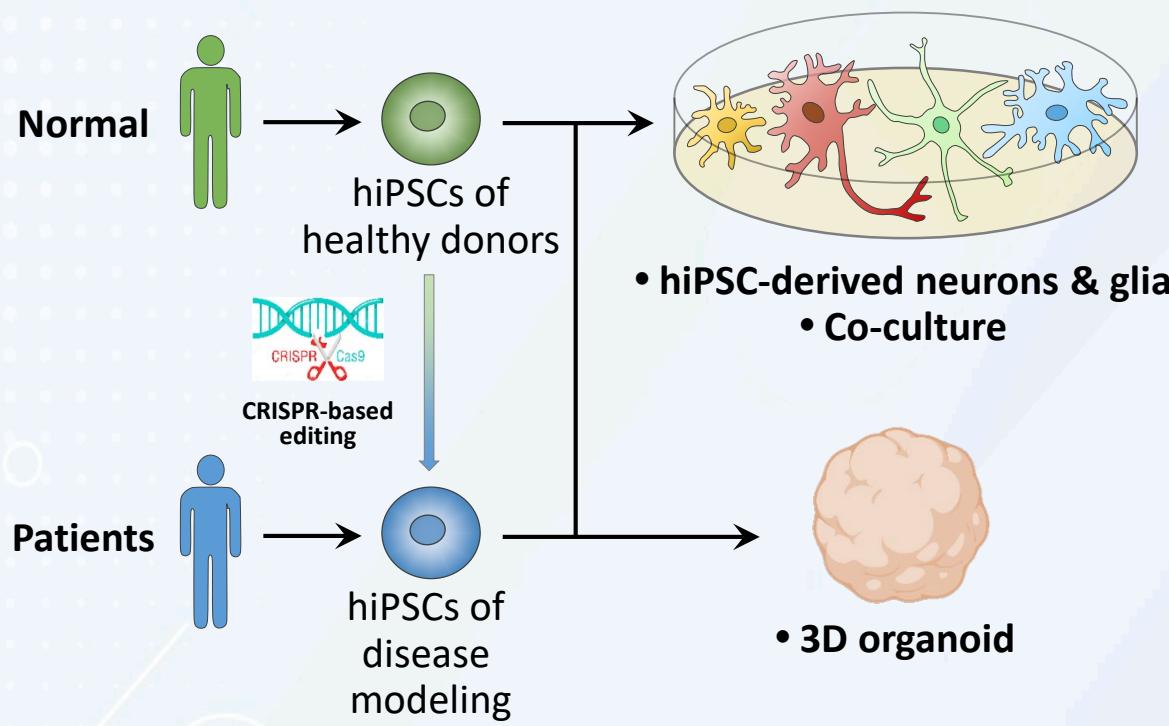
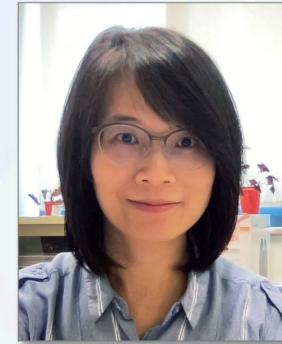
研究方向：

1. 以遺傳學與光學顯微技術研究果蠅腦神經迴路的形成機制
2. 探討餓與渴控制動物覓食、覓水行為的神經機轉
3. 研究大腦儲存、提取記憶的細胞與分子機制



Lab Theme: Exploring Neural Development and Degenerative Diseases with Human iPSC-Derived Cultures

透過人類誘導型多功能幹細胞(hiPSC)分化技術建立不同神經疾病模型
以及腦類胚體研究模式探討大腦發育及退化疾病之細胞層級機轉



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