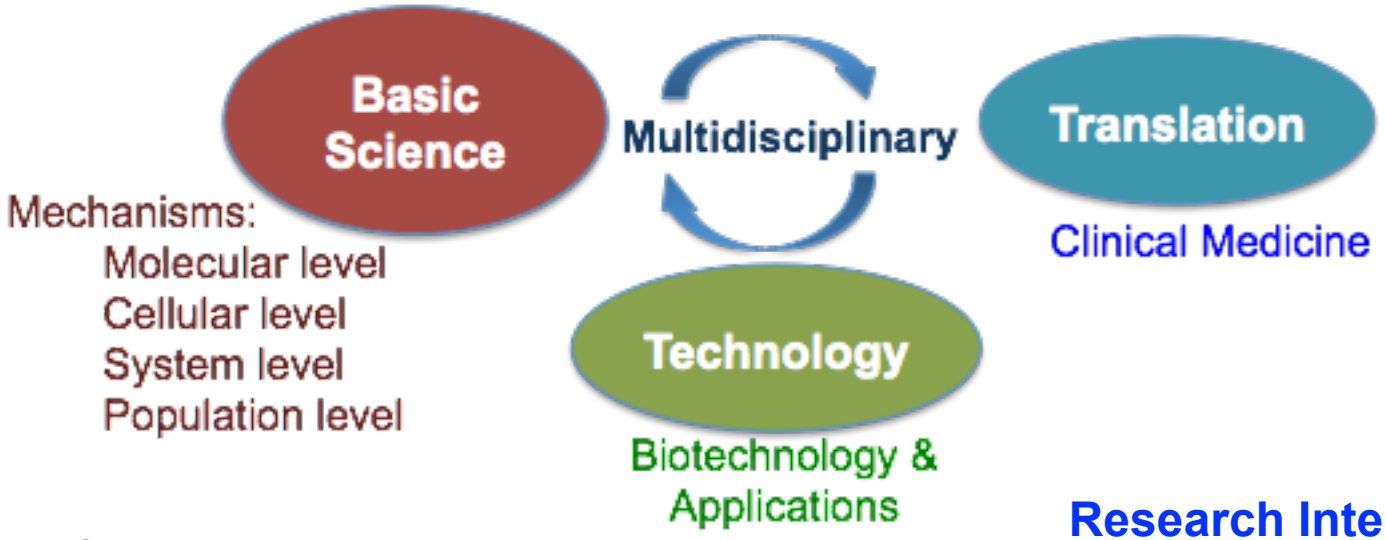
國立陽明交通大學生命科學院

生命科學系暨基因體科學研究所 簡介



民國115年11月

From Basic to Application and Translation Medicine



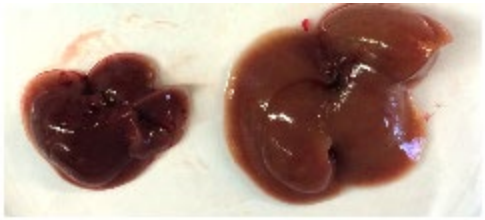
Approaches:

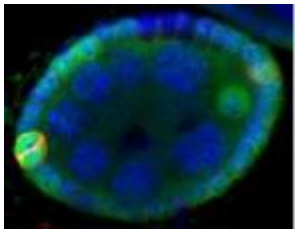
- Structural biology
- Molecular biology
- Cell biology
- Model organisms
- Evolutionary genomics
- Drug discovery
- Computer simulation
- Biochemistry
- Enzymology
- Proteomics
- Genomics
- Imaging
- Biophysics
- Big data analysis

Research Interests:

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

基礎與轉譯醫學

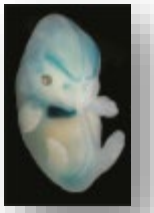


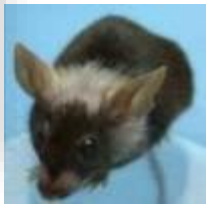


Organ level

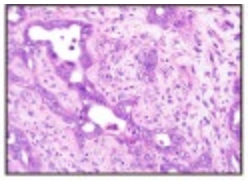


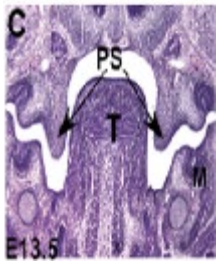






Organism level



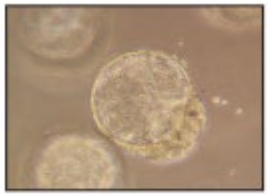


Tissue level

Department of Life Sciences & Institute of Genome Sciences

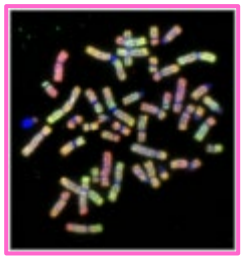
Population level

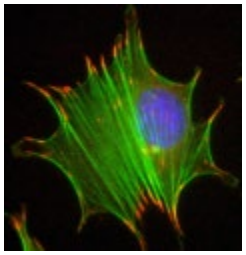




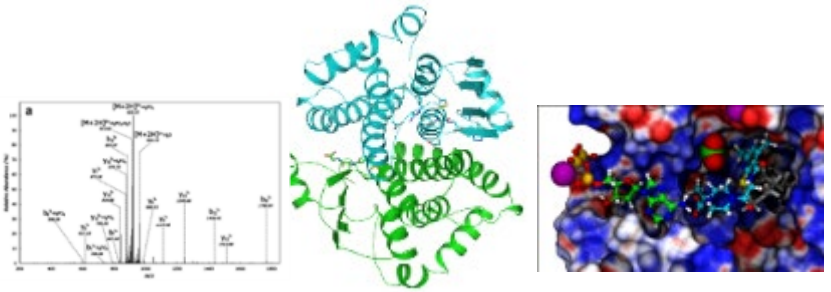
Organoids

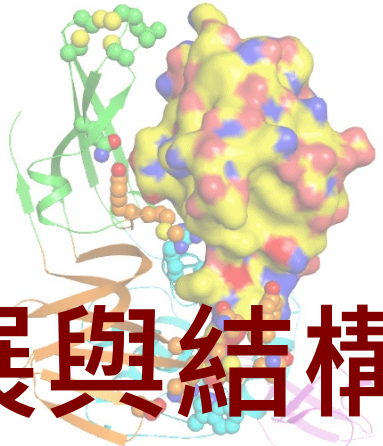
Cellular level





Molecular level





藥物發展與結構生物學組

(The Drug Development and Structural Biology sector)

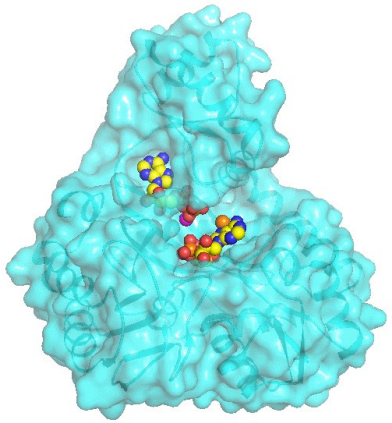
基因與發育組

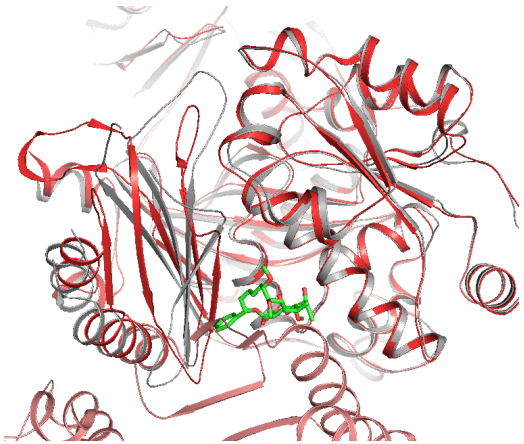
(The Genes and Development sector)

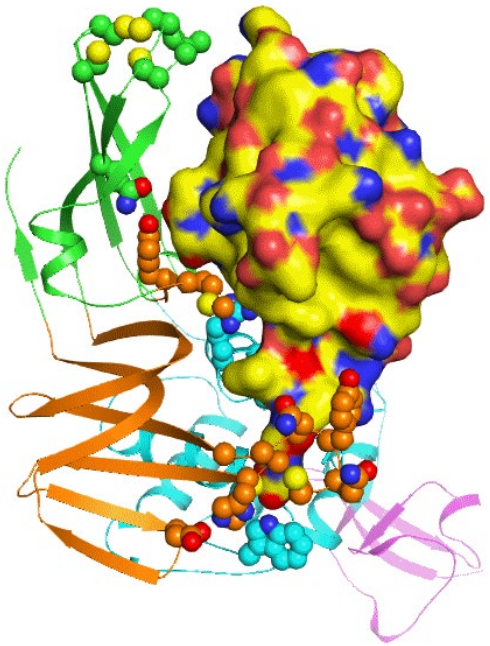


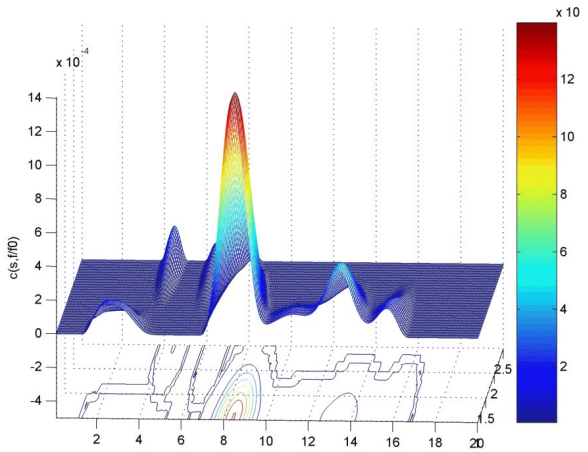


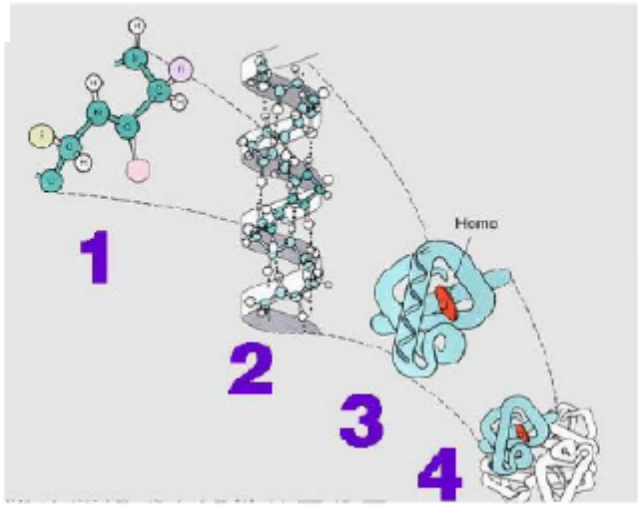
藥物發展與結構生物學組











Sequence	Structure	Function & Activity	Application
Mass	X-ray crystal NMR CD	Fluorescence ITC AUC Single molecule	Drug design



張欣暘副教授簡歷

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：

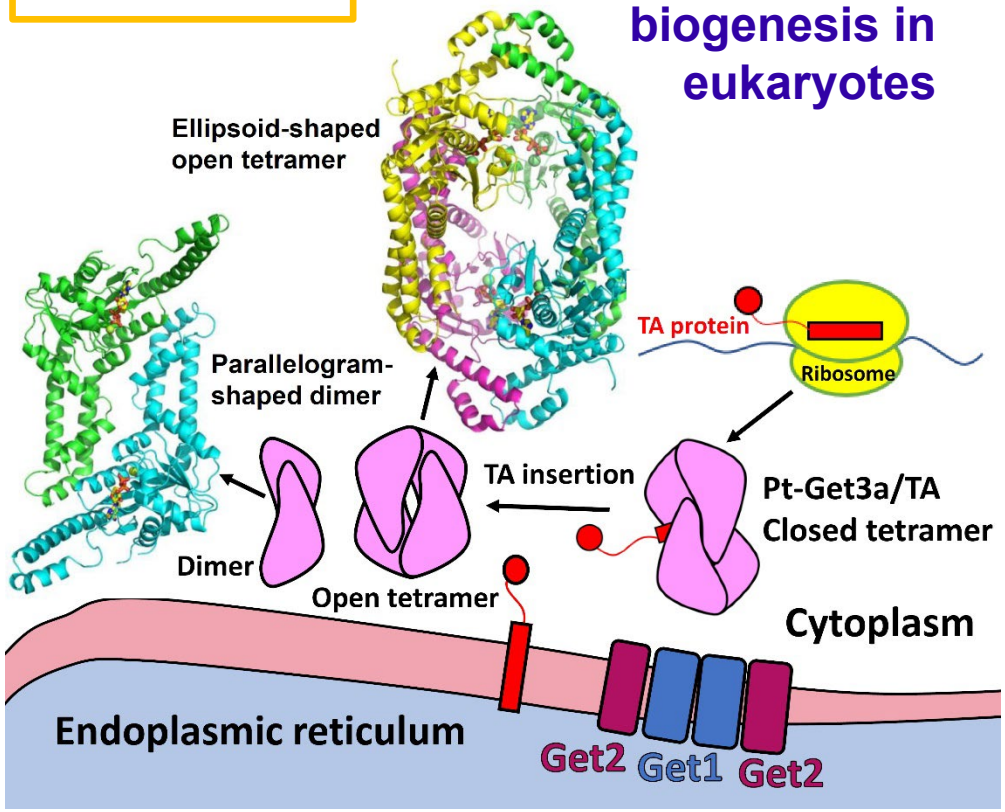
hychang5@nycu.edu.tw

02-28267168

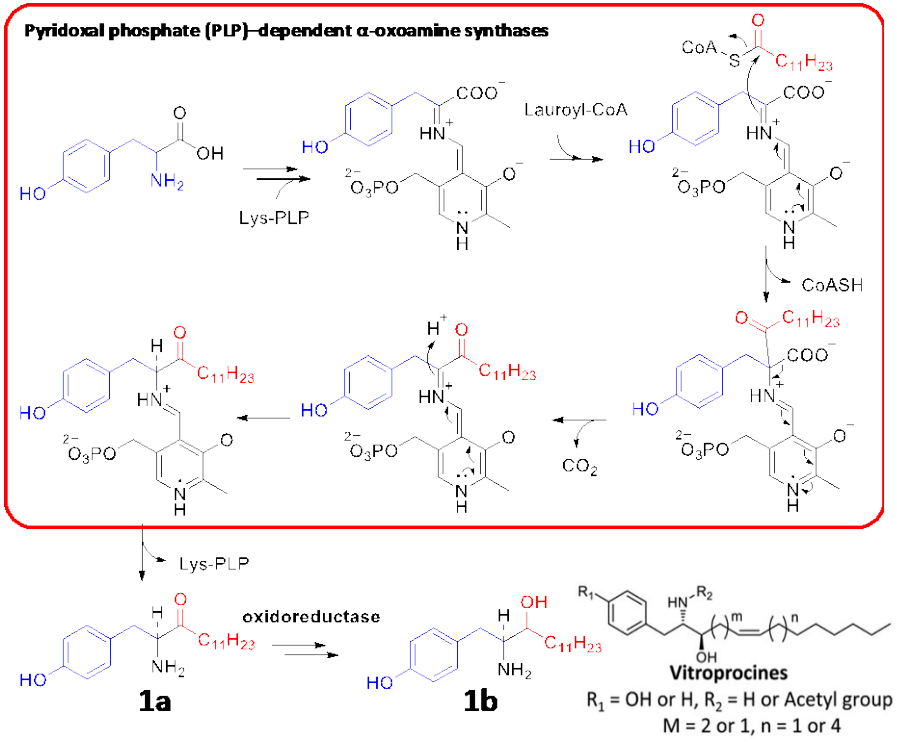
學術專長：X-Ray 蛋白晶體學、酵素動力學、結構生物學、分子生物學、 生物化學

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

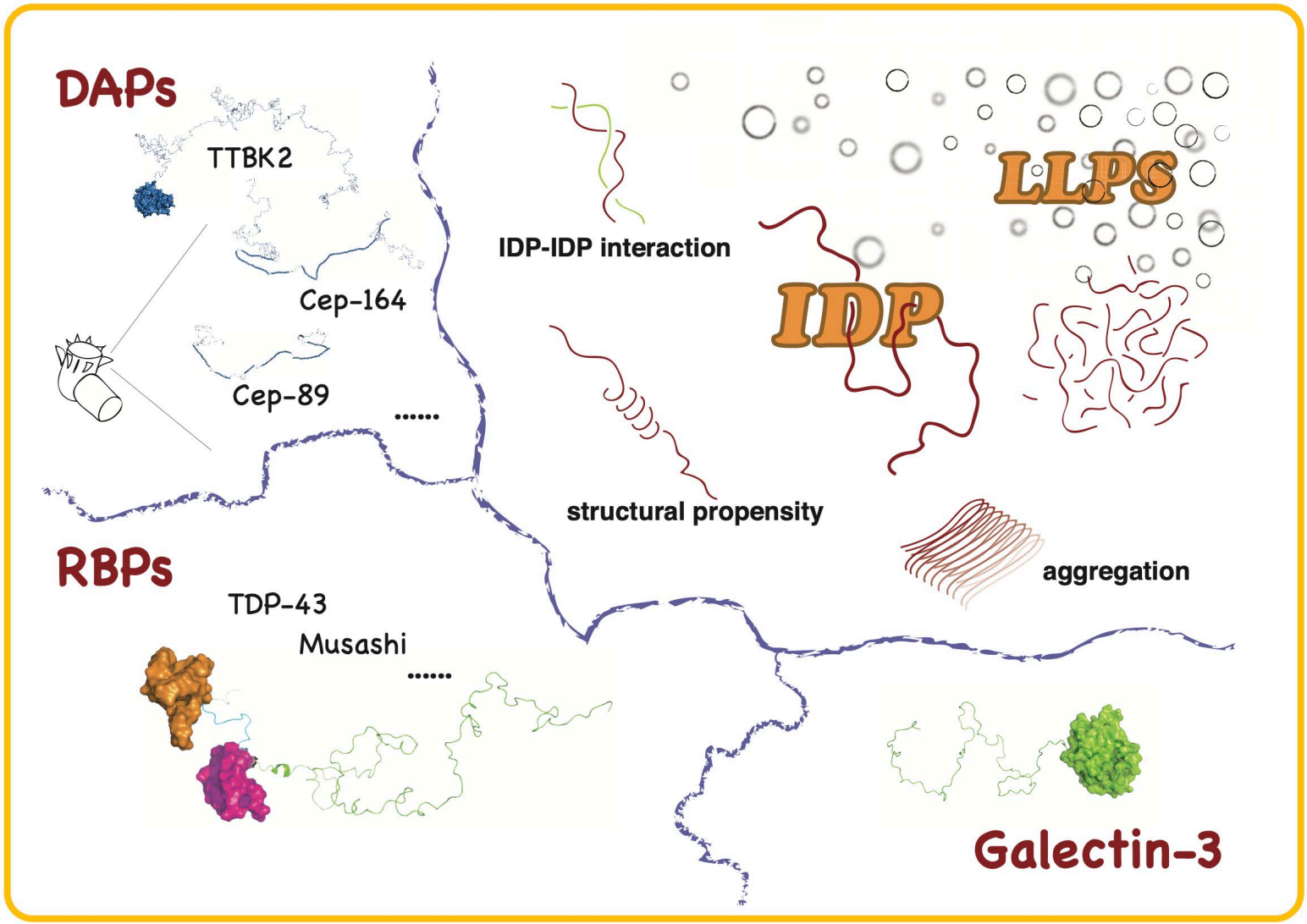


研究興趣：

- 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



黃介嶸 老師

.....實驗室介紹短片

實驗室網頁.....

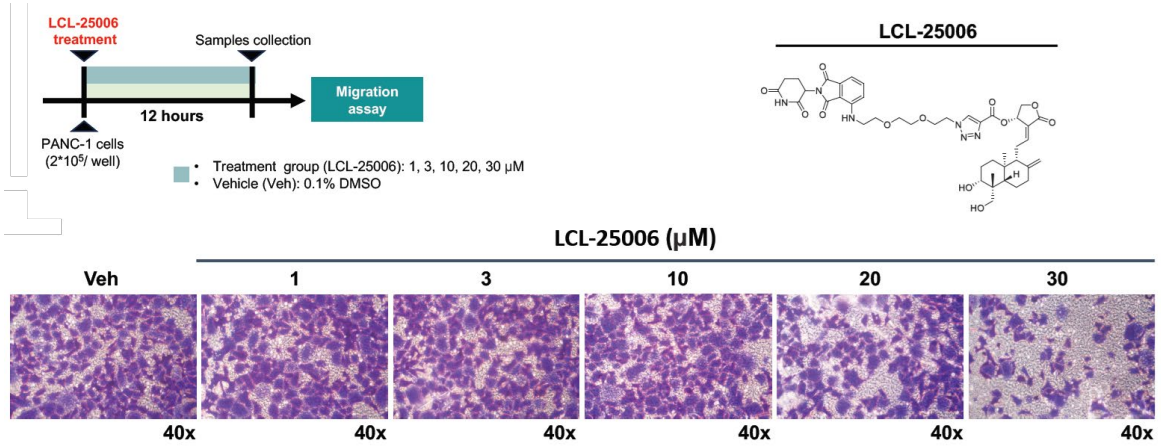
林照雄 教授

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。

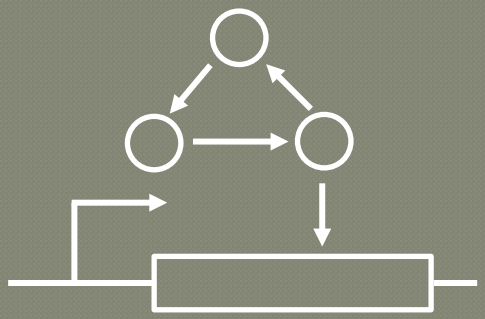


- 以蛋白體及代謝體學來釐清中草藥活性成分如穿心蓮內酯的胞內作用對象。

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**

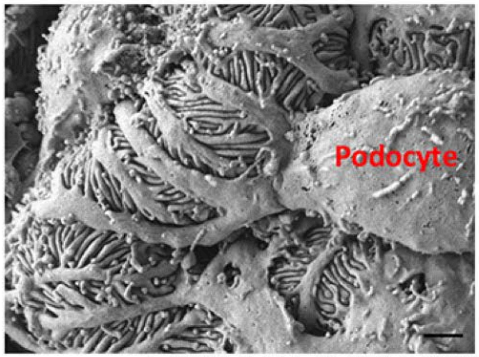
Email: yjoechen@nycu.du.tw



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

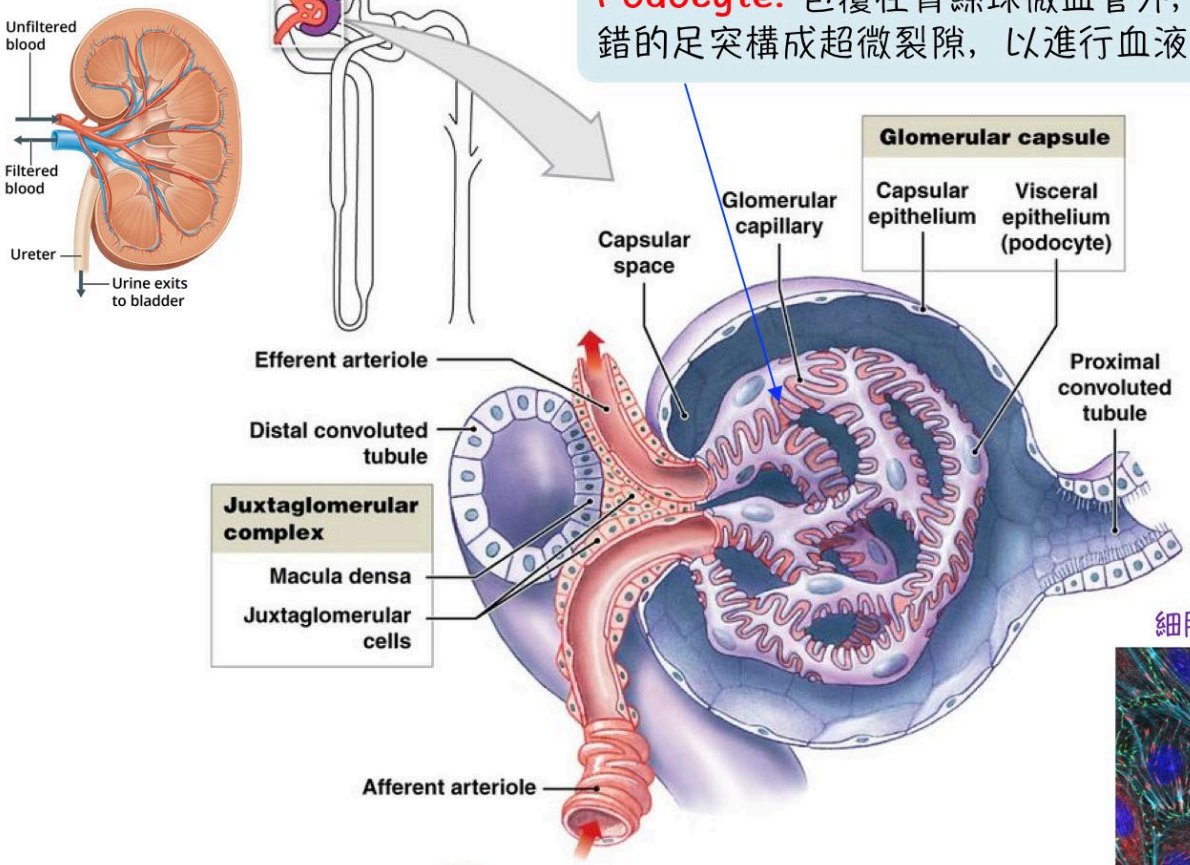


(感謝陳俊銘老師實驗室提供)

- 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。

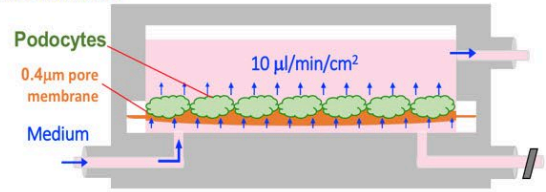
利用溫度誘導分化的足細胞株，建立模擬過濾壓力的細胞模式，探討足細胞的生理與病理問題。



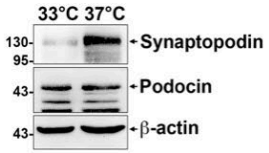
a Important structural features of a renal corpuscle.

© 2015 Pearson Education, Inc.

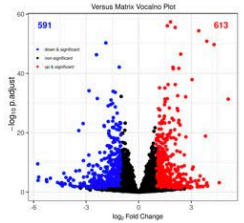
過濾模組



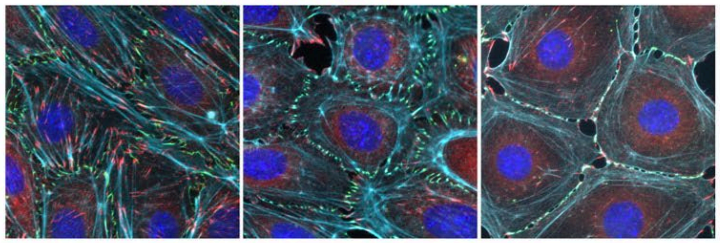
溫度誘導分化



基因表現的改變



細胞骨架、附著結構的變化



Paxillin/ZO-1/Phalloidin/Hoechst

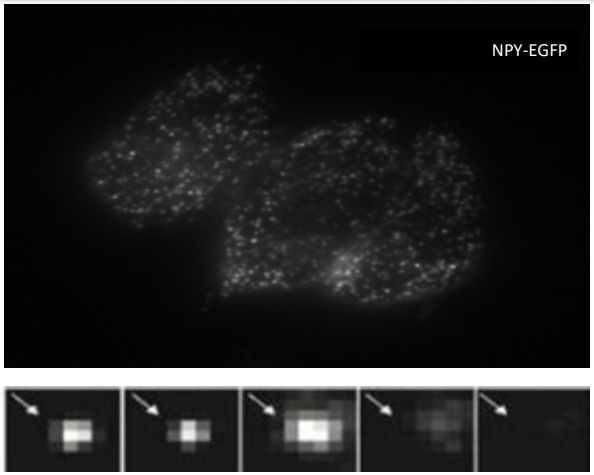
Lab of Cell Bioimage Informatics

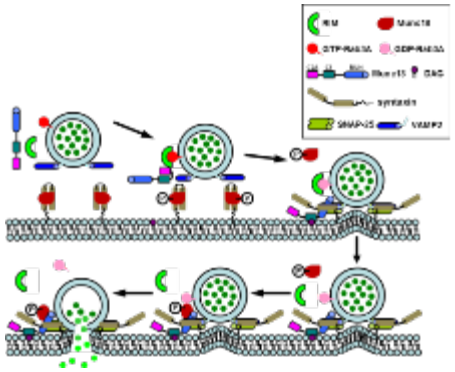


Chung-Chih Lin 林崇智

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

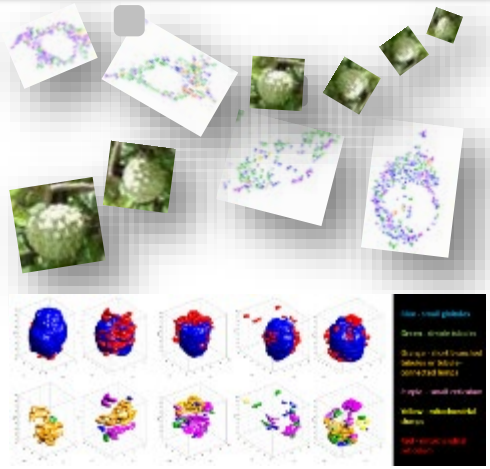
Tracking dynamic bioimage informatics to understand the molecular mechanism of secretion





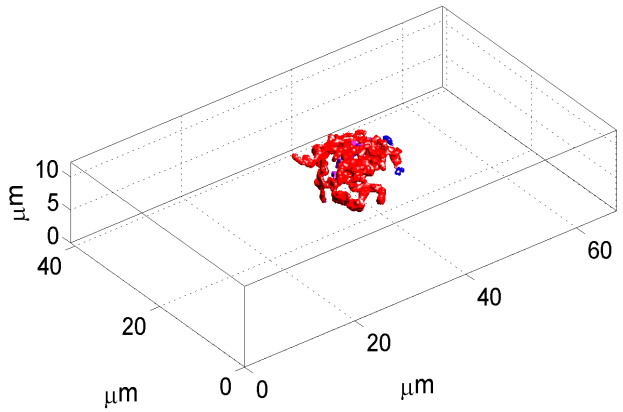
Huang et al., Traffic 2011
Huang et al., J. Cell Sci., 2018

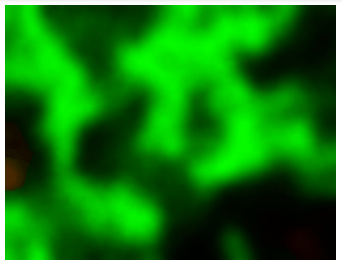
High content analysis of mitochondria dynamics for drug profiling and disease diagnosis

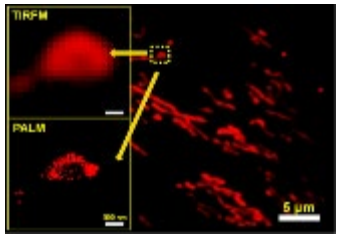


Peng, et al., PLoS Computational Biology 2011

The mechanism of mitochondria dynamics and inheritance during cell division







藍昇輝老師 實驗室

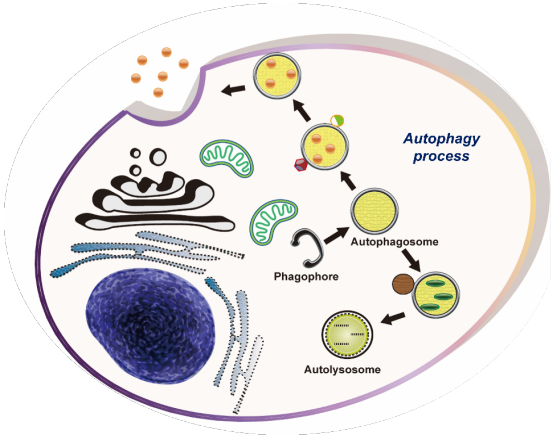
研究主題: 細胞自噬功能與調控

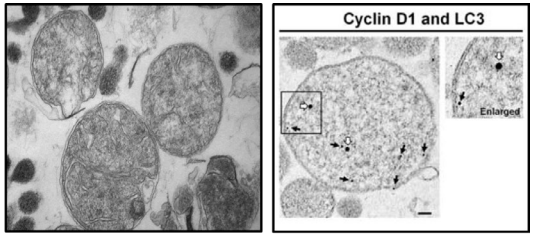


圖資大樓7樓 703室
shlan@nycu.edu.tw; 02-2826-7030 ext. 66210

研究方向:

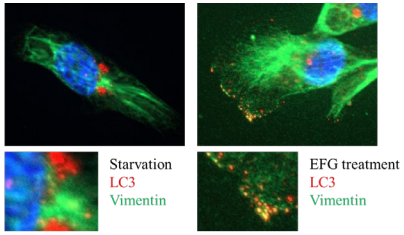
本實驗室研究方向是利用**細胞**與**動物**模式探討細胞自噬作用之創新功能，且進一步於生理及病理中印證，並結合臨床醫學開發相關之治療策略。





Degradative autophagy:

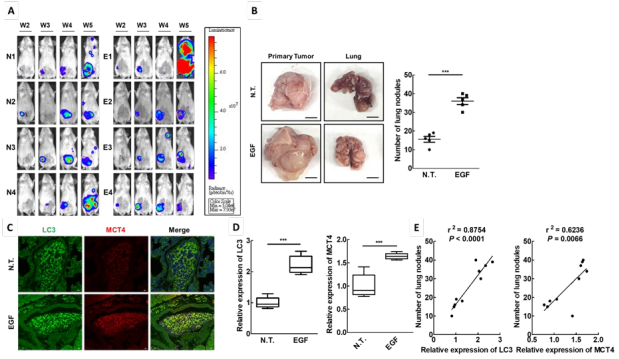
- To purified autophagosomes from cell lines and tissues
- To identify the novel cargos or regulatory proteins
- To manipulate the process of autophagy from initiation to degradation

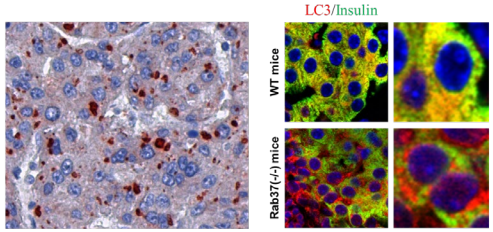


Secretory autophagy:

- 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





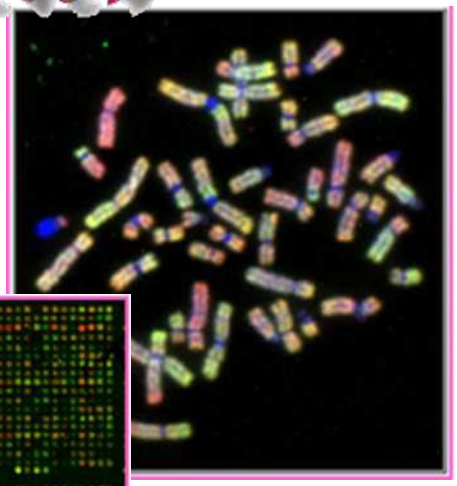


The Role of Autophagy in physiology and pathology:

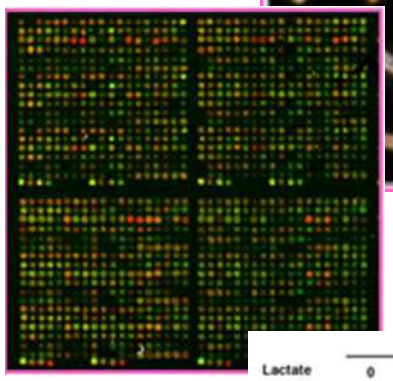
- To establish the animal model for diseases (e.g., cancer, type-II DM, aging)
- To regulate the autophagy activity *in vivo*
- To confirm the mechanisms *in vivo* and in clinical specimens (tissue array)



Molecular Cytogenetics



陳燕彰 副教授



研究主題:

發展遲緩兒童的基因異常偵測

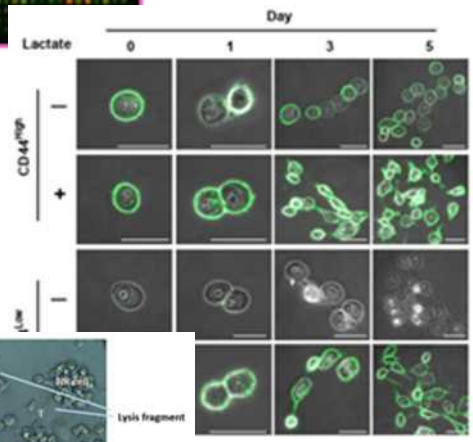
- 利用染色體晶片(array CGH)，次世代基因定序(NGS)、等技術，提供發展遲緩兒童遺傳 變異分析的完整解決方案，藉此提升發展遲緩兒童正確的病因診斷。

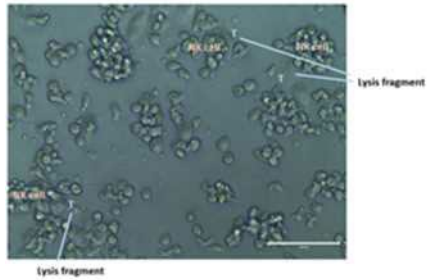
先天代謝異常疾病基因治療的發展

- 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

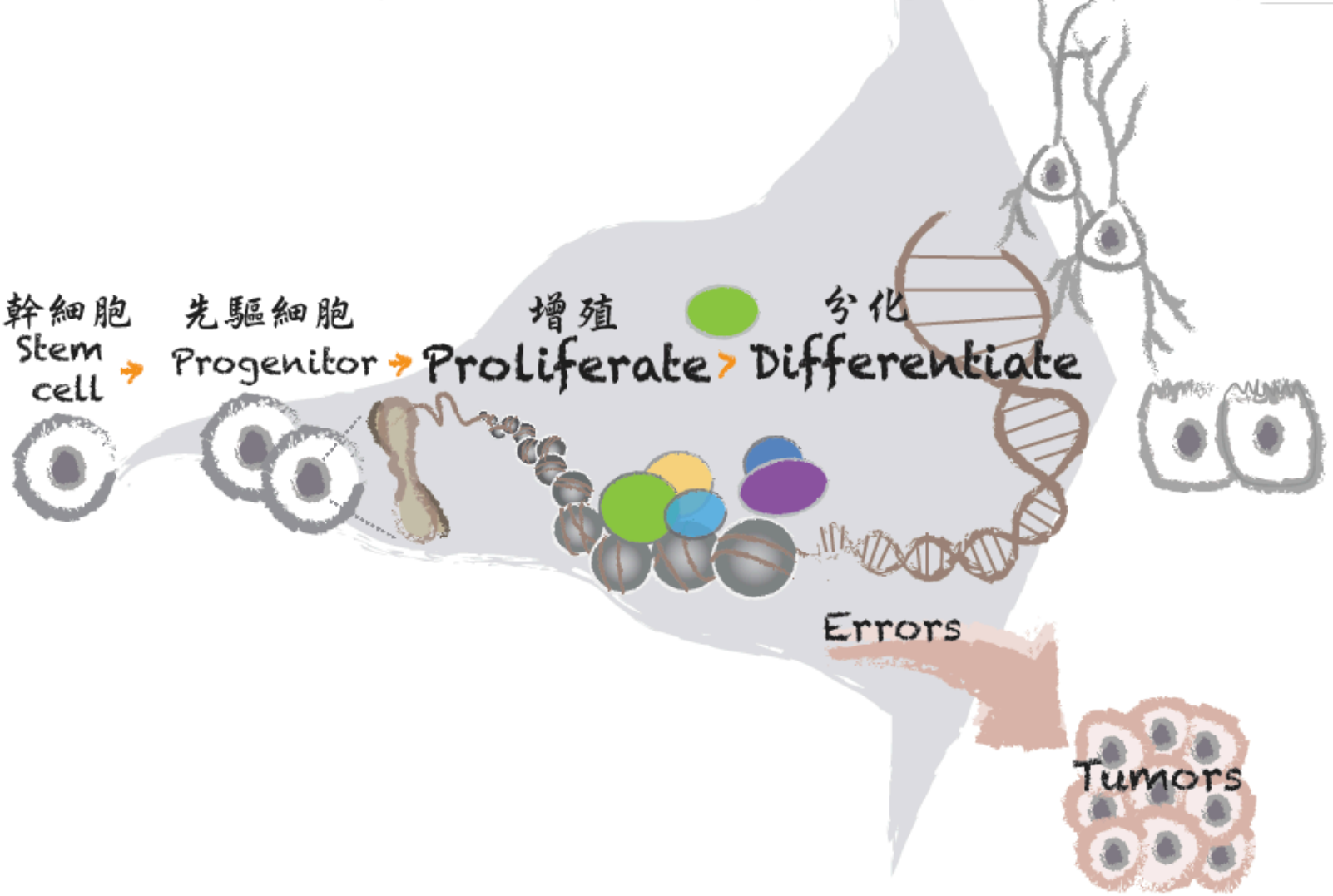
- 1. 探討乳酸對腫瘤微環境中免疫細胞的細胞毒殺能力下降的機轉，特別是對NK cell的影響。
  2.發展針對EpCAM的CAR-NK 92，評估其對食道癌(esophageal carcinoma)等相關表皮細胞來源之惡性腫瘤的毒殺能力 ，以及做為臨床癌症治療的可行性。





李敏嘉 老師 (圖資904#67040)
Lab of Molecular Epigenetics 分子表觀遺傳學實驗室

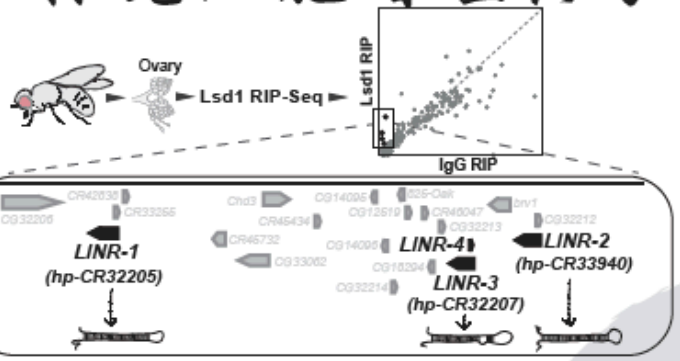
探究細胞增殖與分化的表觀遺傳控制機轉

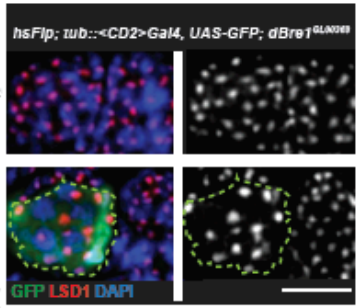


Lab of Molecular Epigenetics 分子表觀遺傳學實驗室

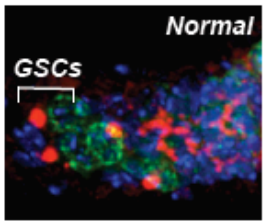
探究細胞增殖與分化的表觀遺傳控制機轉

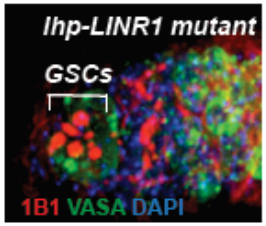
李敏嘉 老師 (圖資904#67040)

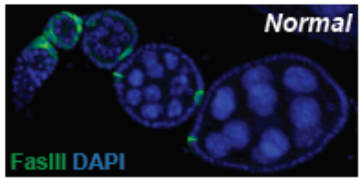


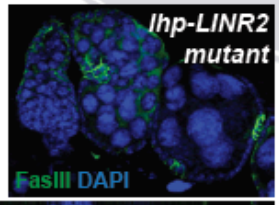


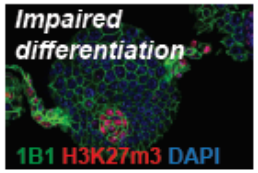
幹細胞 Stem cell → 先驅細胞 Progenitor → 增殖 Proliferate → 分化 Differentiate

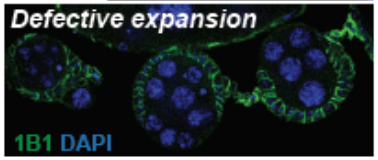




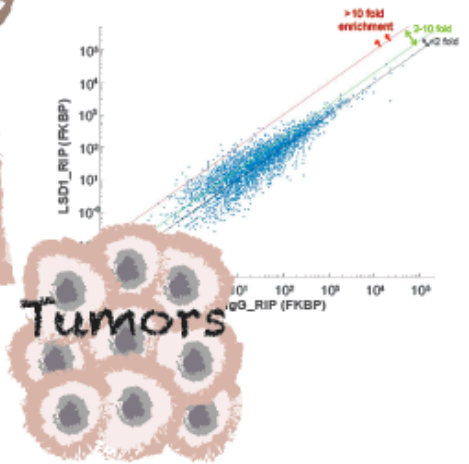






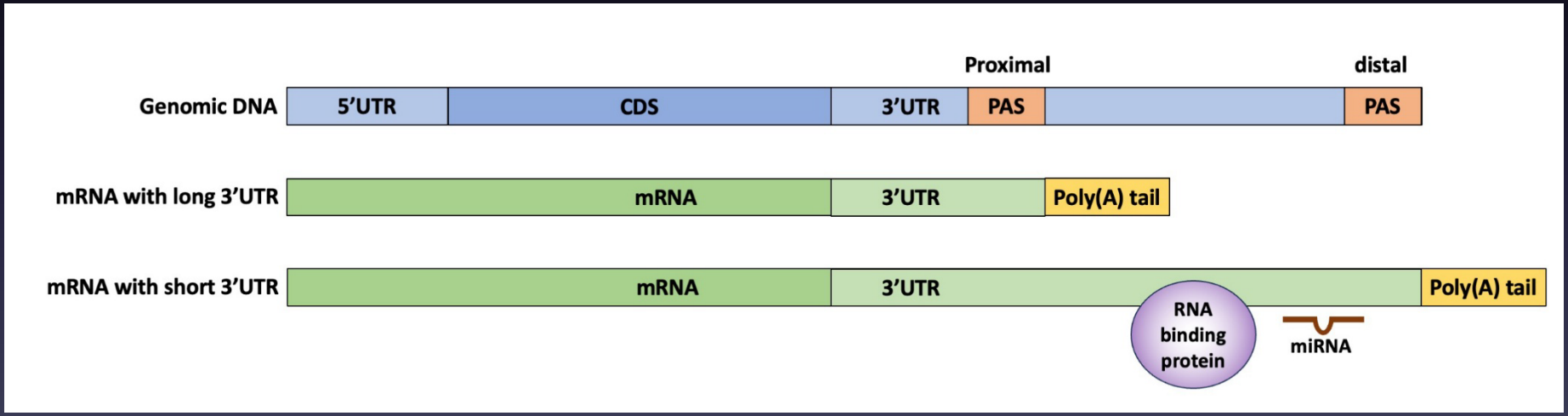


Errors

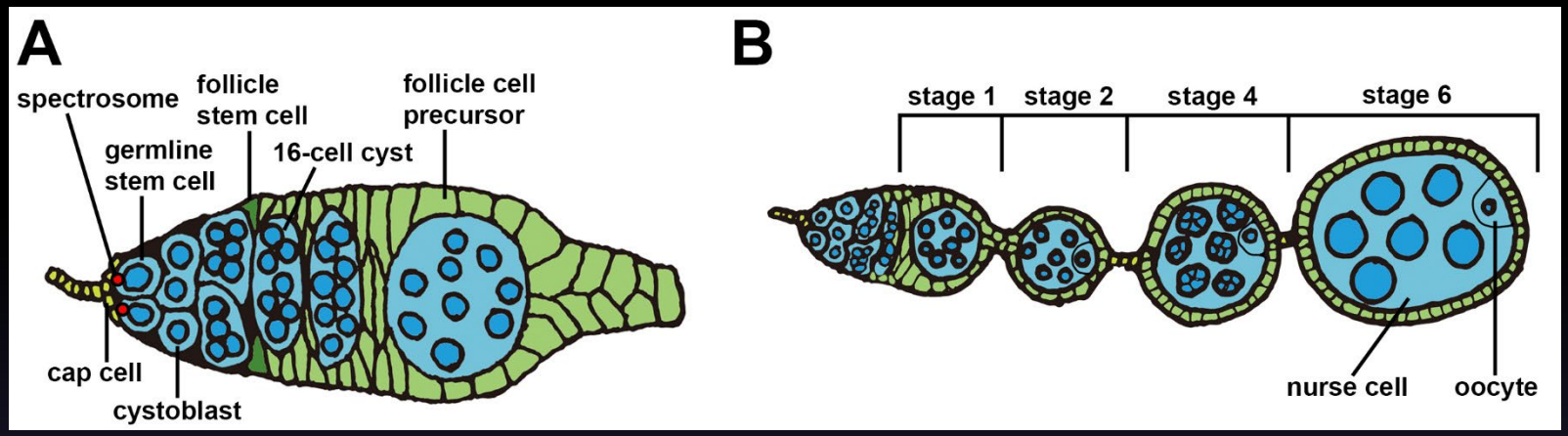


俞震亞　　專長：幹細胞，發育生物學，基因表現調控

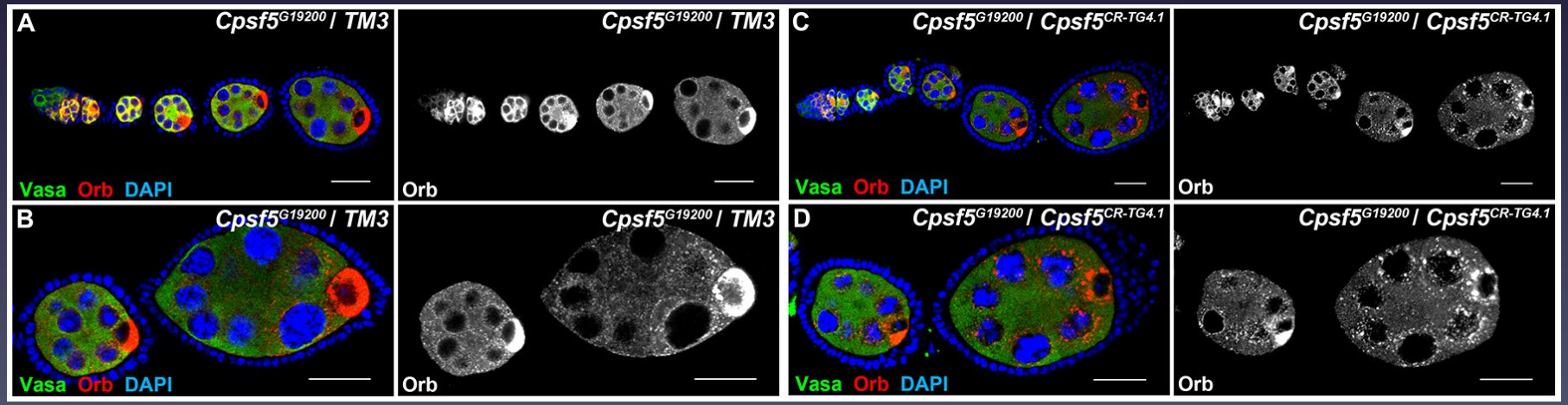
研究主題：超過70%的基因有不只一個多腺苷酸化位點，造成轉錄後的mRNA有不同長度的3‘非轉譯區（3’untranslated region），此一過程稱為選擇式多腺苷酸化（alternative polyadenylation, APA）。3‘非轉譯區是微型核糖核酸（miRNAs）與各種蛋白質結合調控的平台，所以3’非轉譯區的長度會影響mRNA的穩定性與轉譯，進而影響蛋白的產量或分布位置，而影響細胞的行為。APA是一種重要的轉錄後調控，但是目前APA及其功能的相關研究並不多。



我們以果蠅卵巢為模式，探討Cpsf5/6, 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濾泡幹細胞；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。



Cpsf5/6 調控APA，進而維持生殖幹細胞與濾泡幹細胞，並影響生殖細胞與濾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

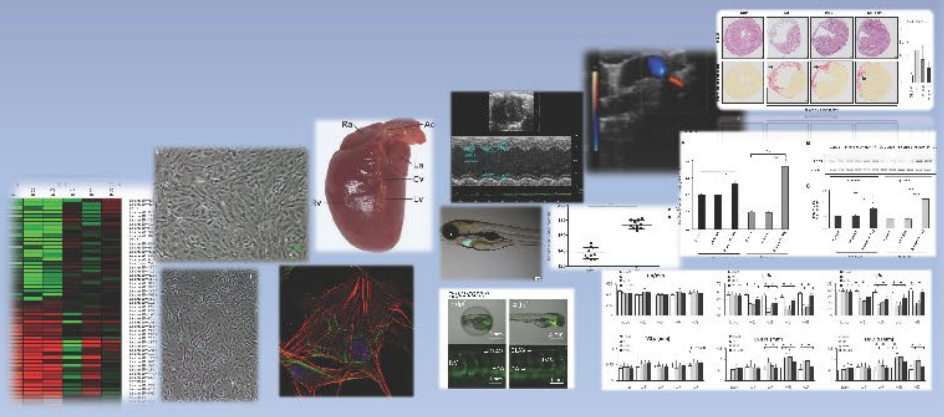
國立陽明交通大學
生命科學系暨基因體科學研究所
Department of Life Sciences and Institute of Genome Sciences

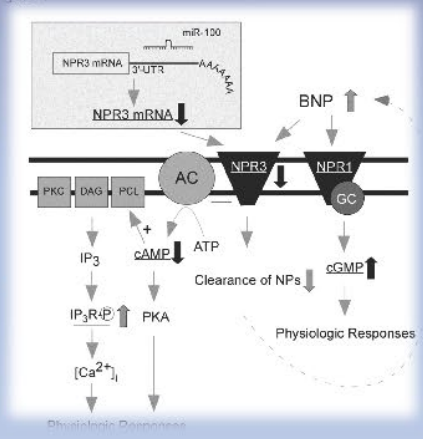
Department of Life Sciences & Institute of Genome Sciences
National Yang Ming Chiao Tung University, Taipei, Taiwan.

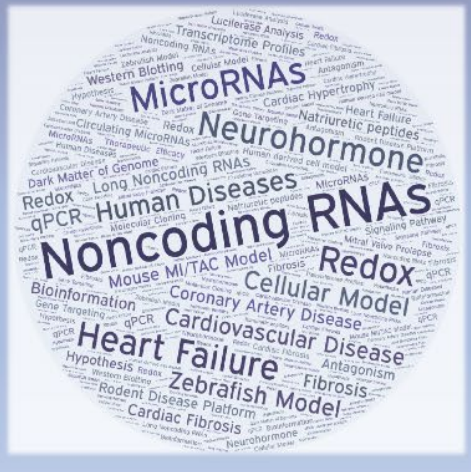
To explore the underlying mechanisms of human diseases from the dark side of genome.

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: yeitsungchen@nycu.edu.tw; Phone: X66249

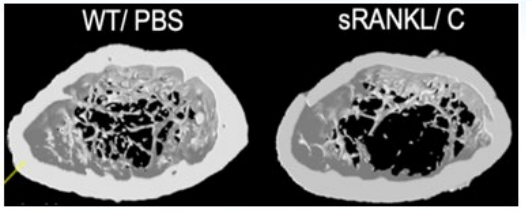
The Luo Lab (羅清維)

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



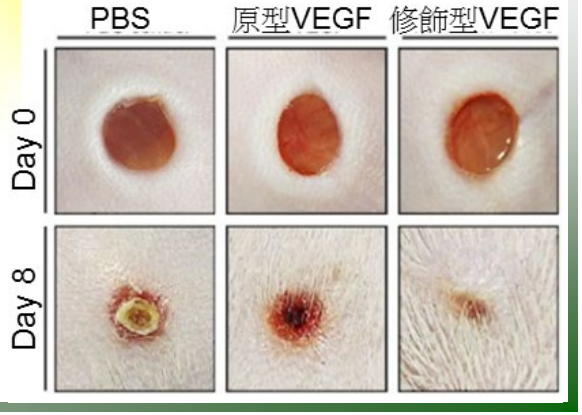
- **主題二、生殖生理與卵巢癌症惡化的機轉**
  - * 外泌蛋白訊息如何影響生殖系統的運作，以及卵巢癌的惡化與轉移機轉



- **主題三、 開發長效型藥用蛋白**



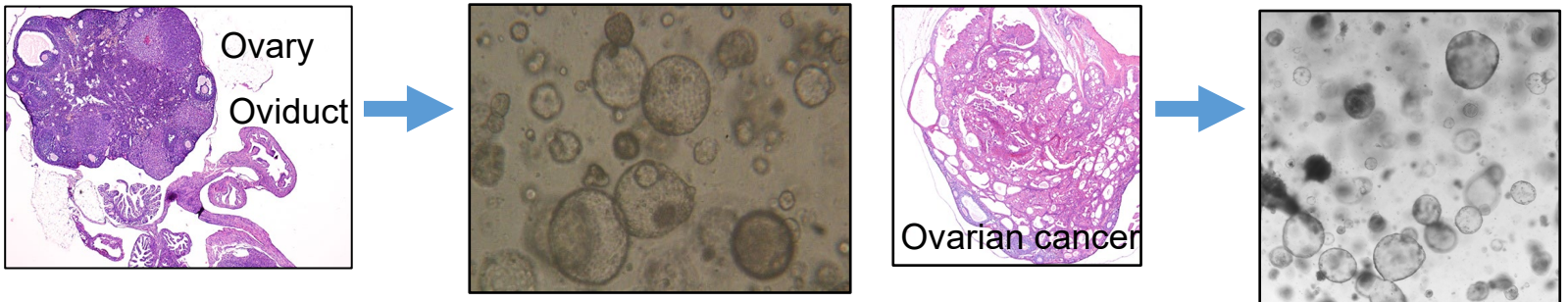
  - * 使用蛋白重組工程延長外泌蛋白的生理半衰期，以開發其醫藥用途



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

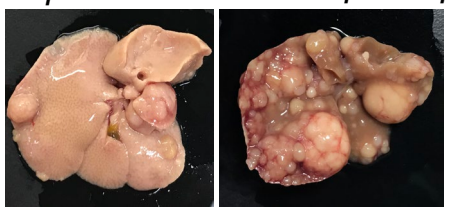


Ovarian versus Oviductal Organoids

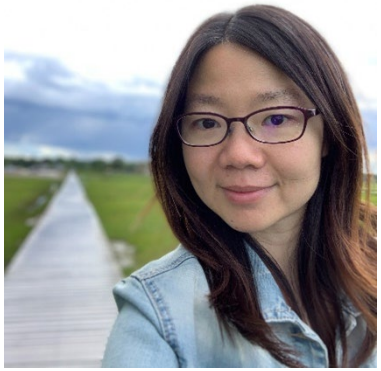
Tumor Organoids from Mouse Epithelial Ovarian Cancer

Comparative Analysis

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

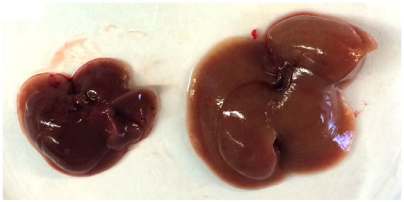


Laboratory of Tumorigenesis and Tissue Regeneration

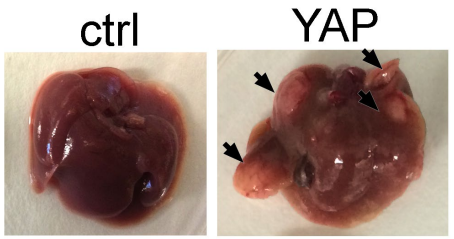


袁維謙　Wei-Chien Yuan
wcyuan@nycu.edu.tw

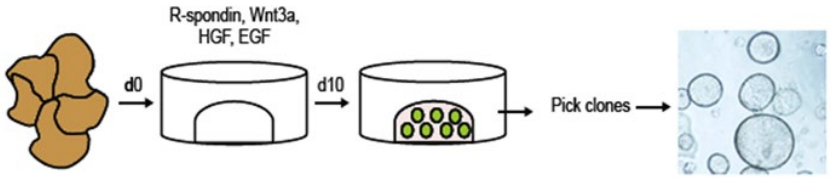
YAP overexpression for 1 week

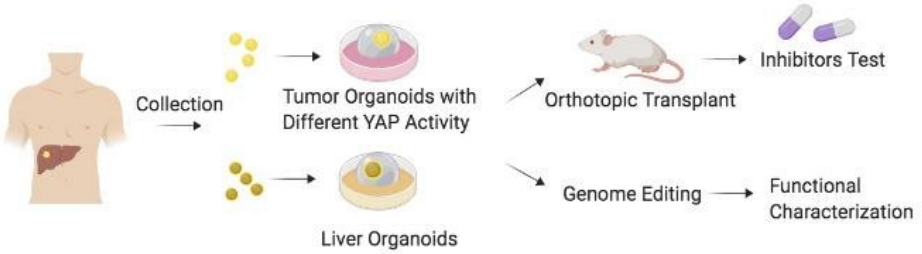


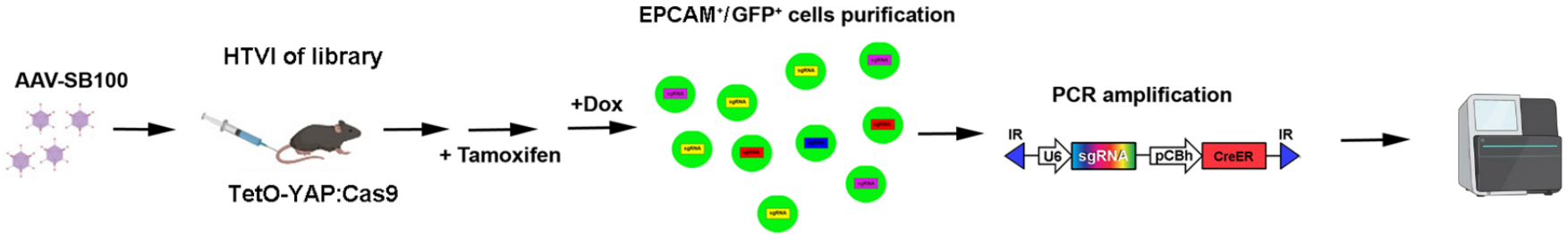
YAP overexpression for 3 months



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)

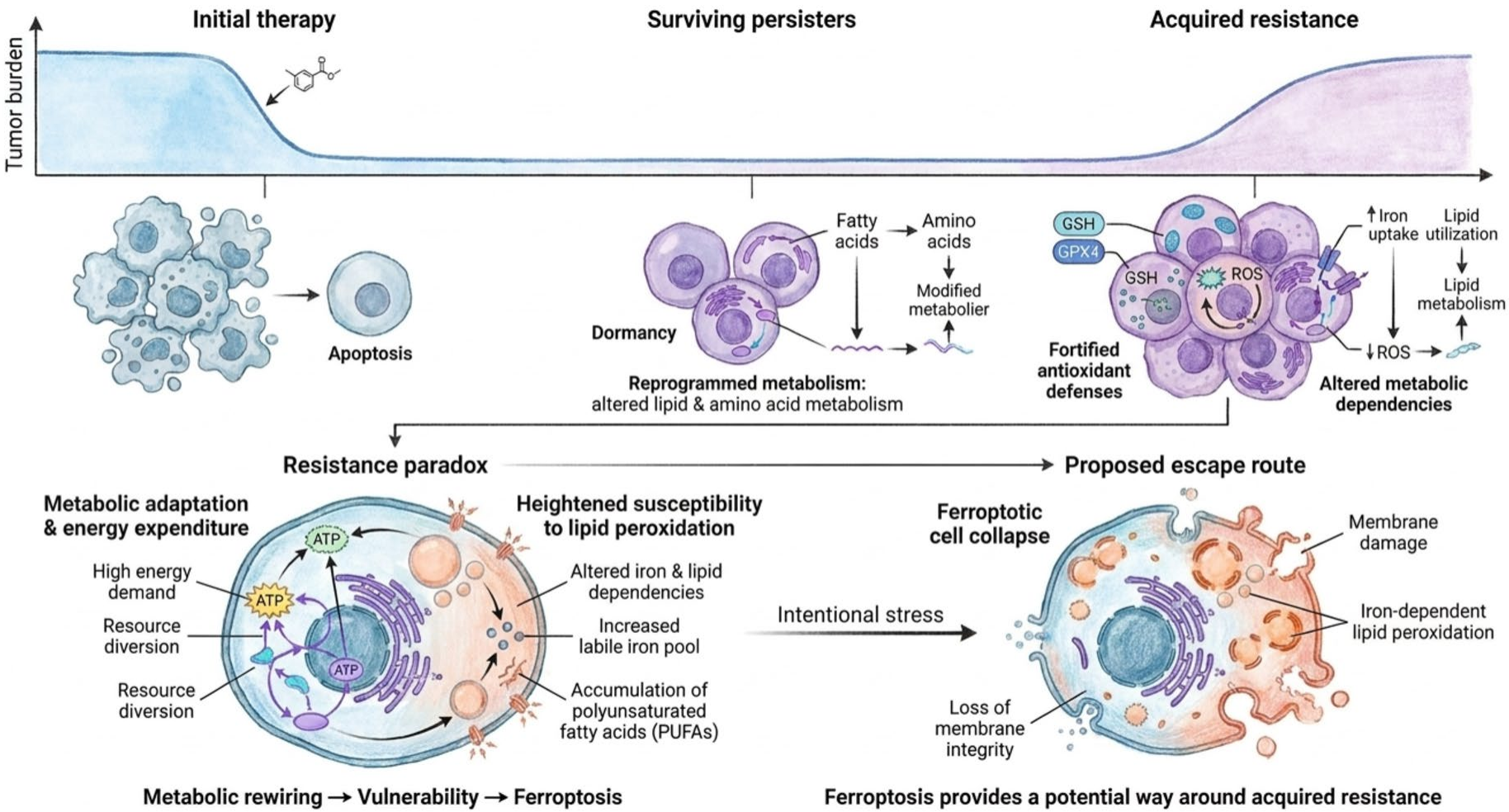
Exploiting metabolic vulnerabilities to overcome drug resistance

■ 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)

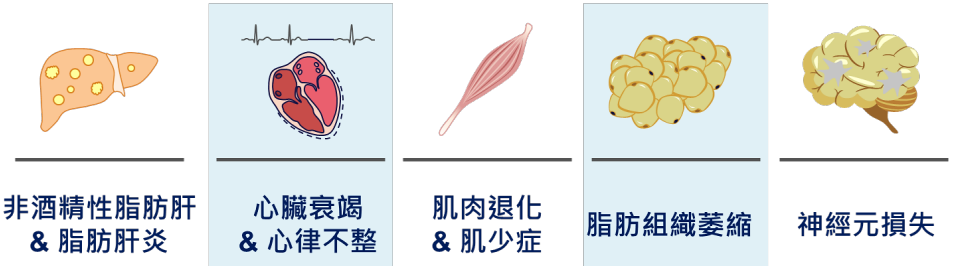


CISD2長壽基因、老化生物學、及抗老化新藥開發

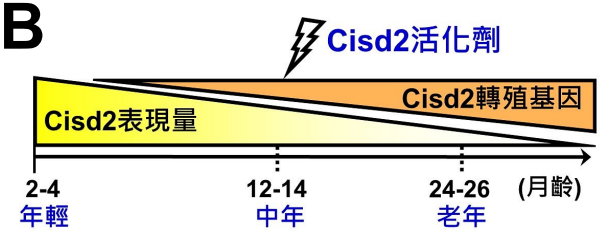


蔡亭芬 特聘教授

A CISD2表現不足，會導致多重器官功能衰退及老化

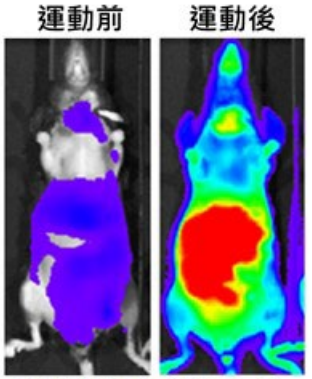


B



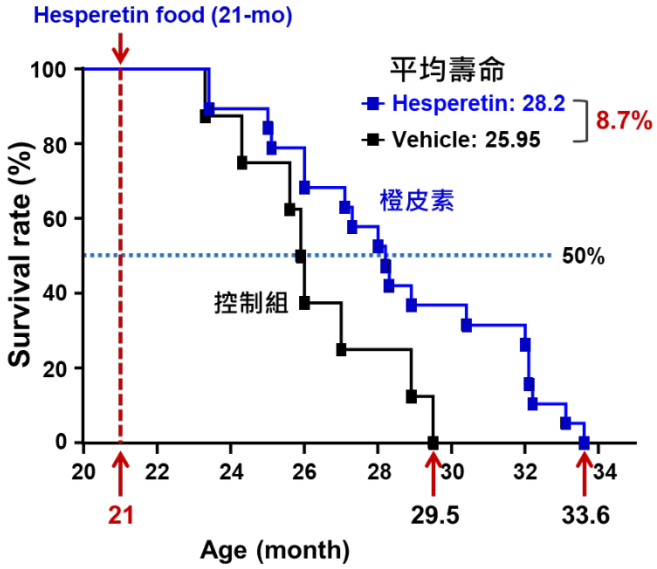
- Cisd2長壽基因表現量在自然老化中明顯下降
- 提升Cisd2長壽基因表現量可促進健康長壽

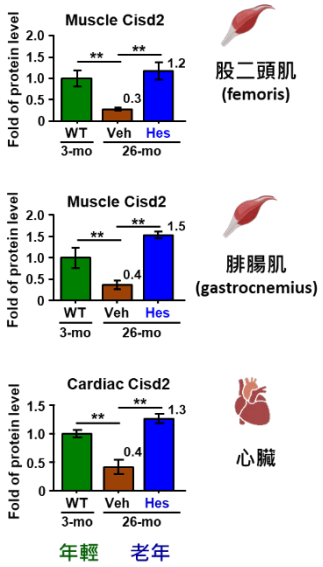
C 運動能有效提升CISD2基因表現



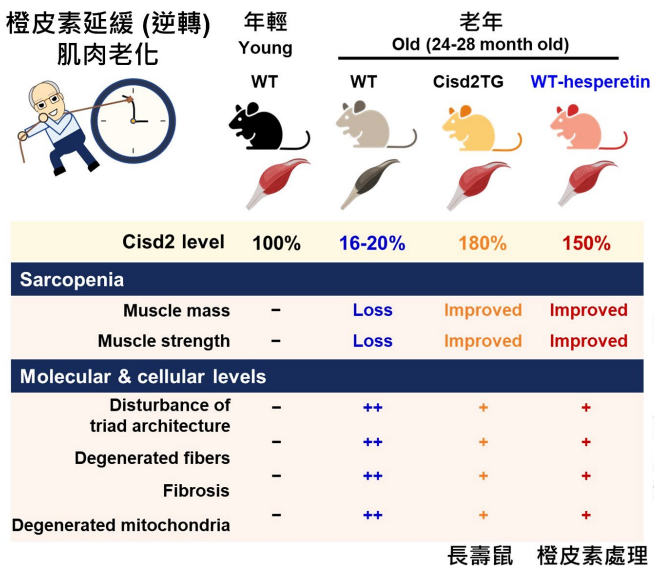
增強的冷光訊號表示
Cisd2長壽基因被活化

D 橙皮素





E



The Ultimate Relief for Chronic Pain

Wei-Hsin Sun, Professor (孫維欣教授)

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

Department of Life Sciences & Institute of Genome Sciences

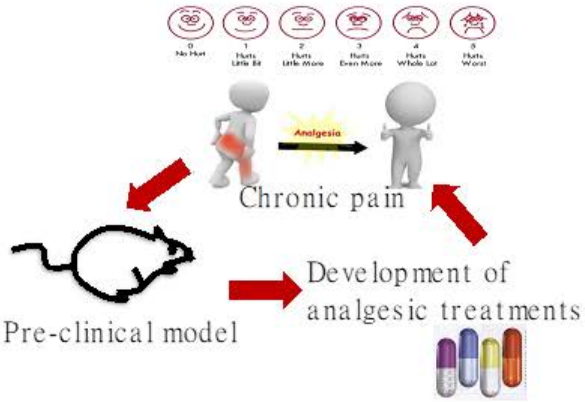
Library Information Research Building Rm708, YangMing Campus, NYCU

Email: weihsin@nycu.edu.tw; Tel: 886-2-28267268



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。



Neuropathic pain

Chronic constriction injury of sciatic Nerve (CCI)



Bennett and Xie, 1988

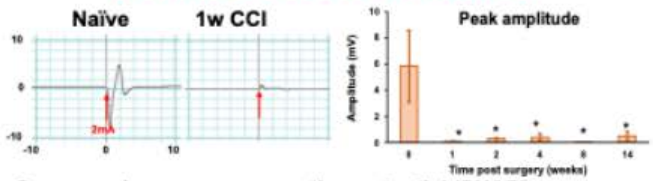
Rheumatoid arthritis pain

Intra-articular injection of CFA (RA)



Gauldie et al. 2004 J. Neurosci Method 139:281-291

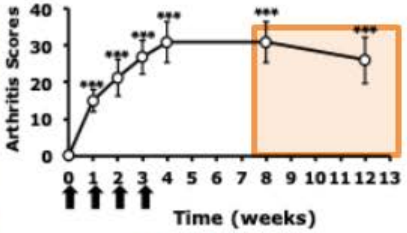
Peripheral nerve degeneration



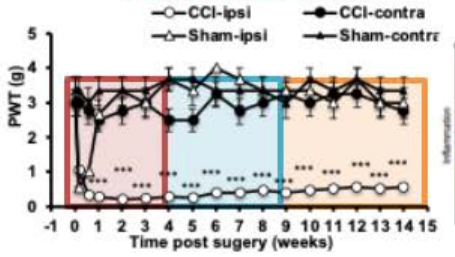
Compound sensory nerve action potential (SNAP)

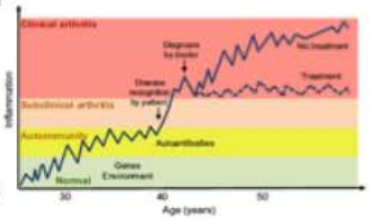


Arthritis scores

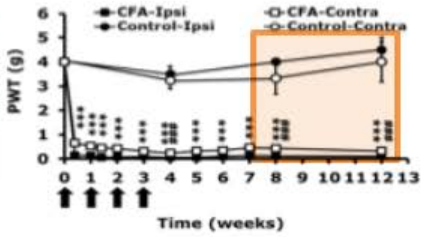


Neuropathic pain



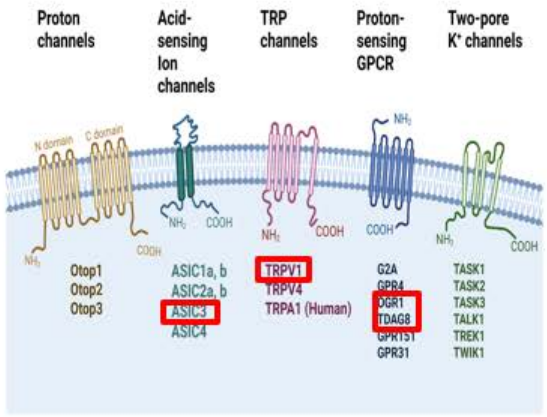


Arthritic pain



Chronic pain

- Molecular Mechanisms
- Nerve Degeneration
- Neuroinflammation
- Gut – Brain signaling
- Sexual Dimorphism
- Drug development





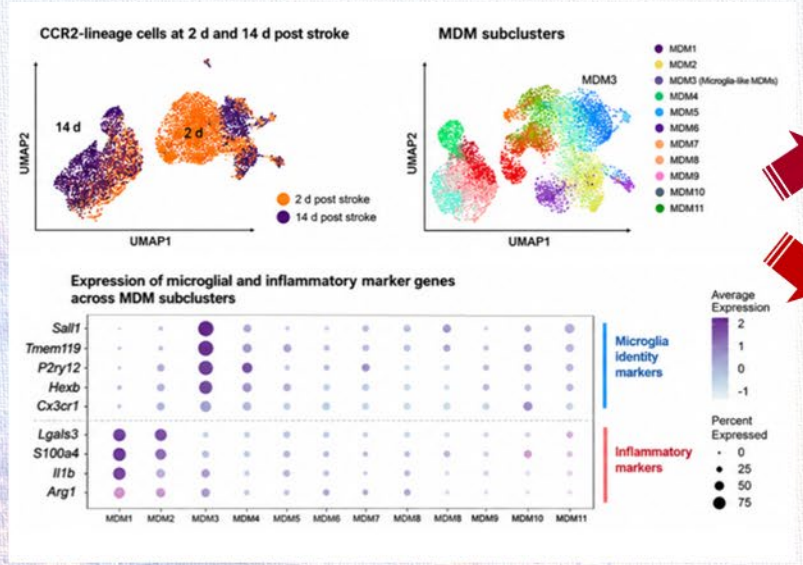
Lab website

HR Chen Lab:

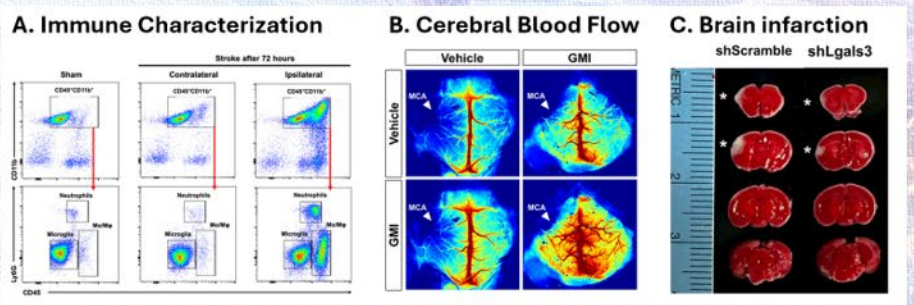
Unraveling the Role of Monocyte Heterogeneity in the Pathogenesis of Neonatal Stroke and Neurodegeration

RESEARCH FOCUS: *Neuroinflammation* & *Neuroimmune interaction*

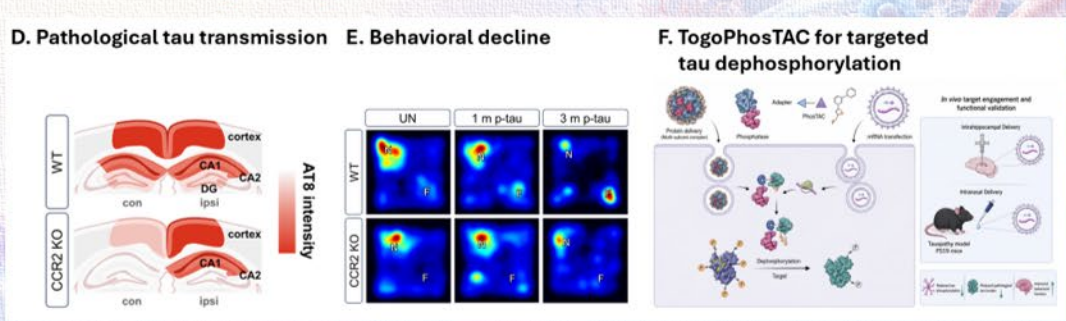
Identifing monocyte heterogeneity in diseases



#1 Targeting monocyte-mediated inflammation in neonatal stroke



#2 Disrupting monocyte-mediated transmission of tauopathy



Science Advances, 2020; *Theranostics*, 2022; *Nature Communications*, 2026

Population and evolutionary genomics lab

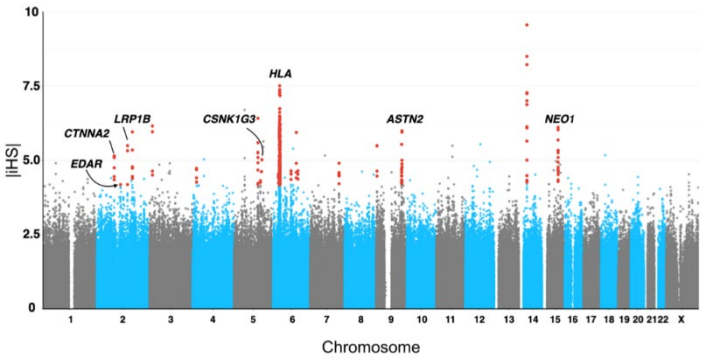
可文亞老師實驗室 (圖資629)（族群遺傳和演化基因體學實驗室）



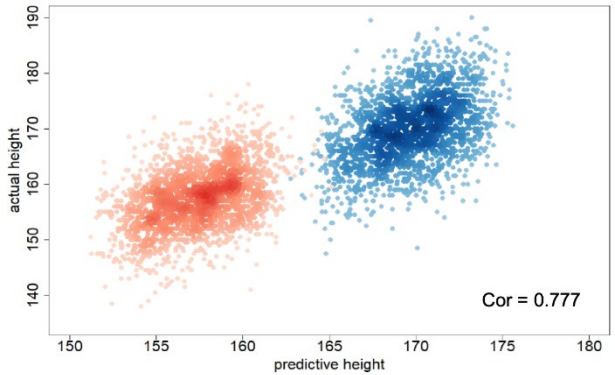
- Genetic origins and admixed ancestry characterization of human populations
  (人類族群與其基因體的遺傳起源)

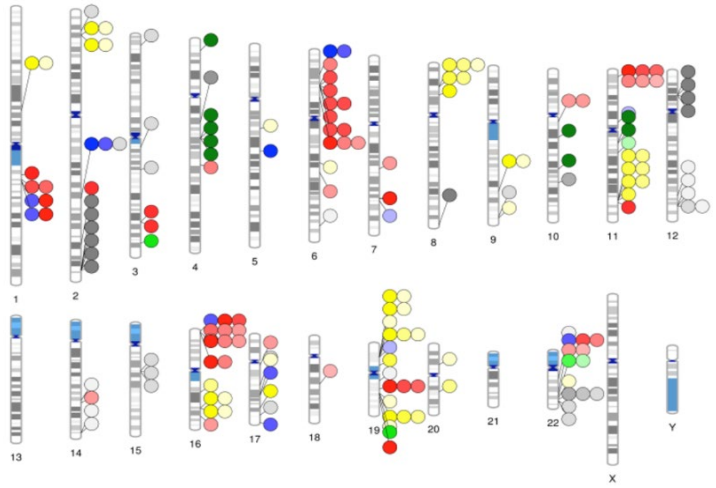


- Identifying genetic variants underlying evolutionary adaptation and/or disease susceptibility in humans
  (尋找人類演化適應或與疾病相關的遺傳變異)



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



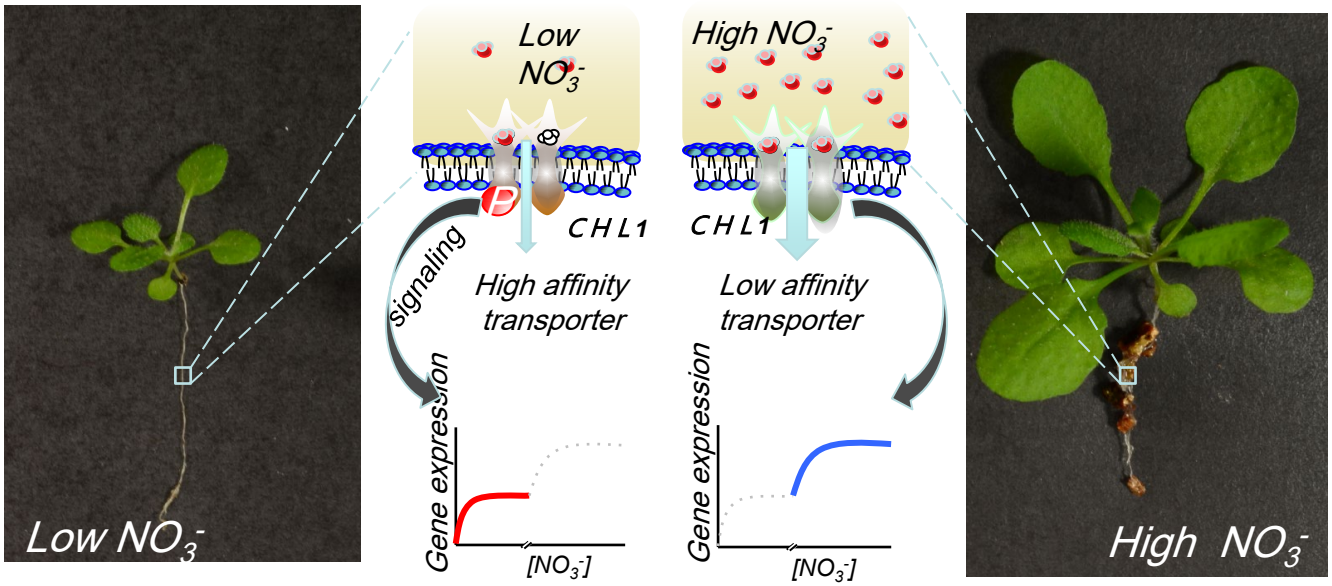


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研究領域：訊息傳導、膜蛋白功能、營養學

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。



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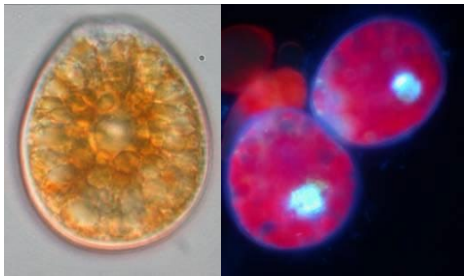


研究領域：天然藥物化學、藻類與微生物培養

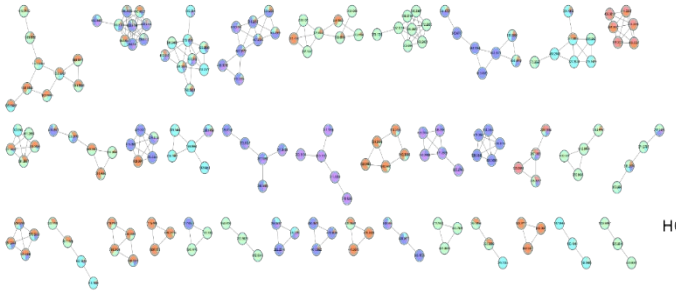
利用生物學與化學相結合的篩選方法，由海洋與陸地特殊棲所篩選共生於其他生物體中的藻類與微生物，發展藥用新資源。以現代層析技術與代謝體學分析方法，配合活性篩選平台，發掘具有專利性的新穎化合物，以高解析的NMR與質譜等技術完成化合物的結構解析，進行新先導藥物的研究。

目前主要的研究主題包括:

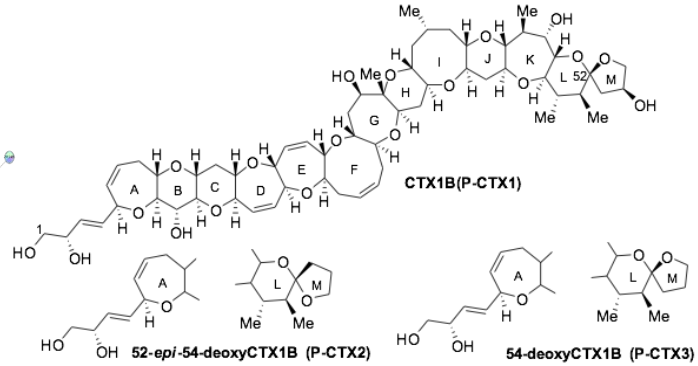
1. 由中草藥中找尋促進長壽、美容與神經再生之物質。
2. 調控海洋渦鞭毛藻*Gambierdiscus* spp.之生長條件，利用於量產Na^+ channel activators 。
3. 海洋微生物與藻類純化與培養、及其具生物活性天然物之結構解析，開發具潛力之先導藥物。



Prorocentrum lima



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



林書葦 副研究員



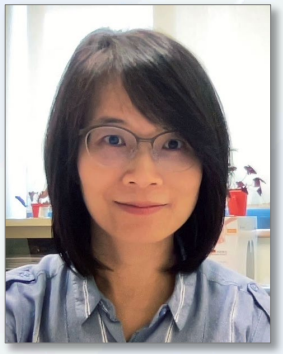
神經迴路與行為實驗室 @ 中研院跨領域大樓8C03室
sueweilin@gate.sinica.edu.tw; (O) 02-2789-9315
https://sueweilin.wixsite.com/linlab

研究領域：動機與記憶的神經機轉、神經迴路的形成

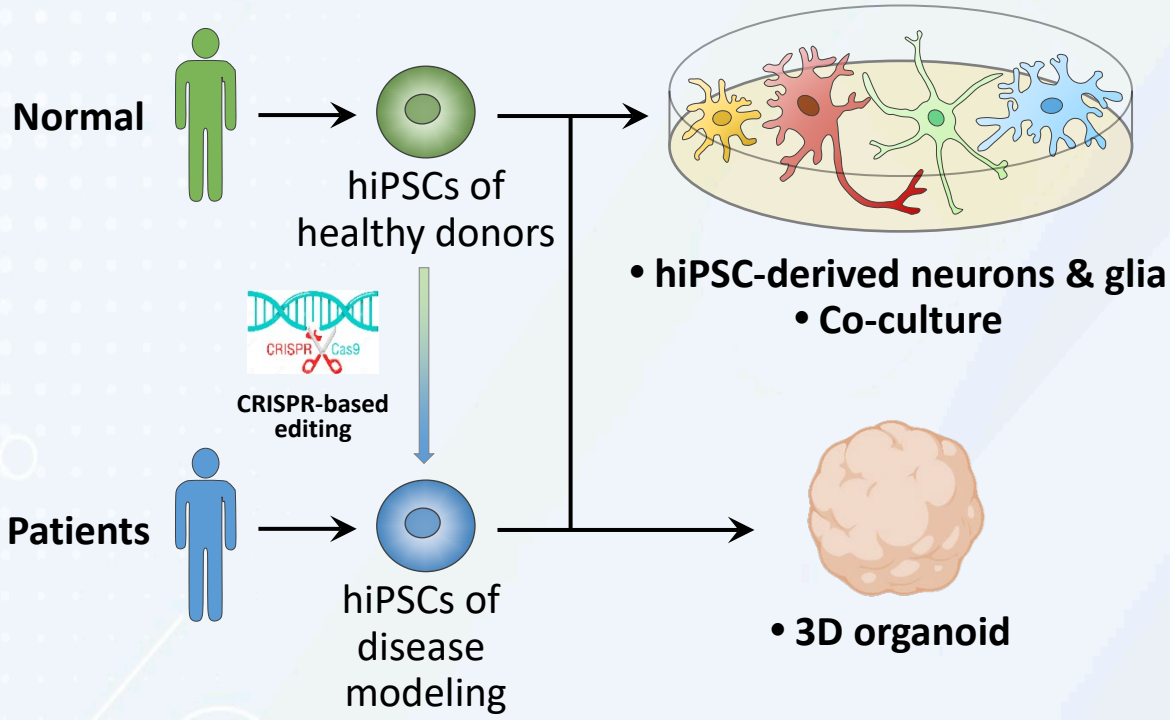
研究方向：

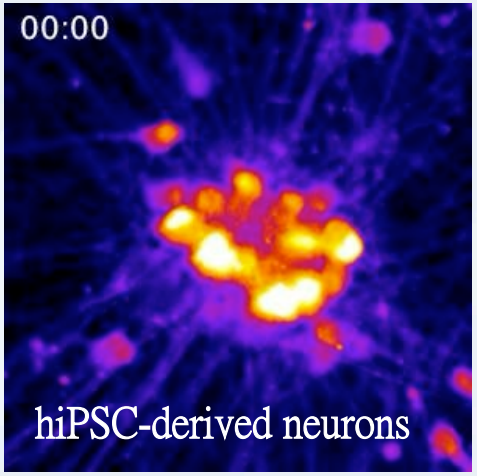
1. **以遺傳學與光學顯微技術研究果蠅腦神經迴路的形成機制**
2. **探討餓與渴控制動物覓食、覓水行為的神經機轉**
3. **研究大腦儲存、提取記憶的細胞與分子機制**

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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