JACBS
Joint Annual Conference of Biomedical Science

39th 生物醫學聯合學術年會

Advancing Therapies in Cancer and Diseases

2025 The 39th Joint Annual Conference of Biomedical Science

大會手冊

時間

03.22 SAT. —
03.23 SUN.

地點

國防醫學院

中華民國免疫學會 | 台灣分子生物影像學會 | 台灣生物化學及分子生物學學會 | 中華民國細胞及分子生物學學會
中華民國臨床生化學會 | 台灣毒物學學會 | 中國生理學會 | 台灣藥理學會 | 中華民國解剖學學會

動物實驗 3R 科學埕
3R Curriculum

動物實驗 3R 科學埕是匯聚動物實驗專業教育資源的平台，以「專業職能再造 3R 落地生根」為願景目標，依循跨部會人才培育分工，規劃建構動物實驗科學職能導向的繼續教育課程模組與試證體制，並透過課程審查與學習時數認列的方式，串接國科會、教育部、農業部的教育課程，匯集跨部會教育能量共同組建動物實驗 3R 科學埕，持續完備與擴充教育資源。

8 大主題課程模組

將動物實驗科學梳理成各個主題課程，以能夠落實於實務應用的教育內容展開核心課綱，網羅相關專業課程，提供動物實驗參與者汲取新知、增強知能、持續學習的資源管道。

7 項專業職能檢定考試

依據不同工作角色的專業能力需求，制定專業職能檢定考試，通過職能檢定考試，代表已經完成該職能內容基本知能之學習，並能配合所投入職場之工作需求，進行實務訓練。

歡迎參與動物實驗的夥伴們一起加入科學埕，開始規劃自己的學習計畫，透過持續學習、提升職能、瞭解最新趨勢，為自己的職涯加分升級！

相關資訊詳見
科學埕網站

科學埕
YouTube 頻道

創建個人
學習履歷帳號

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Advancing Therapies in Cancer and Diseases

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CONTENTS

大會會長的話

各位尊敬的來賓、學界先進：

歡迎您參加本屆生物醫學聯合學術年會！此次盛會匯聚了來自生物醫學領域的專家學者，此次由中華民國免疫學會主辦，以及八大協辦學會，包含分子生物影像學會、生物化學及分子生物學學會、細胞及分子生物學學會、臨床生化學會、毒物學學會、生理學會、藥理學會、解剖學學會，致力於推動醫學與科技的進展。

今年，我們將聚焦於主題「Advancing Therapies in Cancer and Diseases」，探討如何在癌症、免疫疾病等方面推動創新治療，這些疾病不僅影響著患者的生活品質，也對社會與醫療領域貢獻了許多寶貴的研究與心力。

非常榮幸邀請到瑞士洛桑大學及路德維希癌症研究所的何秉智博士擔任本屆年會的主題演講嘉賓。何博士專精於癌症及自體免疫疾病中的免疫反應代謝調節研究，他深入探索代謝重編程如何恢復免疫功能，並以此作為新穎的治療策略。他的研究成果不僅發表於《Cell》《Nature Immunology》等國際頂尖期刊，並獲得多項專利及獎項肯定。何博士的研究進展對於癌症及免疫疾病的治療方法提供了重要啟發，也與本屆大會主題密切契合。

著生物技術的發展與精準醫療的普及，我們正處於一個醫學快速革新的時代。本次年會透過何博士的演講及其他前沿研究的分享，旨在啟發與會者在癌症、神經退行性疾病等領域持續探索，為人類健康提供更多前瞻性方案。

此外，為了推動更多年輕學者與研究者的投入，我們也特別設立了「大會主題競賽獎」，鼓勵在癌症和重大疾病治療研究上表現優異的年輕人才，期盼通過這些激勵措施，為未來的科研工作注入新的活力與創新動能。

在此，謹代表本屆年會籌備委員會，衷心感謝所有辛勤投入的夥伴與學者們，感謝各界學會的支持與協助，還有眾多廠商的參展與贊助，讓此次大會能順利進行。相信在這樣的努力下，本屆年會將成為促進交流與合作的平台，為癌症及重大疾病的療法開創新的契機。

祝福本次年會圓滿成功，並期待大家能有所收穫！

許秉寧

第 39 屆生物醫學聯合會學術年會 大會會長

理事長的話

各位先進您好：

生物醫學聯合學術年會（JACBS）是國內歷史悠久、規模宏大且極具指標性的學術研討會，由國內九大基礎醫學學會聯合主辦（分別為免疫學會、藥理學會、解剖學學會、分子生物影像學會、生物化學及分子生物學學會、細胞及分子生物學學會、臨床生化學會、毒物學學會與生理學會）。歷屆大會均吸引超過 2,300 名學者與研究人員踴躍參與。今年，我們誠摯邀請您參加第 39 屆生物醫學聯合學術年會（The 39th Joint Annual Conference of Biomedical Science, JACBS），本屆會議由中華民國免疫學會負責籌備與規劃，將於 114 年 3 月 22 日至 23 日在台北市國防醫學院隆重舉行。

本屆大會以「Advancing Therapies in Cancer and Diseases」為主題，旨在促進會員掌握該領域最新科技與研究成果。我們特別邀請瑞士洛桑大學及路德維希癌症研究所的何秉智博士擔任主題演講嘉賓。何博士專注於探討免疫反應中代謝調節在癌症及自體免疫疾病中的角色，並致力於以代謝重編程（metabolism reprogramming）恢復免疫功能的創新治療方法。他的眾多研究成果已刊登於 Cell、Nature Immunology、Nature Medicine、Immunity 等頂尖期刊，並屢獲專利與獎項肯定，對癌症及免疫疾病的治療帶來深遠影響與啟示。

此外，各大學會也邀請了多位國內外知名研究學者參與，其中包括美國 Emory 大學 Emory Vaccine Center 主任 Rafi Ahmed 教授（專注於 T 細胞記憶生成與維持及其在病毒感染中的作用）以及美國哈佛醫學院 Bertarelli Rare Cancers Fund 的 Marcia Haigis 博士（專研罕見及難治性癌症的分子機制與治療策略）。會議議程豐富多元，精彩內容不容錯過。

為了激勵學術創新，聯合年會將同步舉辦大會主題論文競賽，誠邀各學會優秀年輕學者踴躍參與。每年發表的研究論文數量均超過千篇，充分展現出台灣基礎研究的實力與創新活力，並促進各界間更多互動與交流。

相信為期兩天的會議將為來自各大學院與研究機構的教授、學者、專家、研究人員及研究生帶來豐碩收穫。我們誠摯邀請所有對生物醫學懷有熱忱的夥伴，共同參與並推廣 JACBS 的各項活動，藉由精彩的演講與熱烈的交流，激發青年學子投身醫藥與生物科技研發，進一步厚植台灣科技創新能量。

謹代表第三十九屆生物醫學聯合學術年會籌備委員會，誠摯歡迎您的蒞臨，期待與您在會中相見。祝您健康快樂！

第三十九屆生物醫學聯合學術年會
總召集人：中華民國免疫學會　理事長 葉國偉
中華民國解剖學學會　理事長 郭余民
台灣分子生物影像學會　理事長 林康平
台灣生物化學及分子生物學學會　理事長 王育民
中華民國細胞及分子生物學學會　理事長 司徒惠康
中華民國臨床生化學會　理事長 徐慧貞
台灣毒物學學會　理事長 王應然
中國生理學會　理事長 李昆澤
台灣藥理學會　理事長 林建煌

交通資訊

前往國防醫學院交通示意圖

年會舉辦地點：
國防醫學院（114 臺北市內湖區民權東路六段 161 號）

大眾交通工具

搭乘公車：

- 國防醫學院周邊公車：民權幹線（原紅 32）、藍 36、284 直、617、645、903（於「國防醫學院（網球中心）」下車，步行約 5 分鐘）。
- 三軍總醫院周邊公車：市民小巴 10、小 3、藍 20、藍 27、棕 9、214、256、278、284、551、617、630、645、652、903（請於「國防醫學中心」下車，步行約 10 分鐘）。
- 進入三軍總醫院公車：市民小巴 10、藍 20、藍 27、紅 29、0 東、28、278、284、521、551、617、645（請於「三總內湖站」下車，繞駛時間為 0800-2130 時）。

自行開車

行經中山高速公路，內湖成功路交流道出口下，往內湖方向往北走，直行至民權東路與成功路交叉口後，右轉約 500 公尺左側至國防醫學院大門。

附近停車場資訊

- **臺北市網球中心停車場**（步行約 5 分鐘）
  地址：臺北市內湖區民權東路六段 208 號
- **內湖停車場**（步行約 5 分鐘）
  地址：臺北市內湖區民權東路六段 180 巷旁
- **福華商業藝術廣場前 ViVi Park 石潭二站平面停車場**（步行約 5 分鐘）
  地址：臺北市內湖區民權東路六段 180 巷 23 號 內湖民權星巴克後方
- **三軍總醫院停車場**（步行約 10 分鐘）
  地址：臺北市內湖區成功路二段 325 號

接駁車時刻表

- 3/22 (六) + 3/23 (日)

接駁時段 08:00-10:30 (人滿即發車)

昆陽捷運站 4 號出口 → 國防醫學院 (只進不出)

上午班次	昆陽捷運站 4 號出口 四輛遊覽車人滿即發車，僅開以下時段
1	08:00
2	08:30
3	09:00
4	09:30
5	10:00
6	10:30

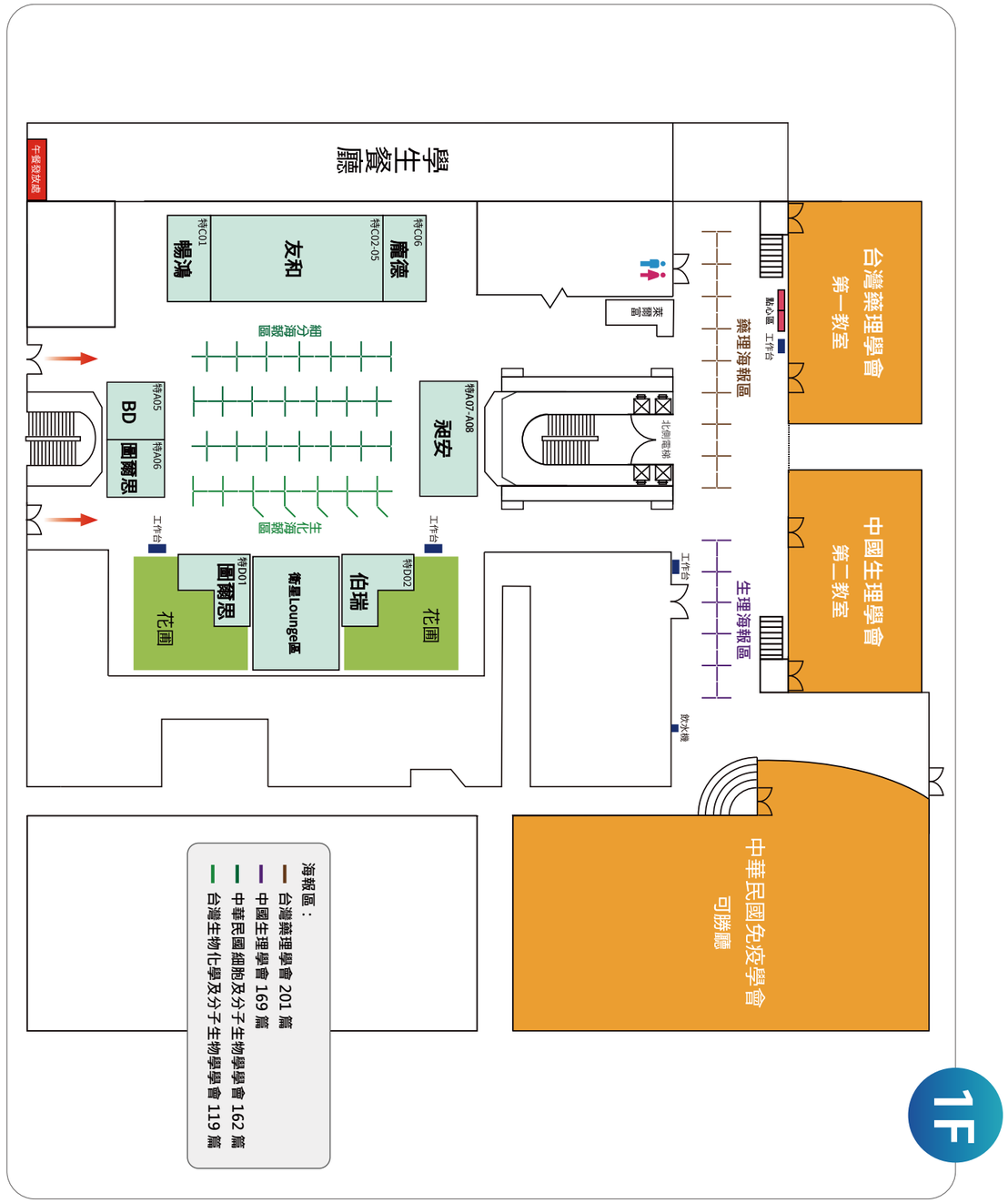
- 3/22 (六) + 3/23 (日)

接駁時段 16:00-17:30 (人滿即發車)

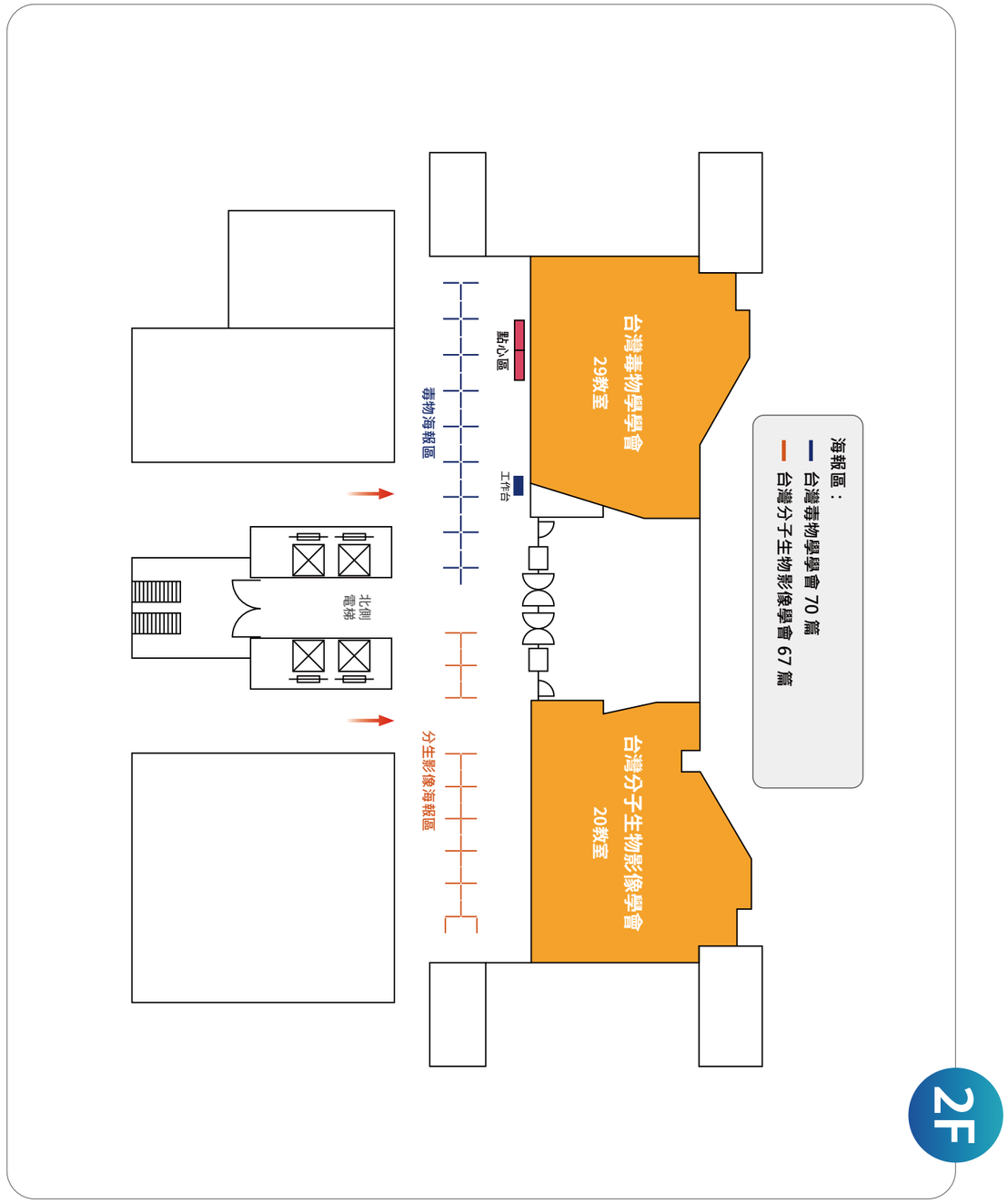
國防醫學院 → 昆陽捷運站 4 號出口 (只進不出)

上午班次	昆陽捷運站 4 號出口 四輛遊覽車人滿即發車，僅開以下時段
1	16:00
2	16:30
3	17:00
4	17:30

- 其他時段無接駁車


台灣藥理學會
第一教室
中國生理學會
第二教室
點心區
工作台
藥理海報區
生理海報區
北側電梯
飲水機
學生餐廳
午餐疏散處
特C06 廳德
特C02-05 友和
特C01 暢鴻
特A07-A08 昶安
特A05 BD
特A06 圖爾思
特D01 圖爾思
特D02 伯瑞
花圃
華星Lounge區
生活遊園區
中華民國免疫學會
可勝廳
海報區：
台灣藥理學會 201 篇
中國生理學會 169 篇
中華民國細胞及分子生物學學會 162 篇
台灣生物化學及分子生物學學會 119 篇
1F

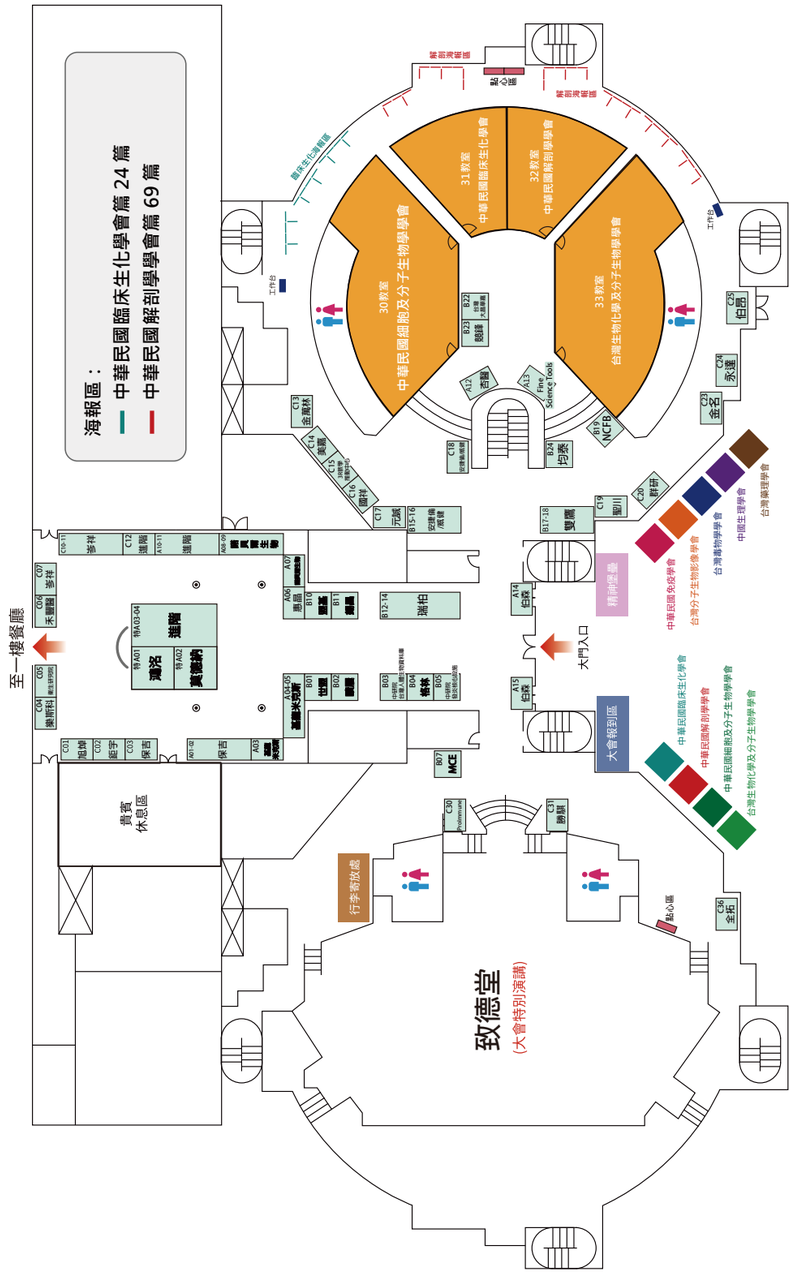
會場平面圖


台灣毒物學學會
29教室
點心區
工作台
毒物海報區
北側電梯
分生影像海報區
台灣分子生物影像學會
20教室
海報區：
台灣毒物學學會 70 篇
台灣分子生物影像學會 67 篇
2F

會場平面圖

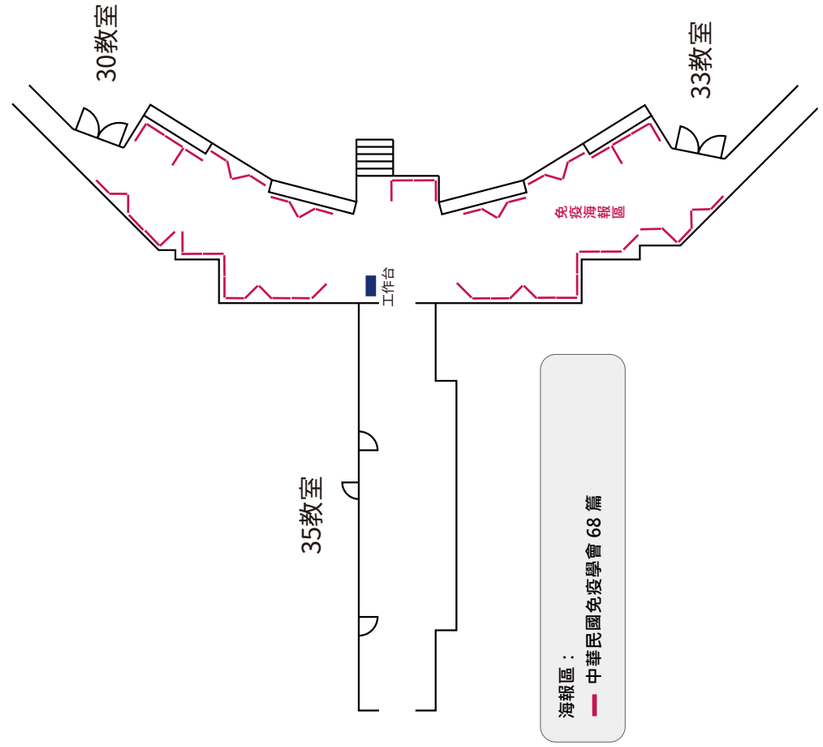
會場平面圖

3F



會場平面圖

4F



大會核心籌備小組

大會會長	大會秘書長	大會財務長
許秉寧	莊雅惠	俞欣慧

第 39 屆生物醫學會聯合學術年會 參與學會暨理事長與秘書長名單

學會名稱	理事長	秘書長
中華民國免疫學會	葉國偉	蘇冠文
台灣分子生物影像學會	林康平	楊邦宏
台灣生物化學及分子生物學學會	王育民	林士鳴
中華民國細胞及分子生物學學會	司徒惠康	李岳倫
中華民國臨床生化學會	徐慧貞	郭靜穎
台灣毒物學學會	王應然	夏興國
中國生理學會	李昆澤	林雅婷
台灣藥理學會	林建煌	許銘仁
中華民國解剖學學會	郭余民	王仰高

會議資訊暨特別演講及會員大會時間表

第 39 屆生物醫學聯合學術年會 會議資訊

內容	時間	地點
大會開幕式	114 年 3 月 22 日 09:30-09:40	3 樓致德堂
大會特別演講	114 年 3 月 22 日 09:40-10:30	
大會主題口頭論文競賽	114 年 3 月 22 日 15:20-17:00	
陳炯霖轉譯醫學講座特別演講	114 年 3 月 23 日 10:50-11:50	
大會主題口頭論文競賽頒獎	114 年 3 月 23 日 11:50-12:00	

學會特別演講及會員大會時間表

學會名稱	特別演講時間	會員大會時間	地點
中華民國免疫學會	114 年 3 月 22 日 10:50-12:00		3 樓 30 教室
台灣分子生物影像學會	114 年 3 月 23 日 10:50-11:40	114 年 3 月 23 日 11:45-12:00	2 樓 20 教室
台灣生物化學及分子生物學學會	114 年 3 月 22 日 11:00-12:00	114 年 3 月 23 日 15:50-16:30	3 樓 33 教室
中華民國細胞及分子生物學學會	114 年 3 月 22 日 10:50-12:00		3 樓 30 教室
中華民國臨床生化學會	114 年 3 月 22 日 10:50-12:00	114 年 3 月 22 日 14:00-14:20	3 樓 31 教室
台灣毒物學學會	114 年 3 月 23 日 09:00-10:30	114 年 3 月 22 日 14:00-15:00	2 樓 29 教室
中國生理學會	114 年 3 月 22 日 10:50 - 12:00	114 年 3 月 23 日 16:15 - 17:15	1 樓第二教室
台灣藥理學會	114 年 3 月 22 日 14:00 - 15:00	114 年 3 月 22 日 15:20-17:00	1 樓第一教室
中華民國解剖學學會	114 年 3 月 22 日 10:50 - 11:50	114 年 3 月 22 日 11:50-12:20	3 樓 32 教室

大會議程

DAY 1

	一樓			二樓		三樓					一樓
	藥理	生理	免疫	分生影像	毒物	細分	臨床生化	解剖	生化	大會議程	衛星 Lounge
	第一教室	第二教室	可勝廳	20 教室	29 教室	30 教室	31 教室	32 教室	33 教室	致德堂	1F 中庭
09:00 09:30	大會報到										
09:30 09:40	**大會開幕式** (致德堂)										
09:40 10:30	09:40-10:30 **大會特別演講** (致德堂) Can you remember? Exhausted T cells										
10:30 10:50	10:30-12:00 **研究生論文獎決選演講**	Coffee Break		10:30-12:00 **分生影像壁報論文競賽展示** (海報區)	3/22-23 **一般海報論文展示**	Coffee Break					10:30-11:00 **科技新知演講 - 龐德**
10:50 11:30		10:50-12:00 **生理學會特別演講** Involvements of TRPV1 receptor in airway hypersensitivity induced by inflammation: from ion channel to patient	10:50-12:00 **開幕式及特別演講 (免疫 x 細分合辦_30 教室)** Investigating the role of metabolism in cancer, immunity and aging.			10:50-12:00 **開幕式及特別演講 (免疫 x 細分合辦_30 教室)** Investigating the role of metabolism in cancer, immunity and aging,	10:50-12:00 **Keynote Speech** Exosome: The rising star in biomedicine	10:50-11:50 **Keynote Speech** Enhancing Anatomical and Surgical Training Through Cadaveric Models: Recent Advances and Practical Insights	10:50-12:00 **開幕式及特別演講** PD-1 membrane presentation and stability: Mechanisms and therapeutics.		
11:30 12:00					10:40-12:00 **毒物學學會口頭論文競賽**						
12:00 13:00	12:00-14:00 **李天德壁報論文競賽海報展示評分** 一般論文海報展示 I	12:00-13:00 **壁報討論時段 I** (展示時段 09:00-13:00)		13:00-14:00 **Plenary speaker I** Diffusion MRI fiber-tractography of the developing human brain	12:00-14:00 **毒物學學會壁報競賽** (海報區)		12:00-12:30 **科技新知演講 - 莫德納**	11:50-12:20 **解剖學學會會員大會 / 頒獎**			
13:00 13:20		13:00-14:15 **生理學會壁報論文競賽 / 壁報討論時段 II** (展示時段 13:00-17:00)					12:00-13:00 **臨床生化學會壁報論文競賽** (海報區)	**研討會 I Neuroscience 神經科學** 13:30-14:00 Anti-NLRP3 inflammasome activation of GM1 ganglioside 14:00-14:30 Hippocampal Development and Ventralization: The Role of COUP-TFI in Patterning 14:30-15:00 A preliminary MRI brain template for Taiwanese macaque			
13:20 13:40											
13:40 14:00			13:30-15:00 **專題演講 (I)**			13:30-15:00 **細胞及分子生物學學會壁報論文競賽及展示** (海報區)	14:00-14:20 **臨床生化學會第 15 屆第 1 次會員大會** 14:20-15:00 **臨床生化學會研討會** Clinical Applications of Stem Cell-derived Exosomes		13:30-15:00 **生化學會海報競賽 (A 組)**		
14:00 14:20	14:00-15:00 **學會特別演講** Cerebellar motor control mechanisms: toward precision and cross-individual uniformity	14:15-16:15 **生理學會研討會**		14:00-15:00 **Plenary speaker II** Microbubble-assisted ultrasound for inner ear drug delivery	14:00-15:00 **台灣毒物學學會第 11 屆第 10 次理監事暨會員大會**						
14:20 14:40											
14:40 15:00											
15:00 15:20	Coffee Break										15:00-15:30 **科技新知演講 - 伯瑞**
15:20 17:00	15:20-17:00 **台灣藥理學會會員大會暨學術研究獎項頒獎**	16:15-17:15 **生理學會會員大會**	15:20-17:00 **免疫學會口頭論文競賽**	15:20-14:20 **Plenary speaker III** Integrating ultrahigh-brightness pDots and stereo NIR-II imaging to assess the angiogenesis with stemness of head and neck cancer and potent anti-angiogenic agents in vivo 16:20-17:20 **Plenary speaker IV** Multimodal Neuroimaging to Investigate Cognitive Impairment in Neuropsychiatric Disorders			15:20-16:00 A Naïve Incident Biomarker Journey: Urinary Exosomal Peptides 16:00-16:40 臍帶間質幹細胞外泌體跨 3 代人機轉性臨床應用發展 17:00-18:00 **壁報論文競賽頒獎** (永信李天德醫藥基金會暨報論文獎)	15:20-17:00 **解剖學會海報競賽**		15:20-17:00 **大會主題口頭論文競賽**	
17:00 21:00	藥理與毒理之夜				藥理與毒理之夜						

DAY 2

	一樓			二樓		三樓					一樓
	藥理	生理	免疫	分生影像	毒物	細分	臨床生化	解剖	生化	大會	衛星 Lounge
	第一教室	第二教室	可勝廳	20 教室	29 教室	30 教室	31 教室	32 教室	33 教室	致德堂	1F 中庭
09:00 09:20	09:00-10:50 **學會學術演講 (一)** Glymphatic System in Brain Disorders	08:30-10:30 **生理 口頭論文競賽**	09:00-10:30 **免疫學會海報競賽** (海報區)	09:00-10:30 **分生影像學會口頭報告競賽** (海報區)	**Keynote Lecture** 09:00-09:45 Marijuana: A new risk factor for cardiovascular disease 09:45-10:30 Ca^{2+} release-activated Ca^{2+} (CRAC) channels as a potential new therapy for treating environmental allergens-house dust mite						
09:20 09:40						09:30-10:30 **細分學會特別演講** Visualizing Connexin Dynamics: Imaging-Based Insights into Cellular Communication and Trafficking	09:30-10:30 **臨床生化學會口頭論文競賽**	09:00-10:30 **解剖學會口頭論文競賽演講**	09:00-10:30 **生化學會海報競賽 (B 組)**		
09:40 10:00		10:00-11:00 **生理學會壁報討論時段 III** (展示時段 09:00-13:00)									
10:00 10:20											
10:30 10:50	Coffee Break										
10:50 12:00	11:00-12:00 **一般論文海報展示 II** 12:00-13:00 **一般論文海報展示 III**	10:50-11:50 **陳炯霖轉譯醫學講座特別演講** (致德堂) 11:50-12:00 **大會主題口頭論文競賽頒獎** (致德堂)		10:50-11:40 **Keynote speaker** Theranostics: Current concept and prospection in the era of personalized medicine 11:45-12:00 **分生影像會員大會、頒獎**	10:50-11:50 **陳炯霖轉譯醫學講座特別演講** (致德堂) 11:50-12:00 **大會主題口頭論文競賽頒獎** (致德堂)						
12:00 13:00		12:10-13:30 **生理學會餐會**					12:00-12:10 **臨床生化學會口頭論文競賽頒獎**				
13:00 13:20	13:00-15:00 **學會學術演講 (二)** Innate Immunity and Inflammation		13:10-14:10 **(免疫 x 細分合辦)** What is T cell exhaustion (30 教室)		13:00-13:30 **研討會 I** 暴露農藥對於腸道微生物群及代謝體與腎臟功能下降之影響探討	13:10-14:10 **(免疫 x 細分合辦)** What is T cell exhaustion		**研討會 II 數位影像和創新教學於解剖教學的應用** 13:00-13:30 3D 列印技術在解剖學教學之應用 13:30-14:00 3D printing in Anatomy Education 14:00-14:30 Decoding the Body: The Advantages and Limitations of Virtual Reality in Anatomy Education 14:30-15:00 Redesigning a Flipped Classroom Course and Evaluating Effectiveness in Medical Education: Case Study of the Course of "Anatomy"			
13:20 13:40		13:30-14:30 **生理學會壁報討論時段 IV** (展示時段 13:30-17:00)			13:30-14:00 **研討會 II** Wastewater-Based Epidemiology for Monitoring the Use of 68 NPS and Conventional Drugs in the Taipei Metropolitan Area, Taiwan, During and After the COVID-19 Pandemic				13:30-14:30 **生化學會學會專題演講** Translational biology		
13:40 14:00			14:10-15:00 **114 年國科會微免及檢驗醫學學門規劃研究推動計畫研究成果發表會：** 計畫申請說明暨申請經驗分享 (30 教室)		14:00-14:30 **研討會 III** The Impact of Environmental Pollutants on Tumorigenesis and Therapeutic Efficacy of Anti-Cancer Drugs				14:30-14:50 Break Time		
14:00 14:20											
14:20 14:40		14:30-16:30 **新進學者專題演講**			14:30-15:00 **研討會 IV** Differential proteomic profiles of lung injury in rat models upon pulmonary exposure to air pollution				14:50-15:50 **生化學會學會專題演講** Translational biology		
14:40 15:00											
15:00 15:20	Break Time										
15:20 17:00		16:30-17:00 **生理學會口頭及壁報論文競賽頒獎典禮**	15:20-16:50 **專題演講 II (免疫 x 細分合辦)** Metabolism and aging (30 教室) 16:50-17:00 **免疫學會閉幕式及頒獎**		15:00-15:30 **研討會 V** Detecting fluorescent-labeled nanoplastics in digestive fluids and tissue using Nano-tracking analysis and near-infrared fluorescence imaging 15:40-16:40 **毒物學會閉幕式暨論文競賽頒獎典禮**	15:20-16:50 **專題演講 II (免疫 x 細分合辦)** Metabolism and aging 16:50-17:00 **細分學會開幕式及頒獎**		15:20-17:00 **解剖學會特別活動 (全勤抽獎)**	15:50-16:30 **生化學會會員大會暨頒獎典禮**		

39th 生物醫學聯合學術年會

Advancing Therapies in Cancer and Diseases

2025 The 39th Joint Annual Conference of Biomedical Science

大會特別演講

Keynote Lecture

Speaker / **何秉智 Ping-Chih Ho**

Current Position

University of Lausanne Full Professor Department of Oncology Lausanne, Switzerland

Education/Training

2015 OTHERS, Yale University Department of Immunobiology, School of Medicine New Haven, CT, USA
2012 PhD, University of Minnesota Department of Pharmacology, School of Medicine Minneapolis, MN, USA
2008 OTHERS, University of Minnesota Department of Pharmacology, School of Medicine Minneapolis, MN, USA

Professional and Research Experience

2023-Present University of Lausanne Full Professor Department of Oncology Lausanne, Switzerland
2023-Present Ludwig Institute for Cancer Research Full Member Lausanne, Switzerland
2019-2022 University of Lausanne Associate Professor Department of Oncology(Tenured) Lausanne, Switzerland

Awards and Honors

2024 Clarivate Highly Cited Researchers
2024 Henry Kunkel Society member
2023 Clarivate Highly Cited Researchers

3/22 (Sat.) 09:40-10:30
3 樓，致德堂

Can you remember? Exhausted T cells

何秉智 Ping-Chih Ho
University of Lausanne Full Professor Department of Oncology Lausanne, Switzerland

Cancer immunotherapies that harness tumoricidal activity of tumor-reactive T cells represent a major breakthrough of current paradigm for treating cancer patents. However, the unstable immunogenicity of tumor cells and highly immunosuppressive tumor microenvironments in solid tumors present the challenges for current immunotherapies. Deciphering the underlying mechanisms utilized by tumor cells to impede tumoricidal activity of infiltrating immune cells and to reduce their immunogenicity is direly needed. Recent studies revealed that the metabolic competition over nutrients between tumor and immune cells in the tumor microenvironment causes metabolic crisis for infiltrating immune cells, especially T cells. This process impairs metabolic fitness of tumor infiltrating T cells and results in T cell dysfunction and formation of an immunosuppressive tumor microenvironment. Therefore, the intensive metabolic communication between tumor and T cells could determine the aggressiveness and immunogenicity of tumor cells. Here, I will discuss how T cell mediated immunosurveillance shapes the metabolic activity of tumor cells via an "immunometabolic editing" process. Tumor cells could acquire the edited metabolic advantages to support their unrestricted growth and immune evasion through this undefined editing process. Given that deregulated metabolic activity is hallmark of most solid tumors that contributes to the outgrowth of tumor cells, new knowledge gained from this new dimension of immunoediting will be transformative for developing new immunotherapies and metabolism targeting strategies to successfully eradicate a broad range of malignancies.

39th 生物醫學聯合學術年會

Advancing Therapies in Cancer and Diseases

2025 The 39th Joint Annual Conference of Biomedical Science

陳炯霖轉譯醫學講座
特別演講暨頒獎典禮

The Chiung-Lin Chen Translational Medicine Award

Speaker / **謝清河**
Patrick C.H. Hsieh

Current Position
Distinguished Research Fellow and Chief, Division of Cardiovascular and Metabolic Diseases, Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan
Professor, National Taiwan University College of Medicine and Kaohsiung Medical University
Member, Healthy Taiwan Promotion Committee, Presidential Office of R.O.C., Taiwan

Education/Training
1992 MD, Medicine, Kaohsiung Medical College
2003 PhD, Bioengineering, University of Washington, Seattle

Professional and Research Experience
2017-2021 Affiliate Attending Surgeon, Cardiovascular Surgery Division, NTU Hospital
2013-Present Professor, Institute of Medical Genomics and Proteomics, NTU College of Medicine
2009-Present Assistant/Associate/Full/Distinguished Research Fellow, Institute of Biomedical Sciences, Academia Sinica

Awards and Honors
2024 Academia Award, Ministry of Education
2024 Tien-Te Lee Outstanding Biomedical Award
2021 Distinguished Alumnus Award, Kaohsiung Medical University

3/23 (Sun.) 10:50-11:50
3 樓，致德堂

Gut Bacteria and Heart Healing: The Hidden Players in Post-Infarction Resilience

謝清河 Patrick C.H. Hsieh
Distinguished Research Fellow and Chief, Division of Cardiovascular and Metabolic Diseases, Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan,Professor, National Taiwan University College of Medicine and Kaohsiung Medical University Member, Healthy Taiwan Promotion Committee, Presidential Office of R.O.C., Taiwan

Discover the surprising connection between gut bacteria and heart healing after a heart attack. This presentation explores how the trillions of microbes living in our gut influence the recovery process, particularly through their impact on the immune system and the production of key compounds called short-chain fatty acids. Special attention is given to butyrate-producing bacteria, which have been shown to play a vital role in protecting the heart after injury. Learn about studies in humans and animals that reveal how these beneficial microbes can boost heart health by producing beta-hydroxybutyrate, a molecule linked to improved heart function. This talk sheds light on how gut microbes and their metabolites interact with the body's immune system to support heart repair. It also opens the door to exciting possibilities for new therapies that harness the gut-heart connection to improve recovery and overall cardiovascular health.

39th 生物醫學聯合學術年會

Advancing Therapies in Cancer and Diseases

2025 The 39th Joint Annual Conference of Biomedical Science

學會特別演講

Keynote Speech

Speaker / **潘明楷**
Ming-Kai Pan

Current Position
Associate Professor, Institute of Pharmacology, College of Medicine, National Taiwan University, Taiwan
Attending Physician, Department of Medical Research, National Taiwan University Hospital, Taiwan

Education/Training
2014 Ph.D., Institute of Physiology, National Taiwan University College of Medicine
2004 M.D., National Taiwan University College of Medicine

Professional and Research Experience
2020-2024 Attending Physician, Division of Hematology-Oncology, Kaohsiung Change Memorial Hospital
2019-2022 Assistant Professor, Institute of Pharmacology, College of Medicine, National Taiwan University
2011-2019 Attending Physician, National Taiwan University Hospital

Awards and Honors
2024 Wu Ho-Su TBF Medical Award, Taiwan Bio-developmental Foundationg Physician
2024 Outstanding Research Award, National Science and Technology Council
2020 National Innovation Award

台灣藥理學會
3/22 (Sat.) 14:00-15:00
1 樓，第一教室

Cerebellar motor control mechanisms: toward precision and cross-individual uniformity

潘明楷 Ming-Kai Pan
Associate Professor, Institute of Pharmacology, College of Medicine, National Taiwan University, Taiwan,Attending Physician, Department of Medical Research, National Taiwan University Hospital, Taiwan

Scientific revolutions have often been driven by the discovery of mechanisms characterized by mathematical precision and uniformity. Newton's laws of motion laid the foundation for mechanical engineering, while the deciphering of the genetic code transformed molecular biology. In contrast, human motor control theory has largely remained descriptive, lacking precise mathematical frameworks for the fine-grained kinematic control seen in physics. The inherent complexity and variability of neuronal networks across individuals raise a fundamental question: does a precise motor control mechanism exist at the systems level? In this talk, we present recent findings demonstrating how the cerebellum employs frequency coding to regulate the fine kinematics of movement. We show that disruptions in this frequency-based control can manifest as tremors (too much rhythm) or ataxia (loss of rhythm), providing a unifying framework for understanding diverse movement disorders. Furthermore, we explore how cerebellar neurons achieve precise frequency computations through population coding, shedding light on the mechanisms of cross-individual consistency in motor control.

Speaker / **李魯元**
Lu-Yuan Lee

Current Position
Professor Emeritus, Department of Physiology, University of Kentucky

Education/Training
1969 BS, (Mechanical Engineering), National Taiwan University, Taiwan
1975 PhD, (Physiology and Biophysics), University of Mississippi Medical Center, USA
1978 OTHERS, (Pulmonary Physiology), University of California San Francisco, Cardiovascular Research Institute, USA

Professional and Research Experience
1981-Present Member of Regular and Special Study Sections and Review Panels, NIH
1992-1993 Karolinska Institute, Stockholm, Sweden
1994-1997 Director of Research, Department of Physiology, University of Kentucky (1992-Present Professor)

Awards and Honors
2002-2022 Fred Zechman Endowed Professor, University of Kentucky
2010 Elected Fellow, Biomedical Engineering Society (USA)
2016 Elected Fellow, American Physiological Society

中國生理學會
3/22 (Sat.) 10:50-12:00
1 樓，第二教室

Involvements of TRPV1 receptor in airway hypersensitivity induced by inflammation: from ion channel to patient

李魯元 Lu-Yuan Lee
Professor Emeritus, Department of Physiology, University of Kentucky

Transient receptor potential vanilloid type 1 (TRPV1) receptor is a nonselective cation channel and a polymodal transducer; in the respiratory tract, it is expressed predominantly in non-myelinated (C-fiber) sensory nerves. Stimulation of these TRPV1-expressing sensory endings in the lung can elicit reflex responses such as bronchoconstriction, cough, dyspnea and other characteristic symptoms of airway inflammatory diseases. Studies in our lab have demonstrated that a number of endogenous inflammatory mediators (e.g., eosinophil granular-derived cationic proteins, tumor necrosis factor-alpha, hydrogen ion, etc.) activated TRPV1 and/or up-regulated its sensitivity in airway sensory nerves. Furthermore, we have reported that allergen sensitization-induced airway inflammation markedly enhanced the expression of TRPV1 and the sensitivity of pulmonary C-fiber afferents in an animal model of allergic asthma. More importantly, our recent studies have revealed a lower temperature threshold for activating TRPV1 expressed in pulmonary vagal sensory neurons than that previously reported in DRG neurons. An important implication of this finding is related to the fact that inflammatory reaction is known to lead to an increase in tissue temperature. In the patch-clamp studies of isolated rat vagal pulmonary sensory neurons, increasing temperature to ~39°C significantly elevated their baseline activity and sensitivity to various chemical stimuli, and an involvement of TRPV1 was primarily responsible. This hypothesis was then further tested in human studies; in patients with mild and stable asthma, a brief isocapnic hyperventilation (at ~40% of maximum voluntary ventilation for 4 min) of humidified warm air (HWA) triggered an immediate and pronounced increase in airway resistance (Raw) and coughs. In sharp contrast, the same challenge failed to evoke any significant change in Raw or cough in healthy individuals. Pretreatment with inhaled ipratropium bromide, a cholinergic antagonist, completely prevented the bronchoconstriction in asthmatic patients, but did not abolish their cough responses; these results suggested an involvement of airway sensory nerves and cholinergic reflex. Hyperventilation of humidified air at room temperature did not cause bronchoconstriction or cough in the same patients. Similarly, the same challenge with HWA also triggered vigorous cough responses and evoked throat irritation in patients with allergic rhinitis and laryngopharyngeal reflux. In summary, increasing airway temperature stimulated bronchopulmonary C-fiber afferents via an activation of TRPV1, which plays an important role in the manifestation of various common symptoms of airway hypersensitivity in patients with chronic inflammatory airway diseases. (Supported in part by NIH grants HL67379, ES026529, AI123832 and UL1TR001998)

Speaker / **MARCIA HAIGIS**

Current Position

Co-Director of Bertarelli Rare Cancers Fund, HMS
Co-Director of Paul F. Glenn Center for Biology of Aging Research at Harvard

Education/Training

2006 OTHERS, Massachusetts Institute of Technology
2002 PhD, University of Wisconsin - Madison
1996 BS, University of New Hampshire

Professional and Research Experience

2021-2024 Inaugural Director, Gender Equity for Faculty in Science, HMS
2021-2024 Co-Chair, HMS Diversity Committee

Awards and Honors

2024 Elected to National Academy of Medicine
2023 Samsung Ho-Am Prize in Medicine
2022 Plenary Speaker in Opening session of 2022 Annual AACR conference

免疫學會X細分學會合辦
3/22 (Sat.) 10:50-11:50
3 樓，30 教室

Investigating the role of metabolism in cancer, immunity and aging.

MARCIA HAIGIS
Co-Director of Bertarelli Rare Cancers Fund, HMS,Co-Director of Paul F. Glenn Center for Biology of Aging Research at Harvard

Metabolic rewiring is a hallmark of cancer and supports the increased biosynthetic and energetic requirements of cancer cells. Tumor metabolism may be regulated by tumor cell intrinsic mechanisms. In addition, the tumor microenvironment provides a unique niche that supports the metabolic reprogramming of the tumor but may be suppressive to cytotoxic T cells. Finally, the systemic metabolic fitness of an individual may affect on tumor cell mechanisms and incidence. Here, we will discuss the how aging and obesity impacts mechanisms of cancer and immunity.

Speaker / **沈湯龍**
Tang-Long Shen

Current Position
Chair and Professor, Department of Plant Pathology and Microbiology, National Taiwan University, Taipei, Taiwan
Director - NTU College of Medicine Global Innovation Joint-Degree Program (GIP-TRIAD)

Education/Training
PhD, Cancer Cell Biology in the Department of Molecular Medicine, Cornell University, USA
MS, Plant Virology in the Institute of Plant Pathology, National Taiwan University, Taiwan
BS, Plant Pathology in the Department of Plant Pathology and Entomology, National Taiwan University, Taiwan

Professional and Research Experience
Post-doctoral Fellow, Department of Molecular Medicine, Cornell University (American Heart Association)
Visiting scholar, Weill Medical College of Cornell University, New York, NY, USA

Awards and Honors
2022 WW the Most Prestigious Medical Doctor Award （史懷哲風雲醫師獎）, International Albert Schweitz er Foundation (史懷哲基金會).
The 16th and 18th National Innovation Award, Development of a small molecule enhancement for erythropoiesis, in the Academic Research Category. Dec. 6, 2019,「利用腸腦軸線概念開發改善睡眠之植萃原料 Bugu-STM」2021
2016 The 6th Breast Cancer Outstanding Research Award, Breast cancer prevention foundation, Taipei, Taiwan

中華民國臨床生化學會
3/22 (Sat.) 10:50-12:00
3 樓，31 教室

Exosome: The rising star in biomedicine

沈湯龍 Tang-Long Shen
Chair and Professor, Department of Plant Pathology and Microbiology, National Taiwan University, Taipei, Taiwan,Director - NTU College of Medicine Global Innovation Joint-Degree Program (GIP-TRIAD)

Exosomes are small extracellular vesicles with a phospholipid bilayer structure, measuring approximately 30-150 nm in diameter. They play a crucial role in intercellular communication, pathophysiological progression, waste disposal, regeneration, immune modulation etc. In recent years, exosomes have attracted increasing attention for their potential clinical applications, with 116 ongoing clinical trials exploring their use in biomarker discovery, therapeutics, drug delivery, and vaccine development. They have shown promise in the diagnosis and treatment of various diseases, including COVID-19, sepsis, osteoarthritis, and cancer. Compared to cell-based therapies, exosomes offer several advantages, such as high permeability, ease of storage, and non-proliferative properties, making them a valuable focus in biomedical research. Furthermore, exosomes have been widely studied in cancer (e.g., breast and colorectal cancer) and metabolic disorders (e.g., diabetes), where their biomarker potential enhances early disease detection. However, challenges such as heterogeneity, standardization of production, bioengineering modifications, and safety concerns still need to be addressed. Future research will focus on enhancing exosome-based drug delivery, expanding applications in personalized medicine, and developing scalable production methods to accelerate their clinical translation. Keywords: exosomes, biomarkers, drug delivery, intercellular communication, clinical applications

Speaker / **In-Beom Kim**

Current Position

Professor of the Dept. of Anatomy, The Catholic University of Korea, Korea
Director of the Catholic Institute for Applied Anatomy (CIAA), The Catholic University of Korea, Korea

Education/Training

2005 OTHERS, Medical School at Houston, University of Texas, TX, USA
2003 PhD, Graduate School, The Catholic University of Korea, Korea
1995 MD, College of Medicine, The Catholic University of Korea, Korea

Professional and Research Experience

2020-Present Secretary General, Organizing committee, Congress of International Federation of Associations of Anatomists (IFAA)
2018-2023 Division Chair, Science Program Committee, The 20th International Microscopy Conference (IMC20)
2018-2022 Director, Catholic Brain Bank, Seoul, Korea

Awards and Honors

2023 PRS Best Paper Award, American Society of Plastic Surgeons, USA
2022 Best Teacher Award, College of Medicine, The Catholic University of Korea
2013 Hangil Award for Excellent Research, The Korean Association of Anatomists

中華民國解剖學學會
3/22 (Sat.) 10:50-12:00
3 樓，32 教室

Enhancing Anatomical and Surgical Training Through Cadaveric Models: Recent Advances and Practical Insights

In-Beom Kim
Professor of the Dept. of Anatomy, The Catholic University of Korea, Korea,Director of the Catholic Institute for Applied Anatomy (CIAA), The Catholic University of Korea, Korea

Human cadavers have long been recognized as the gold standard for teaching anatomy to medical students and refining surgical techniques among clinical practitioners, particularly surgeons. Despite various challenges—including limited availability, potential decomposition, rigidity, and the risk of infection—cadaver-based training remains unrivaled in providing high-fidelity simulations of operative environments. In recent decades, Korea has made notable progress in safeguarding human rights by implementing measures such as reducing working hours. Yet these reforms have also curtailed opportunities for hands-on clinical training, prompting the pursuit of more effective and efficient educational methods. Meanwhile, the proliferation of minimally invasive surgery (MIS)—encompassing laparoscopic and robot-assisted procedures—has resulted in fewer traditional open surgeries, thereby reducing surgical practice time for novices. To address these challenges, a variety of training modalities have emerged, including synthetic models, living animals, and virtual reality (VR) simulators. Nevertheless, human cadavers continue to offer the most realistic and comprehensive framework for developing surgical expertise. To optimize both specimen longevity and tissue fidelity, several embalming techniques have been introduced. In my talk, I will briefly introduce the diverse types of cadaveric specimens currently used for surgical skills training, detailing their properties, benefits, and limitations. I will also highlight our recent advances in creating "fresh cadavers with pulsation," which enhance realism and better support procedure training for vascular surgeons. Additionally, I will share insights from our latest initiatives, where medical students and residents practice essential clinical procedures—ranging from posterior nasal packing for epistaxis, tracheostomy, airway intubation, central venous catheterization, ascites paracentesis, bone marrow aspiration, pericardiocentesis, and spinal tap—using cadaveric models. A key focus will be placed on a straightforward, simple method for preparing cadavers specifically tailored to spinal tap training. By sharing our recent experiences with cadaver development and cadaver-based learning, I hope this talk will help you reflect on your identity as an anatomist and provide valuable insights into clinical medicine education in today's rapidly evolving technological environment.

Speaker / **王憶卿**
Wang Yi-Ching

Current Position
Director and Chair Professor, Department of Pharmacology, College of Medicine, National Cheng Kung University, Taiwan.

Education/Training
1993 PhD, Genetics, Michigan State University, USA.

Professional and Research Experience
2015-Present Chair Professor, Department of Pharmacology & Institute of Basic Medical Sciences, College of Medicine, National Cheng Kung University.
2006-2015 Distinguished Professor, Department of Pharmacology, College of Medicine, National Cheng Kung University.
1999-2006 Professor, Department of Life Science, National Taiwan Normal University.

Awards and Honors
2024 國科會傑出特約研究員獎
Merit Research Fellow, National Science and Technology Council, Taiwan.
2023 第 19 屆永信李天德醫藥科技獎—卓越醫藥科技獎
Tien Te Lee Biomedical Foundation for Excellent Biomedical Award, Taiwan.
2022 第 66 屆教育部學術獎
The Ministry of Education's 66th Annual Academic Award, Taiwan.

台灣生物化學及分子生物學學會
3/22 (Sat.) 11:00-12:00
3 樓，33 教室

PD-1 membrane presentation and stability: Mechanisms and therapeutics.

王憶卿 Wang Yi-Ching
Director and Chair Professor, Department of Pharmacology, College of Medicine, National Cheng Kung University, Taiwan.

To date, immune checkpoint inhibitor therapies targeting the programmed cell death-1 (PD-1) pathway, including PD-1 or PD-L1 inhibitors, have emerged as frontline treatments in cancer therapy. Nevertheless, our current understanding of PD-1-mediated regulation in T cells is still limited, underscoring the urgent need to gain a deeper insight into how PD-1 contributes to T cell exhaustion and tumor immune escape. Our recent findings reveal novel mechanisms of intracellular trafficking and plasma membrane presentation of PD-1 mediated by Rab37 small GTPase to sustain T cell exhaustion, thereby leading to poor patient outcomes. In addition, post-translational modifications (PTMs) such as phosphorylation, ubiquitarian, and glycosylation of PD-1 influence its stability, membrane presentation, and T-cell activity within the immunosuppressive tumor microenvironment. By identifying key enzymes and effectors involved in these PTMs, we strive to shed light on the crosstalk between PTMs and PD-1 function, providing new insights into regulating immune responses in cancer. Moreover, we have developed therapeutic strategies targeting PD-1 PTMs using co-culture cell systems, transgenic mice, and syngeneic animal models. These strategies involve the use of neutralizing antibodies, inhibitors, or our in-house developed antagonists targeting key enzymes identified in the PTM process. Clinically, multiplex fluorescence immunohistochemistry of tumor specimens from cancer patients has shown a high enrichment of aberrant trafficking and PTM-modified PD-1 in CD8 exhausted T cells, correlating with tumor progression.

Speaker / **高潘福**
Pan-Fu Kao

Current Position
中山醫學大學 醫學系 核子醫學科 教授
中山醫學大學附設醫院 核子醫學科 主治醫師

Education/Training
2018 PhD, 中山醫學院 臨床醫學研究所
1994 MS, Johns Hopkins University, Radiation Health Sciences
1985 MD, 中山醫學大學 醫學系

Professional and Research Experience
2020-2025 副院長，中山醫學大學 醫學院
2018-2021 理事長，臺灣醫用迴旋加速器學會
2013-2025 教授，中山醫學大學 醫學系

Awards and Honors
2017 台灣醫學教育學會雜誌 最佳論文獎
2016 原子能科技學術合作研究計劃 成果發表優良獎
2012 中山醫學大學 教學特優教師

台灣分子生物影像學會
3/23 (Sun.) 10:50-11:40
2 樓，20 教室

Theranostics: Current Concept and Future Perspectives in the Era of Personalized Medicine

高潘福 Pan-Fu Kao
中山醫學大學 醫學系 核子醫學科 教授
中山醫學大學附設醫院 核子醫學科 主治醫師

Theranostics（治療診斷學）是一種結合診斷與治療的個人化醫療技術，當今特別著重應用於癌症治療。它利用放射性標記物進行分子影像診斷（如 SPECT/CT 或 PET/CT），再使用相同的放射性核種藥物進行治療，最早應用放射性碘 I -123 和 1-131 進行甲狀腺癌診斷與治療，以及 [I -123]MIBG 和 [1-131]MIBG 進行腎上腺髓質瘤診斷與治療。 隨後 Theranostics 的觀念拓展到以相同生物特性的製劑，標定上不同特性的放射核種，例如以 [Ga-68]DOTATATE PET/CT 影像診斷和 [Lu-177]DOTATATE 治療神經內分泌腫瘤（Neuroendocrine Tumors），以及近年蓬勃發展的以 [Ga-68]PSMA PET/CT 影像診斷和 [Lu-177]PSMA 治療去勢抗性的轉移性前列腺癌 (metastatic castration-resistant prostate cancer, mCRPC)。優勢包括提高診斷準確性、降低副作用，以確保精準、高效的個人化療法。 近年 Theranostics 更拓展到運用合併不同種類的 PET 製劑的影像，例如合併 [Ga-68]PSMA 和 [氟 -18] 去氧葡萄糖（FDG）確認腫瘤內部是否有基因的異質性表現，再合併不同放射藥物治療與其他標靶或化學治療的可能性，以實現個人化治療及改善預後。未來發展方向更涵蓋新型放射性藥物、AI 影像分析及更多疾病應用，如阿茲海默症的診斷與治療指引，使 Theranostics 成為個人化精準醫療的重要技術。

Speaker / 魏子堂
Tzu-Tang Wei

Current Position

Associate Professor, Department of Pharmacology, National Taiwan University, Taiwan
Faculty Member, Taiwan International Graduate Program in Chemical Biology and Molecular Biophysics (TIGP-CBMB), Academia Sinica

Education/Training

2015 PhD, Department of Pharmacology, National Taiwan University, Taipei, Taiwan
2010 MS, Department of Pharmacology, National Cheng Kung University, Tainan, Taiwan
2008 BS, School of Pharmacy, Taipei Medical University, Taipei, Taiwan

Professional and Research Experience

2019-2023 Assistant Professor, Department of Pharmacology, National Taiwan University, Taiwan
2016-2019 Postdoctoral Fellow, Cardiovascular Institute (CVI), Stanford University, USA
2015-2015 Postdoctoral Fellow, Department of Pharmacology, National Taiwan University, Taiwan

Awards and Honors

2024 FutureTech Award, National Science and Technology Council (NSTC), Taiwan
2024 NARLabs R&D Service Platform Achievement Award, National Applied Research Laboratories (NARLabs), Taiwan
2024 NTU SPARK Program, National Science and Technology Council (NSTC), Taiwan

台灣毒物學學會
3/23 (Sun.) 09:00-09:45
2 樓，29 教室

Marijuana: A new risk factor for cardiovascular disease

魏子堂 Tzu-Tang Wei
Associate Professor, Department of Pharmacology, National Taiwan University, Taiwan,Faculty Member, Taiwan International Graduate Program in Chemical Biology and Molecular Biophysics (TIGP-CBMB), Academia Sinica

Marijuana is the most widely used illicit drug worldwide. Epidemiological studies indicate its increase in the risk of coronary artery disease. Adverse cardiovascular, cerebrovascular, and peripheral vascular effects have also been reported. In addition, three synthetic cannabis drugs have been approved by FDA for chemotherapy-induced nausea and vomiting. Synthetic cannabis drugs also show cardiovascular side effects. These results suggest that cardiovascular side effects exist in both recreational and medical use of marijuana. However, the underlying mechanisms remain poorly understood. We found that △9-tetrahydrocannabinol (△9-THC), the main mind-altering ingredient in marijuana, induced endothelial dysfunction in human endothelial cells and mice models via activation of cannabinoid CB1 receptor. Using high-throughput drug screening, we discovered genistein, a soybean isoflavone, was a new CB1 antagonist that attenuated marijuana-induced endothelial dysfunction and atherosclerosis, while preserving clinically useful effects such as sedation and analgesia. Cannabinoid CB1 receptor signaling is implicated in various diseases, including obesity, diabetes, cardiovascular disease, coronary artery disease, atherosclerosis, liver cirrhosis, and cancers. Although selective CB1 antagonists like rimonabant (Acomplia®) demonstrated therapeutic potential, their severe psychiatric side effects led to market withdrawal. Our recent work focuses on developing peripherally restricted CB1 antagonists to circumvent these side effects. In this presentation, I will report our latest findings on the role of CB1 receptor in cardiovascular disease. In addition, I will introduce our advancements in developing next-generation CB1 antagonists.

Speaker / 林裕萍
Yu-Ping Lin

Current Position
Assistant Professor of Department of Biotechnology and Bioindustry Sciences

Education/Training
2011 PhD, Department of Basic Science of National Cheng Kung University

Professional and Research Experience
2020-2024 Research Scientist of Oxford University
2013-2019 Research Fellow of NIEHS

台灣毒物學學會
3/23 (Sun.) 09:45-10:30
2 樓，29 教室

Ca^{2+} release-activated Ca^{2+} (CRAC) channels as a potential new therapy for treating environmental allergens-house dust mite

林裕萍 Yu-Ping Lin
Assistant Professor of Department of Biotechnology and Bioindustry Sciences

House dust mite (HDM) allergens are major triggers of asthma worldwide. This study shows how HDM allergens, particularly the Der p3 protease activated by Der p1, stimulate protease-activated receptors, activating store-operated Ca^{2+} release-activated Ca^{2+} (CRAC) channels. These channels, regulated by STIM-Orai interactions, drive inflammatory responses through Ca^{2+}-dependent transcription factors. Recent studies demonstrate that T cell-specific Orai1 deletion or pharmacological CRAC channel inhibition significantly reduces HDM-induced airway inflammation in mouse models. Combined partial inhibition of Der p3 and CRAC channels shows enhanced therapeutic efficacy compared to single-target approaches. The Der p3-PAR-CRAC channel axis represents a promising therapeutic target for allergen-induced asthma, with partial inhibition strategies potentially offering improved safety profiles while maintaining therapeutic efficacy.

Speaker / **Sandra Murray**

Current Position

Professor, University of Pittsburgh School of Medicine, Department of Cell Biology & Clinical and Translational Science Institute University of Pittsburgh, Pittsburgh, PA Joint Appointment, Pittsburgh PA, USA
Past President, American Society for Cell Biology

Education/Training

1970 BS, University of Illinois, Chicago, IL
1973 MS, Texas Southern University, Houston, TX
1980 PhD, School of Medicine, University of Iowa, Iowa City, IA

Professional and Research Experience

1999-Present Professor, Depart. of Cell Biology, University of Pittsburgh, School of Medicine, Pittsburgh, PA.
1988-1999 Associate Professor, Department of Neurobiology, Anatomy and Cell Science, School of Medicine, Pittsburgh, PA.
1982-1988 Assistant Professor, School of Medicine, Department of Neurobiology, Anatomy and Cell Science, University of Pittsburgh, School of Medicine, Pittsburgh, PA.

Awards and Honors

2024 Elected President of the American Society for Cell Biology
2020 Awarded the Training and Experimentation in Computational Biology (TECBio) Outstanding Mentor of the Year Award, University of Pittsburgh, Department of Computational and Systems Biology, Computational Biology REU Program
2018 Inducted as a Lifetime Fellow of the American Society for Cell Biology

中華民國細胞及分子生物學學會
3/23 (Sun.) 09:30-10:30
3 樓，30 教室

Visualizing Connexin Dynamics: Imaging-Based Insights into Cellular Communication and Trafficking

Sandra Murray
Professor, University of Pittsburgh School of Medicine, Department of Cell Biology & Clinical and Translational Science Institute University of Pittsburgh, Pittsburgh, PA Joint Appointment, Pittsburgh PA, USA,Past President, American Society for Cell Biology

Cell-cell communication is essential for maintaining tissue homeostasis, and gap junction channels play a pivotal role in facilitating this process by enabling the direct transfer of ions, metabolites, and signaling molecules between adjacent cells. Gap junction channels are composed of transmembrane proteins called connexins with connexin 43 (Cx43) being the most abundant isoform. Advances in imaging technologies have revolutionized our understanding of connexin dynamics, by shedding light on the complex processes governing gap junction channel assembly, internalization, and trafficking. In this talk, I will highlight how cutting-edge imaging approaches, including live-cell fluorescence microscopy, super-resolution techniques, and immunogold cytochemical transmission electron microscopy, have unveiled new insights into the life cycle of connexins. I will discuss the molecular mechanisms driving gap junction plaque internalization into annular gap junction vesicles, and their subsequent fate through degradation or recycling pathways. Furthermore, I will explore how connexin trafficking integrates with cellular organelles such as lysosomes and mitochondria, with implications for cellular signaling and energy homeostasis. By visualizing these dynamic processes, we have uncovered how connexins contribute to cellular communication in normal physiology and disease states. Our findings open new avenues for therapeutic interventions for developing novel strategies to modulate gap junctional communication in cancer, cardiovascular diseases, and metabolic disorders. This talk will highlight the power and beauty of imaging as a tool to understand the choreography of cellular communication and its potential in future research directions.

39th 生物醫學聯合學術年會

Advancing Therapies in Cancer and Diseases

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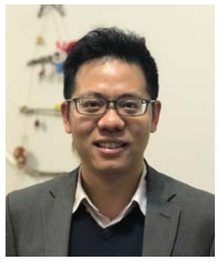
研討會演講
Symposia



Speaker / **陳示國 Shih-Kuo Chen**

Current Position
Professor, Department of Life Sciences, National Taiwan University

Education/Training
2017 Ph. D., Department of Biology, University of Houston
2002 BS, Department of Zoology, National Taiwan University

Professional and Research Experience
2008-2012 Postdoc, Biology Department, John's Hopkins University

Awards and Honors
2018 傑出人才基金會年輕學者創新獎
2017 吳大猷先生紀念獎

中國生理學會
3/22 (Sat.) 14:15-14:45
1 樓，第二教室

Environmental Light modulates gut microbiota, social memory and circadian clock through intrinsically photosensitive retinal ganglion cells

陳示國 Shih-Kuo Chen
Professor, Department of Life Sciences, National Taiwan University

In mammals, the retina at the back of the eye contains three types of photoreceptors. The classic photoreceptors, rod and cone cells, are essential for pattern vision, detecting light through visual opsins and relying on retinal ganglion cells to convey information to the visual cortex. However, a third type of photoreceptor, the intrinsically photosensitive retinal ganglion cells (ipRGCs), project to various nuclei in the hypothalamus and thalamus. These ipRGCs express the photopigment melanopsin, which has a peak absorption spectrum near 478 nm, enabling them to control non-image-forming functions such as circadian photoentrainment and the pupil light reflex. In our study, we discovered that light exposure can reduce social memory formation in mice. Through ipRGCs, light can regulate social memory by activating GABAergic neurons in the peri-supraoptic nucleus (pSON) and inhibiting oxytocin neurons in the supraoptic nucleus (SON). Furthermore, ipRGCs could influence gut microbiota oscillation and hair regeneration through sympathetic nerves, potentially mediated by the suprachiasmatic nucleus (SCN), the central oscillator for the circadian clock. Aberrant light dark cycle such as light exposure at night will impair gut microbe composition and dampen their daily oscillation. In summary, light information in mammals can modulate numerous physiological functions through a direct ipRGC-to-hypothalamus circuit, bypassing the visual cortex. This provides a neural pathway for mammals to respond to external light without "seeing" the light.

Speaker / 林士傑 Shih-Chieh Lin

Current Position

Professor, Institute of Neuroscience, National Yang Ming Chiao Tung University, Taiwan

Education/Training

2006 PhD, Duke University
2000 MD, National Taiwan University

Professional and Research Experience

2009-2017 Investigator, National Institutes on Aging, NIH, USA
2017-2025 Professor, National Yang Ming Chiao Tung University

中國生理學會
3/22 (Sat.) 14:45-15:15
1 樓，第二教室

A common neural mechanism for selective attention across sensory modalities in the basal forebrain

林士傑 Shih-Chieh Lin
Professor, Institute of Neuroscience, National Yang Ming Chiao Tung University, Taiwan

Selective attention enhances the processing of behaviorally relevant sensory inputs while filtering out distractions, leading to improved perception and behavioral responses specific to the attended modality. Despite the modality-specific manifestations of selective attention, here we identify a modality-common attention signal in the basal forebrain (BF), where attention signals from different sensory modalities converge onto the same population of noncholinergic BF neurons. Using a novel crossmodal selective attention task, in which auditory and visual stimuli were presented concurrently, rats were trained to rapidly switch attention between sensory modalities. Behavioral performance and BF activity were dictated solely by the currently attended modality, with minimal influence from perceptually salient inputs in the unattended modality. Remarkably, the same BF neurons exhibited highly similar responses to attended targets regardless of sensory modality, providing a modality-common signal for selective attention. This BF activity closely tracked behavioral performance on a trial-by-trial basis, including during task-related rapid attentional shifts and spontaneous, self-initiated switches. Furthermore, BF response amplitudes and latencies reliably decoded attentional engagement and the attended modality, respectively, in single trials. These findings suggest that selective attention across sensory modalities converges onto a shared mechanism in the BF, underscoring its role as a subcortical hub for integrating attention and promoting adaptive behavior.

Speaker / **吳炳男 Bin-Nan Wu**

Current Position
Professor, Kaohsiung Medical University, Kaohsiung, Taiwan

Education/Training
1995 PhD, Institute of Medicine, College of Medicine, Kaohsiung Medical University
1990 MS, Institute of Medicine, College of Medicine, Kaohsiung Medical University
1987 BS, School of Pharmacy, Kaohsiung Medical College

Professional and Research Experience
2005-Present Professor, Department of Pharmacology, Kaohsiung Medical University
2018-2024 Prof. & Director, Graduate Institute of Medicine, Kaohsiung Medical University
2006-2012 Prof. & Chief, Department of Pharmacology, Kaohsiung Medical University

Awards and Honors
2002 Taiwan Pharmacological Society Young Investigator Award
2005 The 2005 Neuroplasticity Symposium and the 2nd TMU Neuroscience Symposium ---The Distinguished Neuroscience Award
2014 Associate Editor: The Kaohsiung Journal of Medical Sciences (KJMS)

中國生理學會
3/22 (Sat.) 15:15-15:45
1 樓，第二教室

Cornel iridoid glycosides improve peripheral nerve injury-induced neuropathic pain and associated neurogenic inflammation

吳炳男 Bin-Nan Wu
Professor, Kaohsiung Medical University, Kaohsiung, Taiwan

Neuropathic pain remains the most frequent cause of suffering and disability throughout the world. Hyperalgesia and allodynia associated with neuropathic pain are the hallmarks of peripheral nerve injury. Since currently available treatments for neuropathic pain remain inadequate, it is imperative to continue the search for novel targets and improved therapies. We aimed to examine the inflammatory factors and pain-related ion channels in streptozotocin/nicotinamide (STZ/NA)-induced rats and diabetic db/db mice and to explore the possible mechanisms of cornel iridoid glycosides (CIG) on peripheral nerve injury. Materials and Methods: Animals' blood glucose levels ≥200 mg/dl were used as diabetic models. STZ/NA-induced SD rats and db/db mice were performed to induce hyperalgesia and allodynia. SD rats were randomly divided into control, STZ/NA, control+CIG, and STZ/NA+CIG groups. Diabetic db/db mice were separated into sham, sham+CIG, chronic constriction injury (CCI), and CCI+CIG groups. Intraperitoneal injection of the vehicle or drugs was performed once daily for 2 (rats) or 3 weeks (mice). Animals' body weight and blood glucose levels during the experimental period were measured. Next, we sacrificed the animal, and the sciatic nerve, dorsal root ganglia (DRG), and spinal cord were removed. Results and Discussion: Administration of CIG could effectively alleviate hyperalgesia and allodina in SD rats and db/db mice. CIG also reduced pain-associated channel protein CaV3.2 and calcitonin gene-related peptide (CGRP) in the surficial spinal dorsal horn of SD rats. CIG inhibited oxidative stress and NF-κB activation and decreased the levels of mRNA and protein of proinflammatory factors IL-1β and TNF-alpha. In the group of db/db mice combined CCI, immunofluorescence staining results demonstrated that p-NF-κB increased in neurons and astrocytes, Cx43 increased in astrocytes, and P2X3R increased in neurons. Besides, the ATP content in the spinal cord was also significantly increased. All the effects were improved in the CCI + CIG group. Those data indicated that CIG attenuated Cx43-mediated ATP release, which bound to P2X3R and contributed to hindering the ERK/p38NF-κB activation. Conclusion: Those results suggested that CIG improved painful diabetic neuropathy (PDN)-mediated pain behaviors by inhibiting oxidative stress-provoked inflammation and pain-related channel proteins in the spinal cord to improve neuropathic pain. Our findings demonstrated that CIG might be a potential candidate for treating PDN. Keywords: Cornel iridoid glycosides, chronic constriction injury, neuropathic pain, neuroinflammation

Speaker / **陳志成 Chih-Cheng Chen**

Current Position
Distinguished Research Fellow, Institute of Biomedical Sciences, Academia Sinica

Education/Training
1997 PhD, University College London

Professional and Research Experience
2023-Present Distinguished Research Feoolw, Institute of Biomedical Sciences, Academia Sinica

Awards and Honors
2023 NSTC Outstanding Research Award
2017 NOST Outstanding Research Award

中國生理學會
3/22 (Sat.) 15:45-16:15
1 樓，第二教室

Roles of acid-sensing ion channels in sngception

陳志成 Chih-Cheng Chen
Distinguished Research Fellow, Institute of Biomedical Sciences, Academia Sinica

The perception of acid-sensation can be regarded as one of the most mysterious somatosensory functions. Traditionally, tissue acidosis which occurs in ischemia, inflammation, fatiguing exercise, etc., is a potent factor for activating proton-sensing ion channels/receptors to trigger pain, as has been demonstrated in humans and animal models. The location of the proton-sensing ion channels however, is more paradoxical being found on a wide range of somatosensory neurons. These, include not only nociceptors, but also pruriceptors, and non-nociceptive mechanoreceptors (e.g., proprioceptors). Thus, acidosis seems not only to be involved in nociception, but also in pruriception, proprioception, and anti-nociceptive signaling. For instance, the acid-sensing ion channel 3 (ASIC3) is arguably the most acid-sensitive of ion channels in somatosensory neurons and is involved in perception of acid-induced chronic pain in experimental animal models. Yet, intriguingly, ASIC3 is also expressed in proprioceptors where it behaves as a mechanically sensitive ion channel involved in tether-mode mechanotransduction. In addition, a recent study showed another acid-sensitive ion channel, ASIC1a, can mediate anti-nociceptive effects in dextrose prolotherapy. Therefore, the role of acid signaling in non-nociceptive somatosensory neurons is of great interest for understanding the neurobiology of pain associated with tissue acidosis, and a potential therapeutic target. To address the promiscuous nature of acid-sensation, we have coined the term "sngception (sng- ception)" for this specific somatosensory function, to distinguish it from the nociceptor neuron-specific sensation of painful stimuli (nociception). 'Sng' (pronounced as sə-ng) is derived from a linguistic phenomenon where both "sour taste" and muscle soreness are encoded in the same word in the Taiwanese language. In Chinese, such acid-like discomfort is often described as sng or sng-pain, again using the sng Taiwanese word that represents the state of feeling sore. In the pain clinic, soreness (or sng) sensation is seen as a distinct and characteristic sensory phenotype of various acute and chronic pain syndromes (e.g., delayed onset muscle soreness or DOMS, fibromyalgia, and radicular pain). It is also a sign of successful analgesia for acupuncture and many physical therapies. Here we show evidence that sng and pain can be segregated and distinguished separately in humans and mice. We also show in mouse models how sngception is transmitted and contributes to chronic hypersensitivity.

Speaker / **宋柏儀**
Bo-Yi Sung

Current Position
Assistant professor, Department of Microbiology and Immunology, National Defense Medical Center

Education/Training
2010 MD, Department of Medicine, National Defense Medical Center, Taipei, Taiwan
2019 PhD, Pathobiology program, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Professional and Research Experience
2022-Present Assistant professor, Department of Microbiology and Immunology, National Defense Medical Center, Taiwan
2020-2022 Assistant professor, Department of Biomedical Engineering, National Defense Medical Center, Taiwan
2017-2020 Instructor, Health Service Training Center, National Defense Medical Center, Taiwan

Awards and Honors
2018 Co-PI of Einstein Program, Ministry of Science & Technology (MOST), Taiwan
2016 Pathology Young Investigator Award, Johns Hopkins University, USA

Selected Publication
1. Bo-Yi Sung, Yi-Hsin Lin, Qiongman Kong, Pali D. Shah, Joan Glick Bieler, Scott Palmer, Kent Weinhold, Hong-Ru Chang, Hailiang Huang, Robin K. Avery, Jonathan P. Schneck*, Yen-Ling Chiu* Wnt Activation-Induced PRMT1 Epigenetically Controls Memory T cell Polyfunctionality. J Clin Invest. 2022
2. Yen-Ling Chiu, Chung-Hao Lin, Bo-Yi Sung, Yi-Fang Chuang, Jonathan P. Schneck, Florian Kern, Graham Pawelec & George C. Wang. Cytotoxic polyfunctionality maturation of cytomegalovirus-pp65-specific CD4 + and CD8 + T-cell responses in older adults positively correlates with response size. Sci Rep. 2016.

中華民國免疫學會
3/22 (Sat.) 13:30-14:00
1 樓，可勝廳

A Systematic Approach to Spectral Cytometry Panel Design Incorporating Intracellular Staining with SCOPE (Spectral Cytometry Optimization and Panel Expansion)

宋柏儀 Bo-Yi Sung
Assistant professor, Department of Microbiology and Immunology, National Defense Medical Center

Spectral cytometry is a powerful tool, yet researchers often struggle with effectively designing high-dimensional panels. To tackle this challenge, we developed SCOPE (Spectral Cytometry Optimization and Panel Expansion)—a comprehensive strategy that enables users from any institute equipped with a spectral cytometer to quickly, conveniently, and flexibly design optimized panels, including intracellular staining. This approach overcomes the long-standing limitation where high-dimensional flow cytometry incorporating intracellular markers was primarily achievable only through CyTOF. I will first demonstrate how inverse matrix multiplication can be used to manually compute conventional flow cytometry compensation. I will then explain the data structure of spectral cytometry and how unmixing reconstructs the original signals. Key principles of panel design will be discussed, including fluorescence brightness, instrument configuration, antigen expression patterns, and antibody availability. By leveraging database searches, we selected 56 candidate fluorescent dyes. Single-stain experiments were conducted to calculate stain indices (SI) under normal and fix/perm-treated conditions. Unmixing analysis on the Thermo BigFoot spectral cytometer (U12V12B7Y12R5) at National Defense Medical Center revealed that over 44 dyes could be effectively separated. Using this information, we successfully designed a 35-color panel to comprehensively analyze tumor-infiltrating lymphocytes (TILs) populations in lung cancer. This study provides a systematic and scalable framework for spectral panel design, empowering researchers to maximize the potential of spectral cytometry for high-dimensional immunophenotyping, including the analysis of cytokines, transcription factors, and other intracellular proteins.

Speaker / 王偉蓓
Wei-Bei Wang

Current Position
Assistant Professor, Department of Life Science, National Taiwan University

Education/Training
2011 PhD, Graduate Institute of Immunology, National Taiwan University College of Medicine, Taiwan
2004 MS, Graduate Institute of Immunology, National Taiwan University College of Medicine, Taiwan
2001 BS, Department of Life Sciences, National Cheng Kung University, Taiwan

Professional and Research Experience
2023-2024 Instructor in Research, Department of Microbiology, Immunology & Molecular Genetics, UT Health San Antonio, USA
2018-2023 Postdoctoral Research Fellow, Department of Microbiology, Immunology & Molecular Genetics, UT Health San Antonio, USA
2014-2018 Postdoctoral Scholar, Department of Veterinary and Biomedical Sciences, The Pennsylvania State University, USA

Awards and Honors
2017 American Association of Immunologists (AAI) Trainee Abstract Awards, AAI annual meeting, Washington DC, USA
2013 The Postdoctoral Research Abroad Program Awards, Ministry of Science and Technology, Taiwan

中華民國免疫學會
3/22 (Sat.) 14:00-14:30
1 樓，可勝廳

A Novel Role for CCR10+ iNKT Cells in Skin Immunity: Regulating Iron Levels and Hair Follicle Morphogenesis in Early Life

王偉蓓 Wei-Bei Wang
Assistant Professor, Department of Life Science, National Taiwan University

Invariant natural killer T (iNKT) cells are a unique subset of innate-like T cells that have diverse functions in the immune system. iNKT cells express restricted T cell receptors (TCR) to recognize self and foreign lipid antigens. Distinct iNKT subsets can quickly produce numerous cytokines to regulate immune responses in microbial infection, allergic disease, autoimmune disease, and cancer. These subsets have unique transcription factor profiles that determine their cytokine-producing abilities. However, the mechanisms that direct the tissue localization preference of different iNKT cell subsets are not well understood. Using CCR10 reporter mice, we found that the skin-homing chemokine receptor CCR10 is highly upregulated in iNKT cells during their thymic development stages in early life. Analysis of cytokine production in stimulated skin iNKT cells demonstrated that CCR10+ iNKT cells are unique iNKT2/1 subsets. In postnatal mice, iNKT cells are essential for immune equilibrium and skin morphogenesis. Further investigation revealed that skin-resident iNKT cells produce transferrin (Tf), a protein involved in iron metabolism. This finding suggested that iNKT cells might regulate iron levels in the skin, potentially influencing developmental processes. To explore this possibility, we conducted adoptive transfer experiments, introducing iNKT cells into hypotransferrinemic (hpx) mice that were deficient in transferrin. We observed a significant improvement in hair follicle development in these mice, with iNKT cells increasing iron levels in hair follicle stem cell progenitors. This process is crucial for hair follicle formation during early postnatal life. Overall, these studies enrich our understanding of the physiological roles played by iNKT cells in early skin development and may pave the way for novel therapeutic approaches targeting iNKT cells to promote skin health and regeneration.

Speaker / **楊佳郁 Chia-Yu Yang**

Current Position
Associate Professor, Dept. of Microbiology & Immunology, Chang Gung University, Taiwan.

Education/Training
2009 PhD, Graduate Institute of Life Sciences, National Defense Medical Center, Taiwan.
2001 MS, Dept. of Public Health, National Yang-Ming University, Taiwan.
1999 BS, Dept. of Medical Biotechnology and Laboratory Science, Chang Gung University, Taiwan.

Professional and Research Experience
2016-2021 Assistant Professor, Dept. of Microbiology & Immunology, Chang Gung University, Taiwan.
2014-2016 Assistant Research Fellow, Molecular Medicine Research Center, Chang Gung University, Taiwan.
2010-2014 Postdoctoral Fellow, Immunology Research Center, National Health Research Institutes, Taiwan.

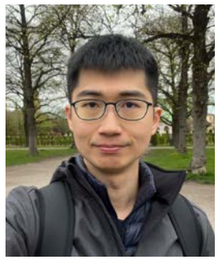
Selected Publication
1. Wang LJ, Tsai CS, Chou WJ, Kuo HC, Huang YH, Lee SY, Dai HY, Yang CY, Li CJ, Yeh YT. Wang. Add-On Bifidobacterium Bifidum Supplement in Children with Attention-Deficit/Hyperactivity Disorder: A 12-Week Randomized Double-Blind Placebo-Controlled Clinical Trial. Nutrients. 2024, 6(14):2260 (IF= 4.8, 18/114 in NUTRITION & DIETETICS)
2. Chan XY, Chang KP, Yang CY, Liu CR, Hung CM, Huang CC, Liu HP, Wu CC. Upregulation of ENAH by a PI3K/AKT/β-catenin cascade promotes oral cancer cell migration and growth via an ITGB5/Src axis. Cell Mol Biol Lett 2024, 29:136 (IF= 9.2, 27/313 in BIOCHEMISTRY & MOLECULAR BIOLOGY)
3. Chen KR*, Yang CY*, Shu SG*, Lo YC, Lee KW, Wang LC, Chen JB, Shih MC, Chang HC, Hsiao YJ, Wu CL, Tan TH, Ling P. Endosomes serve as signaling platforms for RIG-I ubiquitination and activation. Science Advances 2024, 10:45 (First author), (*These authors contributed equally to this study) (IF= 11.7, 11/134 in MULTIDISCIPLINARY SCIENCES)
4. Lee SY, Li SC, Yang CY, Kuo HC, Chou WJ, Wang LJ. Gut leakage markers and cognitive functions in patients with Attention-Deficit/Hyperactivity Disorder. Children, 2023, 10:513, (IF= 2.835, 59/130 in PEDIATRICS)

中華民國免疫學會
3/22 (Sat.) 14:30-15:00
1 樓，可勝廳

Functional roles of dual-specificity phosphatase 12 in T-cell survival

楊佳郁 Chia-Yu Yang
Associate Professor, Dept. of Microbiology & Immunology, Chang Gung University, Taiwan.

Dual-specificity phosphatases (DUSPs) are a family of protein phosphatases, which dephosphorylate threonine and tyrosine residues on their substrates. DUSP12 is an atypical dual-specificity phosphatase that contains a phosphatase domain at the N-terminus and a zinc-binding domain at the C-terminus. DUSP12 mediates the regulation of Toll-like receptor signaling, cell cycle, hepatocyte metabolism, cardiac hypertrophy, and fibrosis. Moreover, a nonsynonymous mutation of DUSP12 has been identified in 2 patients with the T-cell-mediated autoimmune diseases. T cells play an important role in the adaptive immune response, and well-controlled T-cell signaling is essential for proper immune responses. However, the functional roles and molecular mechanisms of DUSP12 and its substrates/regulators in T cells and immune responses remain unclear. To study the DUSP12 functions in T cells, we have established T-cell-specific DUSP12 conditional knockout (cKO) mice by breeding DUSP12 floxed mice with CD4-Cre transgenic mice. Our data showed that DUSP12 cKO mice had severe T-cell lymphopenia in CD4+, CD8+, and regulatory T cells. Furthermore, the proportion of Annexin V-positive CD4+ and CD8+ T cells was significantly increased in DUSP12 cKO mice compared with wild-type mice. These findings suggest that DUSP12 plays an important role in controlling T-cell survival. Using DUSP12 co-immunoprecipitation and liquid chromatography-mass spectrometry experiment, we have identified multiple potential DUSP12-binding proteins in T cells, which may regulate T-cell survival. We will further characterize the molecular mechanisms of DUSP12 in T-cell survival in this study.



Speaker / **黃聖閔 Sheng-Min Huang**

Current Position

Assistant Professor, Department of Pharmacology, College of Medicine, National Cheng Kung University

Education/Training

2016 PhD, Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University

2011 BS, Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University

Professional and Research Experience

2019-2024 Postdoc, Institute of Biomedical Engineering & Nanomedicine, National Health Research Institute

Awards and Honors

2024 Third Place Award, IFMBE Young Investigator Competition, ICBHI 2024

2021 Summa Cum Laude Merit Award, ISMRM 2021

Selected Publication

Huang, S. M., Cho, K. H., Chang, K., Huang, P. H.*, and Kuo, L. W.* (2024) Altered thalamocortical tract trajectory growth with undisrupted thalamic parcellation pattern in human lissencephaly brain at mid-gestational stage. Neurobiology of Disease, p. 106577. doi: 10.1016/j.nbd.2024.106577

台灣分子生物影像學會
3/22 (Sat.) 13:00-14:00
2 樓，20 教室

Diffusion MRI fiber-tractography of the developing human brain

黃聖閔 Sheng-Min Huang
Assistant Professor, Department of Pharmacology, College of Medicine, National Cheng Kung University

Proper topographically organized neural connections are essential during brain development. We aim to disclose the developmental progress of brain connections by using diffusion MRI fiber-tractography. Specifically, the connections between the thalamus and the cerebral cortex are of importance in thalamus function. Thalamocortical (TC) fiber growth begins during the embryonic period and completes by the third trimester of gestation, so that human neonates at birth have a thalamus with a near-facsimile of adult functional parcellation. By using diffusion MRI fiber-tractography analysis of long-term formalin-fixed postmortem fetal brain, the thalamocortical tracts were reconstructed and the topological patterns of thalamic subregions were characterized. We found similar topological patterns of thalamic subregions and of internal capsule parcellated by TC fibers. On the contrary, the lissencephaly fetal brain showed less organized TC fibers and optic radiations, and much less cortical plate invasion by TC fibers. These results show the feasibility of diffusion MRI fiber tractography in postmortem long-term formalin-fixed fetal brains to disclose the developmental progress of TC tracts. Moreover, we further extend the fiber-tractography analyzing approach to investigate the major cerebellar fibers in developing human brain, trying to characterize the developing progress of cerebellar peduncles in different neonatal stages. Preliminary result reveals the developing changes of along tract diffusion MRI metrics, highlighting the capability of diffusion MRI in exploring the cerebellar connectome in developing human brain.

Speaker / **廖愛禾 Ai-Ho Liao**

Current Position
Professor, Graduate Institute of Biomedical Engineering, National Taiwan University of Science and Technolog

Education/Training
2009 PhD, Department of Electrical Engineering in National Taiwan University

Professional and Research Experience
2009-2010 Postdoctoral Researcher, NTU Research Center for Medical Excellence – Division of Genomic Medicine

Awards and Honors
2017 Dr. Ta-You Wu Memorial Award
2018 Taiwan Innovation Award
2023 Taiwan Innovation Award

Selected Publication
1. Ai-Ho Liao, Yu-Chen Chen, Chia-Yu Chen, Shun Cheng Chang, Ho-Chiao Chuang, Dao-Lung Lin, Chien-Ping Chiang, Chih-Hung Wang, Jehng-Kang Wang. Mechanisms of ultrasound-microbubble cavitation for inducing the permeability of human skin. Journal of Controlled Release, 349:388-400, 2022. (SCI) IF: 10.5, 12/354. (PHARMACOLOGY & PHARMACY)
2. Ai-Ho Liao*, Ying-Jui Lu, Yi-Chun Lin, Hang-Kang Chen, Huey-Kang Sytwu, Chih-Hung Wang*, “Effectiveness of a Layer-by-Layer Microbubbles-Based Delivery System for Applying Minoxidil to Enhance Hair Growth” Theranostics, 6(6), 817-827, 2016. (SCI) IF:12.4, 8/189. (MEDICINE, RESEARCH & EXPERIMENTAL)

台灣分子生物影像學會
3/22 (Sat.) 14:00-15:00
2 樓，20 教室

Microbubble-assisted ultrasound for inner ear drug delivery

廖愛禾 Ai-Ho Liao
Professor, Graduate Institute of Biomedical Engineering, National Taiwan University of Science and Technolog

Ultrasound-microbubbles (USMBs) can be applied for imaging, drug delivery, gene transfection, cancer therapy and blood-brain barrier opening. The inner ear is a highly specialized sense organ and lacks the capacity to regenerate hair cells which can be easily damaged by excessive stimulation of noise, ototoxic drugs and the effects of aging. In previous studies, USMBs has been demonstrated to enhance the permeation of round window membrane and local delivery of drug into the inner ear without hearing damage. In this presentation, we introduce the technique of USMBs in the inner ear drug delivery and illustrate the new challenge and insight. The cochlear blood-labyrinth barrier (BLB) and the blood-brain barrier (BBB) have many similarities and have blocking effects on many large and small molecules. However, some studies have confirmed that the cochlear blood-labyrinth barrier and the blood-brain barrier exist different mechanisms in drug delivery. When sudden deafness occurs due to damage to the inner ear, the blood flow in the tissue is reduced, causing ischemic damage and insufficient glucose and oxygen supply (Oxygen Glucose Deprivation, OGD). Hyperbaric oxygen therapy (HBOT) has been suggested as a viable option for treatment of sudden sensorineural hearing loss as it improves vascular dysfunction. However, the most common complication during HBOT is middle ear barotrauma, which can lead to permanent hearing loss and vertigo. Therefore, we prepared drug-coated or drug-loaded oxygenated albumin microbubbles (Met-OMB or MetOMB), and combined with ultrasound to improve the delivery efficiency of drug and oxygen through the round window membrane or cochlear blood-labyrinthine barrier, and treat inner ear damage. Moreover, the present study firstly explores the feasibility of combining siRNA-coated lysozyme-shelled microbubbles (LyzMBs) with ultrasound (US) to increase the knockdown effect of target genes on the cochlea as well as reducing the degradation of siRNA. The obtained results show that this approach can inhibit the expression of disease-causing gene and the generation of ROS in cells, and effectively reduce the ototoxicity induced by cisplatin.

Speaker / **李易展 Yi-Jang Lee**

Current Position
Professor. Dept. of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University, Taiwan

Education/Training
2003 PhD, Pathology and Laboratory Medicine, School of Medicine, University of Rochester, NY, USA

Professional and Research Experience
2014-Present Professor, Dept. of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University, Taiwan

Awards and Honors
2024 2024 生物醫學年會之台灣分子生物影像學會傑出論文獎
2022 國科會未來科技獎
2022 JMBE 年度傑出論文獎

台灣分子生物影像學會
3/22 (Sat.) 15:20-16:20
2 樓，20 教室

Integrating ultrahigh-brightness polymer dots and stereo NIR-II imaging to assess the angiogenesis with stemness of head and neck cancer and potent anti-angiogenic agents in vivo

李易展 Yi-Jang Lee
Professor. Dept. of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University, Taiwan

Head and neck cancer (HNC) is often diagnosed at an advanced stage with poor differentiation and prognosis. Late-stage tumors exhibit reduced proliferative fractions and increased cell loss, yet the remnant living cells remain poorly characterized. In vivo optical imaging of FaDu tumor-bearing mice revealed reduced tumor activity at advanced stages. However, remnant living FaDu cells isolated from these tumors exhibited accelerated growth, enhanced chemo-radioresistance, and antioxidant properties compared to pre-implanted cells. These cells demonstrated increased migration, invasion, and upregulation of epithelial-mesenchymal transition (EMT) markers. Moreover, they displayed cancer stem cells (CSC) associated characteristics, including high tumorigenicity, reduced side population, increased spheroid formation, and upregulation of TIC-associated biomarkers. Despite arsenic trioxide (ATO) treatment suppressing TIC-related biomarkers, Nrf2 was strongly induced, sustaining low oxidative stress. This suggests that the antioxidant potency of late-stage tumors could serve as a therapeutic target for advanced HNC. Given the critical role of angiogenesis in tumor progression and therapy resistance, we employed an ultrabright semiconducting polymer dots (Pdots)-based near-infrared-II (NIR-II) imaging platform to assess tumor vasculature and evaluate anti-angiogenic therapies. Stereo NIR-II imaging of xenograft tumors revealed that remnant living cells formed a denser vascular network than parental cells. To assess the efficacy of anti-angiogenic agents, we integrated Pdots-based NIR-II imaging with a 3D fluorescence imaging system in an oral squamous cell carcinoma (OSCC) model. Tumor-bearing mice implanted with MTCQ1 tongue cancer cells were treated with PX-478, a hypoxia-inducible factor-1 α (HIF-1 α) inhibitor, and BPR0C261, a microtubule-disrupting agent. Both agents significantly inhibited tumor growth, prolonged survival, and suppressed tumor vascularity without affecting body weight. Pdots-based NIR-II imaging demonstrated reduced tumor vascular density following treatment, consistent with ex vivo analysis showing decreased blood vessel formation. Immunohistochemical and Western blot analyses confirmed that PX-478 and BPR0C261 suppressed endothelial marker CD31 expression, while PX-478 additionally downregulated HIF-1α and VEGF-A, and BPR0C261 specifically reduced VEGF-A levels. These findings highlight the utility of Pdots-based stereo NIR-II imaging in evaluating angiogenesis and treatment response in aggressive tumor models. The identification of remnant living cells with CSC-like and antioxidant properties in late-stage HNC suggests that targeting oxidative stress pathways may enhance treatment efficacy. Additionally, the integration of advanced NIR-II imaging with biocompatible Pdots provides a powerful platform for real-time, non-invasive assessment of anti-angiogenic therapies, advancing personalized treatment strategies for aggressive head and neck cancers.

Speaker / **楊凱鈞**
Kai-Chun Yang

Current Position
Associate Professor, Department of Psychiatry, Taipei Veterans General Hospital and National Yang Ming Chiao Tung University, Taiwan

Education/Training
2017 PhD, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden
2003 MD, School of Medicine, National Yang-Ming University, Taipei, Taiwan

Professional and Research Experience
2017-Present Attending Psychiatrist, Department of Psychiatry, Taipei Veterans General Hospital, Taipei, Taiwan

Awards and Honors
2011 Fellowship Award, 2nd AsCNP (Asian College of Neuropsychopharmacology), Seoul, Korea

台灣分子生物影像學會
3/22 (Sat.) 16:20-17:20
2 樓，20 教室

Multimodal Neuroimaging to Investigate Cognitive Impairment in Neuropsychiatric Disorders

楊凱鈞 Kai-Chun Yang
Associate Professor, Department of Psychiatry, Taipei Veterans General Hospital and National Yang Ming Chiao Tung University, Taiwan

Cognitive impairment is a critical factor in neuropsychiatric disorders, significantly impacting functional outcomes independent of other clinical variables and representing a major unmet therapeutic need. Neuroimaging offers a powerful means to investigate the in vivo relationships between brain structure, function, neurochemistry, and cognition. While neuroimaging research has yielded valuable insights, translating these findings into clinically useful biomarkers remains a challenge. This talk argues that moving beyond single-region analyses to examine brain networks/circuits, and integrating multiple modalities through multimodal neuroimaging, are crucial steps toward this goal. Specifically, we will explore the advantages of multimodal approaches, including network/circuit-based analyses and the unique opportunities afforded by combined PET/MR systems for simultaneously assessing diverse aspects of brain function and structure. We will discuss the potential of these techniques to elucidate the mechanisms underlying cognitive impairment in neuropsychiatric disorders, as well as the associated challenges and future directions. Ultimately, multimodal neuroimaging holds immense promise for advancing our understanding of these debilitating impairments and paving the way for more effective treatment strategies.

Speaker / **董久源 Howard Doong**

Current Position
臺灣來富可得生物科技股份有限公司董事長
天主教輔仁大學生命科學系兼任教授

Education/Training
OTHERS NIH, National Cancer Institute, Lab of Pathology, Clinical Research Fellow
PhD The University of Chicago, the Department of Organismal Biology Anatomy
OTHERS Program Harvard-MIT, Division of Health Sciences and Technology

Professional and Research Experience
執行長 , 美國輝景生物醫藥公司 (ABVC BioPharma, Inc, NASDAQ 上市公司)
董事長 , 美國 BioKey 醫藥品製造受託 (CDMO) 公司
助理教授 , 美國馬里蘭州州立大學醫學院和生物技術研究所

Awards and Honors
美國病理醫師學會 (CAP) 認證醫學實驗室主任 (Next Generation Sequencing)
臺灣首家在納斯達克資本市場上市的生物科技製藥公司 (ABVC) 執行長
美國國立衛生研究院國家癌症研究所最佳研究員獎 (Fellowship Award) 得獎主

中華民國臨床生化學會
3/22 (Sat.) 14:20-15:00
3 樓，31 教室

Clinical Applications of Stem Cell-derived Exosomes

董久源 Howard Doong
臺灣來富可得生物科技股份有限公司 董事長
天主教輔仁大學生命科學系 兼任教授

Exosomes are biological nanoscale spherical lipid bilayer vesicles with a diameter of 40-200 nm secreted by cells. Exosomes act as intercellular messengers and have been regarded as miniature versions of their parental cells, partially because exosomes from a certain cell type provide cell-specific or unique sets of biomolecules (DNA, RNA & proteins). Exosomes are thought to be able to inherit similar therapeutic effects from their parent cells, such as embryonic and adult stem cells, through vertical delivery. Compared to stem cells, stem cell-derived exosomes possess numerous advantages, such as non-immunogenicity, non-infusion toxicity, easy access, effortless preservation, and freedom from tumorigenic potential and ethical issues. By reviewing relevant literature in recent years, this lecture is focusing on the applications and potential uses of stem cell-derived exosomes. Exosomes derived from mesenchymal stem cells are capable of treating numerous diseases encountered in orthopedics, neurology, plastic surgery, general surgery, thoracic surgery, cardiology, urology, head and neck surgery, ophthalmology, and obstetrics and gynecology. The diverse therapeutic effects of stem cell-derived exosomes are through a hierarchical translation of tissue-specific responses and cell-specific molecular signaling pathways. Future studies will combine insights from medical doctors, nanomedicine scientists and stem cell researchers in this intriguing area of research.

Speaker / **王治元 Chih-Yuan Wang**

Current Position

Chief, Division of Endocrinology and Metabolism, Department of Internal Medicine, National Taiwan University Hospital
Professor, Faculty, Department of Internal Medicine, College of Medicine, National Taiwan University, Taiwan

Education/Training

1989 MD, Chung-Shan Medical University, Taiwan
2003 PhD, National Taiwan University, Taiwan (Physiology)
2007 OTHERS, Graduate Institute of Business Administration, National Taiwan University

Awards and Honors

2013 Professor Fan-Wu Chen's Outstanding Research Award from the Endocrinology
2010 Outstanding Publication Award of the Endocrinology Society of the Republic of China
2008 Excellent Publication Award in Journal of the Taiwan Internal Medicine Society

中華民國臨床生化學會
3/22 (Sat.) 15:20-16:00
3 樓，31 教室

A Naïve Incident Biomarker Journey: Urinary Exosomal Peptides

王治元 Chih-Yuan Wang
Chief, Division of Endocrinology and Metabolism, Department of Internal Medicine, National Taiwan University Hospital,Professor, Faculty, Department of Internal Medicine, College of Medicine, National Taiwan University, Taiwan

Thyroid cancer, a common endocrine malignancy, remains a clinical challenge with recurrence rates as high as 30% even after thyroidectomy and radioactive iodine therapy. Traditional approaches relying on serum biomarkers, such as thyroglobulin, have limitations, particularly in cases complicated by anti-thyroglobulin antibodies or suboptimal sensitivity. Advances in molecular biology have brought urinary exosomal peptides into the spotlight as innovative, non-invasive alternatives for prognostics in thyroid cancer. These nano-sized vesicles, secreted by cells into bodily fluids like urine, serve as carriers of proteins, nucleic acids, and lipids, reflecting the state of their originating cells and offering a reliable window into disease progression. Studies have demonstrated a strong correlation between urinary exosomal peptides, such as thyroglobulin, tissue inhibitor of metalloproteinase (TIMP), and angiopoietin-1, with advanced thyroid cancer stages and lymph node metastasis. One study revealed that elevated preoperative levels of TIMP and angiopoietin-1 in urinary exosomes were significantly associated with lymph node metastasis, highlighting their value for identifying high-risk patients before surgery. Similarly, urinary exosomal thyroglobulin has shown potential in detecting recurrence post-thyroidectomy, even in cases where serum thyroglobulin levels fail to provide accurate results. Such findings underscore the clinical importance of these biomarkers in preoperative risk stratification and long-term surveillance. Longitudinal research has further validated the utility of urinary exosomal peptides in long-term monitoring. Another study tracked peptide levels in thyroid cancer patients over a decade and found minimal fluctuations among patients without recurrence, establishing their stability as reliable biomarkers. For high-risk individuals, consistent levels of urinary exosomal peptides within defined basal ranges correlated with a lower likelihood of recurrence, offering a non-invasive and reassuring monitoring tool for clinicians and patients alike. Urinary exosomal biomarkers hold several advantages over traditional methods. Urine collection is non-invasive, simple, and cost-effective, avoiding the need for expensive recombinant TSH stimulation or repeated imaging. Exosomes also protect their molecular cargo from enzymatic degradation, ensuring higher sensitivity and integrity of diagnostic data. Furthermore, they are unaffected by anti-thyroglobulin antibodies, a common limitation of serum thyroglobulin tests. Despite their promise, challenges such as standardizing methods for exosome isolation, peptide analysis, and large-scale validation remain. However, with ongoing advances in nanotechnology and bioinformatics, these obstacles are likely to be overcome. Although I hope urinary exosomal peptides could be a paradigm shift for thyroid cancer management in the future, offering a non-invasive, sensitive, and transformative approach to improving patient outcomes and quality of care. We still need more studies and research with ongoing program.

Speaker / **楊崑德 Kuender D. Yang**

Current Position

Vice Superintendent, MacKay Children's Hospital
Professor, MacKay Medical College

Education/Training

1989 PhD, Immunology, National Defense Medical Center, Taiwan
1983 MD, Medicine, National Defense Medical Center, Taiwan

Professional and Research Experience

2016-Present Affiliated Professor, National Defense Medical Center, Taipei, Taiwan
2015-Present Professor , Department of Medical Research, Mackay Memorial Hospital; Institute of Biomedicine, Mackay Medical College, Taipei, Taiwan
2012-Present Affiliated Professor, Institute of Medical Sciences, National Yang Ming University, Taiwan

Awards and Honors

2023 20th Annual National Biotechnology Award
2022 The first place of the mentorship for medical student research, MacKay Medical School
2020 World top 2% Influential Scientist

中華民國臨床生化學會
3/22 (Sat.) 16:00-16:40
3 樓，31 教室

臍帶間質幹細胞外泌體跨 3 代人機轉性臨床應用發展
Cross-generation mechanistic applications of exosomes from umbilical cord mesenchymal stem cells

楊崑德 Kuender D. Yang
Vice Superintendent, MacKay Children's Hospital,Professor, MacKay Medical College

外泌體在細胞通訊中扮演關鍵角色，健康幹細胞的外泌體具再生與抗炎功能，而老化細胞或癌細胞外泌體則可能促進老化與癌症。2013 年，外泌體研究獲諾貝爾獎肯定。我們深耕間質幹細胞及外泌體研究逾 20 年，利用醫療廢棄臍帶分離幹細胞，開發特色條件培養液與多種外泌體製劑，並探索藥物載體應用。 為推動再生醫療與節能減碳，我們建立多層次應用模式。透過 1) 取得生產婦女同意後收集臍帶，2) 分離與培養幹細胞，3) 製備外泌體製劑，4) B2B 授權異體與自體應用，5) B2C 提供抗老、抗皺與抗肌少症產品，串聯學術、產業與醫療機構，推動全民參與的再生醫療模式。 外泌體為器官移植困境提供潛在解方。全球千萬人等待移植，成功率低於 5%。我們透過臍帶間質幹細胞 (ucMSC) 分離 30–200nm 外泌體，發展早期再生醫療，可能取代器官移植。外泌體無細胞核，免疫相容性高，具再生與免疫調節因子，可經多種途徑給藥，優於細胞治療，並已獲專利技轉。其應用涵蓋三代人退化疾病，包括：a) 早產兒腦缺氧與肺纖維化，b) 成人外傷與器官纖維化，c) 老年皺紋與退化疾病。此外，外泌體具精準醫療價值。液態切片技術已應用於循環腫瘤細胞 (CTC) 監測，循環外泌體（CTE）可進一步提升癌症與抗老治療精準度，為人類健康帶來突破。

Speaker / **黃雍協 Yuahn-Sieh Huang**

Current Position

Associate Professor, Department of Biology and Anatomy National Defense Medical Center, Taipei, Taiwan, R.O.C.

Education/Training

2007 PhD, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan

1998 MS, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan

1996 BS, Department of Life Sciences, National Cheng Kung University, Taiwan

Professional and Research Experience

2015-Present Associate Professor, Department of Biology and Anatomy, National Defense Medical Center, Taipei, Taiwan, R.O.C.

中華民國解剖學學會
3/22 (Sat.) 13:30-14:00
3 樓，32 教室

Anti-NLRP3 inflammasome activation of GM1 ganglioside in microglia

黃雍協 Yuahn-Sieh Huang
Associate Professor, Department of Biology and Anatomy National Defense Medical Center, Taipei, Taiwan, R.O.C.

Exogenous GM1 ganglioside has the potential to modulate innate immunity, suppressing LPS-induced activation of microglial cell lines and macrophages. The NLRP3 inflammasome, a critical protein in innate immunity, triggers robust inflammatory responses and is implicated in the progression of neurodegenerative diseases. The aim of this study was to investigate whether GM1 is involved in regulating NLRP3 inflammasome activation and the underlying mechanisms. We found that GM1 inhibits NLRP3 inflammasome activation in MG6 microglial cells in a dose-dependent manner, as evidenced by decreased ASC puncta staining and NLRP3 and cleaved caspase-1 protein levels. LDH and ELISA assays indicated that GM1 decreased LPS/ATP-induced GSDMD-mediated pyroptosis and IL-1β secretion, respectively. Mechanistically, GM1 inhibits LPS/ATP-induced mtROS levels and reduces lysosomal cathepsin B release, both of which contribute to NLRP3 inflammasome activation. In LPS-primed MG6 cells, GM1 inhibited NF-B activation and suppressed the production of NLRP3 and pro-IL-1β. Furthermore, GM1 promoted autophagy/mitophagy, which also contributes to the inhibition of NLRP3 inflammasome activation. In an animal study using LPS-treated mice, GM1 administration decreased the protein levels of NLRP3 and ASC in microglia. In conclusion, GM1 alleviates NLRP3 inflammasome activation and pyroptosis by modulating NF-B, mtROS and autophagy. GM1 can be a potential candidate for the treatment of NLRP3 inflammatory neurodegenerative diseases.

Speaker / **曾慶三**
Ching-San Tseng

Current Position
Assistant Professor, Department of Anatomy, School of Medicine, China Medical University, Taiwan

Education/Training
2018 PhD, Graduate Institute of Life Sciences, National Defense Medical Center
2010 MS, Graduate Institute of Biology and Anatomy, National Defense Medical Center

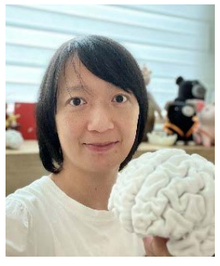
Professional and Research Experience
2022-Present Assistant Professor, Department of Anatomy, School of Medicine, China Medical University, Taiwan
2018-2022 Postdoctoral fellow, Institute of Cellular and Organismic Biology, Academia Sinica, Taiwan

中華民國解剖學學會
3/22 (Sat.) 14:00-14:30
3 樓，32 教室

Hippocampal Development and Ventralization: The Role of COUP-TFI in Patterning

曾慶三 Ching-San Tseng
Assistant Professor, Department of Anatomy, School of Medicine, China Medical University, Taiwan

As one of the most-studied brain regions, the hippocampus is renowned for its essential role in cognitive processes such as episodic memory and spatial learning; however, it also contributes to interoceptive emotions such as anxiety and depression. Along its longitudinal axis, the hippocampus is commonly divided into two halves: the dorsal and ventral hippocampi. Early studies with region-specific ablations demonstrate their functional specializations: the dorsal hippocampus is involved in spatial learning and memory processes, while the ventral hippocampus is implicated in motivational and emotional behaviors. These two functionally distinct domains differ in anatomy, histology, transcriptome, and disease susceptibilities. However, how these regions are established during hippocampal embryogenesis remains largely unknown. In our preliminary results, we found that the transcription factor COUP-TFI (chick ovalbumin upstream transcription factor I, or Nr2f1) is distributed in a low dorsal-to-high ventral gradient in the hippocampal epithelium, suggesting its role in the development of ventral populations. By comparing the hippocampal cytoarchitecture among wild-type, COUP-TFI conditional knockout (cKO), and conditional transgenic (cTG) mice, we showed that hippocampal volume was greatly reduced in the COUP-TFI-cKO but expanded in the COUP-TFI-cTG. Moreover, further analyses of CA1 pyramidal cell layer thickness, CA1 neuronal compositions, and hippocampal regional markers demonstrated that the hippocampus was dorsalized in COUP-TFI-cKO and ventralized in COUP-TFI-cTG. This process involves the antagonistic regulation of the Wnt and SHH signaling pathways, key players in hippocampal development. Furthermore, we are conducting behavioral analyses of COUP-TFI mutants with modified hippocampal structures to determine the functional outcomes of altered hippocampal patterning. These experiments aim to confirm the behavioral changes associated with altered COUP-TFI levels. In conclusion, our findings reveal a novel mechanism by which COUP-TFI modulates hippocampal ventralization, providing insights into the neural specialization that underlies disease susceptibilities, such as autism spectrum disorders and Alzheimer's disease.



Speaker / **陳可欣 Ke-Hsin Chen**

Current Position

Brain Research Center, National Defense Medical Center, Taipei, Taiwan

Education/Training

2017 PhD, Department of Psychology, National Taiwan University, Taipei, Taiwan
2007 MS, Department of Psychology, National Taiwan University, Taipei, Taiwan
2004 BS, Department of Psychology, National Taiwan University, Taipei, Taiwan

Professional and Research Experience

2023-Present assistant professor, Brain Research Center, National Defense Medical Center, Taipei, Taiwan
2021-2023 post-doc researcher, Department of Psychology, National Taiwan University, Taipei, Taiwan

中華民國解剖學學會
3/22 (Sat.) 14:30-15:00
3 樓，32 教室

A preliminary MRI brain template for Taiwanese macaque

陳可欣 Ke-Hsin Chen
Brain Research Center, National Defense Medical Center, Taipei, Taiwan

Non-human primates (NHPs) have long been critical models in biomedical research. Compared to other lab animals (e.g., fruit fly, rodents), NHPs are phylogenetically closer to humans, and thus provide better models of the health and diseases in terms of genetics, anatomy, physiology and behavior. For instance, in neuroscience, their large brain, high intelligence and sociability, make them especially suitable for the studies of higher cognitive functions and neuropsychiatric disorders. Following the COVID pandemic and the growing interests in brain-machine interfaces, there is a surge of the demand of NHP models. Nonetheless, the supply remains limited as among all the primate species, only a few are widely used as the animal model for research – namely, the rhesus macaque (Macaca mulatta), crab-eating macaque (Macaca fascicularis), Japanese macaque (Macaca fuscata) and common marmosets (Callithrix jacchus). Formosan rock macaque (Macaca cyclopis), also known as Taiwanese macaque, is the native primate living in Taiwan and is a close relative of the rhesus and Japanese macaques. However, the feasibility of using it in biomedical research, especially in neuroscience, has rarely been studied. To facilitate this species to be used in brain researches, a standard anatomical template is required for data analysis and comparison across subjects and studies. As a first step, in-vivo magnetic resonance images (MRI), including T1W, T2W, FGATIR and DTI, were collected from seven Taiwanese macaques (3 females). A preliminary MRI template with tissue segmentation maps was conducted to serve as a neuroimaging tool for analysis and visualization. To delineate cytoarchitecture using whole-brain sectioning and Nissl stain in the future, a high-resolution ex-vivo MRI scan of a perfused brain was acquired to achieve precise image registration between the MRI template and histological images. In conclusion, the present study provides a preliminary neuroimage tool for Taiwanese macaque, and henceforth a comprehensive anatomical brain template and atlas will be developed.

Speaker / **陳震宇 Cheng-Yu Chen**

Current Position

Distinguished Professor, Department of Radiology, College of Medicine, Taipei Medical University
Chief, Section of Neuroradiology, Department of Medical Imaging, Taipei Medical University Hospital

Education/Training

1985 MD, Medical degree in School of Medicine, National Defense Medical Center, Taipei

Professional and Research Experience

2019-2023 Vice president, Taipei Medical University
1990-2011 Attending Neuroradiologist, Department of Radiology, Tri-Service General Hospital, Taipei
1992-1993 Clinical Researcher, Department of Radiology, The Children Hospital's of Philadelphia, USA

Awards and Honors

2024 National Science and Technology Council Academic Research Award, Taiwan
2024 ASNR Honorary Member Award
2024 Outstanding Contribution Award, Wang Ming-Ning Memorial Foundation, Taiwan

台灣藥理學會
3/23 (Sun.) 09:00-09:30
1 樓，第一教室

CNS Lymphatic-Glymphatic System from Neuroimaging Perspectives

陳震宇 Cheng-Yu Chen
Distinguished Professor, Department of Radiology, College of Medicine, Taipei Medical University,Chief, Section of Neuroradiology, Department of Medical Imaging, Taipei Medical University Hospital

The discovery of the meningeal lymphatic vessels and the glymphatic system has revolutionized our understanding of CNS fluid balance, immune surveillance, and waste clearance. The meningeal lymphatic vessels, located parallel to the dural venous sinuses and middle meningeal arteries, drain immune cells, small molecules, and excess fluid from the CNS into the deep cervical lymph nodes. These vessels function downstream of the glymphatic system, a brain-wide network of perivascular spaces that facilitates the clearance of metabolic waste products, particularly during sleep. Dysfunction of these systems has been implicated in various neurological disorders, including neurodegenerative diseases, stroke, and head trauma. Evaluating the glymphatic system in humans remains challenging due to the lack of approved fluorescent tracers and the invasive nature of intrathecal gadolinium-based contrast agents (GBCA). Non-invasive neuroimaging techniques have emerged as promising alternatives, with the Diffusion Tensor Image Analysis along the Perivascular Space (DTI-ALPS) method gaining attention for its ability to indirectly evaluate glymphatic function through the ALPS-index. However, recent critiques have questioned its reliability due to sensitivity to imaging conditions and issues like fiber crossing. Other techniques, such as choroid plexus volume assessment, perivascular space volume measurement, and evaluations of blood-brain barrier or venous wall permeability using GBCA, offer complementary insights into glymphatic function. Additionally, clearance-specific techniques like diffusion-weighted arterial spin labeling (DW-ASL) have shown promise in imaging aquaporin-4, a key water channel involved in glymphatic transport. This talk will address the limitations of individual techniques and introduce a multimodal imaging approach integrating structural imaging, dynamic assessment, and clearance-specific techniques. By advancing our knowledge of glymphatic function in health and disease through multimodal neuroimaging, we can ultimately develop improved diagnostic and therapeutic strategies for neurological disorders.

Speaker / **蔡欣熹 Hsin-Hsi Tsai**

Current Position
台灣大學醫學院神經科臨床助理教授
台大醫院神經部主治醫師

Education/Training
2021 PhD, 台灣大學臨床醫學研究所
2012 MD, 台灣大學醫學系

Professional and Research Experience
2021-2023 主任，台大醫院北護分院教學研究部
2018-2022 兼任講師，台灣大學醫學院神經
2013-2023 主治醫師，台大醫院北護分院神經內科

Awards and Honors
2024 國科會吳大猷先生紀念獎
2023 Paul Dudley White International Scholar(International Stroke Conference)
2023 腦血管疾病防治基金會高明見教授優秀論文獎

台灣藥理學會
3/23 (Sun.) 09:30-10:00
1 樓，第一教室

Meningeal Lymphatic System—A Potential Treatment Target for Stroke Patients

蔡欣熹 Hsin-Hsi Tsai
台灣大學醫學院神經科臨床助理教授
台大醫院神經部主治醫師

Lymphatic drainage is essential for maintaining overall tissue fluid and solute balance, proper metabolic function, and macromolecule clearance. The newly discovered meningeal lymphatic system within the dura mater carries macromolecules away from the brain parenchyma and transports cerebral spinal fluid to the cervical lymph nodes in the periphery. This system has been considered to play a major role in neurodegenerative diseases and other central nervous system disorders, including stroke. In this talk, I will briefly introduce current advances in the understanding of meningeal lymphatic system in different stroke subtypes, including ischemic stroke, subarachnoid hemorrhage and intracerebral hemorrhage. We recently performed a pilot study which investigated the contribution of the meningeal lymphatic system to intracerebral hemorrhage pathologies using animal models. we observed that meningeal lymphangiogenesis and increased lymphatic drainage occurred until late phase after stroke, suggesting a potential role in the recovery phase. The impairment of meningeal lymphatic function impeded intraparenchymal hematoma resolution, whereas its enhancement reduced hematoma volume and ameliorated neurological deficits. Based on the results from current literature and hypothesis, meningeal lymphatics has been considered to have major implications after strokes, and yet its pathophysiology and translational potential remain to be tested in future studies.

Speaker / **陳世彬**
Shih-Pin Chen

Current Position
Professor & Director, Institute of Clinical Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan
Chief, Division of Translational Research, Department of Medical Research & Attending Neurologist, Department of Neurology, Taipei Veterans General Hospital, Taipei, Taiwan

Education/Training
OTHERS, Neurovascular Research Lab, Massachusetts General Hospital, Harvard Medical School
PhD, Institute of Clinical Medicine, National Yang-Ming University, Taipei, Taiwan
MD, School of Medicine, National Yang-Ming University, Taipei, Taiwan

Professional and Research Experience
2021-Present Professor, Institute of Clinical Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan
2017-Present Attending Physician, Division of Translational Research, Department of Medical Research, Taipei Veterans General Hospital
2008-2017 Attending Physician, Department of Neurology, Neurological Institute, Taipei Veterans General Hospital

Awards and Honors
2022 Outstanding Research Award, Ministry of Science and Technology, Taiwan (科 技 部 110 年度傑出研究獎)
2021 Tien Te Lee Biomedical & Technology Award (李天德青年醫藥科技獎)
2019 Ta-You Wu Memorial Award, Ministry of Science and Technology, Taiwan (科技部吳大猷先生紀念獎)

台灣藥理學會
3/23 (Sun.) 10:00-10:30
1 樓，第一教室

Glymphatics and Meningeal Lymphatics in Complex Neurovascular Disorders

陳世彬 Shih-Pin Chen
Professor & Director, Institute of Clinical Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan,Chief, Division of Translational Research, Department of Medical Research & Attending Neurologist, Department of Neurology, Taipei Veterans General Hospital, Taipei, Taiwan

The glymphatic system and meningeal lymphatics have emerged as critical components in brain homeostasis, waste clearance, and neuroimmune regulation. The glymphatic system facilitates the perivascular transport of cerebrospinal fluid and interstitial solutes, while meningeal lymphatic vessels provide an essential drainage route for immune cells and macromolecules from the central nervous system to peripheral circulation. Dysfunction in these systems has been linked to neuroinflammation, impaired cerebrovascular reactivity, and the accumulation of neurotoxic proteins, all of which may contribute to the pathogenesis of complex neurovascular disorders. To investigate these processes, we have developed non-invasive imaging techniques to visualize human glymphatic and meningeal lymphatic dynamics, enabling their exploration in translational research. Our studies have examined the roles of glymphatic and meningeal lymphatic dysfunction in neurovascular disorders such as migraine, reversible cerebral vasoconstriction syndrome, and cerebral small vessel disease. These findings highlight the importance of preserving glymphatic and meningeal lymphatic function for the prevention and treatment of neurovascular diseases. Further research into the mechanisms underlying their dysfunction may pave the way for novel therapeutic strategies targeting these clearance pathways.

Speaker / **吳爵宏 Chueh-Hung Wu**

Current Position

Associate Professor, College of Medicine, National Taiwan University, Taiwan
Director, Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital Hsin-Chu Branch, Taiwan

Education/Training

2005 MD, Medicine, National Taiwan University, Taipei, Taiwan
2020 PhD, Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

Professional and Research Experience

2012-Present Attending physician, Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, Taipei, Taiwan
2020-2020 Director, Department of General Medicine, National Taiwan University Hospital Biomedical Park Branch, Hsinchu, Taiwan
2017-2021 Assistant professor, Department of Physical Medicine and Rehabilitation, College of Medicine, National Taiwan University, Taipei, Taiwan

Awards and Honors

2024 World's Top 2% Scientists (Elsevier Data Repository)
2024 Taiwan Academy of Physical Medicine and Rehabilitation Excellent Research Award
2024 Professor Chen Xiyao's Outstanding Ultrasound Paper Award

台灣藥理學會
3/23 (Sun.) 10:30-10:50
1 樓，第一教室

Enhancing Glymphatic Function via Ultrasound: Therapeutic Potential for Stroke and ALS

吳爵宏 Chueh-Hung Wu
Associate Professor, College of Medicine, National Taiwan University, Taiwan,Director, Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital Hsin-Chu Branch, Taiwan

The glymphatic system plays a crucial role in maintaining brain homeostasis by facilitating the clearance of metabolic waste and toxins through cerebrospinal fluid and interstitial fluid exchange. Dysfunction of this system has been implicated in neurological disorders, including stroke and amyotrophic lateral sclerosis (ALS). Recent advancements in ultrasound technology, particularly very low-intensity ultrasound (VLIUS), have shown promising potential in modulating glymphatic function. This presentation explores the mechanisms by which VLIUS enhances glymphatic activity, focusing on its ability to influence the TRPV4-AQP4 pathway. Preclinical studies showed that ultrasound stimulation can improve waste clearance and promote functional recovery in stroke models. Similarly, in ALS, VLIUS holds potential to slow disease progression. By highlighting the therapeutic implications of ultrasound in enhancing glymphatic function, this talk aims to provide insights into this novel, non-invasive strategy for treating these debilitating conditions.

Speaker / **林錫賢 Hsi-Hsien Lin**

Current Position

Head, Department of Microbiology and Immunology, College of Medicine, Chang Gung University, Taiwan.
Adjunct Researcher, Division of Rheumatology, Allergy, and Immunology, Chang Gung Memorial Hospital-Keelung, Keelung, Taiwan

Education/Training

1997 PhD, Oak Ridge Graduate School of Biomedical Sciences, University of Tennessee - Knoxville TN, U.S.A.
1989 MS, Institute of Biochemistry, College of Medicine, National Taiwan University, Taipei, Taiwan
1987 BS, Department of Biology, National Cheng Kung University, Tainan, Taiwan

Professional and Research Experience

2013-2022 Director, Graduate Program of Molecular Medicine, College of Medicine, Chang Gung University, Taiwan.
2016-Present Adjunct Researcher, Department of Anatomic Pathology, Chang Gung Memorial Hospital-Linkou, Taoyuan, Taiwan
2016-2017 Visiting Professor, The Kennedy Institute of Rheumatology, University of Oxford, UK

Awards and Honors

2023 Elected Full Member of Sigma Xi, The Scientific Research Honor Society
2023 Outstanding Research Award, The Chinese Society of Immunology
2012 Board Member, Adhesion-GPCR Consortium

台灣藥理學會
3/23 (Sun.) 13:00-13:30
1 樓，第一教室

The role of GPR97-induced PAR2 transactivation in neutrophil-driven inflammatory responses

林錫賢 Hsi-Hsien Lin
Head, Department of Microbiology and Immunology, College of Medicine, Chang Gung University, Taiwan.,Adjunct Researcher, Division of Rheumatology, Allergy, and Immunology, Chang Gung Memorial Hospital-Keelung, Keelung, Taiwan

Neutrophils play a vital role in the innate immune system, contributing significantly to anti-microbial defense and inflammatory responses. Abnormal neutrophil dysfunction usually results in harmful inflammatory or autoimmune diseases, highlighting the need for stringent regulation of their immune effector activities. Neutrophils harbor various intracellular proteinases, including proteinase 3 (PR3) and myeloperoxidase, which are essential for effective microbial killing. Interestingly, these two proteins are also the primary targets of autoantibodies responsible for rare autoimmune diseases, specifically granulomatosis with polyangiitis and microscopic polyangiitis. Our recent research has uncovered a novel allosteric activation mechanism for membrane PR3 (mPR3), involving the formation of a unique PR3/CD177/GPR97/PAR2/CD16b protein complex on the neutrophil surface. This receptor complex enables GPR97 to enhance the proteolytic activity of mPR3, which subsequently cleaves and transactivates PAR2, leading to robust neutrophil activation. The molecular mechanism underlying mPR3-mediated GPR97-PAR2 transactivation in neutrophils will be discussed here. We propose that the CD177/GPR97/PAR2/CD16b receptorsome constitutes a multi-target complex with significant potential for developing therapeutics aimed at modulating human neutrophil-driven inflammatory diseases.

Speaker / **李永凌 Yungling Leo Lee**

Current Position
Research Fellow, Institute of Biomedical Sciences, Academia Sinica, Taiwan

Education/Training
2003 PhD, National Cheng Kung University
1999 MD, National Taiwan University

Professional and Research Experience
2019-2020 Professor, Institute of Epidemiology and Preventive Medicine, National Taiwan University, Taiwan
2014-2019 Associate Professor, Institute of Epidemiology and Preventive Medicine, National Taiwan University, Taiwan
2009-2014 Assistant Professor, Institute of Epidemiology and Preventive Medicine, National Taiwan University, Taiwan

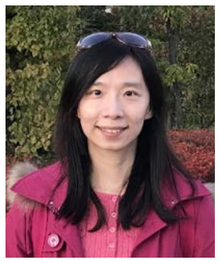
Awards and Honors
2023 Chief in Biotechnology, Taiwan Bio-develop Foundation, Taiwan
2021 18th National Innovation Award in Academic Research, Taiwan
2018 Outstanding Research Award, National Science and Technology Council, Taiwan

台灣藥理學會
3/23 (Sun.) 13:30-14:00
1 樓，第一教室

Developing novel nanoimmuno-drugs targeting dendritic cells for cancer therapy

李永凌 Yungling Leo Lee
Research Fellow, Institute of Biomedical Sciences, Academia Sinica, Taiwan

Immune checkpoint inhibitor therapy and adoptive cell transfer immunotherapy harness components of the immune system to fight tumor cells. Dendritic cells (DCs), a critical linker between innate and adaptive immunity, are important targets for PD-1 axis blockade, indicating that developing DC-targeting drugs could benefit cancer therapy. Our previous research revealed that tumor growth was profoundly restricted in AhR DC-conditional knockout (AhRf/f CD11cCRE) mice. Therefore, we discovered and inserted synthetic peptide 65 (SP65) via phage display onto surface of liposomal CH223191 (SP65-lipo-CH), having considerable affinity with DCs. In non-tumor models, SP65-lipo-CH applied on DCs would induce IL-12 production which resulted in IFN-γ production from NK cells. Additionally, it should also be emphasized that AhR inhibition on DCs reduced PD-L1 expression on surface. In a tumor xenograft model, SP65-lipo-CH demonstrated moderate efficacy against MC38 through NK cells activation and degranulation. Furthermore, the majority of tumors were eradicated and became undetectable when mice were co-administrated with SP65-lipo-CH and anti-PD-1. In an orthotopic and metastatic model, SP65-lipo-CH application two days prior to tumor inoculation effectively suppressed LLC growth in lungs, which could stem from NK cells activation via IL-12 from DCs. Our findings suggest that SP65 is a powerful ligand to target DCs and enhance drug delivery into DCs. SP65-lipo-CH illustrates future "off-the-shelf" products and holds substantial promise for cancer immunotherapy.



Speaker / **陳斯婷 Szu-Ting Chen**

Current Position

Associate Professor, Institute of Clinical Medicine National Yang-Ming University

Education/Training

2009 PhD, National Yang-Ming University, Taiwan
2021 MS, National Taiwan University, Taiwan
1998 BS, National Taiwan University, Taiwan

Professional and Research Experience

2021-Present Adjunct Associate Professor, Biomedical Industry Ph.D. Program
2020-Present Adjunct Associate Professor, Institute of Emergency and critical care medicine, National Yang Ming Chiao Tung University
2015-2020 Assistant Professor, Institute of Clinical Medicine, National Yang-Ming University Taiwan

Awards and Honors

2023 Wu Ho-Su TBF Taiwan Bio-development Foundation Medical Award
2023 Travel Grant Winner, 15TH International Congress on Systemic Lupus Erythematosus
1970 Outstanding Research Scholar Award, Chinese Society of Immunology

台灣藥理學會
3/23 (Sun.) 14:00-14:30
1 樓，第一教室

NLRP12: An Innate Immune Checkpoint Managing Health and Pathology through the Regulation of Type I IFN Production

陳斯婷 Szu-Ting Chen
Associate Professor, Institute of Clinical Medicine National Yang-Ming University

Innate immunity serves as the first line of host defense against infections. It also maintains physiological balance, influences the composition of the microbiota, and plays crucial roles in contexts of disease progression. NLRP12, a member of the nucleotide-binding oligomerization domain (NOD)-like receptors (NLRs) superfamily, is primarily expressed by cells of the myeloid lineage and serves as an innate immune checkpoint to regulate the activation of signaling pathways driven by innate immune receptors. NLRP12 limits DSS-induced colon inflammation and tumorigenesis through the negative regulation of canonical and noncanonical NF-κB signaling in an experimental colitis model. NLRP12 suppresses NLRP3 inflammasome activation by physically interacting with NLRP3, thereby nonsense mutations in NLRP12 increase NLRP3 inflammasome activity and spontaneous release of IL-1β in patients with autoinflammatory diseases due to the loss of confinement between NLRP12 and NLRP3. Additionally, NLRP12 suppresses virus and nucleic acid-induced type I IFN (IFN-I) production. This suppression occurs through the downregulation of NLRP12 expression, which releases the confinement within the type I IFN receptor signaling during virus infection. Consequently, the host regulates innate immune signaling by modulating the expression levels of NLRP12, leading to an anti-viral response through increased IFN-I production. However, prolonged low NLRP12 expression results in excessive IFN-I production, facilitating the progression of inflammatory diseases, such as systemic lupus erythematosus (SLE). The ability of NLRP12 to limit IFN-I production is linked to its role in suppressing neutrophil hyper-responsiveness to bacterial infections and stimulation by nucleic acid-containing immune complexes derived from SLE patients. By constraining excessive neutrophil activation, NLRP12 functions as an innate immune checkpoint, shaping host defense mechanisms and maintaining immune homeostasis.

Speaker / **陳柏任 Po-Jen Chen**

Current Position
Assistant Research Fellow, Department of Medical Research, E-Da Hospital, Taiwan

Education/Training
2006 PhD, Graduate Institute of Life Sciences, National Defense Medical Center and Academia Sinica, Taipei, Taiwan
2003 MS, Department of Medical Biotechnology and Laboratory Science, Chang Gung University, Taoyuan, Taiwan
1999 BS, Department of Biomedical Sciences, Chung Shan Medical University, Taichung, Taiwan

Professional and Research Experience
2018-2021 Assistant Professor, Department of Cosmetic Science, Providence University, Taichung, Taiwan
2014-2018 Postdoctoral Fellow, Graduate Institute of Natural Products, Chang Gung University, Taoyuan, Taiwan
2012-2014 Postdoctoral Fellow, Genomics Research Center, Academia Sinica, Taipei, Taiwan

Awards and Honors
2023 Outstanding Alumni Award, Department of Biomedical Sciences, Chung Shan Medical University
2022 Dr. Tsungming Tu Young Investigator Award, The Pharmacological Society
2019 Junior Research Award, Society of Chinese Natural Medicine

台灣藥理學會
3/23 (Sun.) 14:30-15:00
1 樓，第一教室

Advancing the development of drug candidates for neutrophilic inflammatory diseases

陳柏任 Po-Jen Chen
Assistant Research Fellow, Department of Medical Research, E-Da Hospital, Taiwan

Neutrophilic inflammation, characterized by dysregulated neutrophil activation, triggers various inflammatory responses, including chemotactic infiltration, oxidative bursts, degranulation, and the formation of neutrophil extracellular traps (NETs). This type of inflammation is central to the pathogenesis of many inflammatory diseases, particularly acute respiratory distress syndrome (ARDS). Despite current treatments, managing neutrophil-associated inflammatory symptoms remains a significant challenge. To advance the development of drug candidates targeting neutrophilic inflammatory diseases, we focused on repurposed clinical drugs and natural products. First, we demonstrated that ribociclib, a cyclin-dependent kinase 4 and 6 (CDK4/6) inhibitor clinically used in cancer treatment, serves as a novel phosphodiesterase 4 (PDE4) inhibitor, effectively mitigating inflammatory responses in activated human neutrophils and alleviating ARDS symptoms in mice. Second, we showed for the first time that Bletinib derived from Bletilla formosana, a native medicinal plant in Taiwan, acts as a novel Src family kinases (SFKs) inhibitor to reduce neutrophilic inflammation-mediated lung damage in human neutrophils and mice. Together, the repurposing of ribociclib and the discovery of naturally occurring Bletinib highlight their potential as lead drug candidates for neutrophilic ARDS. Targeting neutrophilic PDE4 and SFKs offers promising off-label alternatives for treating lung lesions and other inflammatory conditions.

Speaker / 林雅婷 Ya-Tin Lin

Current Position

Assistant Professor, Graduate Institute of Metabolism and Obesity Sciences, Taipei Medical University, Taiwan

Education/Training

2016 PhD, Graduate Institute of Biomedical Sciences, Division of Physiology and Pharmacology, Chang Gung University, Taiwan

2009 MS, Graduate Institute of Basic Medical Sciences, Division of Physiology and Pharmacology, Chang Gung University, Taiwan

Professional and Research Experience

2021-Present Assistant Professor, Graduate Institute of Metabolism and Obesity Sciences, Taipei Medical University, Taiwan

2018-2019 Visiting Scholar, Institute of Neurobiology & Institute of Comparative Molecular Endocrinology, Ulm University, Germany

2016-2021 Postdoctoral Fellow, Graduate Institute of Biomedical Sciences, Division of Physiology and Pharmacology& Healthy Aging Research Center, Chang Gung University, Taiwan

Awards and Honors

2024 IUPS International Early Faculty Prize, The International Union of Physiological Sciences (IUPS)

中國生理學會
3/23 (Sun.) 14:30-14:54
1 樓，第二教室

Hypothalamic Insulin Resistance and Energy Balance: A Neuropeptide's Novel Contribution

林雅婷 Ya-Tin Lin
Assistant Professor, Graduate Institute of Metabolism and Obesity Sciences, Taipei Medical University, Taiwan

The hypothalamus is a critical brain region that regulates peripheral metabolic functions through insulin signaling. Hypothalamic insulin signals act via multiple neuronal circuits and anabolic/catabolic pathways, ultimately converging on the vagus nerve and sympathetic fibers to coordinate energy metabolism across peripheral organs. Insulin resistance in the hypothalamus leads to dysregulated energy balance, characterized by increased food intake, enhanced lipolysis, elevated hepatic glucose production, reduced thermogenesis in brown adipose tissue, and impaired browning of white adipose tissue. These disruptions are key contributors to the onset and progression of metabolic disorders such as obesity and diabetes. In recent years, neuropeptide FF (NPFF) has emerged as a significant regulator of energy homeostasis. Our research focuses on elucidating the mechanisms by which NPFF influences metabolic disorders through its actions in the central nervous system. We have demonstrated that NPFF exacerbates obesity- and diabetes-related metabolic abnormalities, primarily through the activation of its type 2 receptor (NPFFR2) in the hypothalamic arcuate nucleus. Deletion of NPFFR2 in mice alleviated both central and peripheral metabolic disturbances associated with metabolic disorders. Additionally, NPFFR2 activation was found to impair hypothalamic insulin sensitivity while simultaneously enhancing feeding behavior. The role of NPFFR2 in promoting central insulin resistance is likely mediated by its induction of neuroinflammation. These findings provide valuable insights into the pathophysiological role of NPFF signaling and highlight NPFFR2 as a potential therapeutic target for metabolic disorders.

Speaker / 賴財春
Tsai-Chun Lai

Current Position
Assistant Professor, Department of Life Sciences, National Chung Hsing University, Taiwan

Education/Training
2018 PhD, Graduate Institute of Physiology, College of Medicine, National Taiwan University, Taiwan

Professional and Research Experience
2019-2023 Post-doctoral researcher, Graduate Institute of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan

中國生理學會
3/23 (Sun.) 14:54-15:18
1 樓，第二教室

Synergistic Effects of Particulate Matter and Hyperglycemia on Endothelial Inflammation: Oxidative Stress, Inflammation, and Potential Therapeutic Interventions

賴財春 Tsai-Chun Lai
Assistant Professor, Department of Life Sciences, National Chung Hsing University, Taiwan

Cardiovascular diseases (CVDs) are associated with particulate matter (PM) exposure and diabetes, while the molecular mechanisms underlying their combined effects on endothelial damage remain unclear. Our previous study investigated the synergistic impact of high glucose (HG) and PM2.5 on endothelial inflammation and explores potential protective interventions. Human umbilical vein endothelial cells (HUVECs) and endothelial cells (ECs) were treated with 30 mM HG and 10 or 50 μg/mL PM to simulate hyperglycemia and air pollution exposure. Cellular damage, apoptosis, and oxidative stress were assessed via reactive oxygen species (ROS) production, mitochondrial function assays, and Western blot analysis of autophagy-related proteins, mitophagy-related protein, and inflammation markers, including p62, LC3B, BNIP3, intercellular adhesion molecule-1 (ICAM-1), and vascular cell adhesion molecule-1 (VCAM-1). In vivo, streptozotocin (STZ)-induced diabetic mice were exposed to PM via intratracheal injection to evaluate endothelial inflammation. Potential protective effects of vitamin D and nanocurcumin (NCur) were investigated. Co-exposure to HG and PM significantly increased endothelial cell damage, apoptosis, and mitochondrial ROS production while reducing mitochondrial membrane potential. This exposure also promoted mitochondrial fission, autophagy, and mitophagy by upregulating DRP1, Fis1, p62, LC3B, and BNIP3. In vivo, PM exposure exacerbated oxidative stress, mitochondrial dysfunction, and endothelial inflammation in diabetic mice. Vitamin D and NCur effectively alleviated these effects by improving cell viability, reducing mitochondrial ROS levels, and modulating mitophagy and inflammation. Therefore, simultaneous exposure to PM and HG induces endothelial inflammation through oxidative stress, mitochondrial impairment, and inflammatory signaling. Vitamin D and NCur offer protective effects by reducing ROS, improving mitochondrial function, and modulating key inflammatory pathways. These findings suggest that Vitmain D and NCur may be promising therapeutic strategies for mitigating the impact of diabetes and air pollution on CVD progression.

Speaker / **簡千栩 Chian-Shiu Chien**

Current Position
Assistant Professor, Institute of Physiology, National Yang Ming Chiao Tung University

Education/Training
2014 PhD, National Yang-Ming University

Professional and Research Experience
2020-2022 Postdoctoral Fellow, Department of Medical Research, Taipei Veterans General Hospital
2017-2020 Postdoctoral Fellow, Institute for Engineering in Medicine, University of California, San Diego

Awards and Honors
2022 Albert Ly-Young Shen Research Award
2018 Oversea Outstanding Youth Award, R.O.C.

中國生理學會
3/23 (Sun.) 15:18-15:42
1 樓，第二教室

RNA modifications in Cardiovascular Development and Disease

簡千栩 Chian-Shiu Chien
Assistant Professor, Institute of Physiology, National Yang Ming Chiao Tung University

With the rapid increase in the aging population worldwide, cardiovascular diseases (CVDs) have become a major health threat to elderly individuals, inflicting a significant burden on healthcare systems. Therefore, elucidating the molecular mechanisms underlying cardiovascular development and disease progression is crucial for disease prevention and elderly health management. Recent studies have demonstrated that RNA modifications regulate gene expression and participate in various physiological processes, including cardiovascular development and pathology. However, the precise role of RNA modifications in vascular and cardiac development and diseases remains unclear. Our team mainly employs vascular and heart organoids as model systems to investigate the functional roles and mechanisms of RNA modifications in cardiovascular development and disease progression. In vascular research, we have identified that RNA modifications regulate vascular inflammation-related genes, thereby influencing the progression of atherosclerosis. Additionally, we have integrated imaging analysis with artificial intelligence (AI) technologies to identify the accurate vascular organoid differentiation assessment and further reveal a critical regulatory role of RNA methylation in vascular development. In cardiac research, we discovered that losing mitochondrial RNA methylation may promote chemo-drug-induced cardiotoxicity. Moreover, we established heart organoids to investigate the impact of RNA modifications on cardiac development and disease progression. Our future research will focus on elucidating the molecular mechanisms by which RNA modifications regulate vascular and cardiac development and contribute to disease. We will also develop RNA modification-based therapies to identify novel diagnostic biomarkers and therapeutic targets for cardiovascular diseases.

Speaker / **吳玉威 Yu-Wei Wu**

Current Position
Assistant Research Fellow, Institute of Molecular Biology, Academia Sinica, Taiwan

Education/Training
2012 PhD, Institute of Neurology (IoN), University College London UCL, London, UK
2007 MS, Institute of Zoology, National Taiwan University, Taipei, Taiwan
2003 BS, Department of Zoology, National Taiwan University, Taipei, Taiwan

Professional and Research Experience
2013-2019 Postdoctoral Research Fellow,, Department of Neurosurgery, Stanford University School of Medicine, Palo Alto, CA
2012-2013 Postdoctoral Research Fellow, RIKEN Brain Science Institute, Wako, Japan

Awards and Honors
2021 Career Development Award, Academia Sinica, Taiwan
2019 Academia Sinica Young Investigator Fellowship,Academia Sinica, Taiwan
2015 Postdoctoral Research Fellowship, Parkinson's Disease Foundation, USA

中國生理學會
3/23 (Sun.) 15:42-16:06
1 樓，第二教室

Mixed selectivity of subthalamic nucleus neurons in encoding motor and reward behaviors

吳玉威 Yu-Wei Wu
Assistant Research Fellow, Institute of Molecular Biology, Academia Sinica, Taiwan

The subthalamic nucleus (STN) plays a critical role in modulating motor and cognitive functions within the basal ganglia, and its involvement in Parkinson's disease (PD) and deep brain stimulation (DBS) is well established. However, the behavioral representations of individual STN neurons remain poorly understood. Using in vivo calcium imaging in behaving mice, we tracked single-cell STN activity across multiple behaviors, including locomotion, licking, and reward-driven actions. Our results reveal that STN neurons exhibit mixed selectivity, encoding multiple behaviors with distinct temporal dynamics through both excitatory and inhibitory responses. These findings suggest a more complex functional role for the STN beyond simple motor control. Furthermore, population-level analyses demonstrate that STN activity robustly encodes motor parameters such as locomotion speed and licking intensity, potentially reflecting computational principles underlying behavioral modulation. We also compared neural representations in the STN to those in the adjacent zona incerta (ZI). While neurons in both regions encode locomotion-related variables, ZI neurons exhibit more diverse calcium activity patterns, including longer event durations and weaker correlations with movement parameters. In contrast, STN neurons more faithfully encode motor states and display stronger contextual interactions across different behaviors. These findings highlight the overlapping yet distinct contributions of the STN and ZI in regulating motor and reward-related behaviors, offering new insights into their respective roles in basal ganglia circuits and their broader implications for motor control and reinforcement learning.

Speaker / **薛元毓 Yuan-Yu Hsueh**

Current Position
Associate Professor, Department of Physiology, National Cheng Kung University

Education/Training
2015 PhD, Institute of Clinical Medicine, National Cheng Kung University
2010 MS, Institute of Clinical Medicine, National Cheng Kung University
2003 MD, College of Medicine, National Cheng Kung University

Professional and Research Experience
2021-2025 Clinical Associate Professor, Department of Plastic Surgery, National Cheng Kung University Hospital
2017-2019 Visiting Assistant Professor, Department of Bioengineering, UCLA
2003-2025 Physician, Department of Plastic Surgery, National Cheng Kung University Hospital

Awards and Honors
2024 國際傑出發明家 - 學術國光獎章
2023 未來科技獎
2022 國家新創獎

中國生理學會
3/23 (Sun.) 16:06-16:30
1 樓，第二教室

Modulating neuromuscular interface with electroceuticals: Feeding on demand

薛元毓 Yuan-Yu Hsueh
Associate Professor, Department of Physiology, National Cheng Kung University

Neuromuscular junction (NMJ) dysfunction can occur after nerve injury, particularly injuries that affect the peripheral nervous system. When the motor nerves that innervate skeletal muscle are damaged, it can result in muscle weakness, atrophy, and even paralysis. Following nerve injury, the NMJ undergoes a series of changes that can contribute to dysfunction, including loss of synaptic architecture and neurotransmitters and maintaining the mechanism of the postsynaptic microenvironment of denervated skeletal muscle.

Electroceuticals, also known as bioelectronic medicine or neural engineering, refer to the use of electrical stimulation to modulate the function of the body's neural system for therapeutic purposes. Electroceuticals aim to treat various health conditions by interfacing with the body's nervous system, including the brain, spinal cord, and peripheral nerves, to regulate physiological processes such as pain perception, inflammation, and organ function. Electroceuticals can potentially play a role in promoting NMJ regeneration by modulating the activity of the motor neurons that innervate skeletal muscle. In this talk, I will briefly introduce our recent electroceutical strategy for NMJ regeneration. NMJ degradation is ameliorated with decreased muscle atrophy via direct distal nerve electrical stimulation. In addition, the skeletal muscle injury-associated genes are downregulated under feeding distal nerve electrical stimulation. Long-term functional improvement is achieved with increased nerve reinnervation and NMJ regeneration. Furthermore, electroceuticals also facilitate direct muscle neurotization in terms of NMJ regeneration at the denervated muscle. The strategy of electroceuticals provides promising benefits for improving neuromuscular interface regeneration via enhancing distal axon reinnervation per se.

Speaker / **陳秀玲 Hsiu-Ling Chen**

Current Position

Department of Food Safety/Hygiene and Risk Management, College of Medicine, National Cheng Kung University

Education/Training

2004 PhD, Department of Basic Medicine, National Cheng Kuang University

Professional and Research Experience

2017-Present Vice-director, Research Center of Environmental Trace Toxic Substances

2017 Director/Professor, Department of Food Safety/Hygiene and Risk Management, National Cheng Kung University

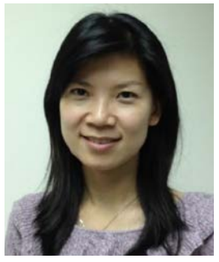
1998-2004 President, Taiwan Society of Indoor Environmental Quality (TSIEQ)

台灣毒物學學會
3/23 (Sun.) 13:00-13:30
2 樓，29 教室

暴露農藥對於腸道微生物群及代謝體與腎臟功能下降之影響探討
Effects of exposure to pesticides on renal function, gut microbiota, and kidney function decline

陳秀玲 Hsiu-Ling Chen
Department of Food Safety/Hygiene and Risk Management, College of Medicine, National Cheng Kung University

Abstract Chronic kidney disease (CKD) and diabetic kidney disease (DKD) are major global health challenges, with nearly 50% of CKD patients also diagnosed with diabetes. Compared to CKD patients, those with DKD face a higher risk of progressing to dialysis or kidney transplantation, significantly reducing their quality of life and imposing substantial economic burdens on healthcare systems. Research suggests that short-term, high-level exposure to organophosphate and carbamate pesticides can induce glucose production by gut microbiota, leading to hyperglycemia. Pesticide exposure may also accelerate CKD progression by disrupting gut microbiota balance and exacerbating kidney damage. However, evidence on the underlying mechanisms of pesticide exposure in CKD patients remains limited. Therefore, CKD patients were enrolled, with their dietary patterns and lifestyle habits surveyed. Blood and urine samples were analyzed using targeted and non-targeted methods to measure metabolomics and pesticide levels as indicators. Then, we focused on investigating the correlations between pesticide exposure, gut microbiota composition, and metabolomics in CKD patients. Machine learning techniques was also applied to evaluate the predictive power of pesticide exposure, gut microbiota, and metabolomics for forecasting kidney function decline in CKD patients. The current study utilized UHPLC-Orbitrap-MS for untargeted metabolomics analysis, genomics analysis to investigate gut microbiota and LC-MS/MS to analyze targeted pesticides and oxidative damage biomarkers (8-OH-dG), aiming to identify integrated biomarkers for predicting kidney function decline in CKD patients. In the 98 CKD patients, enabling analysis of the relationship between pesticide exposure and metabolite concentrations. Additionally, potential biomarkers for pesticide exposure were identified, demonstrating the robust analytical capabilities in metabolomics analysis and implementing AI technology, bio-informatics in high-precision medicine of our team.



Speaker / **陳珮珊 Pai-Shan Chen**

Current Position
Professor of the Institute of Toxicology, National Taiwan University, Taiwan

Education/Training
2011 PhD, Analytical and Environmental Sciences, King's College London, UK.
2005 MS, Department of Chemistry, National Tsing Hua University, Taiwan.
2002 BS, Department of Chemistry, National Taiwan Normal University, Taiwan.

Professional and Research Experience
2022-Present Professor, Institute of Toxicology, National Taiwan University, Taiwan
2019-2022 Associate professor, Institute of Toxicology, National Taiwan University, Taiwan
2016-2019 Associate professor, Institute of Forensic Medicine, National Taiwan University, Taiwan

Awards and Honors
2024 Young Scholar Award by the Taiwan Society for Mass Spectrometry.
2016 Supervisor of the Taiwan Academy of Forensic Sciences.
2020 Secretary-General of the Taiwan Academy of Forensic Sciences.

台灣毒物學學會
3/23 (Sun.) 13:30-14:00
2 樓，29 教室

暴露農藥對於腸道微生物群及代謝體與腎臟功能下降之影響探討
Effects of exposure to pesticides on renal function, gut microbiota, and kidney function decline

陳珮珊 Pai-Shan Chen
Professor of the Institute of Toxicology, National Taiwan University, Taiwan

Amid the profound impacts of COVID-19 and associated social restrictions, this study applied wastewater-based epidemiology (WBE) to monitor the use of 38 conventional drugs and 30 new psychoactive substances (NPS) in northern Taiwan. Daily wastewater samples were collected from four treatment plants in Taipei between September 2021 and January 2024. The timeline encompassed various phases, including nightclub reopenings, holidays, Lunar New Year, a localized COVID-19 outbreak, and regular periods, providing a comprehensive perspective on drug use patterns during and after the pandemic. In total, 31 drugs were identified, including five NPS. Notably, tramadol, zolpidem tartrate, CMA, and MDPV were detected in Taiwanese sewage for the first time, with detection frequencies ranging from 1.4% to 89.0%. Among conventional drugs, methamphetamine exhibited a detection frequency of 100%, indicating consistent daily consumption despite the restrictions imposed during the pandemic. This finding highlights the resilience of methamphetamine use, even under conditions that severely disrupted social and economic activities. Drug consumption patterns varied across the timeline. For example, methamphetamine and morphine usage declined during periods of nightclub closures but surged following their reopening, suggesting that access to these substances may have been limited during social restrictions. The consumption trend of methadone appeared to compensate for reduced morphine use, hinting at a substitution effect among opioid users. Meanwhile, ketamine and NPS displayed consistent usage patterns throughout the study period, reflecting the stable demand for these substances among certain user groups. NPS, often associated with party settings, were particularly affected by supply chain disruptions and enforcement complexities during the pandemic. Despite these challenges, their use persisted, although at fluctuating levels. Benzodiazepines, commonly co-abused with synthetic cathinones in Taiwan, exhibited a contrasting trend to NPS. Their consumption aligned more closely with acetaminophen, potentially reflecting increased stress and anxiety levels during the pandemic. This correlation underscores the psychological toll of COVID-19 and the role of certain pharmaceuticals in coping with these effects. Another notable finding was the lack of significant differences in drug consumption between weekdays and weekends. Traditionally, recreational drug use spikes during weekends, driven by social gatherings and nightlife activities. However, the pandemic blurred these distinctions, with lockdowns and social restrictions disrupting conventional social rhythms. This shift suggests that the behavioral patterns of drug users adapted to the new normal imposed by the pandemic. This study underscores the utility of WBE as a real-time surveillance tool for monitoring drug use trends. By capturing a broad spectrum of substances, including emerging NPS, WBE provides valuable insights into the evolving landscape of drug consumption. The findings reveal not only the persistence of drug use despite social and economic disruptions but also the complex interplay between access, supply chain dynamics, and user behavior during and after the COVID-19 pandemic. Such data are crucial for informing public health strategies and tailoring interventions to address substance abuse in the post-pandemic era.

Speaker / **黃偉謙 Wei-Chien Huang**

Current Position

Professor and Director, the Ph.D. program for Cancer Biology and Drug Discovery, China Medical University, Taiwan.

Education/Training

2007 OTHERS, Department of Molecular and Cellular Oncology, UT. M.D. Anderson Cancer Center, Houston, TX, USA
2006 OTHERS, Department of Pharmacology, National Taiwan University, Taipei, Taiwan
2004 PhD, Department of Pharmacology, National Taiwan University, Taipei, Taiwan

Professional and Research Experience

2024 -Present Chairman, Program for Cancer Biology and Drug Discovery, China Medical University, Taichung, Taiwan
2019-Present Associate Director, Graduate Institute of Biomedical Sciences, China Medical University, Taichung, Taiwan
2017-2022 Associate Dean, the Department of Research & Development, China Medical University, Taichung, Taiwan

Awards and Honors

2024 Potential Team of New Drug Development, Pitch Day, National Biotechnology Research Park.
2012 Teacher Award for Outstanding Teaching Performance, College of Medicine, China Medical University
2007 Young Scholar Award for Medical Research, Professor C. Y. Lee Foundation

台灣毒物學學會
3/23 (Sun.) 14:00-14:30
2 樓，29 教室

The Impact of Environmental Pollutants on Tumorigenesis and Therapeutic Efficacy of Anti-Cancer Drugs

黃偉謙 Wei-Chien Huang
Professor and Director, the Ph.D. program for Cancer Biology and Drug Discovery, China Medical University, Taiwan.

Environmental pollutants have emerged as critical factors influencing both the initiation and progression of cancer, as well as the efficacy of anti-cancer therapies. This talk will highlight recent findings on the impact of key environmental pollutants, including cigarette smoke, incense smoke, and particulate matter (PM2.5), on oncogenic pathways and therapeutic resistance in non-small cell lung cancer (NSCLC). These pollutants have been shown to activate pro-oncogenic signaling cascades, alter the tumor microenvironment, and reduce the effectiveness of standard anti-cancer drugs, posing significant challenges for treatment. In addition to lung cancer, our research explores the role of plasticizer exposure in the early onset of breast cancer, focusing on its effects on metabolic and immune dysregulation. Through a comprehensive analysis of these pathways, we have identified potential therapeutic targets that could pave the way for the development of novel and more effective treatment strategies for both NSCLC and breast cancer. By addressing the molecular underpinnings of pollutant-induced tumorigenesis and drug resistance, this presentation aims to shed light on innovative approaches to combat the dual threat posed by environmental toxins and cancer.

Speaker / **韓嘉莉 Chia-Li Han**

Current Position
Director of Master Program in Clinical Genomics and Proteomics, College of Pharmacy, Taipei Medical University, Taiwan

Education/Training
2008 PhD, Department of Chemistry, National Taiwan Normal University
2002 BS, Department of Chemistry, Tunghai University

Professional and Research Experience
2021-Present Associate Professor, Master Program in Clinical Genomics and Proteomics, College of Pharmacy, Taipei Medical University, Taiwan
2021-Present Adjunct Associate Professor, Department of Pharmaceutical Sciences, Taipei Medical University, Taiwan
2021-Present Adjunct Associate Professor, Ph.D. Program in Biotechnology Research and Development, Taipei Medical University, Taiwan

Awards and Honors
2022 Young Scholarship Research Award, Taiwan Mass Spectrometry Society, Taiwan
2017 C-HPP Young Investigator Award, the 16th Human Proteome Organization World Congress, Dublin, Ireland
2015 Poster Award, Third Prize, 2015 International Conference on Advanced Translational Research in Food Science, Environmental Toxicology and Cancer Biology, Taipei, Taiwan

台灣毒物學學會
3/23 (Sun.) 14:30-15:00
2 樓，29 教室

Differential proteomic profiles of lung injury in rat models upon pulmonary exposure to air pollution

韓嘉莉 Chia-Li Han
Director of Master Program in Clinical Genomics and Proteomics, College of Pharmacy, Taipei Medical University, Taiwan

Chronic obstructive pulmonary disease (COPD) is one of the major causes of morbidity and mortality globally. Inhalation of particulate matter (PM) air pollution has been studied to closely associate with COPD. However, the pathogenesis mechanisms underlying PM2.5-induced lung injury is largely unknown, leading to the poor stratification and treatment of the disease. Thus, we aim to explore the underlying molecular mechanisms associated with PM-mediated lung injury by quantitative proteomics analysis of lung tissues from ageing and young rat models with whole body exposure to traffic-related PM pollutants and compared it with that in rat models exposed to high-efficiency particulate air-filtered gaseous pollutants. Our data showed that before lung function decline the 0.5-yr rats had exhibited differential dysregulation of proteins involved in oxidative stress, cellular metabolism, calcium signalling, inflammatory responses, and actin dynamics under exposures to PM and gaseous pollutants. On the contrary, more significant and consistent molecular effects were observed in 1.5-yr rats exposed to PM and gaseous pollutants, of which the malignancy-related ERB signalling pathways were activated additionally in PM-exposed ageing rats. Based on our data, we proposed a detailed pathogenic mechanism to depict temporal and dynamic molecular regulations associated with PM- and gaseous pollutants-induced lung injury. We expect that our findings would provide valuable information towards progression of air pollution-caused lung injury and serve as a repository to search for potential draggable targets.

Speaker / **蕭伊倫 I-Lun Hsiao**

Current Position
Associate Professor, School of Food Safety, College of Nutrition, Taipei Medical University

Education/Training
2015 PhD, Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Taiwan
2009 MS, Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Taiwan.
2007 BS, Department of Chemistry, National Taiwan Normal University, Taiwan.

Professional and Research Experience
2016-2017 Postdoctoral research, Institute of Toxicology and Genetics, Karlsruhe Institute of Technology, Germany
2013-2014 Visiting PhD student, Department of chemicals and product safety, Federal Institute for Risk Assessment (BfR), Germany

Awards and Honors
Postdoctoral Research Abroad Program, Ministry of Science and Technology (MOST), Taiwan
Xin Tian Temple long term scholarship, Taiwan
German Academic Exchange Service (DAAD)-MOST sandwich program for PhD candidates

台灣毒物學學會
3/23 (Sun.) 15:00-15:30
2 樓，29 教室

Detecting fluorescent-labeled nanoplastics in digestive fluids and tissue using Nano-tracking analysis and near-infrared fluorescence imaging

蕭伊倫 I-Lun Hsiao
Associate Professor, School of Food Safety, College of Nutrition, Taipei Medical University

Abstract Humans may inevitably be exposed to nanoplastics (NPIs) through ingestion. The aggregation state of NPIs significantly influences their absorption efficiency, so understanding behaviors of NPIs during digestion, both in the presence or absence of food matrix is vital for risk assessment. On the other hand, in order to obtain results for different time points in toxicokinetics and tissue distribution studies, previous research has typically required the use of large numbers of animals. In accordance with the 3R principle, a novel methodology that minimizes animals use is imperative. In our recent studies, commercial fluorescent-labeled NPIs were employed to characterize the size in both artificial and real digestive fluids using a Nano-tracking analysis fluorescence model, and proved that NPI sizes in artificial digestive fluids were underestimated. A near-infrared (NIR) fluorescence contrast agent was labeled in a polyethylene terephthalate (PET) NPI and utilized for real-time in vivo tracking of the NPIs. This presentation will demonstrate how accurate tracking of fluorescent-labeled NPIs in complex biological matrices can be achieved by avoiding autofluorescence of proteins and scattering of solid matrices. Reference: 1. Lee, G., Jhang, Y.J., Jhang, Y.T., Chang, Y.C., Chang, H.W., Chuang, C.Y., Chuang, Y.K., Lin, C.W., Hsiao, I.L.* (2024) Artificial digestion represents the worst-case scenario for studying nanoplastic fate in gastrointestinal tract. Journal of Hazardous Materials, In Press.

Speaker / **Rafi Ahmed**

Current Position

Charles Howard Candler Professor, Emory University,USA
Director, Emory Vaccine Center, Emory University School of Medicine,USA

Education/Training

1972 BS, Idaho State University, Pocatello, ID
1974 MS, Idaho State University, Pocatello, ID
1981 PhD, Harvard University, Cambridge, MA

Professional and Research Experience

1995Present Georgia Research Alliance Eminent Scholar in Vaccine Research
1995Present Professor, Microbiology and Immunology, Emory University School of Medicine, Atlanta, Georgia,
1992-1995 Professor, Department of Microbiology & Immunology, UCLA School of Medicine, Los Angeles, California,

Awards and Honors

2022 Class of Fellows of the Academy of Immuno-Oncology (SITC)
2021 Member of American Academy of Arts and Sciences
2020 Distinguished Fellow of American Association of Immunologists (AAI)

免疫學會X細分學會合辦
3/23 (Sun.) 13:10-14:10
3 樓，30 教室

What is T cell exhaustion

Rafi Ahmed
Director, Emory Vaccine Center, Emory University

T-cell exhaustion is a phenomenon characterized by stepwise and progressive loss of T-cell functions that arises from chronic antigen exposure. T cell exhaustion was first defined in the mouse model of chronic lymphocytic choriomeningitis virus (LCMV) infection. During chronic antigen stimulation, exhausted T cells fail to differentiate into functional memory cells, possess poor effector function, reduced proliferation and sustained expression of several inhibitory receptors. These T cells acquire a transcriptional and epigenetic state that is distinct from functional effector or memory T cells. Exhaustion prevents optimal tumor control and adequate immune response to infections. High levels of programmed death- 1 (PD-1) expression is one of the hallmarks of exhausted T cells. PD-1 targeting therapy reinvigorates the exhausted CD8 T cells which is instrumental in controlling virus and tumor burden. In the last two decades, therapeutics targeting the PD-1 signaling pathway has been highly successful in the treatment of people living with cancer.

A subset of "exhausted" CD8 T cells possess high proliferative capacity and is identified as **PD-1^{+}TCF-1^{+}TOX^{+} stem-like CD8 T cells**. These cells play a major role in sustaining CD8 T cell responses during chronic viral infection and cancer. These quiescent stem-like CD8 T cells can be generated as early as day 5 after LCMV infection regardless of acute or chronic infection and serve as the precursors of exhausted CD8 T cells. **Stem-like CD8 T cells provides the proliferative burst after PD-1 targeted therapy and is critical for the reinvigoration of exhausted CD8 T cells**. Better understanding of the biology of stem-like CD8 T cells will lead to the development of novel therapeutics and have significant implications in immunotherapy; particularly in the optimizing checkpoint blockade strategies to reinvigorate exhausted T cells.

免疫學會X細分學會合辦
3/23 (Sun.) 13:10-14:10
3 樓，30 教室

何謂 T 細胞耗竭

Rafi Ahmed
美國艾莫瑞 (Emory) 大學疫苗中心主任

T 細胞耗竭 (T cell exhaustion) 是當 T 細胞**因**長期感染處於抗原暴露 (antigen exposure)，或受到癌細胞抑制免疫系統查核點 (Immune checkpoint)，致使 T 細胞**逐漸失去清除**這些**受感染細胞或癌細胞的能力**。此現象最早發現於脈絡叢腦膜炎病毒 (lymphocytic choriomeningitis virus; **LCMV**) **感染小鼠**實驗，當小鼠受抗原的長期刺激，導致精疲力盡的 T 細胞**無法分化至**具完整免疫功能的**「記憶型 T 細胞」**(memory T cells)，造成**耗竭 T 細胞的免疫功能低落** (poor effector function) 與**降低細胞增生力** (reduced proliferation)。

為何這些 T 細胞會耗竭？仔細分析**耗竭 T 細胞膜上的受體** (receptors)，發現有一些受體會抑制 T 細胞分化，也**恰是免疫系統查核點**，例如 T 細胞上的 CTLA-4、PD-1、LAG-3、TIM-3 等受體。原來是這些細胞進入耗竭狀態時，由 DNA 走向 RNA 的轉錄狀態 (transcriptional state) 和表觀遺傳狀態 (epigenetic state)[即基因的功能改變]，導致**耗竭 T 細胞已有別於「效能型 T 細胞」**(effector T cells) **或「記憶型 T 細胞」**。事實上，耗竭 T 細胞的這些抑制受體會致該細胞**無法辨識抗原**，猶如視而不見，導致免疫武功驟降而患者病況加重。科學發現其機轉是**耗竭 T 細胞高度表現如「程式死亡分子 -1」**(programmed cell death protein-1, PD-1) **[註 1]** 的標誌。此後，針對 PD-1 的治療研究可重振 CD8+T 細胞毒殺病毒感染細胞與癌細胞的能力；即**以 PD-1 的訊息途徑已掀起免疫治療的新曙光 [註 2]**。

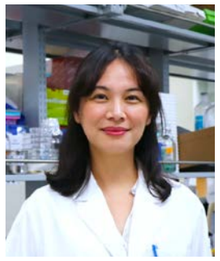
有趣的是近來研究發現有一群 T 細胞被稱為 **$PD1^{+}TCF\text{-}1^{+}Tox^{+}$ CD8 T 幹細胞**，在病毒持續感染和癌症中扮演著維持 CD8 T 細胞功能的極重要的角色，這一些靜止的 CD8 T 幹細胞無論是在 LCMV 急性或慢性 **[註 3]** 的感染第 5 天即出現，**作為耗竭 T 細胞的前驅細胞** (precursor cells)。因此，耗竭 CD8T 細胞的幹細胞 (Stem-like CD8 T cells) 在 **PD-1 免疫治療**後，提供爆發式的 CD8 T 細胞增殖，極關鍵地扭轉原已一蹶不振的 CD8+T 細胞**恢復並維持其原有的免疫功能**。

未來更深入明瞭耗竭 CD8T 細胞的幹細胞生物特性，如**妥用不同免疫查核點的最佳化治療策略**，將導引**免疫治療**的新里程碑。

[註 1]：日本京都大學特聘教授本庶佑 (**Tasuku Honjo**) 的研究團隊，在 1992 年著手研究**「程序性細胞死亡」(programmed cell death) 的機制**，這是一種細胞自殺以維持體內恆定。他們發現 T 和 B 細胞在**走向死亡時，會誘發一蛋白 PD-1** (programmed cell death-1)。後又發現**缺乏 PD-1 基因**時，小鼠會表現許多發炎症狀，但卻**對病毒有較強的抵抗力**，因此思考 PD-1 是否和免疫機制有關。本庶佑和艾利森 (**James Allison**) 榮獲臺灣 2014 年唐獎之生技醫藥獎和 2018 年諾貝爾生理醫學獎，表彰他們各發現 T 細胞表面的兩免疫查核點抑制因子 **CTLA-4** 和 **PD-1** 的卓越貢獻。

[註 2]：在發現 PD-1 的七年後，也發現 PD-1 的配體 (ligand) PD-L1。即 PD-1 是 T 細胞的一「煞車鍵」，而 PD-L1 是啟動煞車的開關。**當 PD-L1 與 T 細胞表面的 PD-1 結合，會抑制 T 細胞的活化**。自此發展免疫抑制劑或單株抗體 (如 anti-PD-1 antibody)，**免疫治療** (immunotherapy) 可有很大的臨床應用，如應用於愛滋病毒 (HIV-1)、B 型與 C 型肝炎病毒 (HBV and HCV) 所造成慢性發炎、癌症的 T 細胞衰弱，均可經由這些免疫抑制劑或單株抗體達到臨床治療效果。因此若經由 anti-PD-1 抗體的幫助，能調整 T 細胞分化方向，重新活化找回具有正常功能的 T 細胞，提供治療的全新視野，極具潛力以**免疫治療**的新作法，以面對不同疾病所帶來 T 細胞問題，這二十多年來也有很多成功案例與研究，為治療帶來新曙光。

[註 3]：LCMV 急性感染與慢性感染是由不同的病毒株感染所造成的兩種結果：
LCMV 阿姆斯壯病毒株 (Armstrong strain) 感染實驗小鼠會造成急性感染
LCMV 科隆 13 病毒株 (Clone 13 strain) 感染實驗小鼠會造成慢性感染



Speaker / 徐嘉琳 Chia-Lin Hsu

Current Position
Professor, Institute of Microbiology and Immunology, NYCU, Taiwan

Education/Training
2007 PhD, Duke University, U.S.A.

Professional and Research Experience
2025-Present Professor, Institute of Microbiology and Immunology, NYCU, Taiwan
2022-Present Deputy Director, Laboratory Animal Center, NYCU, Taiwan
2022-2023 Vice Secretary General, Chinese Society of Immunology, Taiwan

Awards and Honors
2023 Fellow of Higher Education Accreditation (FHEA)
2022 Chinese Society of Immunology Outstanding Research Award
2019 Ta-You Wu Memorial Award

中華民國細胞分子生物學學會
3/23 (Sun.) 15:20-15:50
3 樓，30 教室

The Contribution of Lysosomal Metabolite Transporter, ENT3, to the Immune Responses

徐嘉琳 Chia-Lin Hsu
Professor, Institute of Microbiology and Immunology, NYCU, Taiwan

Equilibrative nucleoside transporter 3 (ENT3) is a lysosomal metabolite transporter that facilitates intracellular nucleoside translocation. This talk will discuss its role in immune cells and potential involvement in disease settings.

Speaker / **莊懷佳 Huai-Chia Chuang**

Current Position
Associate Investigator, Immunology Research Center, National Health Research Institutes, Taiwan

Education/Training
2008 PhD, Institute of Basic Medical Sciences, National Cheng-Kung University, Taiwan
2003 MS, Graduate Institute of Pathology, National Taiwan University, Taiwan
2001 BS, Department of Botany, National Taiwan University, Taiwan

Professional and Research Experience
2022-Present Associate Investigator, Immunology Research Center, National Health Research Institutes, Taiwan
2015-2022 Assistant Investigator, Immunology Research Center, National Health Research Institutes, Taiwan
2008-2014 Postdoctoral Fellow, Immunology Research Center, National Health Research Institutes, Taiwan

Awards and Honors
2019 57th Ten Outstanding Young Persons (Taiwan) 第 57 屆十大傑出青年獎 - 醫學研究類
2018 Ta-You Wu Memorial Award from Ministry of Science and Technology (科技部吳大猷先生紀念獎)
2017 President Rey-Shyong Tsai Outstanding Paper Award in Metabolism and Nephrology (第一屆蔡瑞熊校長優秀研究論文獎)

中華民國細胞分子生物學學會
3/23 (Sun.) 15:20-16:20
3 樓，30 教室

MAP4K3/GLK in Inflammation and Aging

莊懷佳 Huai-Chia Chuang
Associate Investigator, Immunology Research Center, National Health Research Institutes, Taiwan

MAP4K3 (also named GLK) belongs to the mammalian Ste20-like kinase family. GLK-overexpressing T cells are correlated with multiple human autoimmune diseases including systemic lupus erythematosus (SLE). GLK directly phosphorylates and activates PKC θ , leading to activation of IKK/NF-κB in T cells. GLK-deficient mice display impaired T-cell-mediated immune responses or autoimmune diseases. GLK signaling selectively stimulates IL-17A production in T cells by inducing AhR-RORγt complex and their nuclear translocation. In contrast, GLK signaling inhibits Foxp3 transcription by blocking the function of FoxO1. Collectively, GLK signaling induces IL-17A transcription and inhibits Foxp3 transcription, leading to induction of Th17 differentiation and reduction of Treg differentiation. Thus, GLK inhibitors could be more effective than IL-17A blockade for treatment of autoimmune diseases. Furthermore, we found that 39% SLE patients harbor GLK germline or somatic variants, which cause increased of GLK mRNA/protein levels. Recently, we identified a novel protein-coding gene, UHRF1P, as a SLE-specific transcript by three machine learning (AI) statistical methods. Remarkably, UHRF1P induction blocked the interaction between GLK and its E3 ubiquitin ligases (MKRN4 and UHRF1), leading to GLK overproduction. Besides T cells, we found that GLK is induced in epithelial cells and macrophages of human COVID-19 patients, as well as tissues of lung cancer and liver cancer. GLK directly phosphorylates and stabilizes ACE2 proteins, and GLK-induced ACE2-containing exosomes are important pathogenic factors for COVID-19. In cancer cells, GLK directly phosphorylates and activates IQGAP1, resulting in induction of Cdc42-mediated cell migration and cancer metastasis. Taken together, GLK is a therapeutic target for inflammatory/autoimmune diseases and cancer recurrence. Interestingly, GLK also regulates animal lifespan. GLK deficiency in Caenorhabditis elegans results in an expansion of the worm lifespan. Similarly, GLK-deficient mice show a significant extension of lifespan. The serum levels of proinflammatory cytokines are increased in aged wild-type mice, but are decreased in aged GLK-deficient mice. Chronic inflammation plays a critical role in the aging process. Thus, expanded lifespan of GLK-deficient mice may be due to decreased inflammatory responses (inflamm-aging). These findings suggest that GLK inhibitors may be used as prophylactic agents to suppress inflamm-aging.

Speaker / **陳昇宏 Sheng-Hong Chen**

Current Position
Associate Research Fellow, Institute of Molecular Biology, Academia Sinica, Taiwan

Education/Training
2008 PhD, Division of Biological Sciences, University of California, San Diego
2001 MS, School of Cognitive and Computer Sciences, University of Sussex
1998 BS, Department of Zoology, National Taiwan University

Professional and Research Experience
2016-2024 Assistant Research Fellow, Institute of Molecular Biology, Academia Sinica
2011-2016 Postdoc, Department of Systems Biology, Harvard Medical School
2010-2011 Postdoc, Department of Cellular and Molecular Pharmacology University of California, San Francisco

Awards and Honors
2020 傑出人才基金會積極留任國內優秀學者獎
2013 Ruth L. Kirschstein National Research Service Award - NIGMS
2001 Distinction M.Sc. honor degree, University of Sussex

中華民國細胞分子生物學學會
3/23 (Sun.) 16:20-16:50
3 樓，30 教室

Nature as a great sculptor — a lesson from ferroptotic trigger waves

陳昇宏 Sheng-Hong Chen
Associate Research Fellow, Institute of Molecular Biology, Academia Sinica, Taiwan

Large-scale cell death is commonly observed during organismal development and in human pathologies1,2,3. These cell death events extend over great distances to eliminate large populations of cells, raising the question of how cell death can be coordinated in space and time. One mechanism that enables long-range signal transmission is trigger waves6, but how this mechanism might be used for death events in cell populations remains unclear. Here we demonstrate that ferroptosis, an iron- and lipid-peroxidation-dependent form of cell death, can propagate across human cells over long distances (≥ 5 mm) at constant speeds (around 5.5 μm/min) through trigger waves of reactive oxygen species (ROS). Chemical and genetic perturbations indicate a primary role of ROS feedback loops (Fenton reaction, NADPH oxidase signalling and glutathione synthesis) in controlling the progression of ferroptotic trigger waves. We show that introducing ferroptotic stress through suppression of cystine uptake activates these ROS feedback loops, converting cellular redox systems from being monostable to being bistable and thereby priming cell populations to become bistable media over which ROS propagate. Furthermore, we demonstrate that ferroptosis and its propagation accompany the massive, yet spatially restricted, cell death events during muscle remodelling of the embryonic avian limb, substantiating its use as a tissue-sculpting strategy during embryogenesis. Our findings highlight the role of ferroptosis in coordinating global cell death events, providing a paradigm for investigating large-scale cell death in embryonic development and human pathologies.

Speaker / **蔣偉程 Wei-Cheng Jiang**

Current Position
Assistant Professor, Institute of Anatomy and Cell Biology, College of Medicine, National Yang Ming Chiao Tung University, Taiwan

Education/Training
PhD, Biomedical Engineering, National Yang Ming University, Taipei, Taiwan

Professional and Research Experience
2024-Present Assistant Professor, Institute of Anatomy and Cell Biology, College of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan
2022-2024 Assistant Professor, Department of Anatomy and Cell Biology, School of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan
2016-2022 Postdoctoral Fellow, Institute of Cellular and System Medicine, National Health Research Institutes, Zhunan, Taiwan

Awards and Honors
2022 財團法人沈力揚教授醫學教育獎學紀念基金會講師級研究與進修獎助
2021 Postdoctoral Researcher Academic Research Award, Ministry of Science and Technology (MOST)
2018 Excellent Paper (Oral Presentation) Award, 2018 National Health Research Institutes Research Day

中華民國解剖學學會
3/23 (Sun.) 13:00-13:30
3 樓，32 教室

3D 列印技術在解剖學教學之應用

蔣偉程 Wei-Cheng Jiang
Assistant Professor, Institute of Anatomy and Cell Biology, College of Medicine, National Yang Ming Chiao Tung University, Taiwan

Advancements in 3D printing technology have revolutionized educational methodologies across disciplines. In anatomy education, traditional approaches relying on cadaver dissection and 2D illustrations often present challenges in accessibility, ethical concerns, and comprehension of complex structures. In contrast, customized 3D-printed anatomical models provide visual and tactile representations of human structures, creating a more interactive and inclusive learning experience. These models offer accurate replications of organs and systems, enabling students to examine spatial relationships and intricate details that are difficult to visualize using conventional methods. Moreover, 3D printing facilitates the creation of pathology-specific models, aiding in the contextualization of clinical scenarios and bridging the gap between theory and practice. Additionally, these tools are cost-effective and reusable, making them suitable for institutions with limited access to cadaveric specimens. The integration of 3D bioprinting technologies holds the potential to simulate physiological functions, further advancing the scope of anatomy education and enhancing its future relevance to clinical practice.

Speaker / **鍾敦輝**
Tun-Hui Chung

Current Position
Assistant Professor, Anatomy, School of Medicine, Fu-Jen Catholic University

Education/Training
2006 PhD, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan
1998 MS, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan
1992 BS, Biology, Fu Jen University, New Taipei City, Taiwan

Professional and Research Experience
2006-Present Assistant Professor, Fu Jen University
2001-2005 Teaching Assistant, National Taiwan University
2000-2001 Anatomy Lecturer, Chang Gung University

中華民國解剖學學會
3/23 (Sun.) 13:30-14:00
3 樓，32 教室

3D printing in Anatomy Education

鍾敦輝 Tun Hui Chung
Assistant Professor, Anatomy, School of Medicine, Fu-Jen Catholic University

3D printing technology has been making much progress and is actively applied at all levels recently. DICOM (Digital Imaging and Communications in Medicine) data donated by the cadavers are used to build a 3D brain blood vessel database, and then print the 3D blood vessel structures to the medical student in gross anatomical teaching at Fu Jen Catholic University. By using the 3D software to analyze and create the gross brain blood vessel data and STL (STereo Lithography) output for we using a 3D printer to print blood vessel structures and applying them to the teaching of medical gross anatomy experiments. We used a 3D scanner for the anatomical models and create the 3D files to upload them to the Sketchfab website for online browsing. Based on these online materials, brain slices teaching video, we design an online laboratory for teaching neuroanatomy and gross anatomy experiments of the School of Medicine. We conduct questionnaires to evaluate effectiveness of the neuroanatomy online laboratory we designed to learn. The questionnaire shows that students generally agree that 3D software, 3D scanning or 3D printing are helpful for anatomy courses. We hope that we can increase the amount of 3D anatomy database using a 3D scanner, and continue to optimize the database and the anatomy teaching website. Students can even design, construct and print their own anatomical models to learn and can continuously develop, add 3D printing model to assist and increase students' interest in learning. In the future, we will try to cooperate with the Computer Tomography Machine of the Institute of Forensic Medicine, National Taiwan University School of Medicine. We will establish a computer tomography database for the anatomy teacher, and provide DICOM support for human anatomy images in the Fu Jen Catholic University and Hospital.

Speaker / **許書豪**
Shu-Hao Hsu

Current Position
副教授 國立臺灣大學醫學院 解剖所暨細胞生物學 (科) 研究所

Education/Training
2012 PhD, Molecular, Cellular and Developmental Biology, THE OHIO STATE UNIVERSITY
2003 MS, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan
2001 BS, Zoology, National Taiwan University, Taiwan

Professional and Research Experience
2023-Present Associate Professor, Dept. of Anatomy and Cell Biology, National Taiwan University, Taipei, Taiwan.
2016-2023 Assistant Professor, Dept. of Anatomy and Cell Biology, National Taiwan University, Taipei, Taiwan.
2013-2015 Postdoctoral Associate, Dept. of Pathology, University of Pittsburgh, Pittsburgh, PA.

中華民國解剖學學會
3/23 (Sun.) 14:00-14:30
3 樓，32 教室

Decoding the Body: The Advantages and Limitations of Virtual Reality in Anatomy Education

許書豪 Shu-Hao Hsu
副教授 國立臺灣大學醫學院 解剖所暨細胞生物學 (科) 研究所

Virtual reality (VR) anatomy software offers numerous advantages for anatomy education, enabling students to achieve a deeper and more intuitive comprehension of human anatomy. VR technology overcomes the spatial and resource limitations of traditional anatomy education, enabling students to engage in anatomical studies anytime and anywhere without needing a physical laboratory or special equipment. Over the past year, VR anatomy equipment has been integrated with various approaches into the Gross Anatomy Lab course. With real-time projecting and recording functions, students collaboratively created and recorded instructional videos on anatomical structures. Also, students were guided to use VR equipment to perform cross-sections of the human body and match the structures in plastinated cross-sectional cadaveric specimens. This 'slicing' function is a significant advantage of VR software; compared to traditional physical dissections, VR software allows students to explore various cross-sections at any time. In addition to exploring gross anatomy, instructors can utilize the software's exam feature to conduct virtual "station rounds" for identifying specific structures. Through cloud-based data analysis, teachers can track students' test scores and understand their learning progress. However, several drawbacks of VR anatomy need to be addressed to apply this new technology in anatomy education continuously. First, the overall pricing of most systems is too expensive to increase the headset-to-student ratio, which is critical for students to practice virtual dissections frequently. Second, it is challenging to fine-tune or troubleshoot the VR settings without the manufacturer's help. Third, new course design ideas generated from the teaching experience are difficult for the manufacturer to produce due to the cost, which the academy possibly underestimates. In conclusion, a mutually beneficial collaboration between the manufacturer and the school is urgently needed to overcome these issues and turn VR anatomy into an indispensable tool in gross anatomy education in the future.

Speaker / **陳淑華 Seu-Hwa Chen**

Current Position
Associate Professor, Department of Anatomy and Cell Biology, School of Medicine, College of Medicine, Taipei Medical University

Education/Training
PhD, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan
MS, Department of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan
BS, Department of Nutrition, College of Health Care and Management, Chung Shan Medical University

Professional and Research Experience
2022-Present Associate Professor, Department of Anatomy and Cell Biology, School of Medicine, College of Medicine, Taipei Medical University
2012-2022 Assistant Professor, Department of Anatomy and Cell Biology, School of Medicine, College of Medicine, Taipei Medical University
1999-2012 Instructor, Department of Anatomy and Cell Biology, School of Medicine, College of Medicine, Taipei Medical University

Awards and Honors
2024 教學實踐研究計畫傳習教師
2022 年度教學表現優異獎第一名
2022 傑出優良教師

中華民國解剖學學會
3/23 (Sun.) 14:30-15:00
3 樓，32 教室

Redesigning a Flipped Classroom Course and Evaluating Effectiveness in Medical Education: Case Study of the Course of "Anatomy"

陳淑華 Seu-Hwa Chen
Associate Professor, Department of Anatomy and Cell Biology, School of Medicine, College of Medicine, Taipei Medical University

Virtual reality (VR) technology has been used in medical education and anatomy learning. First, we took students taking anatomy courses at medical universities as subjects to explore the correlation between the application of VR technology and students' learning achievements. The results showed that participants' learning performance after using VR had a significantly positive correlation with the frequency of VR control and the degree of engagement when using VR. Then the final spatial ability and anatomy laboratory scores increased significantly under the intervention of VR in anatomy learning, but it did not affect the anatomy lecture score. Therefore, besides integrating virtual reality tools into classroom instruction for the past five years, increasing opportunities for students to use the 3D organon anatomy app after class to improve learning performance in the anatomy lecture. Furthermore, the exam pass rate of participants in the School of Medicine was studied in the flipped classrooms and VR innovative courses "Skeleton-Muscular System". Compared with participants in lecture-based teaching, the pass rate was significantly increased in the "remember," "analyze," and "apply" types of questions. Moreover, in the middle-scoring group and low-scoring group, the pass rate of participants in the types of "analyze" and "apply" questions has been significantly improved. According to the analysis of Spearman correlation coefficients, the pass rate in "remember," "understand, "analyze," and "apply" questions has a moderate positive correlation with the bell-ringer lab exam scores of the gross anatomy laboratory. Further analysis of the pass rates of the high-, middle-, and low-scoring groups on questions of different difficulty (level 1: easy, level 2: medium, level 3: difficult). Results show the pass rate of the high- and middle-scoring groups in the midterm exam has no statistical significance, but they are both significantly higher than those in the low-scoring group. In the final exam, pass rates on level 1 and level 3 questions of the middle- and low-scoring groups have significantly increased than the midterm exam. The better pass rate in the high-scoring group is the level 2 and 3 questions. Based on the above research results, integrating virtual reality tools into anatomy instruction may increase students' spatial abilities to affect their learning achievements in anatomy lectures and laboratories, and improve retention learning.

Speaker / **吳漢忠 Han-Chung Wu**

Current Position
Director, Biomedical Translation Research Center, Academia Sinica, Taiwan
Distinguished Research Fellow, Institute of Cellular and Organismic Biology, Academia Sinica

Education/Training
1993 PhD, Institute of Pathology, College of Medicine, National Taiwan University

Professional and Research Experience
2020-Present Distinguished Research Fellow, Institute of Cellular and Organismic Biology, Academia Sinica
2019-Present Director, Biomedical Translation Research Center, Academia Sinica, Taiwan

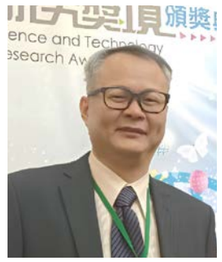
Awards and Honors
2011 NSC Outstanding Research Award, National Science Council, Taiwan (twice, in 2011-2014 and 2015-2018.)
2018 The Executive Yuan Award for Outstanding Science and Technology Contribution
2020 The 17th National Innovation Award- Excelsior Award

台灣生物化學及分子生物學學會
3/23 (Sun.) 13:30-14:30
3 樓，33 教室

Epithelial cell adhesion molecule-targeted niche therapy attenuates Wnt signaling to suppress colorectal cancer stemness

吳漢忠 Han-Chung Wu
Director, Biomedical Translation Research Center, Academia Sinica, Taiwan,Distinguished Research Fellow, Institute of Cellular and Organismic Biology, Academia Sinica

Cancer stem cells (CSC) are widely implicated in tumorigenesis and cancer re-occurrence, but the development of therapeutics to target CSCs remains a challenge due to their plasticity. Nevertheless, CSCs in colorectal cancer (CRC) highly express epithelial cell adhesion molecule (EpCAM) and are dependent on Wnt signaling for their function. To simultaneously target EpCAM and Wnt signaling, we combined our EpCAM-neutralizing antibody, EpAb2-6 (NCT05687682), with a porcupine inhibitor (LGK974) in a clinically feasible 'niche therapy' for the treatment of CRC. Patient-derived tumor-organoids (PDTOs), xenografts (PDX), CSC-derived models and tissue arrays obtained from patients were utilized. Therapy-induced gene expression changes were studied by RNAseq analysis. CSC-related mechanisms and niche-factor inhibition were assessed using stemness assays, analysis of tumor interstitial fluid, and super resolution microscopy. Therapeutic efficacy was tested in patient/CSC-derived animal models. The combination therapy attenuated Wnt signaling and targeted CSC properties, even in KRAS-mutant patient samples. At a molecular level, cleaved extracellular domain of EpCAM (EpEX) was enriched in the tumor microenvironment and mimicked natural Wnt ligands by directly interacting with Wnt receptors to induce signaling. Activated Wnt signaling induced ADAM17/TACE, augmenting shedding of EpEX in a positive feedback-loop. Ultimately, the therapy depleted EpEX enrichment and consequent Wnt-related activity, inhibiting cancer stemness. When tested in multiple patient/CSC-derived, metastatic and orthotopic models, the combined therapy halted cancer progression and prolonged animal survival. In conclusions, EpCAM promotes cancer stemness by stimulating Wnt signaling via the action of EpEX as niche factor. Therefore, EpAb2-6-based niche therapy may target CSCs and prove beneficial for treatment of CRC, including KRAS mutant disease.



Speaker / 侯明宏
Ming-Hon Hou

Current Position
Director, Biotechnology Center, National Chung Hsing University, Taiwan
Distinguished Professor, Institute of Genomics and Bioinformatics, National Chung Hsing University, Taiwan

Education/Training
2003 PhD, Institute of Biochemical Sciences, National Taiwan University
1999 MS, Graduate Institute of Biochemistry, National Chung Hsing University, Taiwan
1997 BS, Department of Food Science, Fu Jen Catholic University, Taiwan

Professional and Research Experience
2022-2023 Associate Dean, College of Life Sciences, National Chung Hsing University, Taiwan
2014-2020 Director, Institute of Genomics and Bioinformatics, National Chung Hsing University, Taiwan
2013-Present Professor, Institute of Genomics and Bioinformatics, National Chung Hsing University, Taiwan

Awards and Honors
2020 17th National Innovation Award for development of broad spectrum antiviral drug against coronaviruses
2020 Ministry of Science and Technology (MOST) Outstanding Research Award
2015 Young Scientist Research Award, Tien-Te Lee Biomedical Foundation

台灣生物化學及分子生物學學會
3/23 (Sun.) 13:30-14:30
3 樓，33 教室

New Strategies for Targeting Functional DNAs with Small Molecules in Cancer Therapy

侯明宏 Ming-Hon Hou
Director, Biotechnology Center, National Chung Hsing University, Taiwan,Distinguished Professor, Institute of Genomics and Bioinformatics, National Chung Hsing University, Taiwan

Cancer remains one of the leading causes of mortality worldwide, highlighting the urgent need for innovative and targeted therapeutic strategies. Traditional chemotherapy is often constrained by severe off-target effects, drug resistance, and dose-dependent toxicity. Recent advances in DNA-targeting small molecules provide new opportunities to selectively modulate key genomic elements involved in oncogenesis. In this study, we present two complementary DNA intercalation strategies that enhance anticancer specificity and efficacy by exploiting distinct structural features of DNA. The first approach employs a dual-binding site intercalation strategy, in which actinomycin D (ActD) and doxorubicin (Dox) exhibit synergistic binding to consecutive GCCG motifs within GC-rich promoters, such as the epidermal growth factor receptor (EGFR) promoter. High-resolution X-ray crystallography reveals that ActD intercalates at 5'-GC sites, inducing local conformational changes that optimize Dox binding at adjacent 5'-CG sites via stacking interactions, hydrogen bonding, and drug-drug cooperativity. This cooperative binding mode stabilizes GCCG-rich DNA sequences, enhancing sequence selectivity and reducing off-target interactions. Functional studies in breast cancer models confirm that this combination effectively downregulates EGFR expression, leading to significant tumor suppression. The second strategy focuses on bis-intercalators, a class of DNA-targeting agents that induce topological alterations by bridging adjacent DNA duplexes. Using a tetraplex base-pair junction model, we demonstrate that bis-intercalators DA4 and DA5 selectively cross-link DNA at CpG-rich junctions, transforming B-DNA into an overwound A-DNA-like conformation, which disrupts topoisomerase II function. Structural analysis reveals that DA5, with its optimized flexible linker, aligns its chromophores with CpG sites, facilitating continuous stacking and water-mediated hydrogen bonding. This structural perturbation enhances DNA stabilization and anticancer efficacy, as demonstrated in SW620 xenograft models. By integrating these two mechanistically distinct yet complementary strategies including dual-site intercalation for sequence-specific targeting and bis-intercalator-induced structural modulation, this study provides a structural and mechanistic foundation for designing highly selective DNA-binding chemotherapeutics. These findings highlight the potential of structure-guided drug design in developing precision anticancer therapies with enhanced specificity, reduced toxicity, and improved clinical efficacy.

Speaker / **楊鎧鍵**
Kai-Chien Yang

Current Position

Professor, Department and Graduate Institute of Pharmacology, National Taiwan University, Taiwan
Attending physician, Division of Cardiology, Department of Internal Medicine, NTU Hospital, Taiwan

Education/Training

2000 MD, National Taiwan University College of Medicine
2012 PhD, Washington University in St Louis, USA

Professional and Research Experience

2012-2014 Post-Doc, University of Illinois at Chicago/Brown University
2000-2005 Resident/Clinical Fellow, Department of Internal Medicine, NTU hospital

Awards and Honors

2021 Outstanding Research Award, NSTC
2024 Taiwan Bio-development Foundation (TBF) Chair Professor Award
2022 The 18th Tien Te Lee Biomedical Awards

台灣生物化學及分子生物學學會
3/23 (Sun.) 14:50-15:50
3 樓，33 教室

Targeting aberrant TXNDC5 expression in stromal fibroblasts resolves tumor desmoplasia and resistance to immune checkpoint blockade in colorectal cancer with mesenchymal traits

楊鎧鍵 Kai-Chien Yang
Professor, Department and Graduate Institute of Pharmacology, National Taiwan University, Taiwan,Attending physician, Division of Cardiology, Department of Internal Medicine, NTU Hospital, Taiwan

Mesenchymal-type colorectal cancer (CRC), characterized by strong stromal infiltration and immune tolerance, resists immune checkpoint blockade and has poor outcomes. Cancer-associated fibroblasts (CAFs), abundant in tumor stroma, actively remodel the extracellular matrix (ECM), aid immune evasion, and drive tumor progression. We have recently identified thioredoxin domain-containing protein 5 (TXNDC5), a protein disulfide isomerase (PDI), as a critical mediator of fibroblast activation and ECM remodeling in organ fibrosis. We hypothesized that TXNDC5 could also contribute to fibroblast activation, stroma formation and tumor progression in cancer, especially in the stroma-enriched fibrogenic mesenchymal-type CRC. Methods: Transcriptome databases of CRC were re-analyzed to determine the clinical relevance of TXNDC5. Experimentally, CRC was induced in mouse lines by azoxymethane (AOM) and dextran sulfate sodium (DSS) stimuli, a model sharing multiple characteristics with human mesenchymal-type CRC. Human colonic fibroblast line CCD-18co was used to investigate the molecular mechanisms by which TXNDC5 regulates colonic fibroblast activities. Fibroblast-specific TXNDC5 knockout (Col1a2-Cre/ERT2*TXNDC5fl/fl, cKO) mice were generated, combining with single-cell RNA sequencing analyses on AOM/DSS-induced CRC tumors in these animals, to clarify how fibroblast TXNDC5 impact tumor microenvironment, CRC progression and response to immune checkpoint blockade. Findings: TXNDC5 was predominantly expressed in stromal fibroblasts of human and mouse CRC. Fibroblast-specific deletion of Txndc5 lessened CAF activation, attenuated tumor fibrosis and reduced tumor burden in AOM/DSS-induced CRC. Mechanistically, increased TXNDC5 levels augments TGF signaling in CAF by post-translational stabilization of TGFBR1 through its PDI activity. In addition, deletion of Txndc5 in CAFs led to less tumor desmoplasia, decompressed tumor vessels and attenuated intratumoral hypoxia, thereby easing immune tolerance and increasing cytotoxic T cell infiltration in CRC. Single-cell transcriptome analysis revealed a marked change of intratumoral immune cell populations upon fibroblast-specific deletion of TXNDC5, shifting from myeloid-derived suppressive cells to cytotoxic tumor-infiltrating lymphocytes. Importantly, depletion of TXNDC5 in CAFs potentiated the anti-tumor effects of immune checkpoint blockade with anti-PD1 therapy in CRC. Conclusions: Our data suggest an important yet previously unrecognized role of fibroblast TXNDC5 in CRC progression, through enhancing CAF activation, stroma formation and immune escape. Combining immune checkpoint blockade with TXNDC5 deletion synergistically improved anti-tumor effects in CRC. Targeting TXNDC5, therefore, can be a novel therapeutic approach for CRC patients.

Speaker / 王育民 **Ju-Ming Wang**

Current Position

Distinguished Professor, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University, Taiwan
Dean, College of Bioscience and Biotechnology, National Cheng Kung University, Taiwan

Education/Training

1999 PhD, Institute of Life Science, National Defense Medical Center, Taipei, TW

Professional and Research Experience

2024-Present President, The Taiwan Society for Biochemistry and Molecular Biology, Taiwan
2022-2023 Chairman, Life Sciences Research Promotion Center, Taiwan
2019-2022 Vice President, Academic Affairs, NCKU, Taiwan

Awards and Honors

2024 K. T. Li Honorary Scholar Award
2023 K. T. Li Gold Medal Award
2021 MOST Outstanding Research Award

台灣生物化學及分子生物學學會
3/23 (Sun.) 14:50-15:50
3 樓，33 教室

Disruption of the pentraxin 3/CD44 interaction can be an efficient strategy for disease therapy

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Fibroblasts, as key structural components of all organs, play a pivotal role in immune-mediated inflammatory diseases, including cancer. Pentraxin 3 (PTX3), a secretory factor induced by pro-inflammatory cytokines and various stresses, is primarily expressed by fibroblasts and monocytes/macrophages in injured tissues and is elevated in the serum of patients with inflammatory diseases. Beyond its well-established role in promoting cancer migration, invasion, stemness, and drug resistance, our study reveals that PTX3 also contributes to immunosuppression by activating M2 macrophages and inhibiting cytotoxic CD8+ T cells. Furthermore, in vitro and in vivo studies showed that PTX3 plays a crucial role in tissue fibrosis, with its interaction with CD44 significantly driving fibrotic disease progression. We further found that PTX3 regulate the activation of TGF β signaling and extracellular matrix and epithelial-mesenchymal transition genes in epithelial cells and fibroblasts. Recognizing the pathological significance of PTX3, we developed WHC-001, a PTX3-specific neutralizing antibody, to explore its therapeutic potential in chronic diseases, including cancer and fibrosis. Our findings demonstrate that WHC-001 effectively suppresses tumor progression in colon cancer and triple-negative breast cancer (TNBC) while also mitigating tissue fibrosis. These results suggest that targeting the PTX3/CD44 axis with WHC-001 represents a promising therapeutic strategy for cancer and fibrotic diseases.

39th生物醫學聯合學術年會

Advancing Therapies in Cancer and Diseases

2025 The 39th Joint Annual Conference of Biomedical Science

科技新知研討會

Technology Symposium

時間：3 月 22 日 (Sat.) 12:00-12:30
地點：3 樓，31 教室
單位：莫德納台灣股份有限公司

Speaker/ 黃立民
台灣大學特聘教授
台灣大學醫學院小兒科暨台大公衛學院流行病學與預防醫學研究所教授
感染症醫學會名譽理事長
兒科醫學會副理事長
台灣病毒暨疫苗學會理事長

Moderator/ 司徒惠康
中華民國免疫學會理事長

mRNA 科學：從新冠抗疫到未來的無限可能

mRNA 技術的發展為疫苗和治療領域帶來了革命性的變革，開啟了精準醫療的新時代。從 COVID-19 疫苗的快速研發，到未來在感染性疾病、癌症免疫治療和罕見病治療上的應用，mRNA 技術展現了廣泛的潛力。

有關 mRNA 技術的核心優勢，mRNA 疫苗的研發建立在數位序列設計、mRNA 合成與脂質納米顆粒（LNP）遞送技術之上，具備以下優勢：快速開發與靈活製造、多功能應用、強效免疫應答、細胞無需進入核內等等。因此在 COVID-19 疫苗的突破上，mRNA 技術在 COVID-19 疫情中證明了其極高的效率和可行性。例如，Moderna 的 mRNA-1273 疫苗從病毒基因測序到獲得緊急使用授權（EUA）僅耗時 11 個月，遠超傳統疫苗的研發速度。此外，針對 COVID-19 變異株（如 XBB1.5）的新一代疫苗 mRNA-1283，已經展現出更好的免疫原性與更長的冷藏保存期限。

在 mRNA 技術的未來應用上，也將提供許多例子供聽眾參考，包括在多重疫苗開發上有流感與 COVID-19 聯合疫苗（mRNA-1083）、呼吸道合胞病毒（RSV）疫苗（mRNA-1345）：適用於老年人和嬰幼兒，降低住院與死亡風險等，以及不論在癌症免疫治療或是罕見病與慢性疾病治療的各項成功例子。

mRNA 技術不僅改變了疫苗的開發方式，也為癌症、罕見病、免疫治療等領域帶來了新希望。未來，隨著遞送系統的優化與抗原設計的進步，mRNA 技術將在更多疾病領域實現突破，為全球公共衛生帶來深遠影響，充分展示了 mRNA 技術如何從 COVID-19 疫苗開始，進一步拓展到更廣泛的醫療應用，並強調了該技術在精準醫療時代的無限潛力。

時間：3 月 22 日 (Sat.) 10:30-11:00
地點：1 樓，中庭
單位：龐德生技有限公司

Speaker/ Jonathan Yang
Applications Specialist, Leica Biosystems

Troubleshooting Routine Histology: A Guide on How to Avoid Common Mistakes
常規組織學疑難排解：如何避免常見錯誤的指南

Understanding the routine histology workflow is essential for producing high-quality slides and accurate diagnoses. This session will cover the complexity of a typical histology process, highlighting why troubleshooting can be challenging and provides practical insights and proper techniques on how to avoid common mistakes in key steps, including: Grossing, Fixation, Processing, Embedding, Microtomy, Staining, Coverslipping, Storage and Archiving.

時間：3 月 22 日 (Sat.) 15:00-15:30
地點：1 樓，中庭、
單位：美商伯瑞股份有限公司台灣分公司

Speaker/ 呂秋瑩
Bio-Rad 美商伯瑞專案經理
台灣大學生化科技學系碩士

Enhancing CAR-T Manufacturing Quality with Droplet Digital PCR
利用微滴數字 PCR 提升 CAR-T 的製程品質

在當今的細胞與基因治療領域，CAR-T 細胞療法已成為癌症治療的重要突破。然而，確保 CAR-T 細胞製造的穩定性和一致性仍然是一項重大挑戰。微滴數字 PCR（Droplet Digital PCR, ddPCR）作為一種高靈敏度、高精確度的基因定量技術，為 CAR-T 製造流程提供了強大的品質控制工具。本次講座將介紹 Bio-Rad ddPCR 技術，包括其原理、優勢及如何克服傳統 qPCR 方法的局限性。ddPCR 透過數位化樣本分割，可提供更準確的 病毒載體滴度測定、CAR 基因拷貝數分析，以及殘餘 AAV 檢測，確保基因改造的 T 細胞品質。

此外，我們將探討 AAV（腺相關病毒）相關試劑套組 在 CAR-T 製造中的應用。透過 ddPCR 技術，研究人員和製造商能夠精確量化基因表達、監測製造變異，並提升 CAR-T 細胞治療的一致性與安全性。本講座將深入探討這些技術如何優化 CAR-T 生產流程，提升整體治療品質。

39th 生物醫學聯合學術年會
Advancing Therapies in Cancer and Diseases
2025 The 39th Joint Annual Conference of Biomedical Science

論文報告資訊
Presentation

中國生理學會

編號	論文題目
PY001	Examinations of environmental enrichment in morphine-induced rewarding conditioned place preference: analysis of brain-derived neurotrophic factor and neuroinflammation responses 潘靖怡 , 黃智偉
PY002	Elucidations of environmental enrichment on methamphetamine-induced behavioral sensitization in behavior and brain mechanisms 鄭凱恩 , 吳少傑 , 黃智偉
PY003	Examinations of chronic mild stress altering phosphorylated extracellular signal-regulated kinase to increase neuronal apoptosis in the brain 馬琬珺 , 黃智偉
PY004	Investigating the Pathway of PKC α in the Disruption of Endothelial Tight Junctions Induced by Blue Light 鍾孝庭 , 溫宏諾 , 李青澔
PY005	The Association of Peripheral Blood Inflammation Indices with Disease Severity and Mortality Caused by Coronavirus Disease 2019 (COVID-19) 張智鈞 , 詹鈞任 , 魏止善 , 朱芳業
PY006	Novel KIF20B Insertion Mutation Associates with Male Infertility and Impaired Spermatogenesis in Taiwanese Population 汪雅雲 , 林盈宏
PY007	Investigating the Role of Anti-aging Klotho in Dentate Gyrus Network Dynamics and Behavioral Correlates 歐諾亞 , 連正章
PY008	Effects of oxytocin in posttrumatic stress disorder affecting rewarding and aversive effects induced by alcohol 洪沛濬 , 劉人瑄 , 蔡羽柔 , 吳承恩 , 林宇晨 , 黃智偉
PY009	Footshock stress induces freezing behavior and interlukin-1beta expression in the medial prefrontal cortex, amygdala, and hippocampus during situational reminder: a posttraumatic stress animal model test 宋昀臻 , 洪沛濬 , 黃智偉
PY010	社會支持對於憂鬱症患者在憂鬱行為反應之研究 王崇美 , 黃智偉
PY011	Exploring How CCR5 in Brown Adipose Tissue Affects Lipid Metabolism in the Liver 羅祐安 , 邱威誠 , 郁兆蘭
PY012	Aryl Hydrocarbon Receptor Defect Attenuates Mitogen-Activated Signaling Through Leucine-Rich Repeats and Immunoglobulin-Like Domains 1 (LRIG1)-Dependent EGFR Degradation 李青澔 , 許翰琳 , 陳竑愷 , 詹燕茹

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PY013	Sex Differences in Neural Circuits Underlying Observational Fear Learning 黃貽珺 , 陳榆涵 , 夏子涵 , 陳純娟 , 黃佳瑜
PY014	The Role of Spinal BAF in Epigenetic Silencing of the Mu-Opioid Receptor Gene in Neuropathic Pain 謝明君 , 賴政遠 , 林則彬 , 王學孝 , 鄭仁坤 , 楊博勝 , 許介謙 , 周迪侖 , 彭賢祐
PY015	CtBP1-LSD1 Complex-Mediated Epigenetic Modulation of ErbB2 Gene Transcription in the Dorsal Root Ganglion Contributes to Paclitaxel-Induced Neuropathic Pain 謝明君 , 賴政遠 , 周迪侖 , 倪曉彤 , 陳安旂 , 陳美錡 , 許耕綸 , 許介謙 , 林則彬 , 彭賢祐
PY016	The Role of Mitochondrial Methyltransferase Mettl15 in Doxorubicin-induced Cardiotoxicity 鍾昕叡 , 簡千栩
PY017	Elevated HIF-1 α –NKCC1 Signaling Underlies Juvenile Stress-Induced Anxiety: Therapeutic Potential of 2-Methoxyestradiol 陳子漠 , 林維星 , 呂睿傑 , 陳易群 , 吳宗訓 , 楊奕玲 , 呂國棟
PY018	Exploring the Influence of Neuropeptide FF on Palmitate-Induced Leptin Resistance and Metabolic Dysregulation 賴苡捷 , 林雅婷
PY019	Exosomes Derived From miR-5004-3p-Overexpressing Mesenchymal Stem Cells to Treat Gouty Arthritis by Inhibiting the ROS/Inflammasome/Pyroptosis Pathway 黃渝珊 , 陳冬生
PY020	Green tea epigallocatechin gallate inhibits X9 beige preadipocyte growth via the microRNA-let-7a/HMGA2 signaling pathways 許紫媞
PY021	Exosomes Derived from Ohwia Caudata Extract Treated-Mesenchymal Stem Cells Enhanced Treatment of Gout by Regulating Inflammasome Activation and Modulating Mitochondrial Dynamic. 巫靖妤 , 陳冬生
PY022	Nostoc commune Polysaccharide Extract Enhances Wharton's Jelly Stem Cell Therapeutic Efficacy in Ameliorating Senescent Cardiac Tissue via Modulation of Mitochondrial Dynamics. 周秀咪 , 陳冬生
PY023	Improvement of Dyspnea in Long COVID Patients Using an Incentive Spirometer 謝雨珊 , 陳姚向
PY024	A Patient-Derived Xenograft Model Biobank for Cancer Study and Drug Discovery 王瑞鈴 , 蕭麗如 , 羅昀琪 , 馬文輝 , 謝曉君 , 包玉蘋 , 楊乃潔 , 陳姿伶 , 秦咸靜

編號	論文題目
PY025	Loss of Occludin Reduces Tumor Multiplicity by Modulating TGF-β/Smad3-Dependent Caspase-3 Apoptosis in Colitis-Associated Colorectal Cancer 劉宛瑄 , 蔡依璇 , 林家瑩 , 郭瑋庭
PY026	To Hang Out or to Feast? Hypothalamic Controls of Food and Social Interaction 姜昊廷 , 林士哲 , 楊世斌
PY027	Impact of High Fat and High Fructose Diet on Neuroinflammation and Amyloid Burden in Alzheimer's Disease Mouse Model 林楹娟 , 陳薈文 , 蔡惠珍
PY028	BS Ameliorates Pulmonary Fibrosis by Modulating the TGF-β/AKT Signaling Pathway 林思吟 , 邱韋中 , 黃琤
PY029	Exploring the Impacts of Neuropeptide FF receptor 2 in Palmitate-Induced Neuroinflammation 莊昀庭 , 林雅婷
PY030	Brain-Wide Neuronal Activity Analysis of Chronic Muscle Pain in a Mouse Model 楊博喻 , 連正章
PY031	The Effects of CCL5 / CCR5 on Lipid Accumulation and Apoptosis in FL83B Hepatocytes 陳念妤 , 洪麗滿
PY032	Comprehensive Multi-Omics Analysis Identifies Mechanisms of Sleep Deprivation in Gut Microbiota and Immune Modulation of Hepatocellular Carcinoma in Nras/Shp53/SB100-Driven HCC mouse Models 蔡鎧鴻 , 蔡睿辰 , 郭賀喻 , 范沛涵 , 彭偉豪 , 吳莉玲
PY033	G9a Inhibition Enhances Imatinib Sensitivity in Chronic Myeloid Leukemia Cells through Modulation of Cell Death Pathways 吳柏勳 , 蘇溶真 , 張原翊
PY034	Intestinal Epithelial ZO-1 Facilitates Mucosal Healing by Modulating Mitotic Spindle Orientation with AKAP9 Instead of Cortical Actin 張映捷 , 蔡依璇 , 郭瑋庭
PY035	Vaspin Alleviates Atherosclerotic Plaque Instability by Regulating Smooth Muscle Cell Phenotypic Switching 陳懿 , 蔡旻倩
PY036	The Effect of miR-567 in BRAF-inhibitor Resistant Melanoma and BRAF-inhibitor-induced Secondary Tumor 鄧慶元 , 阮氏梅香 , 馬念涵
PY037	miR-155-5p and miR-636 Reduce Cancer Stem Cell Ability in Urothelial Carcinoma Cells 黃品媗 , 馮于甄 , 范皇添 , 馬念涵

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PY038	Epithelial Antiviral Responses to Intestinal Invasive Pathobionts Containing Prophages 來品言 , 余佳慧 , 林家賢 , 胡文絜 , 李憶萱 , 賴亮全 , 魏淑鈐 , 倪衍玄
PY039	Exposure to Incense Burning in Mice Triggered Amygdala Dysfunction And Social Impairment 盧俊諺 , 廖玥涵 , 詹于萱 , 黃佳瑜
PY040	The Therapeutic Effect of Memantine Derivatives on Glioblastoma 湯寓舜 , 徐宗溢
PY041	Investigating the Role of Mossy Cells in Predictive Functions of Fear Memory Using Fiber Photometry 劉奕辰 , 連正章
PY042	MiR-210-5p Increases IL-6 Expression and Foam Cell Formation through CTRP3- and ABCA1-Dependent Pathways 吳依璇 , 謝喜龍
PY043	Sox9 Regulates Astrocyte Function in a Region-Specific Manner and Is Necessary for Astrocyte Activation After Ischemic Stroke 陳熙培 , 黃騰緯 , 黃拓 , 游欣穎
PY044	Tight Junction Protein Occludin Preserves Mucosal Homeostasis through TGF β / SMAD Signaling-Induced Epithelial Apoptosis 林家瑩 , 劉宛瑄 , 張映捷 , 郭瑋庭
PY045	Erinacine A Attenuates Cognitive Impairment in the Chronic Phase After Ischemic Stroke – A Longitudinal Study of Brain Structural Changes and Functional Outcome 蔡霆霖 , 許珮蒨 , 李麗雅 , 陳勁初 , 高瑀絜 , 李怡萱
PY046	Melatonin Inhibits Epithelial-Mesenchymal Transition and Peritoneal Dissemination via AhR/BNIP3L-Mediated Mitophagy in Gastric Cancer 劉蓉靜 , 許美鈴
PY047	The Role of Estradiol in Defensive Behavior of Female Mice in Response to Aerial Threats 鄭如晴 , 吳偉立
PY048	Specialized pro-resolving mediators reduce astrogliosis and neuroinflammation in the anterior cortex of a mouse model for chronic kidney disease 張詩涵 , 黃昱傑 , 周家丞 , 江南 , 洪家琪 , 李怡萱
PY049	JWF, a Traditional Medicine Formula, Provides an Anxiolytic Effect via Maintaining Hippocampal NMDA Receptor Composition in an FKBP51 Deficiency-Associated Post-Inflammation Anxiety Mouse Model 陳亮蓉 , 康毓蘋 , 許珮蒨 , 洪家琪 , 甘育菱 , 傅淑玲 , 許中華 , 李怡萱

編號	論文題目
PY050	Investigate the Role of Rad23b on Protein Degradation in Spinocerebellar Ataxia Type 3 陳憶晴 , 楊尚訓
PY051	The Involvement of Extracellular Vesicle-Enriched miRNAs in CCR5-Deleted BAT on UCP-1-Independent Thermogenesis in Mice 黃偉翔 , 詹沛祺 , 謝博軒
PY052	Reduced Colon Cancer Burden by Bacteriophage Treatment Targeting Gut Microbiome in Mice 劉岢昕 , 胡文傑 , 林柏諭 , 李憶萱 , 魏淑鈐 , 倪衍玄 , 王錦堂 , 余佳慧
PY053	Age-Dependent Immune Response to SARS-CoV ssRNA and the Role of PMN-MDSCs in Immunosuppression 鄧敬蓉 , 吳豫宣 , 張原翊
PY054	Regulatory Mechanisms of Hepcidin in the Pathogenesis of Atherosclerosis 吳冠林 , 阮琪昌
PY055	Aberrant Function of Tight Junction Protein ZO-1 Links Mitotic Misorientation with Genomic Instability in the Progression of Colorectal Cancer 蔡依璇 , 陳宣妤 , 張映捷 , 郭瑋庭
PY056	Pro-inflammatory Cytokines Promote Cell Proliferation, Migration and Nerve Infiltration in Deep Endometriosis 唐筱茜 , 孫仲賢 , 吳孟興 , 蔡少正
PY057	Impaired IRF7 Signaling and SNARE-mediated Cytokine Secretion Drive Age-dependent Immune Dysfunction in SARS Coronavirus Response and Are Restored by Young CD11+ Cell Transfer 吳豫宣 , 胡智偉 , 張瑞育 , 張原翊
PY058	Role of Subicular Vasoactive Intestinal Polypeptide-expressing (VIP) interneurons in Modulating the Hippocampal Output and Behaviour Jakobus Gerick Pantouw, Cheng-Chang Lien
PY059	Emodin Suppresses Proliferation of A549 Lung Cancer Cells by Inducing Ferroptosis and Autophagy via p53-p21 and Akt-FoxO3a Pathways 黎喻暄 , 王建甯 , 林赫 , 陳美智
PY060	Macrophage-mediated CD63 Upregulation and Extracellular Vesicle Secretion Facilitate Pancreatic Cancer Progression 沈倢 , 王竹安
PY061	Role of IL-17A in Lysosomal Dysfunction and Pathogenesis of Huntington's Disease 陳凱柏 , 朱自淳
PY062	In-Ear EEG/PPG Device for Precise Sleep Monitoring in Ambulatory Settings 顏廷耘 , 翁義欽 , 陳新 , 楊正維

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PY063	Advancing Neuroscience with NeuLive: A Wireless Electrophysiological Recording and Electrical Stimulation System 顏廷耘 , 楊正維 , 陳新
PY064	MEMS-Enabled Drug Delivery Technology The New Generation Drug Pump for Animal Research 格林科技
PY065	Revolutionizing Static Cellular Culturing: Advanced Biomechanics and Biomimetic Systems for Minimizing Animal Use 游淳晴
PY066	AdDrop(TM) Single B Cell Antibody Discovery Platform 林禹岑
PY067	Dopamine and GABA systems mediate reward and aversion by alcohol in rats 吳承恩 , 林宇晨 , 吳迪茲 , 葉芷伶 , 趙堂曆 , 黃智偉
PY068	A role of dopamine receptors in the prelimbic cortex to posttraumatic stress disorder during short-term memory 周郁曦 , 吳承恩 , 黃智偉
PY069	Neuroinflammation cytokines interleukin-1 beta in morphine’s paradoxical effects reward and aversion 李彊 , 王英洲 , 邱偉哲 , 鄭凱恩 , 黃智偉
PY070	Modulation of stress on morphine-induced conditioned taste aversion and place preference in a rat model of posttraumatic stress disorder 尤奕竣 , 徐永丞 , 黃智偉
PY071	結合機器學習與影像建模探索不同年齡人類纖維母細胞的型態 陳靖雅 , 孫子龍 , 呂東武 , 林永松 , 楊瀅臻
PY072	Review: the paradoxical effect hypothesis of abused drugs on opioid use disorder 黃智偉 , Anna Kozłowska, 吳季文 , 鄭凱恩 , 高志岳 , 徐百川
PY073	TRPA1 and ROS contribute to hypersensitivity of apneic reflex responses induced by methylglyoxal in rats 蕭培俞 , 賴靜蓉
PY074	Gene Expressions in Obstructive Sleep Apnea in Patients 謝坤叡 , 王秀美 , 張恩庭 , 楊淑娟
PY075	The Impact of Intracerebral Hemorrhage on Alzheimer's Disease Progression 曾翌璇 , 楊佳樺 , 韓佩宸 , 施沐葶 , 胡瑋芬 , 黃欣儀 , 蔡昇宗 , 馮清榮 , 廖學健
PY076	A Study on Product Quality, Logistics Management, Pricing Strategy, After-sales Service and Customer Satisfaction - the Operating Strategies of a Pharmaceutical Distributor as an Example 胡育瑋 , 施承典

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PY077	A Study on Postpartum Women's Knowledge and Acceptance of Medicinal Food Therapy Meals 陳佳嫻 , 謝孟志 , 陳立材
PY078	Testis Intactness and Testosterone May Affect Acute Visceral Pain Sensitivity in a Mouse Model 黃煒倫 , 游一龍
PY079	Mitotic Cycle Modulation: A Novel Therapeutic Approach to Overcoming Transarterial chemoembolization (TACE) Refractoriness 劉蕙溥 , 張芷璇 , 李永國
PY080	Identification of Glycosylation-related gene signatures via a machine learning-based framework for assessing prognosis of TACE (transarterial chemoembolization) therapy and validation of these signatures to improve prognosis in HCC patients 劉蕙溥 , 張芷璇 , 李永國
PY081	Unveiling the Impact of GLUT1 and Galectin-3 in Drug Resistance: Metabolic Adaptations in Hypoxia and Their Implications for TACE Treatment in Hepatocellular Carcinoma 劉蕙溥 , 張芷璇 , 李永國
PY082	Fipronil Induces Neurotoxicity in Human Glioblastoma Cells via Ferroptosis Mechanism 陳信宏 , 李羽賀
PY083	T cell infiltration drives cytoskeleton remodeling and immune checkpoint regulation in tumor microenvironments 彭瑞銘 , 羅佳紋 , 王貝嘉
PY084	NEK5 Promotes Drug Resistance and Tumor Progression in Colorectal Cancer 蔡琴英 , 傅兆麟 , 蔡少正
PY085	Chronic Hypertension and Hypoperfusion Drive Cerebral Small Vessel Disease in RenTg Mice 孫羽佑 , 郭怡敏 , 郭金霖 , 李佩珊 , 劉可佾
PY086	Application of MK53 peptide in metabolic syndrome 孫宏羽 , 紀力齊 , 邱芎蓉 , 楊孔嘉
PY087	Biomolecular Basis Underlying Tefluthrin- Induced Resurgent Currents Generation in the Voltage-Gated Sodium Channel 黃炯瑋 , 林碧珍
PY088	Respiration Triggered Trans-Spinal Magnetic Stimulation on Diaphragmatic Motor Evoked Potentials in Rats with Cervical Spinal Cord Injury 李昆澤 , 陳叡怡

編號	論文題目
PY089	Morpho-physiological Differences in Dentate Granule Cells and Hilar Mossy Cells of Humans and Mice Shameemun Naseer, Ju-Yun Weng, Yu-Jui Li, Cheng-Chang Lien
PY090	A novel abiraterone derivative suppresses glioblastoma through increasing FLG expression Tran Hoang Yen, 劉景平 , 徐宗溢
PY091	Serotonin Receptor Subtype 7 is Involved in Neurotrophin Synthesis in Intestinal Submucosal Nerves and Visceral Hypersensitivity 林俐妤 , 冷佳宏 , 吳明賢 , 郭瑋庭 , 忻凌偉 , 余佳慧
PY092	Protein Kinase D and Scaffold Protein Na+/H+ Exchanger Regulatory Factor 1 Mediate Hypoxia-Induced Gene Expression in 3T3-L1 Adipocytes 吳溦宇 , 盧主欽
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台灣生物化學及分子生物學學會

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TX058	Understanding the Role of Matrix Metalloproteinase 7 in Chronic Kidney Disease Progression 黃泓縉 , 劉文治 , 李宥萱 , 邱惠雯
TX059	Melatonin Suppresses Gastric Cancer Growth and Metastasis via the CEBPα/TRIM25/ZEB1 Axis 詹佳陽 , 許美鈴
TX060	Polystyrene Microplastics Disrupt Hepatic Lipid Metabolism and Energy Homeostasis 陳怡潔 , 邱惠雯 , 李宥萱
TX061	Targeting the Aryl Hydrocarbon Receptor as a Novel Therapeutic Strategy for Diabetic Vascular Complications 葉宜綸 , 許美鈴
TX062	Targeting Retinoid X Receptor Alpha Inhibits Epithelial-Mesenchymal Plasticity and Metastatic Dissemination in Gastric Cancer 謝宗哲 , 許美鈴
TX063	Regulation of TANK-Binding Kinase 1 (TBK1) on the Nab-Paclitaxel-Mediated Phosphorylation of Sequestosome 1 (SQSTM1)/p62 and Nanoparticulophagy in Human Lung Cancer Cells 童湘婷 , 趙瑞益

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MI001	Advanced Optical and Biofunctional Design of Intraocular Lens Using Chemical Vapor Deposition 李沁芸 , 魏婉瑩 , 陳賢燁
MI002	Development of Functional and 3D-aligned Scaffold for Tubular Dentin Differentiation via Vapor Sublimation and Deposition Polymerization 陳重儒 , 魏婉瑩 , 莊芷芃 , 吳治宇 , 葉筱雯 , 王鵬元 , 吳亭瑩 , 郭瑋庭 , 姜昱至 , 陳賢燁
MI003	Synthesizing Y-90 PET Images from SPECT Images Using a Generative Diffusion AI Model 林珺媛 , 林可瀚 , 楊邦宏 , 施政廷 , 吳東信
MI004	Application and efficacy evaluation of synthetic biomarkers in the diagnosis of general and radioresistant prostate cancer 譚存孝 , 莊惠燕
MI005	Exploring the Effect of PARP Inhibitors as Radiosensitizers for Treating BRCA1/2 Proficient Triple-Negative Breast Cancer 江晨瑄 , 詹惠雯 , 莊惠燕
MI006	Deep Learning Auto-Segmentation of Cervical Vertebral Body in Videofluoroscopic Swallowing Study 蘇柏勳 , 莊惟凱 , 盧家鋒
MI007	Altered Brain Functional Connectivity Induced by Mild Early-life Necrotizing Enterocolitis 宋映葦 , 盧家鋒 , 黃朝慶 , 李學德 , 高瑀絜
MI008	Investigating the Effects of Extracellular Vesicles Secreted by Cofilin-1 Overexpressing Cells on the Migration Ability of Human Lung Cancer Cells 黃鉑涵 , 曾觀 , 游智凱 , 李致賢 , 李易展
MI009	Bovine Serum Albumin-Stabilized Gold Nanomaterials for Cellular and Extracellular Vesicle Visualization: Assessment of Labeling Approaches and Imaging Versatility 呂承烓 , 連韋雄 , 巫瑞文 , 林郁涵 , 蘇家豪 , 陳傳霖 , 戴明泓 , 陳于珊 , 王紹諭 , 陳昭政 , 王逢興 , 楊宛諭 , Yi-Jang Lee, Yun Lian Lin, Wan-Chun Li
MI010	Biocompatible PEG-GdOCl Nanomedicines with Oxygen Vacancies for Imaging-Guided Radiocatalytic Therapy in Liver Tumors 蘇家豪 , Suresh Thangudu, Chun-Chieh Yu, Min-Chiao Liao
MI011	Design of Functional Porous Encapsulation Materials via Vapor-Phase Polymerization for Biomolecule and Microbial Stabilization 徐亦辰
MI012	Vapor-Phase Fabrication of Porous Parylene Coatings for an Interstitial Fluid Filtration Device 張育銘 , 黃啟裕 , 林奕維 , 陳賢燁
MI013	Targeting the LIMK/CFL Pathway with Cofilin-1 Peptidomimetics for Lung Cancer Treatment 林旻穎 , 呂志得 , 吳駿一 , 陳亮丞 , 李易展
MI014	Vapor Phase Fabrication of MOF Coatings for Biological Applications 胡書嫚 , 陳賢燁
MI015	Evaluating the Synergistic Effect of Radiation and PSMA-Targeted Therapy in C4-2 3R Orthotopic Prostate Cancer Model 黃可欣
MI016	8-O-acetylharpagide Induces G2/M Arrest and Apoptosis to Enhance Radiation Sensitivity in Head and Neck Cancer Cells 楊宛諭
MI017	M1 Macrophage-dependent Cytotoxicity against Triple-negative Breast Cancer Progression under High-dose Irradiation 郭翰錫
MI018	Personalized Targeted Radionuclide Therapy for Precise Internal Dosimetry Using Consistency Model Networks 王佳柔 , 林可瀚 , 楊邦宏 , 施政廷 , 吳東信
MI019	The Upregulation of Cofilin-1 in Senescence Cell and Its Impact on Altered Telomere Function 高佳偉 , 李易展
MI020	Outcome Prediction in HER2-positive Breast Cancer: A Combined Radiomics and Clinical Feature Analysis of DCE-MRI 洪采妮 , 李佳芬 , 吳文沛 , 盧家鋒
MI021	Utilizing Diffusion Tensor Imaging to Investigate Long-term Impact Induced by Repetitive Mild Traumatic Brain Injury in Adolescent Rodents 郭品慧 , 黃瑓惠 , 宋映葦 , 高瑀絜
MI022	Exploring the Mechanisms of Ultrasound-Mediated Menthol Loaded Microbubbles Cavitation on Hypopharyngeal Cancer Cells and Normal Skin Keratinocytes Treatments 鄭伯昱 , 鄭庭鈞 , 王正康 , 廖愛禾
MI023	Increased Intracochlear Oxygen Tension and Protection Against Noise-Induced Hearing Loss in Mice Through Transcranial Ultrasound Combined with Intravenous Administration of Metformin-Loaded Oxygenated Microbubbles 鄧妤柔 , 周林逸 , 洪御展 , 施政坪 , 王智弘 , 廖愛禾
MI024	In Vivo SPECT/CT Imaging of Radiolabeled Novel Long-acting FPAI in HEK-293-FAP Solid Tumor Model 陳亮丞 , 羅瑋霖

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MI025	ALDOC-mediated neurotransmitter reprogramming and PPAR-γ signaling to treat glioblastoma progression 林又妤 , 何兆璟 , 郭翰錫 , 張御展
MI026	Intercomparison of DCA and EPR scoring for validation with individual physical dosimetry 張剛瑋 , 林真如 , 鄧豪恩
MI027	Exploitation of non-invasive imaging with over-expression TSPO in keloid tissue by F-18-FEPPA/PET scan 張剛瑋 , 劉惠菁
MI028	Establishing an in vitro insulin resistance model using a skeletal muscle system derived from human pluripotent stem cells 曾柏揚 , 林壯宇
MI029	Structural Insights into PSGL-1 Binding to Enterovirus 71 Revealed by Cryo-EM 謝侑珊 , 吳尚蓉 , 莊穎華 , 王俊雄 , 莊子圻 , 張敬昆 , 周彥宏
MI030	Multimodal Imaging of Cartilage Using Functionalized Gold Nanomaterials 呂承烝 , 巫瑞文 , 林郁涵 , 蘇家豪 , 陳于珊 , 王逢興 , 連韋雄
MI031	Chemical Exchange Saturation Transfer (CEST) MRI: A Versatile Tool for Probing Molecular and Metabolic Dynamics in Diverse Biological Systems 黃聖言
MI032	Hybrid Coatings with Multicomponent Structures via Vapor Phase Sublimation and Deposition 王惠萱
MI033	Assessing the Neuromodulatory Effects of rTMS Using PET in Non-Human Primates 陳芊汗 , 張廷宇 , 游文愷 , 楊幼屏 , 陳可欣 , 葉信顯 , 馬國興
MI034	Compromise IL-8 overcomes osimertinib resistance by inhibiting NSCLC cells, tumoroids formation and suppressing tumorigenesis. 林又妤 , 張御展
MI035	Upconversion Nanoparticle-Mediated Neutron Capture Therapy Lu-177 Treatment in Head and Neck Squamous Cell Carcinoma via the c-MET Signaling Pathway 林凱弘 , 吳駿一 , 張御展張 , 詹明賢
MI036	Assessing the Neuroprotective and Chronic Anti-Inflammatory Effects of Bezafibrate in an Alzheimer's Rat Model with [18F] FEPPA PET Imaging 陳芊汗 , 楊幼屏 , 張廷宇 , 陳可欣 , 游文愷 , 鄭澄意 , 馬國興
MI037	Macrophage-Based Gold Nanoparticles Delivery Strategy Enhances Radiotherapy Efficacy through Boosting Anti-Tumor Immunity 詹惠雯 , 莊惠燕

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MI038	Integrating Deep Learning and Large Language Models in Tongue Images Analysis of Traditional Chinese Medicine 曾茂源 , 呂紹弘 , 林汶正 , 林康平
MI039	Exploring the Synergistic Potential of Boron Neutron Capture Therapy and Immune Checkpoint Inhibitors in Melanoma Treatment 廖貫程 , 康永晴 , 陳柔君 , 李紫瑜 , 吳駿一 , 葉信顯 , 黃文盛 , 葉啟斌 , Guang-Uei Hung, Ing-Jou Chen, Chuang-Hsin Chiu
MI040	Automated Skeletal Image ROI Segmentation Using Specific Bone Landmarks and Thin-Plate Splines 陳立錡 , 林康平 , 林汶正 , 陳美芬 , 楊邦宏 , 劉仁賢
MI041	Establishment and International Collaboration of the NARI Human Biodosimetry Laboratory for Radiation Dose Assessment and Public Health Protection 陳冠因 , 盧安祺 , 蔡宜樺 , 廖澤蓉 , 林旻萱 , 郭裕民 , 李振弘 , 張志賢
MI042	Improvement of Central 99mTc-TRODAT-1 Imaging Quality Following Mannitol Administration: A Clinical Investigation Wen-Sheng Huang, Chin-Bin Yeh, Guang-Uei Hung, Ing-Jou Chen, Chuang-Hsin Chiu, Skye Hsin-Hsien Yeh
MI043	Evaluating rTMS for Alcohol Use Disorder: Insights from TRODAT SPECT and Clinical Assessments 葉信顯 , 邱創新 , 黃三原 , 陳穎柔 , 游宗勳 , 馬國興
MI044	Novel Alzheimer's Disease Radiopharmaceutical (F-18-FEONM): Bio-distribution and Toxicity Analysis 張剛瑋 , 陳振宗
MI045	Effect of high glucose stimulation on signaling pathways in colorectal cancer cells 李昀珊 , 柯建志 , 謝雅茹 , 王辰瑜 , 謝易霖 , 黃昅儀 , 劉志輝
MI046	Automated Synthesis and Preclinical Evaluation of [18F]Fluoroacetate for Pancreatic Cancer Imaging 葉信顯 , 張智偉 , 黃文盛 , 游宗勳 , 羅欽瑾
MI047	Exploring the Impact of Image Resolution in MRI Super-Resolution 徐振家 , 趙一平 , 郭立威 , 卓冠宏
MI048	Mapping the Tissue Microstructural Characteristics in a Rodent Model with Hindlimb Lymphedema by Multi-parametric MRI 陳敬棠 , 卓冠宏 , 李怡範 , 張佑謙 , 謝永雋 , 官振翔 , 徐子琛 , 楊啟裕 , 郭立威
MI049	Biocompatible PEG-GdOCl Nanomedicines with Oxygen Vacancies for Imaging-Guided Radiocatalytic Therapy in Liver Tumors Suresh Thangudu, Chun-Chieh Yu, Min-Chiao Liao, Chia-Hao Su

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MI050	ANTICANCER AND RADIOSENSITIZING POTENTIAL OF PHLORETIN DERIVATIVES IN ORAL SQUAMOUS CELL CARCINOMA 王盈期 , 呂晴妍 , 郭仕勳 , 劉志輝 , 謝雅茹
MI051	Effects of High Glucose on Treatment Resistance in Oral Squamous Cell Carcinoma 彭筠雅 , 柳秉軒 , 郭仕勳 , 柯建志 , 謝雅茹
MI052	Generation of the Charcot-Marie-Tooth Disease Model Using Motor Neurons Derived from hiPSCs 涂宇音 , 林壯宇
MI053	Radiation Enhanced Fucoidan-Based Nanoparticles Uptakes in Colorectal Cancer Cells By Upregulating P-selectin and Leads to Better Treatment Outcomes 江俊廷 , 莊惠燕
MI054	[18F]FEPPA PET Imaging Reveals the Dual Impact of Abdominal Low-intensity Pulsed Ultrasound Stimulate on Gut and Brain Inflammation in a DSS-Induced Colitis Model 蘇威慎 , 高從詠 , 張庭瑀 , 吳駿一 , 楊逢羿
MI055	Establishment of Quality System for Spectral X-ray CT Reconstructed Images 李洧緺 , 陳志成 , 陳昌國 , 孫士文 , 許崇誠
MI056	Preclinical evaluation of ^{18}F-PSMA-1007 for Prostate Cancer PET/MR Imaging 詹詠翔 , 李庚穎 , 陳傳霖
MI057	利用神經網路自動化分葉電腦斷層肝臟影像 袁偉傑 , 吳東信 , 施政廷
MI058	Automated Synthesis of [18F]FBPA: Method Development and Optimization 張庭瑀 , Tzu-Yu Lee, Wan-Chi Chan, Min-Tzu Ku, Chun-Yi Wu
MI059	A Novel Theranostic Platform Integrating Exosomes and Near-Infrared Persistent Luminescent Nanoparticles for Enhanced Selectivity and Specificity 廖彩嵐 , 許斐婷 , 詹明賢
MI060	SNR Enhancement Using a Single-Channel Phased Array Coil for 3T MRI 吳政哲 , 陳名傑 , 何伯勳 , 江宣翰 , 郭立威 , 卓冠宏
MI061	In vivo distribution and metabolism of asialoglycoprotein receptor imaging agent [68Ga]Ga-NOTA-HL in mice with non-alcoholic steatohepatitis 于鴻文 , 何宗澧 , 詹振勳 , 楊浚泓 , 鄭凱鴻 , 李婉綺 , 林昆諒 , 王美惠
MI062	Exploring the Therapeutic Efficacy of YC-1 in a Sporadic Alzheimer's Disease Rat Model Using Positron Emission Tomography 鍾凱鈞 , 李俊泰 , 馬國興
MI063	Controlling Internal Structures of Polymer Composites by Vapor Sublimation and Deposition 曹紀妍 , 蕭家麒 , 魏婉瑩 , 陳賢燁

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MI064	Application of Ga-68 NOTA-Tri-Mannose as a Novel Macrophage PET Imaging Tracer in Atherosclerosis and Tumor Diagnosis 于鴻文 , 李婉綺 , 林昆諒 , 詹振勳 , 何宗澧 , 鄭凱鴻 , 楊浚泓 , 王美惠
MI065	Hexa-Lactoside and Tri-GalNAc as Emerging Ligands for Efficient siRNA Delivery to Hepatocytes 王美惠 , 于鴻文 , 林昆諒 , 李婉綺 , 鄭凱鴻 , 楊浚泓 , 何宗澧 , 詹振勳 , 陳怡珊 , 郭璟亮 , 徐維荃
MI066	Evaluation of bone erosion in triple negative breast cancer syngeneic tumor model using high resolution microCT 黃鉑涵 , 李易展
MI067	Therapeutic Potential of Bimetallic Nanoclusters as Radiosensitizers in 張瑜軒 , Chun Jiat Lee, 蘇家豪

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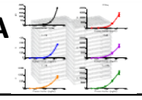
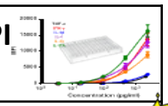
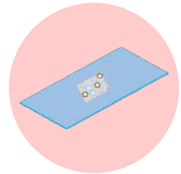
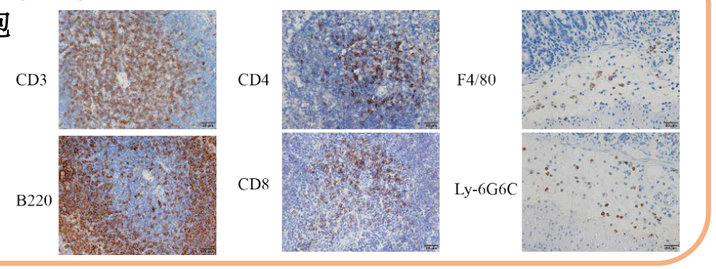
Service Item:

1.1 Multi-Plex Immunoassay (MPI)
分析檢體中細胞因子/趨化因子的表現量

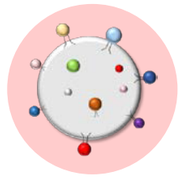
	ELISA 	MPI 
36 mediators/80 samples		
Number of plates required	36	1
Total volume per panel	> 1.5 ml	50 µl
Dynamic range	25-3,000 pg/ml	2-32,000 pg/ml

1.2 Immunohistochemistry (IHC)
分析組織中的免疫細胞





1.3 Cytometry by Time-Of-Flight (CyTOF)
於單細胞層面分析細胞表型與抗原多重檢測，免除螢光光譜重疊和細胞自體螢光的干擾，提供更加清晰準確的高維度單細胞層次的分析



2.1 Mouse models of skin diseases:
psoriasis, atopic dermatitis
動物模型: 乾癬、異位性皮膚炎

2.2 Galectin related reagents
醣結合蛋白相關試劑

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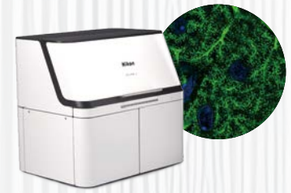

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組織微陣列儀
- 組織晶片/dPCR自動化樣本擷取

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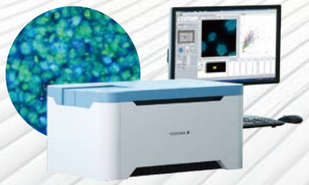

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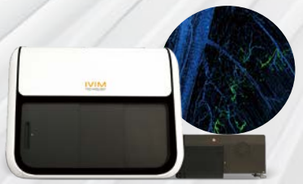
共軛焦高通量影像系統
- 細胞團塊及厚組織樣本高速3D成像

IVIM TECHNOLOGY



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高階技術服務　免費專業諮詢

影像結構

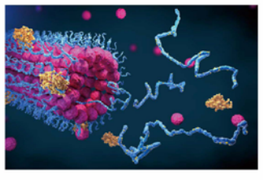
同步輻射蛋白質結晶學核心設施
▶國幅 黃駿翔助理研究員

生醫光學影像核心平台
▶成大 邱文泰教授

生醫轉譯影像解構暨空間導引之單細胞分析平台
▶中研院 沈家寧研究員

臺灣冷凍電子顯微鏡聯盟
▶成大 吳尚蓉副教授





BSL-3實驗室

P3實驗室: 新興傳染病研究核心設施平台
▶國防 高治華研究員

BSL-3實驗室核心設施
▶成大 柯文謙教授

BSL-3研究及檢驗實驗室
▶台大 張淑媛教授

微菌相

建置國家人體微菌研究合作與技術服務核心設施計畫
▶陽交大 吳俊穎教授

NCFB 生技醫藥核心設施平台
National Core Facility for Biopharmaceuticals

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動物模式

基因轉殖鼠核心設施
▶台大 林淑華教授

台灣斑馬魚技術與資源中心
▶國衛院 江運金副研究員

動物設施聯盟—國家綜合小鼠表現型暨藥效分析中心
▶中研院 陳志成研究員



生物資源

台灣水稻突變種原庫及基因資料庫之管理與加值利用
▶興大 賀端華院士

模式生物資源中心
▶台大 丁照棣教授

次世代藥物

一站式藥物早期研究 / 臨床前服務平台
▶國衛院 洪明秀研究員

次世代核酸藥物平台
▶清大 孫玉珠教授

核酸藥物材料核心設施服務平台
▶國衛院 劉士任研究員

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基因平台

RNA技術平台與基因操控核心設施
▶中研院 林淑端特聘研究員

國家基因體學臨床及產業應用發展中心
▶陽明交通大學 楊慕華教授

國家基因體醫學研究中心
▶中研院 鄔哲源研究員

藥物基因體實驗室
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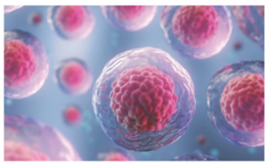

生物資訊

國家生醫數位資料與分析運算雲端服務平台
▶國網 王聿泰組長

生技醫藥生物資訊核心設施
▶國衛院 熊昭名譽研究員

人體資源

人類疾病誘導型多潛能幹細胞服務聯盟
▶中研院 謝清河特聘研究員

台灣地區肝細胞癌研究網及資料庫之建立和台灣肺癌組織樣品資源資源中心
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