國立臺灣大學
生醫電子與資訊學研究所

Graduate Institute of
Biomedical Electronics and Bioinformatics,
National Taiwan University

2018年第 12 期年報

BEBI Annual Report, No. 12 / 2018

國立臺灣大學生醫電子與資訊學研究所

Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University

BEBI Annual Report, No. 12/ Sep. 2018

序言 Preface

生醫電資所從2007年8月成立後，在李百祺、賴飛羆及莊曜宇三位所長的帶領下，短短12年之間已經在生醫領域奠定優異堅實之基礎，將可對於國家經濟發展之未來主流作出具體貢獻。而近年來，人工智慧(AI)技術突飛猛進，各領域及產業均積極導入AI技術，以求突破技術瓶頸及發展更多的前所未有嶄新應用。

為了迎接AI的新世代的到來，本所將朝三個方向來加強，一是課程方面，因電資學院已有十分完整的AI課程，將鼓勵學生主動修習以具備AI技術能力與知識，同時我們將利用專題演講邀請專家學者，來加強學生更深入了解醫療AI的最新發展及應用，以早日規劃未來學習及研究方向。二是大型產學計畫，今年本所已有賴飛羆教授的"臺大醫神–精準醫療人工智慧輔助決策系統"、曾宇鳳教授的"價創計畫：新型治療思覺失調症藥物RS-D7之臨床前安全試驗"、魏安祺教授的"粒線體毒性篩檢整合平台之研發"及本人的"應用深度學習於自動乳房超音波電腦輔助偵測與診斷"，透過執行大型產學計畫以使得參與學生獲得學習及實作最新的醫療AI技術。三是認識專利申請及醫療法規，醫療AI技術最終是要應用至醫療產業，而商品化必須通過醫療法規核准及申請專利以保護智慧財產權，因此在開發技術及產品必須先了解醫療法規和專利申請以及早做好準備，例如本人曾技轉二件產品給廠商，而廠商也陸續取得三項美國FDA核准及二項台灣TFDA核准，當時研發開始進行時即有事先了解各項醫療法規及準備相關文件。

相信在學院及本所完整的課程規劃、教授們在各個領域為國內外頂尖專家及完善的所辦行政支援下，必能在本所師生及行政人員共同的努力耕耘下繼續茁壯成長，成為國內外生醫電子與資訊領域具領導性的創新研發重鎮。

張瑞峰

2018年8月

Since the establishment of Graduate Institute of Biomedical Electronics and Bioinformatics in August 2007, under the leadership of the chairs Prof. Pai-Chi Li, Prof. Fei-Pei Lai and Prof. Eric Y. Chuang, the institute has laid a solid and outstanding foundation in the field of biomedical science in just 12 years, and will make a concrete contribution to the future mainstream of national economic development.

In recent years, AI technology has advanced by leaps and bounds, and various fields and industries are actively introducing AI technology in order to break through technological bottlenecks and develop more unprecedented new applications.

In order to welcome the arrival of the new AI generation, the institute will strengthen in three directions.

First, the curriculum. Because College of Electric Engineering and Computer Science has the complete AI curriculum, the institute will encourage students to take the initiative in learning AI technical skills and knowledge. At the same time, the institute will invite experts and scholars with the keynote speeches to strengthen students' understanding of the latest developments and applications of medical AI, so as to plan future learning and research directions.

The second is the large-scale industry-university cooperative research projects. This year, the Institute has Prof. Fei-Pei Lai's "NTU Medical Genie: AI Decision Support System for Precision Medicine" and Prof. Y. Jane Tseng's "A Novel Drug, RS-D7, for the Treatment of Schizophrenia - Preclinical Safety Studies", Prof. An-Chi Wei's "Integrative platform of mitochondrial toxicity screening" and my "Automated Breast Ultrasound Computer-aided Detection and Diagnosis Using Deep Learning". Through the execution of large-scale industry-university cooperative research projects, students have the chance to learn and implement the latest medical AI technology.

The third is to understand patent applications and medical regulations. Medical AI technology is ultimately applied to the medical industry, and commercialization must be approved by medical regulations and patents to protect intellectual property rights. Therefore, it is necessary to understand medical regulations and patent applications before developing technologies and products as soon as possible. For example, I have technology transferred two products to the manufacturer, and the manufacturer has successively obtained three FDA approvals and two Taiwan TFDA approvals. Before the research and design, there was a prior understanding of various medical regulations and preparations of related documents.

I believe that under the complete curriculum planning of the college and the Institute, the top expert professors in each field at home and abroad, and the perfect administrative support from the office, we will continue to thrive under the joint efforts of our teachers, students and administrators, and lead innovation, research and development center in the field of Biomedical Electronics and Bioinformatics at home and abroad.

August 2018

壹 生醫電子與資訊學研究所簡介
Introduction of BEBI

國立臺灣大學生醫電子與資訊學研究所（簡稱生醫電資所）於 2006 年 8 月 1 日正式成立，本所的獨特性在於生物醫學、電機與資訊三大領域的結合，進行生物醫學之前瞻研究及跨領域教學。換言之，生醫電資所的主要使命在於提升跨領域的研究及教學，以因應生物醫學科技的快速發展，這些領域有：生醫電子、分子 / 細胞 / 組織影像、生醫訊號處理、生醫光電、感測器、生醫晶片、電腦輔助診斷、生物資訊學、系統生物學以及醫學資訊學等，為了在此專業領域中追求卓越，並謀求進一步的研究合作，整合來自不同領域的專業是相當必要的。

2006 年 8 月，生醫電資所開始招收博士班，目前每年招收 13 名博士生加入生醫電資所的行列，碩士班也於 2007 年 8 月開始招生，每年有 42 名碩士新生加入。本所有 36 位教師，來自不同領域的背景，包含了電機工程、資訊科學、生物、藥學、生醫工程、醫學以及生命科學。本所的課程設計也提供學生有足夠的跨領域訓練，以迎合生物醫學科技此一領域的挑戰，目前，我們針對重要的生醫問題進行整合性的研究，同時也和生醫電子及生物資訊相關產業合作，及進行跨領域的訓練和教育，我們期待本所持續的成長茁壯，並對生物科技與健康照護領域做出貢獻。

The Graduate Institute of Biomedical Electronics and Bioinformatics (BEBI) at National Taiwan University was formally founded on August 1, 2006. In a way, it is a very unique institute among those in College of Electrical Engineering and Computer Science, National Taiwan University, in that the fields of expertise are diversified but our efforts remain extremely focused. The main mission of the institute is to promote interdisciplinary research and education in respond to the rapid advancement of biotechnology. In this regard, the following areas have been identified as our focus areas which we have been putting our major efforts in: Biomedical Electronics, Molecular/Cellular/Tissue Imaging, Biomedical Signal Processing, Biophotonics, Sensors, Microarray and Next generation sequencing analyses, Computer-Aided Diagnosis, Bioinformatics, Systems Biology and medical Informatics. To excel in these areas and to bring up research synergy, integrative efforts from different disciplines are necessary.

The BEBI institute started the doctoral program in August, 2006 and now we admit 13 new Ph.D. students every year. Our master program started in August, twith 42 new students entering the institute annually. There are 36 faculty members, among those 8 are with primary appointments. As our main mission mandates, our faculty members come from different trainings, including electrical engineering, computer science, biology, pharmacy, biomedical engineering, medicine and life sciences. Our curriculum is also designed to provide students with sufficient cross-disciplinary training to meet the challenges in biotechnology. Currently resources are used to promote integrated research projects aiming at important biomedical problems, collaboration with local industry in biomedical electronics and bioinformatics, as well as multidisciplinary training and education. As a result, research teams have been formed and several integrated program projects are underway. New courses have also been developed and a core lab is also being established to provide students with hands-on training. We look forward to continuing growth and contributions to this exciting field of biotechnology.

貳 研究領域 Research Fields

一、生醫電子組 Biomedical Electronics Group

本組研究主題涵蓋醫學影像、醫療儀器與生醫信號處理、生物晶片與生醫微感測器、生醫光電、生醫系統工程等數個領域。在醫學影像方面，研究重點係針對核磁共振與超音波造影技術，提升影像的品質、速度與功能性，並發展分子影像技術，應用於臨床醫學診斷、治療以及神經認知科學等方面。在醫療儀器與生醫信號處理方面，重點為開發或利用現有的醫療儀器，擷取各種生理訊號，並透過數位信號處理技術，提供醫療人員有效之疾病診斷及生理監測資訊。生物晶片的研究重點包 DNA 微陣列晶片之製程、感測技術與資料分析方法，以及以光電蝕刻技術控制生物分子、細胞及微組織之排列，並將其應用於生物醫學之研究。在生醫微感測器方面，主要為發展表面電漿共振光學檢測技術與利用標準半導體製程方式，進行生物分子的感測，並進一步將檢測元件微小化。在生醫光電領域，發展高解析度光學顯微影像以及各種光譜技術，提供生物分子、細胞與組織的分析、成像與操控工具，進而輔助疾病的診斷與生醫相關的研究。在生醫系統工程領域，結合生物醫學資訊，量化生理現象，透過系統模擬與工程設計，促進生物醫學發展及疾病治療。

Faculty members in this group have diverse research interests including “medical imaging”, “medical instrumentation and biomedical signal processing”, “biochips and biomedical sensors”, “biomedical optics”, and “biomedical systems engineering”. In the area of “medical imaging”, research efforts are focused on magnetic resonance imaging (MRI) and ultrasound imaging techniques. The goals are to improve the quality, acquisition speed and functionality of imaging, as well as to apply these techniques for diagnosis and treatment of disease. In the area of “medical instrumentation and biomedical signal processing”, digital signal processing techniques are used to extract information that is useful for diagnosis or monitoring of physiological status. Research efforts in the area of “biochips and biomedical sensors” are focused on improving the manufacture and detection of DNA and protein microarrays, arranging biomolecules and culture tissue using micro-patterning techniques, development of new data analysis methods for DNA microarrays, and development of miniature biosensors based on surface plasmon resonance (SPR) and nanowire biomolecular sensing devices based on standard CMOS fabrication. The emphasis of research in “biomedical optics” is to use optical microscopy and spectroscopy techniques to detect, image, analyze, and manipulate biological molecules, cells, and tissues. The ultimate goal is to provide information relevant to diagnosis and useful tools for the general biomedical research community. The biomedical systems engineering group integrates biomedical informatics, computer modeling and simulation and systems engineering to quantify and understand the biological and physiological phenomenon. The goal is to advance the biomedical sciences and to improve the understand and treatment of diseases.

二、生醫資訊組 Bioinformatics Group

本組研究主題為「生醫資料分析與探勘」、「計算系統生物學」、「計算藥物學及化學」以及「醫學資訊系統」。在生醫資料分析與探勘方面，研究重點包括生物晶片 (微陣列) 和次世代定序資料分析、DNA 與蛋白質序列分析、基因及蛋白質結構與功能分析、生醫資料探勘等。在計算系統生物學方面，研究重點則是針對複雜的生物系統，建構數學分析及模擬計算的模型，以作為分析及模擬尖端生物醫學及生命科學現象的基礎。在計算藥物學及計算化學部分，則針對藥物及疫苗開發所涉及的量子化學計算及化學動力學計算建構新的計算模型以及設計更有效率的演算法。在醫學資訊系統方面，研究主題涵蓋層面極廣，包括醫學資訊應用所涉及的網路、多媒體與資料庫系統，以及平行運算、分散式和即時計算等。

We dedicate our resources to cutting-edge topics such as "biomedical data analysis and mining", "computational systems biology", "computational pharmacology and chemistry", and “medical information systems”. Our major research interests in biomedical data analysis and mining include biochip (microarray) and next generation sequencing data analysis, DNA and protein sequence analysis, gene and protein structure and function analysis, as well as biomedical data mining. In the area of computational systems biology, we focus on developing advanced mathematical models and simulation methods to describe the operations and behaviors of complex biological systems. Our research on computational pharmacology and chemistry aims to design novel computational models and efficient simulation algorithms for quantum chemistry and molecular dynamics to facilitate drugs and vaccine development. In medical information systems, we cover a wide range of topics on developing information technologies for medical applications, including networking, multimedia, database, parallel processing, distributed and real-time computing.

參 新進教師介紹
New Faculty

李光斌兼任助理教授級專業技術人員
LI, KUANG-BIN, Adjunct Assistant Professor

學歷

國立交通大學科技管理研究所博士

國立政治大學企業管理研究所企業家班

國立臺灣大學國際企業研究所 EMBA

經歷

夏恩英語董事長、科嶠工業 (4542) 董事、鮮綠農業 (6626) 董事、新光國際創投執行副總經理等

Education

Ph.D., Institute of Management of Technology, National Chiao Tung University.

Executive Program of Business Administration, Institute of Business Administration, National Cheng Chi University.

EMBA, Institute of International Business, National Taiwan University.

Experience

President and CEO of Shane English School, Board of Directors of AsiaNeoTech(4542.tw) and GreatAgri(6626.tw), and Executive Vice President of Shin Kong Global Venture Capital Corporation, etc.

National Taiwan University

Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University

肆 學術交流 Academic Exchanges

電資學院院長、電信工程學研究所、生醫電子與資訊學研究所所新卸任主管交接典禮 The Handover Ceremony of the Dean of EECS, the Director of CICE and BEBI

2018年8月1日(三) 由電資學院於校總區博理館201會議室共同舉行新卸任主管交接典禮。會中由前院長貝蘇章監交、院長陳銘憲致詞。

在各系所師長見證下，由張耀文教授接任電資院第六任電資學院院長、蘇炫榮教授接任第八任所長以及張瑞峰教授接任生醫電資所第五任所長。

張瑞峰所長表示為因應AI人工智慧高度發展的趨勢，除了持續推動本所生醫跨領域的工作，亦廣邀國內外AI人工智慧的專家學者互動，交流人工智慧技術發展概況，為本所「不斷創新」的理念再創新氣象。

On August 1st,2018, the handover ceremony of the dean of EECS, the director of CICE and BEBI was held by EECS at Room 201, Barry Lam Hall in the campus area. The former dean Soo-Chang Pei oversaw the ceremony and the dean Ming-Syan Chen gave a speech.

與會同仁留影 Ceremony participants

Under the testimony of the teachers of various departments, Professor Yao-Wen Chang took over as the sixth dean of EECS, Professor Hsuan-Jung Su took over as the eighth director of EECS and Professor Ruey-Feng Chang took over as the fifth director of BEBI.

Director Ruey-Feng Chang said that in response to the trend of high development of Artificial Intelligence, the Institute not only continues to promote the cross-disciplinary biomedical work, but also invites experts and scholars of AI field at home and abroad to interact and exchange the development of AI technology, which brings a breath of fresh air to the concept of continuous innovation of the Institute.

由李百祺教授(中)負責監交、莊曜宇教授(左)、張瑞峰教授(右)
Professor Pai-Chi Li(center) oversaw the transition of Professor Eric Y. Chuang (left) and Professor Ruey-Feng Chang(right)

新任張瑞峰所長致詞並代表感謝莊所長六年的貢獻與付出
The new director Ruey-Feng Chang gave a speech and represented to express gratitude to the former director Eric Y. Chuang for his contribution and dedication for six years.

伍 生醫核心實驗室
Biomedical Core Laboratories

永齡生醫工程館-生醫核心實驗室 YongLin Biomedical Engineering Hall

永齡生醫工程館自民國 97 年受鴻海集團郭台銘先生及其所屬之永齡健康基金會之捐贈而開始籌建，目的在於建構一處生醫研究基地，而橫跨生醫、電子、資訊等三領域為一體的本所在積極爭取之下，受有七樓一層。民國 102 年，本所雖已有規劃之雛形，所內也有著建置實驗室的共識，但為妥善運用空間，並務求資源能公平、透明的分配予本所全體師生，我們先於 103 年 6 月成立任務型空間規劃委員會，爭取時間討論規劃，同年 8 月便交由新學年之正式空間規劃委員接力運作，擘畫空間、設立規範，全所共用之「生醫核心實驗室」與「高速運算中心」便在此時集結眾人之心力逐步成形。

歷經數百個日子的醞釀，生醫核心實驗室率先於 104 年暑假動工，終於趕在 104 年 11 月正式落成，得以在新的學年為師生們提供服務。生醫核心實驗室的規劃是以長期提升本所研究能量為指標而建置，所以在儀器規格、實驗室內裝配置以及操作規範上，都是以極為嚴謹的態度進行全盤考量。為顧及所內眾多師生不同的實驗需求，一般生物實驗室所需的儀器設備在此皆甚為齊備，例如：整齊安全的工作檯、排氣櫃、細胞離心機等儀器，我們更在實驗室內部規劃了生物安全等級第二級（BSL2）的區塊，設有細胞培養室、生物安全操作櫃等設備，同時更透過實驗室使用規範控管使用者的安全，藉由嚴格遵守相關規範來保障本所最寶貴的人才資產。

本所自 2006 年成立，一路走來受到諸多資源挹注，因此，生醫核心實驗室不僅提供本所師生申請使用，同時也將秉持最開放的態度接受全校師生的借用，讓有限的資源在共享之下得以發揮最大的價值。我們相信生醫核心實驗室在全所的努力與運作下，將能持續茁壯成為國內生醫研發人才與技術的搖籃之一。

YongLin Biomedical Engineering Hall was constructed in 2008 through the generosity of Mr. Tai-ming Guo from Honghai Corporation and its YongLin Health Foundation, with the goal of building a base for biomedical research. After continuous effort, our department, encompassing backgrounds ranging from biomedical to electronics and IT, has secured the entire seventh floor.

In 2013, although we already had done initial planning and had mutual agreement on setting up laboratories, we formed the "space allocation temporary committee" for detailed discussion of proper utilization of space and equal sharing of the resources among all members in the department. In August of 2014, the "committee of space allocation" took over the work of outlining the partition of space and set up usage clauses. During this period, the Biomedical Core Laboratory and High Performance Computing Center started to take shape.

Hundreds of days in the making, the Biomedical Core Lab was the first to be constructed in the summer of 2015. It was completed in November of the same year, just in time to provide service in the new academic year. The Biomedical Core Lab was designed for long-term use. Thus, the specifications of the equipment and configuration of the lab interior have been handled with the greatest care. To fulfill the different requirements of all types of experiments, all the equipment commonly found in an average biology lab, such as workbenches, exhaust cabinets, and centrifuges, are provided. We also set apart a specific region in the lab for with BSL2-grade safety which contains the cell culture room and biological safe operation cabinet. Strict usage clauses are enforced to ensure the safety of all users.

Ever since the birth of our department in 2006, we have had the luxury of receiving resources from all directions. Therefore, the Biomedical Core Lab will not only serve teachers and students of this department, but also do its best to share such resources with members of the whole school, exercising them to their greatest value. We are confident that this lab will never cease to grow and become one of the greatest sources of biomedical talent.

生醫核心實驗室

陸 實驗室及教師
Laboratories and Faculty

生醫電子組實驗室 Laboratory of Biomedical Electronic Group

實驗室名稱 Name	主持教授 Advising professor	地點 Room
超大型積體電路系統晶片電腦輔助設計實驗室 SOC VLSI-EDA Lab.	陳中平 Chung-Ping Chen	博理館 405 室 Room 405, Barry Lam Hall
醫學影像實驗室 / 磁共振影像頻譜實驗室 / 生醫分子影像核心實驗室 Medical Imaging Lab./Magnetic Resonance Imaging Lab./Biomedical Molecular Imaging Core Lab.	陳志宏 Jyh-Horng Chen	明達館 706 室 Room 706, MingDa Building
放射物理生物實驗室 Radiation Physics and Biology Lab.	成佳憲 Chia-Hsien Cheng	臺大醫院 NTUH
生物晶片研究室 Bioinformatics and Biostatistics Core Lab.	莊曜宇 Eric Y. Chuang	明達館 701 室 Room 701, MingDa Building
光流體生醫系統實驗室 Bio-Optofluidic Systems Lab.	黃念祖 Nien-Tsu Huang	明達館 702 室 Room 702, MingDa Building
醫用磁振造影研究室 Magnetic Resonance in Medicine Lab.	鍾孝文 Hsiao-Wen Chung	明達館 704 室 Room 704, MingDa Building
電子束暨奈米元件實驗室 E-beam and NanoDevice Lab.	管傑雄 Chieh-Hsiung Kuan	電機二館 426/129 室 Room 426/129, EE 2
細胞行為實驗室 Cell Behavior Lab.	郭柏齡 Po-Ling Kuo	明達館 707 室 Room 707, MingDa Building
統計信號處理實驗室 Statistical Signal Processing Lab.	李枝宏 Ju-Hong Lee	電機二館 553 室 Room 553, EE 2
紅外線元件實驗室 IR Device Lab.	李嗣涔 Si-Chen Lee	電機二館 451 Room 451, EE 2

實驗室名稱 Name	主持教授 Advising professor	地點 Room
超音波影像實驗室 Ultrasonic Imaging Lab.	李百祺 Pai-Chi Li	明達館 731Room 731, MingDa Building
內皮細胞分子生物學實驗室 Laboratory of Endothelial Cell Molecular Biology	李心予 Hsinyu Lee	生命科學館 504 室 504 Room, Life Science Building
生醫晶片系統實驗室 Bio-Electronics-System Technology Lab.	林致廷 Chih-Ting Lin	電機二館 450 室 Room 450, EE 2
醫用微感測器暨系統實驗室 Medical Micro Sensor and System Lab.	林啟萬 Chii-Wann Lin	永齡生醫工程館 526 室 Room 526, YongLin Biomedical Engineering Hall
人腦實驗室 Brain Imaging and Modeling Lab.	林發暄 Fa-Hsuan Lin	展書樓 703 室 Room 703, Jan Su Hall
奈米生醫光電實驗室 Nano-Biophotonics Lab.	孫啟光 Chi-Kuang Sun	電機二館 R406A 室 Room R406A, EE 2
生醫光譜與影像實驗室 Biomedical Optical Spectroscopy and Imaging Lab.	宋孔彬 Kung- Bin Sung	明達館 703 室 Room 703, MingDa Building
中研院生醫所 IBMS RM511	楊泮池 Pan-Chyr Yang	臺大醫院 NTUH
台大醫院第七共同研究室 Laboratory	周迺寬 Nai-Kuan Chou	臺大醫院 NTUH
生醫系統工程實驗室 Biomedical System Engineering Lab.	魏安祺 An-Chi Wei	明達館 705 室 Room 705, MingDa Building

生醫資訊組實驗室 Laboratory of Bioinformatics Group

實驗室名稱 Name	主持教授 Advising professor	地點 Room
醫學影像處理實驗室 Medical Image Processing Lab.	張瑞峰 Ruey-Feng Chang	德田館 402 室 Room 402,CSIE Building
演算法與計算生物學實驗室 Algorithms and Computational Biology Lab.	趙坤茂 Kun-Mao Chao	德田館 432 室 Room 432,CSIE Building
數位相機與電腦視覺實驗室 Digital camera and Computer Vision Lab.	傅楸善 Chiou-Shann Fuh	德田館 328 室 Room 328,CSIE Building
	黃俊升 Chiun-Sheng Huang	臺大醫院 NTUH
系統生物學研究室 Systems Biology Lab.	阮雪芬 Hsueh-Fen Juan	生命科學館 1105 室 Room 1105,Life Science Building
醫學資訊實驗室 Medical Informatics Lab.	賴飛羆 Fei-pei Lai	德田館 346 室 Room 346,CSIE Building
分子生醫資訊實驗室 Molecular Biomedical Informatics Lab.	歐陽彥正 Yen-Jen Oyang	德田館 410 室 CSIE Building, Room 410
臨床－生物醫學工程－產業融合實驗室 Merger Laboratory for Clinical Sciences, Biomedical Engineering and Industry	孫維仁 Wei-Zen Sun	臺大醫院 NTUH
計算分子設計與代謝體學實驗室 Computataional Molecular Design and Metabolomics Lab.	曾宇鳳 Y. Jane Tseng	德田館 404 室 Room 404,CSIE Building

陳中平 教授

Chung-Ping Chen, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學電子工程學研究所教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics,
Professor, Department of Electrical Engineering, National Taiwan University

超大型積體電路系統晶片電腦輔助設計實驗室

SOC VLSI-EDA Lab.

自 2003 年成立至今，本實驗室一向是一個不斷追求創新及擴展知識的一個的國際化研究團隊，其研究領域包括了生醫電子，電腦輔助設計及數位 IC 設計實驗室，其研究重點在於針對電路實體設計及時序之最佳化以及線路模擬，及在針對製造時所產生之製程移之影響及解決方案。最近，我們又極力發展生醫 MRI 及 PEI 影像及血管模擬以及半導體光學製程之模擬之最佳化。在 IC 設計方面，我們主力在發展在高速低功率之微處理機所須之電路。本實驗室目前的研究方向主要可分為九大領域。

- 生醫 MRI, PET 影像處理
- 生醫行動生理檢測系統
- 蛋白質摺疊分析
- 可製造性設計
- 數位電路之最佳化
- 統計型時序分析
- 高效能電路設計
- 半導體光學製程影像之模擬與處理
- 電力線通訊系統

Established in 2003, BIO-EDA-VLSI Lab has been relentlessly pursuing new challenges and enrich knowledge in the field of EDA, VLSI circuit design, and BIO/Optical Microlithography Image Simulation and Processing. The focus of our research field include the following 9 major projects:

- Biomedical MRI,PET Imaging processing
- The transmission and analysis of Bio-signal
- Protein folding
- Digital Circuit Optimization
- Design for Manufacturabiliy
- Statistical Static Timing Analysis
- High Performance Circuit Design
- BIO and Optical Microlithography Imaging Simulation and Processing
- Power Line Communication system

主要研究領域 Major Research Areas

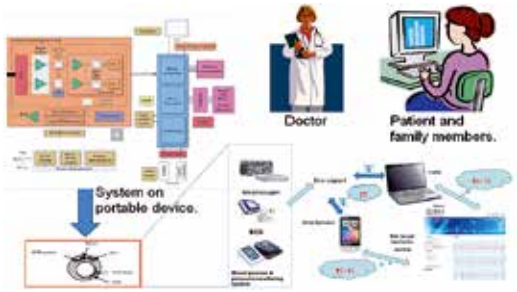
生醫及半導體光學製程影像處理、微處理機設計、VLSI 電腦輔助設計、微波通訊線路設計、電力線通訊系統、生醫行動生理檢測系統

BIO/Optical Microlithography Image Processing, VLSI CAD, Microprocessor Design, RF Mix/Signal Circuit Design, Power Line Communication system, The transmission and analysis of Bio-signal

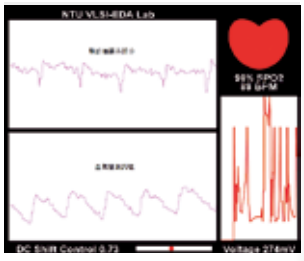
研究計畫 Research Projects

1. 次微米下之高速電路及低耗電最佳化
   Deep-Sub-Micron High-speed Low Power Optimization
2. 動態邏輯加法器設計及自動化
   Domino Adder Design and Automa
3. 次微米級干涉週期量測之診斷演算法
   Efficient and Accurate Optical Scatterometry Diagnosis of Grating Variation Based on Segmented Moment
   Matching and Singular Value Decomposition Method
4. 行動式無線癲癇症預測雲端系統
   Mobile Wireless Epilepsy Seizure Prediction System with Cloud Computation Method
5. 連續性個人化健康照護整合平台子計畫三
6. Telecare platform with portable biomedical system applied in Smartphone

■ **研究計畫** -
連續性個人化健康照護整合平台子計畫三之代表圖：



■ **研究計畫** -
Telecare platform with portable biomedical system applied in Smartphone：
結合藍芽晶片傳送至智慧型手機，做圖形化的顯示。



E-mail: cpchen@ntu.edu.tw
Phone: +886-2-33663611
Office: 博理館 625(BL-625)
Website:http://vlsi.ede.wisc.edu/
Lab. Phone: +886-2-33663700*6405
lab.: 博理館 405(BL-405)

陳志宏 教授

Jyh-Horng Chen, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學電機工程學系教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics
Department of Electrical Engineering, National Taiwan University

醫學影像實驗室

Medical Imaging Lab.

醫學影像實驗室目前位於臺灣大學明達館七樓。負責人為陳志宏 (Jyh-Horng Chen) 教授。主要研究方向為核磁共振造影 (MRI)，包含功能性大腦影像之突破、新一代 MRI 成像之研究及生醫分子影像，並藉由生物、醫學、工程的結合於醫學影像學所造就的優勢，進行「個人化醫學」之努力。

在電機一館及電機二館分別設有 MRI/MRS 實驗室，設置 Bruker 3.0 Tesla MRI，以及動物用 Bruker 7.0 Tesla MRI；於永齡生醫工程館設有 MRI 及 MEG；並在生醫分子影像研究中心底下成立生醫分子影像核心實驗室。平時提供校園內學術單位做研究，以及本實驗室研究造影技術之用。

電機一館 Bruker 3.0 Tesla MR

核磁共振影像頻譜實驗室
Magnetic Resonance Imaging Lab.

本實驗室於 1999 年成立，以提供有效、可靠的成像技術及訓練課程予各研究領域之研究學者，心理學家、生理學家、動物學家，可藉由磁振光譜影像之重建方式，為未來之基因蛋白體研究、動物病變模型之評估，提供微細且精確的訊息，以成為臺灣的 MRI 研究及人才培訓資源中心。另一方面，本實驗室亦從事新技術之研發，期能突破現有磁振造影 (MRI) 之成像速度限制，提升磁共振影幅系統成像能力及臺灣在磁共振領域之國際知名度，並藉由國內現有 MR 研究資源合作，以跨學科之研究，使人文、科學、醫學、工程等不同學科得以匯整激盪，並創造 21 世紀之新學門科學，建立一個世界級之核磁共振卓越中心。主要研究方向包括：大腦功能性磁振造影、擴散磁振造影、MR 線圈設計、MRI 成像最佳化技術、超快速平行擷取 MRI 系統、小動物生理病理研究、分子影像。

電機一館 Bruker 3.0 Tesla MR

The laboratory will apply the existing MRI / MRS techniques to interdisplinary research, including school ofhumanity, psychology, medicine, engineering, agriculture and food science. Its object is to combine experts indifferent areas to generate, hopefully, some new academic areas in 21 century. This laboratory is supported byNational Taiwan University (NTU) as well as Instrumentation Center of National Science Council (NSC) in Taiwan.

電機二館動物用 Bruker 7.0 Tesla

MRI/MEG

團隊於 2015 年爭取科技部 2 億 1 千萬「心智科學大型研究設備建置及共同使用服務計畫」，建置 MRI/MEG 儀器於台大生醫工程館，服務全國學者，研究人文社會科學領域之腦功能相關議題。並成立「身體、心靈與文化整合影像研究中心」(Imaging Center for Integrated Body, Mind and Culture Research)，以期結合人文與社會科學；自然與生命科學、工程與醫衛科學等方面之人才及知識，探討人類的大腦、心智、環境與文化彼此間如何進行雙向互動，以追求對千古謎題──「心靈與身體」關係──的進一步瞭解。

The team won 210 million funding from the Ministry of Science

永齡生醫工程館 MEG

永齡生醫工程館西門子 3T Prisma MRI

and Technology in 2015 for the "Installation and Operation of Core Facility in Mind Science: An Initiative for Integrated Research on Brain, Mind and Culture" project. The funding is used in establishing MRI / MEG instrument in the NTUYongLin Biomedical Engineering Center, open to all researchers in the country, so as to facilitate research in brain function related issues among the humanities and social sciences faculties.

生醫分子影像核心實驗室

Biomedical Molecular Imaging Core Lab.

此核心實驗室位於台大生物科技館，結合磁共振 (MR) 分子影像、光學分子影像 (Optical molecular imaging) 及超音波分子影像 (Ultarsonic molecular imaging) 此外，為使活體中特定的分子成像，除了要有上述高分辨率、敏感、快速的成像技術，還具備合成具有高親和力的分子探針及具有特異標定之顯影劑。

本核心實驗室主要目標之一為提供分子醫學影像之量測與生物體之醫學成像技術研究服務予臺灣大學醫學院區內從事生物醫學、基礎醫學與臨床醫學研究人員，此外，本實驗室致力發展新型醫學影像之顯影劑開發，並結合分子生物之技術，開發新式具特異標定功能之奈米粒子。

This core combined MR molecular imaging, optical molecular imaging and ultrasonic molecular imaging, thence,besides above mentioned properties, high spatial resolution, sensitivity and fast imaging technology, it has the abilityto synthesize high affinity molecular probe and specific-targeting contrast agent, and then in vivo specific molecularimaging will be obtained.

Our primary aim for this Biomedical molecular imaging Core is to provide research services to all the investigatorswithin NTU medical campus, and conducting methodological research related to biomedical molecular imaging is oursecondary aim. On the other hand, we also develop the novel contrast agents which have specific targeting function fordisease model.

主要研究領域 Major Research Areas

核磁共振影像、醫學工程

Magnetic Resonance Image, Functional MRI, Molecular imaging, Man Machine interface, Medical Engineering

研究計畫 Research Projects

1. 磁化率定量影像於磁振造影之生醫應用：動態定量之磁共振影像
2. 心智科學大型研究設備共同使用服務計畫—身體、心靈與文化整合影像研究中心
3. 構建中樞與週邊神經系統聯結之磁共振影像技術：定量化中風偵測與評估研究

E-mail: jhchen@ ntu.edu.tw
Phone: +886-2-33663610
Office: 博理館 619 (BL 619)
Website: http://fmri1.ee.ntu.edu.tw/wiki/doku.php
Lab. Phone: +886-2-33663517
Lab. : 明達館 706(MD-706)

成佳憲 教授

Chia-Hsien Cheng, Professor

國立臺灣大學生醫電子與資訊學研究所合聘教授
國立臺灣大學醫學院腫瘤醫學研究所教授
國立臺灣大學醫學院臨床醫學研究所合聘教授
國立臺灣大學醫學院附設醫院腫瘤醫學部放射腫瘤科主治醫師

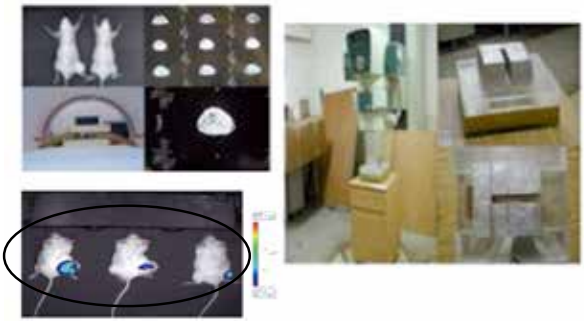
Adjunct Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Professor , Graduate Institute of Oncology, National Taiwan University College of Medicine
Adjunct Professor, Graduate Institute of Clinical Medicine, National Taiwan University College of Medicine
Attending Physician, Division of Radiation Oncology, Department of Oncology, National Taiwan University Hospital

放射物理生物實驗室

Radiation Physics and Biology Lab.

本實驗室由成佳憲教授於 2002 年起隨同整建臺大醫院腫瘤醫學部放射腫瘤科時設立，主要從事放射治療物理學與放射生物學相關研究，目前以設備技術物理與腫瘤放射治療轉譯醫學等領域為研究重點。本實驗室在影像導引放射治療領域與肝癌放射治療領域已產出許多具體貢獻。本實驗室之成員來自臺大醫院腫瘤醫學部放射腫瘤科醫學物理師、放射師及放射生物醫學領域研究人員，多年來亦積極與國內外單位進行合作。

The laboratory for radiation physics and biology was established by Jason Chia-Hsien Cheng, M.D., M.S., Ph.D., with the reconstruction of Division of Radiation Oncology, Department of Oncology, National Taiwan University Hospital. The main research directions are radiation physics related to equipment and technique, as well as translational medicine of radiation oncology. Our research team has been contributing significantly the progress in image-guided radiation therapy and radiotherapy to hepatocellular carcinoma. The team members of our laboratory include the radiation physicists, radiation technologists, and radiation biologists from Division of Radiation Oncology. The laboratory also has the collaboration with the other research teams in Taiwan and in the other countries.



主要研究領域 Major Research Areas

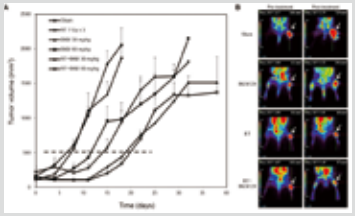
放射腫瘤學、放射物理學、放射生物學、癌症轉譯醫學
Radiation Oncology, Radiation Physics, Radiation Biology, Cancer Translational Medicine

研究計畫 Research Projects

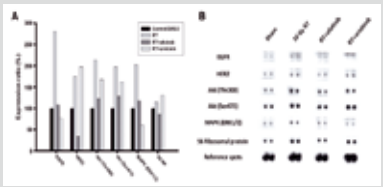
1. 探討磷脂醯肌醇 3- 激酶 / 蛋白質激酶 B/ 哺乳動物雷帕黴素靶蛋白傳遞路徑及相關拮抗劑對於肝癌細胞放射抵抗性之作用機轉
   Investigation on the mechanisms of PI-3K/Akt/mTOR dependent radioresistance of epatocellularcarcinoma and the related inhibitors.
2. 表皮生長因子受體訊息傳遞路徑對表現基質金屬蛋白酶 9 之小鼠肺癌放射治療模式於腫瘤生長及轉移之機轉研究
   Mechanism investigation of EGFR/HER2 signaling pathway on tumor growth and metastasis by radiotherapy for MMP-9 expressed Lewis lung carcinoma.
3. 新一代 EGFR 酪氨酸激酶抑制劑可協同阻斷 EGFR 和 HER2，克服膀胱癌細胞對放射治療的抗性：第二、三年機轉研究
   Synergistic blockade of EGFR and HER2 by new generation EGFRtyrosine kinase inhibitor overcomes radioresistance of bladdercancer cells: mechanistic studies

■ **研究計畫** - 1,3 之代表圖及英文說明：

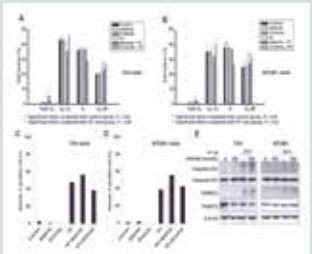
Combined BKM120 and radiotherapy (RT) enhances tumor suppressive activity in two BNL xenograft models.



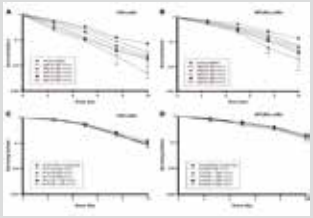
Concomitant EGFR and HER2tyrosine kinase inhibitionsignificantly suppressesradiation-activated signaling pathways in bladder cancer cells.



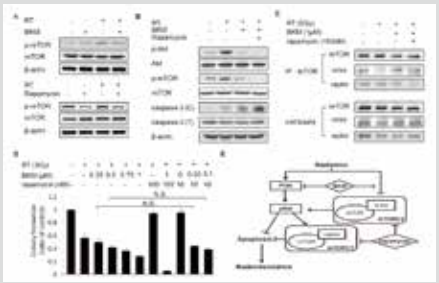
Tyrosine kinase blockade of both EGFR and HER2 by afatinib, not blockade of EGFR alone, promotes radiation-induced apoptosisin bladder cancer cells.



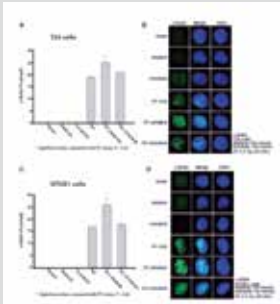
Dual blockade of EGFR and HER2 tyrosine kinases significantly radiosensitizes bladder cancer cells.



The addition of rapamycin to BKM120 enhances the inhibition of mTOR and Akt phosphorylation and increases caspase-3 activation in irradiated BNL cells.



The EGFR/HER2 dual inhibitor afatinib, not the EGFR inhibitor erlotinib, promotes radiation-induced DNA damage in bladder cancer cells.



E-mail: jasoncheng@ntu.edu.tw
Phone: +886-2-2356-2842
Website: http://www.ntuh.gov.tw/onc/
Lab Phone: +886-2-2312-3456*67141
Office: 台大醫院西址檢驗大樓地下 1 樓放射腫瘤科
NTUH (West site) laboratory Building B1 / Department of Radiation Oncology

莊曜宇 教授
Eric Y. Chuang, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學電機工程學系教授
國立臺灣大學生命科學系教授
國立臺灣大學流行病學與預防醫學研究所教授
國立臺灣大學生命科學院與中央研究院合辦-基因體與系統生物學學位學程教授
國立臺灣大學生醫電資所與中央研究院合辦-生物資訊學國際研究生學位學程教授
國立臺灣大學腫瘤醫學研究所教授
國立臺灣大學醫療器材研發中心副主任
國立臺灣大學基因體醫學研究中心-生物資訊暨生物統計核心實驗室主持人
中央研究院基因體中心合聘研究員

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics
Professor, Department of Electrical Engineering/ Department of Life Science/ Graduate Institute of Epidemiology and Preventive Medicine/ Genome and Systems Biology Degree Program, College of Life Science/ Graduate Institute of Oncology, National Taiwan University/ Taiwan International Graduate Program
Director, Yong Lin Biomedical Engineering Center, National Taiwan University
Deputy Director, Research and Development Center for Medical Devices, National Taiwan University
Principal Investigator, Bioinformatics and Biostatistics Core Lab, NTU Center of Genomic Medicine
Joint Appointment Research Fellow / Genomics Research Center, Academia Sinica
Principal Investigator, Bioinformatics and Biostatistics Core Lab, NTU Center of Genomic Medicine

生物晶片實驗室
Microarray Lab.

本研究室研究是以基因體學探討癌症形成機制為主軸。近年來基因晶片(DNA microarray)與次世代定序(Next-Generation Sequencing)已經被廣泛應用在同時觀察大量的基因表現，為研究特定基因調控極為方便、快速與可靠的方法。因此研究室的研究方向乃致力於增進基因晶片與次世代定序技術在生物醫學領域上的應用，研究範疇涵蓋晶片製備技術、影像擷取與分析、次世代定序資料分析、生物資訊學、應用工具與資料庫系統開發，以及利用基因晶片分析與次世代定序技術來解析致癌基因複雜的調控關係，探討基因表現或基因突變與細胞反應的關連。長遠的目標為藉由基因體研究找尋特定的癌症分子指標，將來作為癌症治療與診斷的標的。

The focus of our laboratory is using genomic approaches to investigate the mechanisms of carcinogenesis. DNA microarray and Next-Generation Sequencing (NGS) have been applied widely in simultaneously monitoring a large quantity of gene expression patterns and served as a convenient, quick, and reliable method to investigate specific gene regulation. Therefore, our lab devotes to the application of microarray and NGS technologies in the biomedical field. Interests in our laboratory include microarray fabrication, image capture and analysis, NGS data analysis, bioinformatics, development of application tools and database systems, and application of those techniques to identify the complicated regulatory mechanisms of cancer related genes, as well as the correlation between gene expression or gene mutation and cellular response. Our long-term goals are via genomic study to identify specific cancer molecules as biomarkers for the targets of cancer therapy and diagnosis.

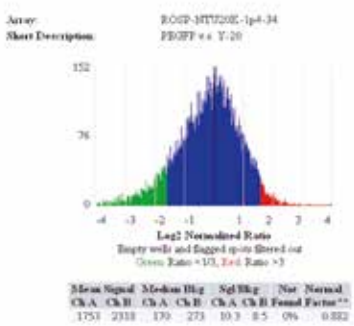
主要研究領域 Major Research Areas

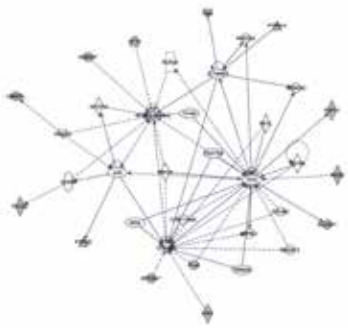
生物晶片、次世代定序、生物資訊、癌症生物、輻射生物

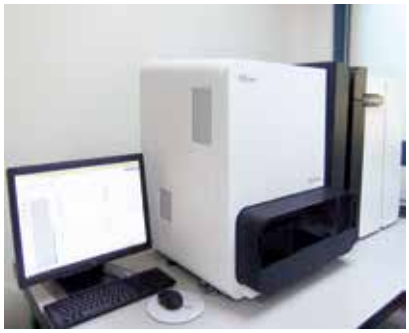
Biochip, Next-Generation Sequencing, Bioinformatics, Cancer Biology, Radiation Biology

研究計畫 Research Projects

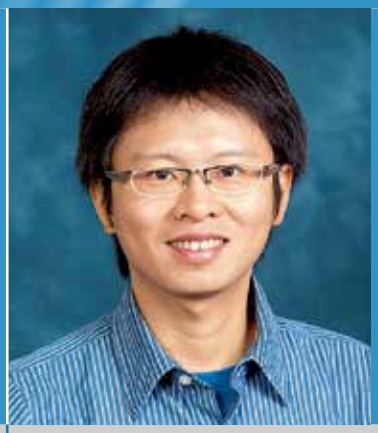
1. 食道癌合併多重癌症特徵及多面向生物標誌之探討 -- 利用總體基因組定序分析菌相探討食道癌合併多重癌症的菌相特徵與有潛力的生物標記 (科技部)
   Metagenomic sequencing analysis to identify potential biomarkers in synchronous multiple primary cancers with esophageal squamous cell carcinoma
2. 探討 Semaphorin 6A 引發之免疫效果及其在肺癌免疫療法上之應用 (科技部)
   Characterization of SEMA6A-derived immunity and its potential applications of immunotherapy in lung caner, project period
3. 再生醫學科技發展計畫 – 幹細胞組織工程於氣管再生醫學之應用 (科技部)
   Application of stem cell and tissue engineering in regenerative medicine of the trachea
4. 利用整合性基因群分析與舊藥新用策略尋找各乳癌亞型之最佳治療藥物 (財團法人國家衛生研究院)
   Utilize Gene Set Analysis to Reposition Putative Drugs for Breast Cancer with Modulated Responses
5. 優勢重點領域拔尖計畫 - 基因體醫學研究中心 - 生物資訊暨生物統計核心實驗室 (邁向頂尖大學計畫)
   Bioinformatics and Biostatistics Core Facility
6. 研究 SEMA6A 在肺癌所扮演的角色及探討其基因多型性在台灣地區非吸菸女性肺癌的重要性 (科技部)
   To investigate the roles of SEMA6A in lung tumorigenesis and susceptibility-associated SNPs of SEMA6A in non-smoking female lung cancer
7. 覆氧時 NDRG1 受非編碼核糖核酸調控之機轉研究 (科技部)
   Investigation of regulatory mechanism of NDRG1 by non-coding RNA upon reoxygenation







E-mail: chuangey@ntu.edu.tw
Phone: +886-2-33663660
Office: 明達館 622 (MD-622)
Website: http://www.ee.ntu.edu.tw/profile?id=99
Lab. Phone : +886-2-33669601
Lab. : 明達館 701 (MD-701)



黃念祖 副教授

Nien-Tsu Huang, Associate Professor

國立臺灣大學生醫電子與資訊學研究所副教授
國立臺灣大學電機工程學系副教授

Associate Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Associate Professor, Department of Electrical Engineering, National Taiwan University

光流體生醫系統實驗室

Bio-Optofluidic Systems Lab.

光流體生醫系統實驗室為黃念祖博士成立於 2013 年，隸屬於國立台灣大學電機工程學系和生醫電子與資訊學研究所。本實驗室主要研究為發展整合型微流體生物晶片 (Lab-on-Chip)，其晶片將微型化電子、光學、機械及流體等元件進行生醫領域相關應用，如細胞生物學、藥物篩選、快速疾病檢測，並期許將來能使用醫療資源較為匱乏環境之定點照護功能 (Point-of-care)。

Bio-Optofluidic System Lab is in the department of Electrical Engineering and the graduate institute of Biomedical Electronic and Bioinformatics at National Taiwan University, Taipei, Taiwan. Our lab is focusing on developing integrated electrical, optical and mechanical miniaturized fluidics and sensors for biological applications, such as cellular biology, drug screening, and disease diagnosis.

主要研究領域 Major Research Areas

生醫微機電、光微流道系統、微系統細胞操控、生醫感測、奈微米製造技術
Bio-MEMS, Optical-MEMS, Microfluidics, Bio-sensing, Cell Manipulation in Microenvironment, Micro/Nano Fabrication Techniques.

研究計畫 Research Projects

1. 研發整合微流道系統之超高解析度顯微鏡進行細胞主纖毛之力學與化學刺激反應研究
"Determining mechanical and chemical stimulation responses of primary cilia with an integrated microfluidics-superresolution platform", sponsored by 國立臺灣大學與中央研究院, N.T. $1,800,000, 2017/01/01-2018/12/31.

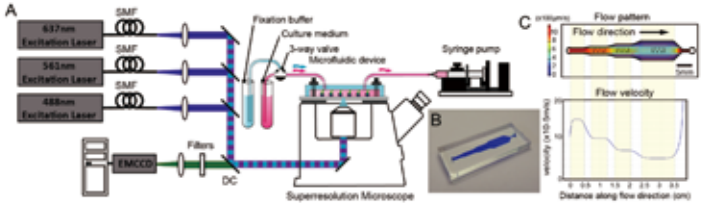


Fig. 1 The microfluidic platform to observe cilia mechano-response under various flow conditions

2. 整合奈米電漿子感測技術之多功能微流道系統開發與應用 " The development of a multifunctional microfluidic integrated nanoplasmonic sensing platform" , sponsored by 科技部 106-2221-E-002-058 -MY3, N.T.$ 3,158,000, 2017/08/01-2020/07/31.

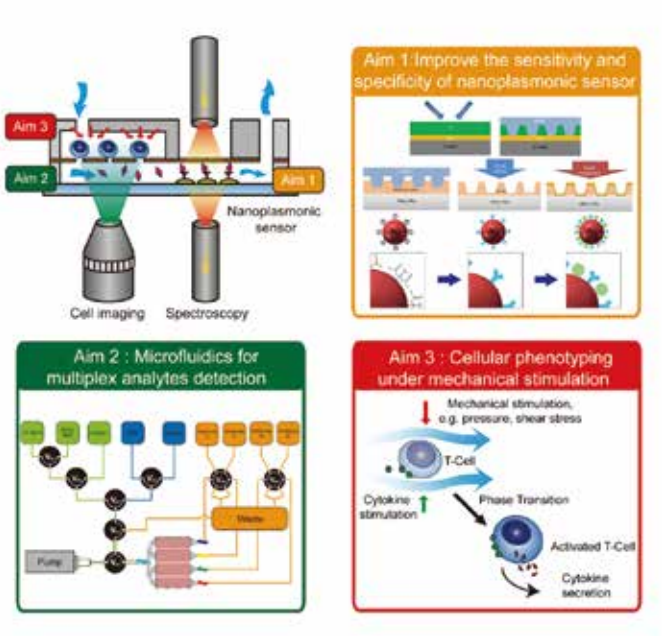


Fig. 2 The large-area nanoplasmonic sensor integrating automated microfluidic control system for a rapid and multi-parallel cytokine detection

3. 開發可進行快速全血處理及生化分子感測之多功能微流道系統"
Developing a multi-functional microfluidic platform for rapid whole blood processing and simultaneous detection of multiple biomarkers', sponsored by 國立臺灣大學高教深耕計畫 , N.T.$ 2,680,000, 2018/06/01-2020/12/31.

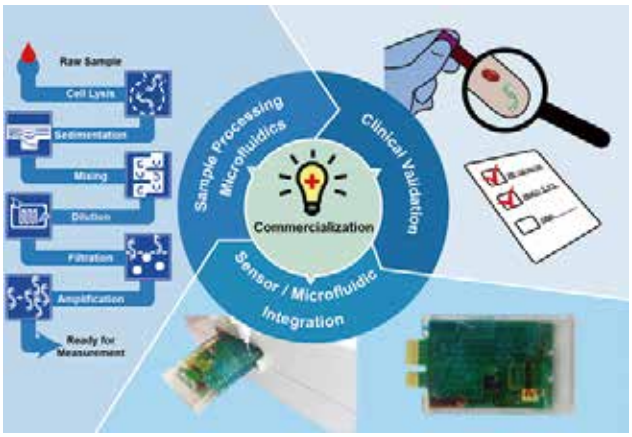


Fig. 3 Schematic of the project scope, including three major parts: whole blood processing modules, sensor/microfluidics integration and clinical validation

E-mail: nthuang@ntu.edu.tw
Phone: +886-2-33661775
Office: 明達館 522 (MD-522)
Website: http://homepage.ntu.edu.tw/~nthuang/index.html
Lab. : 明達館 702 (MD-702)

鍾孝文 教授

Hsiao-Wen Chung, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學電機工程學系教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Department of Electrical Engineering, National Taiwan University

醫用磁振造影研究室

Magnetic Resonance in Medicine Lab.

成立於 2000 年 7 月，指導教授為鍾孝文教授，目前計有博士班研究生 6 名，碩士班研究生 3 名。博士班畢業生 29 名，碩士班畢業生 21 名。

Founded in July 2000. Supervisor: Prof. Hsiao-Wen Chung. This lab currently has 6 Ph.D. students and 3 M.S. student, plus 29 Ph.D. graduates and 21 M.S. graduates.

主要研究領域 Major Research Areas

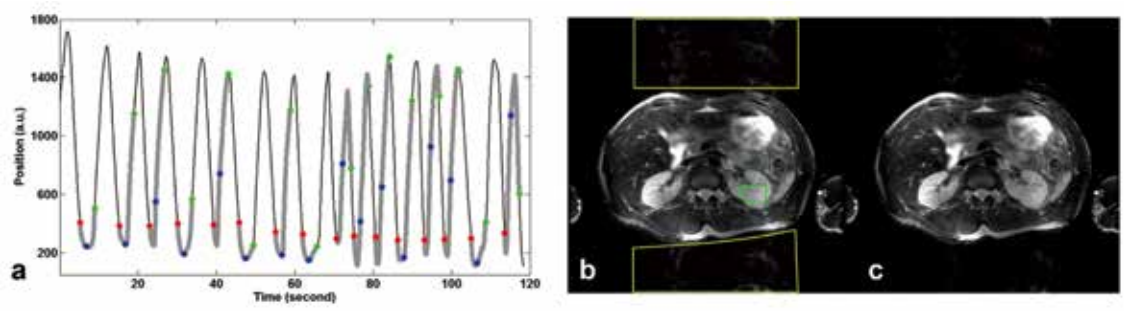
醫用磁振造影
Biomedical magnetic resonance imaging

研究計畫 Research Projects

1. 數據分享式螺旋槳多 b 值擴散磁振造影
   Data sharing Propeller diffusion MR imaging with multiple b-values
   補助單位：行政院科技部工程司
   計畫期間：2015/8/1 ~ 2018/7/31
2. 自由呼吸式腹部主動脈動態磁振造影：使用加速式黑血快速自旋迴訊
   Free breathing black-blood cine MRI of the abdominal aorta using accelerated fast spin-echo
   補助單位：行政院科技部工程司
   計畫期間：2016/8/1 ~ 2019/7/31

■ 代表圖及中英文說明：
使用快速自旋迴訊的自動呼吸校正技術：(a) 為呼吸狀態下之腹腔起伏位置，彩色點為不同切面的觸發點。(b) 與 (c) 為其中一張影像切面使用二維傅立葉轉換與實驗群所提之疊代演算法重建結果比較。

Experimental results of respiratory-triggered abdominal fast spin-echo imaging: (a) shows the respiratory waveforms, with red, blue andgreen dots representing trigger points of three different slices. (b) and (c) are representative images of one slice reconstructed with 2D Fourier transform andan iterative methoddeveloped in our laboratory, respectively.



E-mail: chunghw@ntu.edu.tw
Phone: +886-2-33663628
Office: 明達館 624 (MD-624)
Website: http://www.mrilab.org/
Lab. Phone: +886-2-33663675
Lab. : 明達館 704 (MD-704)

管傑雄 教授

Chieh-Hsiung Kuan, Professor

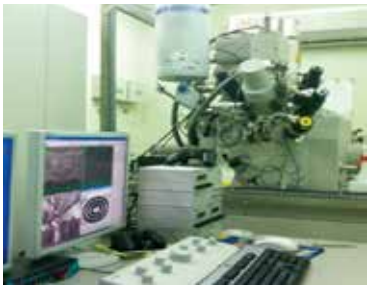
國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學電子工程學研究所教授
國立臺灣大學電機工程學系教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Graduate Institute of Electronics Engineering/ Department of Electrical Engineering, National Taiwan University

電子束暨奈米元件實驗室

E-beam and Nano Device Lab.

- 電子束微影製程與電子束顯微鏡實驗室
  (Direct-Writing Electron Beam Lithography System Lab., Scanning Electron Microscope Lab.)
- 聚焦離子束實驗室 (Focus Ion Beam Lab.)
- 微拉曼 / 光激發光光譜實驗室 (Micro-Raman/PL Spectral Lab.)
- 紅外線光譜實驗室 (Infrared Spectral Lab.)

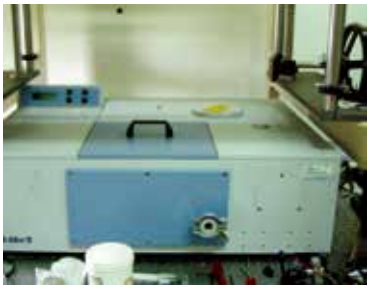


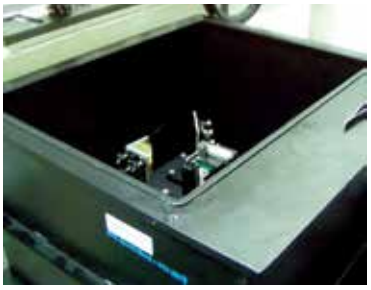
Focus Ion Beam -FIB,聚焦離子束設備

電子束微影系統(100KeV高加速電壓)

電子束微影系統(50KeV中加速電壓)

電子束顯微鏡與微影系統
(5KeV低加速電壓)

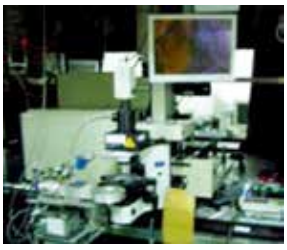




Bruker FTIR 紅外線光譜儀及變角度反射模組

電晶體特性曲線實驗器

FTIR 紅外線光譜儀



T 64000微光譜量測系統
(含XY平面定位掃描功能)

電子束顯微鏡系統
(5KeV低加速電壓)

主要研究領域 Major Research Areas

紅外線光偵測器、發光二極體、太陽能電池、電子束微影技術、生醫元件、量子點元件、電子元件雜訊分析、光學模擬、聚焦離子束系統

Optoelectronic Device, E-beam Lithography, Noise Measurement, Bio-medical Chip, Quantum-dot Device, Optics simulation, Focused-ion-beam System

研究計畫 Research Projects

1. 發展電子束微影技術與聚焦離子束技術於製作三維微結構
   Development of eBeam Lithography technology and Focused-ion Beam technology for Three-dimensional Nano- fabrication
2. 共振式太陽能電池 Resonant Solar Cell
3. 發展奈米結構增強光偵測與光發射
   Development of nano-tructures to enhance light detection and emission
4. 矽鍺量子點奈米級記憶元件及陣列之製作與研究
   Nano-scale SiGe quantum-dot memory and array
5. 可低偏高溫操作且正向頂面入射的超晶格紅外線偵測器及陣列的研發
   Development of the Superlattice Infrared Photodetector and Array for Low-Bias High-Temperature Operation and Top Normal Incidence of Light
6. 光譜與電性量測於基因篩選之應用
   Application of spectrum and electrical signal measurements on gene screening
7. 窄頻紅外線光源與偵測器及其在植物與神經細胞上的應用
8. 離子的高敏感度交流電性量測並以紅外線頻譜作輔助分析 (2/3)
   High-sensitivity AC electrical signal measurement and infrared spectrum assistant analysis originated from ions
9. 整合雙能障超晶格及量子井紅外線偵測器以達到高偵測率高響應及高溫操作
   Integration of double-barrier superlattice and quantum well infrared photodetectors for advantages of high detectivity, high responsivity, and high-temperature operation
10. 平面型寬頻消色差超穎透鏡
    Broadband achromatic optical metasurface devices

E-mail:chkuan@ ntu.edu.tw
Phone:+886-2-33663569
Office: 博理館 513 (BL-513)
Website: http://cc.ee.ntu.edu.tw/~kuanlab
Lab. Phone: +886-2-33663700*426/129
Lab.: 電機二館 426/129(EE-426/129)

郭柏齡 副教授

Po-Ling Kuo, Associate Professor

國立臺灣大學生醫電子與資訊學研究所副教授
國立臺灣大學電機工程學系副教授
國立臺灣大學醫學院副教授
附設醫院復健部主治醫師

Associate Professor, Graduate Institute of Biomedical Electronics and Bioinformatic/ Department of Electrical Engineering, College of Medicine, National Taiwan University
Attending Physician, Departmet of Physical Medicine and Rehabition, National Taiwan University Hospital

細胞行為實驗室

Cell Behavior Lab.

本實驗室主要研究細胞物理學、力學生物學的基礎原理以及相關臨床運用。力學生物學為一新興的跨領域學科，主要探討與力學訊息相關的生物反應。力學訊息目前被認為與多種生理及病理過程有強烈相關，包括組織生成、傷口癒合、血管新生、動脈硬化、心肌肥大、以及腫瘤進展等。因為相對僅能靠擴散方式作用的化學物質而言，力學訊號的作用範圍更遠，傳遞速度也較快。因此在大範圍組織整合過程，包括組織發育、修補、以及退化，惡化，光學訊號可能扮演了具有相當決定性的角色。我們特別對壓力對生物體的影響、生物體如何利用力學訊息通訊、並互相調節功能、以及改造周遭力學環境有興趣。我們研究重點是同質細胞間的自我聚合及功能整合，以及異質細胞間的空間協調。我們的短期目標是發展出能精確測量、並調控細胞與細胞間、以及與介質間力學通訊的實驗平台。遠程目標則是促進吾人對異質細胞間在各種生理、病理狀態下的交互作用，並對組織老化及再生的治療方針上有所啟益。目前本實驗室的研究主題為

- 壓力在細胞生理學以及生物物理學的角色
- 利用生物微機電技術製作可供研究細胞間通訊、以及多重物理因子對細胞生理影響肢體外實驗平台
- 建立可監控細胞與環境力學互動之三維體外實驗平台，並探討該平台在臨床上如藥物篩檢等應用
- 建立臨床上可用於監測及治療緻密結締組織，如肌腱及韌帶，力學功能失常時之非侵入性工具及技術

Mechanobiology is a new field focusing on understanding how living organisms generate, sense, and respond to various mechanical stimuli, which are believed to play a key role in numerous physiological and pathological processes, such as tissue development, tissue repairing, atherosclerosis, cardiac hypertrophy, and cancer progression. My researches primarily focus on the fundamental mechanisms and clinical applications of mechanobiology. Specifically, we investigate the effects of hydrostatic pressure and environmental elasticity on cell physiology, how cells remodel the mechanical properties of their environment, and develop tools quantitatively evaluate the mechanics of cell–matrix interactions. Our previous achievements and ongoing projects include

1. Elucidate the role of hydrostatic pressure on cell physiology

Hydrostatic pressure is an important physical factor in tissue physiology and pathology. We investigated how hydrostatic pressure affects muscle differentiation, immunological activities, cell motility, and cancer invasiveness. Currently we are working on the possible biological signaling pathways involving these processes.

2. Evaluate the effects of multiple biophysical and biochemical stimuli on cell physiology
   The cells in vivo are generally exposed to the coexistence of multiple biophysical and biochemical cues. Knowledge of how cells response to these complex stimuli is important for many disciplines such as regenerative engineering and cancer biology. Using BioMEMS techniques, we have developed several platforms allowing the coexistence of mechanical, electrical, and chemical stimuli for cultured cells. Currently we are delineating the antagonistic and agonistic roles between these stimuli.
3. Develop a 3D cell culture system that allows quantitatively accessing the mechanics of cell-matrix interactions
   The changes of mechanical properties such as stiffness of a tissue usually are hallmarks of various physiological and pathological processes, such as arthrosclerosis and tumor malignant transformation. In vitro assays quantitatively measuring the mechanics of cell-matrix interactions are of great importance to understand the mechanisms and facilitate the development of corresponding therapeutic strategies of these processes. Cells cultured in a 3D environment behave far different from that cultured in 2D and recapitulate more physiological characteristics in vivo. An important ongoing project in our lab is to develop a 3D cell culture system using state-of-the-art imaging and scaffold fabrication techniques to quantitatively access the mechanics of live cell-matrix interactions.

4. Develop clinical tools for treatment and monitoring of the mechanical dysfunction of dense connective tissues

Mechanical malfunction of dense fibrous tissues usually leads to protracted and debilitating conditions, such as joint capsule contracture, tissue fibrosis, and tendinosis. Our goal is to develop clinical tools that allow treating these disorders non-invasively, while the change of mechanical function of the diseased tissues can be non-invasively and quantitatively monitored. We have combined the state-of-the-art ultrasonic techniques and developed a prototypical system for this purpose. Our ongoing project is to evaluate its effectiveness in various clinical conditions.

主要研究領域 Major Research Areas

生物物理、力學生物學、生物力學、組織工程、醫用超音波
Biophysics, Mechanobiology, Biomechanics, Tissue engineering, Medical ultrasound

研究計畫 Research Projects

1. 靜水壓力對肌母細胞型態及分化影響
2. 智慧型非侵入陣列式血流監控系統晶片 -- 子計畫六：以非侵入陣列式系統晶片監控頸動脈血流動力—力學模型及臨床評估
3. 經濟部政策型科專計畫：診斷超音波系統關鍵技術開發 3 年計畫—影像核心平台基礎技術開發
4. 用於肌腱治療之超音波剪力影像
5. 萌芽個案計畫 – 三維細胞培養系統與影像觀測技術
6. 三維折射率活細胞顯微術
7. 適用多波影像之三維細胞培養支架開發
8. 物理性刺激對細胞運動影響的定量研究
9. 肝硬化動物模式替代方案 – 小鼠肝臟星狀細胞之多孔道微流培養系統
10. 使用剪力波彈性影像之三維體外肺癌力學生物學研究系統之開發
11. 萌芽個案計畫 – 用於三維細胞培養系統之剪力波彈性量測設備之設計驗證、樣機製作與應用推廣
12. 剪力波斷層掃描影像儀：技術創新與治療應用 (重點主題 :C3) - 子計畫二：組織纖維化—組織間質流體壓力與組織彈性之體外模型

E-mail: poling@ ntu.edu.tw
Phone: +886-2-33669882
Office: 明達館 519 (MD-519)
Website: http://www.ee.ntu.edu.tw/profile?id=762
Lab Phone: +886-2-33669883
lab.：明達館 707(MD-707)

李枝宏 教授
Ju-Hong Lee, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學電機工程學系教授
國立臺灣大學生電信工程學研究所教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Electrical Engineering/Graduate Institute of Communication Engineering, National Taiwan University

統計信號處理實驗室
Statistical Signal Processing Lab.

本實驗室由李枝宏教授負責成立於 1986 年，主要研究領域為數位信號處理之理論與技術研發，近年來也積極進行應用數位信號處理之理論與技術於生醫領域之相關研究，包含：

1. 由國立臺灣大學醫學院骨科部提供人體膝關節病變與運動傷害所產生之振動訊號，應用相關信號處理理論研發建立此振動訊號之數學模型的技術，以協助臨床上分析診斷人體膝關節病變與運動傷害之型態與種類，以期提供醫生進行正確且必要醫療措施所需之資訊。
2. 由國立臺灣大學獸醫學系提供馬匹膝關節病變與老化所產生之振動訊號，應用相關信號處理理論研發建立此振動訊號之數學模型的技術，以協助臨床上分析診斷馬匹膝關節病變與老化之型態與種類，以期提供獸醫生進行正確且必要醫療措施所需之資訊。
3. 由國立臺灣大學醫學院牙科部提供人體顳顎關節病變所產生之振動訊號，應用相關信號處理理論研發建立此振動訊號之數學模型的技術，以協助臨床上分析診斷人體顳顎關節病變之型態與種類，以期提供醫生進行正確且必要醫療措施所需之資訊。目前進行的研究希望利用此特性進而更精確的找出膝關節振動訊號的特徵，進而發展實用簡單方便的非侵襲性關節診斷系統。

I. Basic Digital Signal Processing:
   (1) Techniques for the Design and Implementation of 1-D and 2-D FIR and IIR Digital Filters.
   (2) Techniques for Design and Implementation of 1-D and 2-D FIR and IIR Digital Filter Banks (Multi-rate Digital Signal Processing)

II. Statistical Digital Signal Processing:
   (1) Adaptive Signal Processing for Array Signals
   (2) Adaptive Array Beamforming Under Random Mismatches
   (3) Adaptive Array Bearing Estimation Under Random Mismatches
   (4) Adaptive Beamforming Using 2-D Circular Array for Wireless CDMA Systems
   (5) Adaptive Minimum Bit Error Rate Beamforming Assisted Receiver for Wireless Communications
   (6) Adaptive Signal Processing Techniques for Smart Antennas with Applications in Wireless and Mobile

Communications

III. Processing and Analysis of Biomedical Signals:

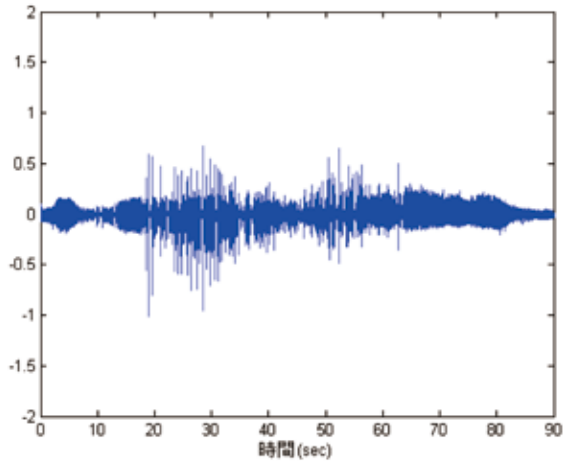
Analysis and Processing of Joint Vibration Signals for the Diagnosis of Cartilage Pathology

(1) Signal Processing Techniques for Vibration Signals of Human Knee Joints

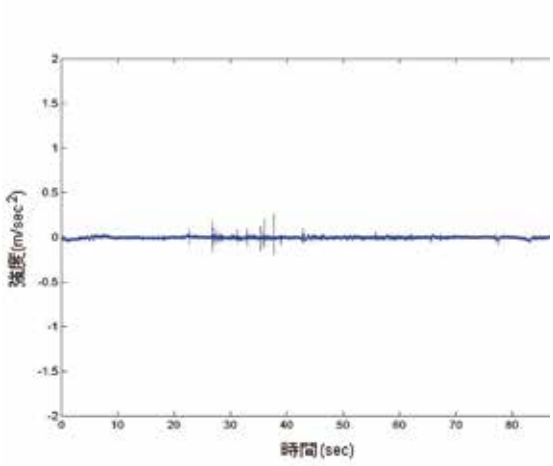
(2) Signal Processing Techniques for Vibration Signals of Equine Knee Joints

(3) Signal Processing Techniques for Vibration Signals of Human emporomandibular joints

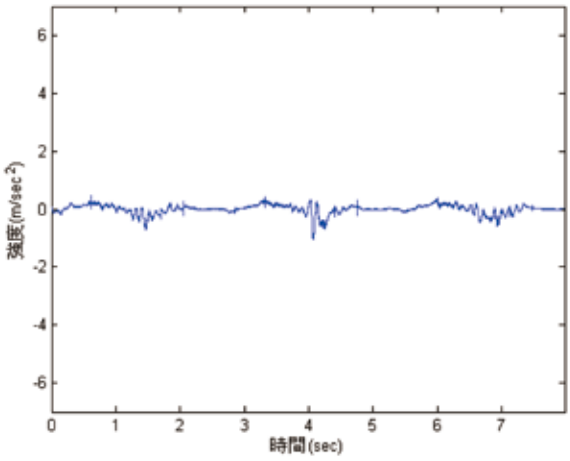
Goal of this research: To conduct research on Vibration Arthrometry (VAM) and provide the public a noninvasive, accurate tool (Expert Systems) for the diagnosis of joint disorders in clinical medicine.



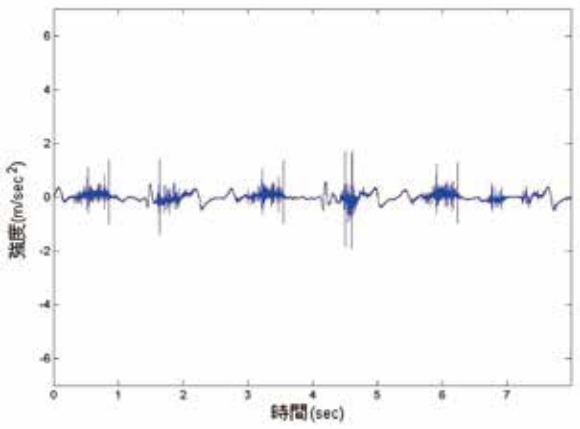
(A) 正常著膝關節在慢速擺動下所產生的振動訊號
(Physiological Patellofemoral Crepitus; PPC)



(B) 非正常著膝關節在慢速擺動下所產生的振動訊號
(Physiological Patellofemoral Crepitus; PPC)



(C) 正常著膝關節在快速擺動下所產生的振動訊號
(Vibration Arthrometry; VAM)



(D) 非正常著膝關節在快速擺動下所產生的振動訊號
(Vibration Arthrometry; VAM)

主要研究領域 Major Research Areas

數位信號處理、智慧型天線與無線通訊信號處理、生醫信號處理、數位影像處理
Digital Signal Processing, Signal Processing for Smart Antennas and Wireless Communications, Biomedical Signal Processing, Digital Image Processing

研究計畫 Research Projects

1. 應用於視訊信號處理之二維副頻帶濾波器組之設計 (Design of Two-Dimensional Subband Filter Banks with Applications to Video Signal Processing), 行政院國家科學委員會 , NSC 97-2221-E-002-116-MY3, NT$650000.00, 2008/8 ~ 2011/7.
2. 應用於通訊環境下可適性陣列信號處理理論與技術之研究 (Theory and Techniques for Adaptive Array Signal Processing Under Communication Environments), 行政院國家科學委員會 , NSC 97-2221-E-002-174-MY3, NT$890000.00, 2008/8 ~ 2011/7.

E-mail: jhlee@ntu.edu.tw
Phone: +886-2-33663657
Office: 電機二館 517(EE2-517)
Website: http://www.ee.ntu.edu.tw/profile?id=15
Lab. Phone: +886-2-23635251*553
Lab. : 電機二館 553(EE2-553)

李嗣涔 特聘教授

Si-Chen Lee, Distinguished Professor

國立臺灣大學生醫電子與資訊學研究所特聘教授
國立臺灣大學電機工程學系特聘教授

Distinguished Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University

紅外線元件實驗室

IR Device Laboratory

本實驗室開發之多波段熱輻射紅外光源 (圖一)，俱有偏極化、窄頻寬、可調變多波長之特性。窄頻紅外光源成功地應用在觀察紅外光對植物生長基因表現，和影響癌細胞生長變化的研究。善用窄頻紅外光源，我們可研究動植物細胞持續受到特定波段紅外光照射時，其成長型態、基因表現，以及所有蛋白質表現的增減變化。近期已將窄頻多波長紅外光源應用於氣體 (酒精) 偵測系統 (圖二)，成功達成不同濃度酒精之雙波長偵測 (圖三)。

研究成果發現 4~5 μm 紅外光照射大腸桿菌 24 小時，可刺激外膜蛋白 (OmpA，OmpF) 表現量，增強新陳代謝和菌落生長，結果如同圖四所示。阿拉伯芥經過 3~5 μm 窄頻紅外光照射 72 小時後，分析 GASA4、CHS、RbcS、NPQ4 和 PSAK 基因，發現不同波段窄頻紅外光可影響生長型態和基因表現。照射 3~5 μm 寬頻紅外光 48 小時的肺腺癌細胞 A549，生長受到明顯抑制，細胞明顯膨大和停滯於細胞週期 G2 與 M，結果如同圖五所示。 3~5 μm 窄頻紅外光照射子宮頸癌細胞 HeLa 48 小時，可破壞粒線體膜電位和增加細胞凋亡，加強化療藥物 Paclitaxel 的療效。

本實驗室開發的另外一項研究為化學修飾之原子力顯微術探針技術，其原理是利用病毒上的抗原與修飾在探針上抗體具有專一性之特性去偵測病原體 (圖六)，其成果具有即時、高靈敏偵測之特性。此修飾之原子力顯微術探針技術已成功應用在偵測腸病毒第 71 型 (圖七)。

Our lab has developed the multi-wavelength thermal emitter with narrow bandwidth, polarization, tunable wavelength characteristics, as shown in Fig. 1. It has been applied to investigate the effects of IR radiation on plant growth and cancer cell physiology. Furthermore, narrow band IR emitters can be used to compare growth morphology, gene and protein expression under specific wavelengths of IR radiation. The IR light source was also applied in a NDIR gas (alcohol) detection system, as shown in Fig. 2. Dual-wavelength detection of different concentrations of alcohol has been successfully achieved, as shown in Fig. 3.

Recently, we found that 4~5μm IR radiation for 24 hours increased up-expression of membrane proteins (*OmpA,OmpF*) and growth rates of *E.* coli colony as shown in Fig. 2. In addition, we found that 3~5μm IR radiation for 72 hours regulated morphology and the genes expression of *Arabidopsis*, such as the *GASA4*, *CHS*, *RbcS*, *NPQ4* and *PSAK* genes. The 3~5 μm IR radiation can induce cell dilation and G_2 /M cell cycle arrest in lung cancer A549 cells at 48 hour as shown in Fig. 3. Moreover, we found that the narrow band infrared radiation with peak wavelengths of 3, 4, and 5 μm for 48 hours can damage mitochondrial membrane potential and cellular apoptosis to enhance the effectiveness of paclitaxel treatment on cervical cancer HeLa cells.

The other study developed by our laboratory is the chemically modified atomic force microscopic probe technique. The principle is based on the specificity between the antigen on the virus surface and antibodies coated on the AFM tip as shown in Fig. 6 to detect the pathogen, and the result has real-time and highly sensitive sensing quality. The technique has been applied to detect enterovirus 71 (EV71) as shown in Fig. 7 successfully.

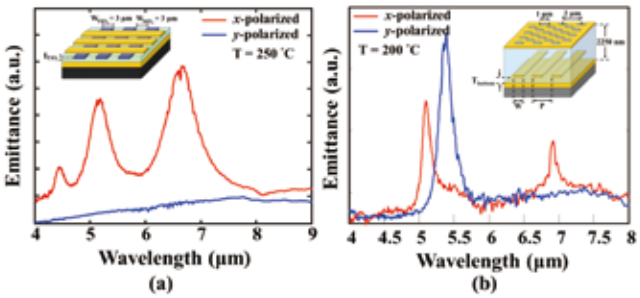


圖 1 多波長且具偏極化特性之 (a) 侷域電漿子型和 (b) 波導型窄頻熱輻射紅外光發射器與其發光頻譜

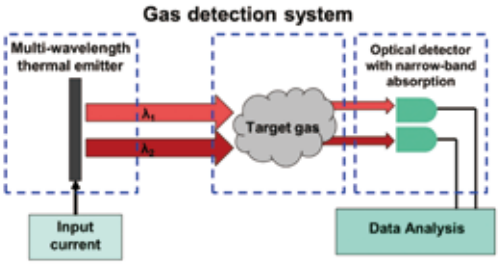


圖 2 氣體 (酒精) 偵測系統結構示意圖

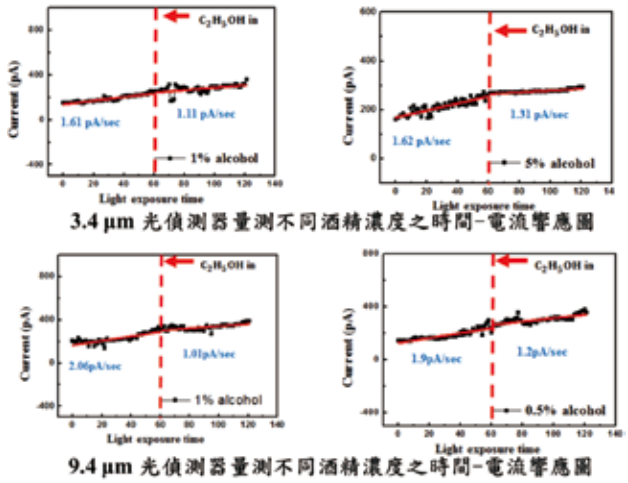


圖 3 氣體偵測系統對待測目標物 (酒精) 所得之量測結果

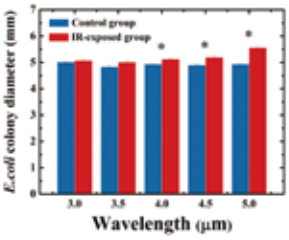


圖 4 大腸桿菌照射紅外光 24 小時之菌落分析

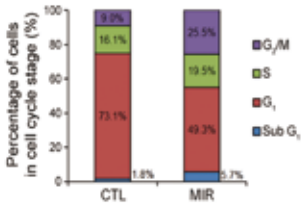


圖 5 肺癌細胞 A549 照射紅外光 48 小時之細胞週期分佈結果

■ **研究成果**：

1. Paclitaxel(紫杉醇) 可阻斷細胞週期 G2 與 M，聚合和穩定細胞內微管，讓腫瘤細胞在有絲分裂階段被固定住，生長過程受阻斷而凋亡。窄頻波導型熱輻射發射器可發出窄頻紅外光 3,4,5 μm 破壞子宮頸癌細胞的粒線體膜電位，進而提升 Paclitaxel 對子宮頸癌細胞 HeLa 的治療效果。
2. 3~5 μm 寬頻紅外光會造成肺癌細胞 A549 在細胞週期 G2/M 停滯和雙股 DNA 的斷裂，若我們在照光前，使用抗氧化劑 NAC 一小時，可消除紅外光造成的雙股 DNA 斷裂。
3. 窄頻表面電漿子熱輻射發射器照射阿拉伯芥 72 小時，不同波段的窄頻紅外光可影響 GASA4、CHS、RbcS、NPQ4 和 PSAK 基因表現。
4. 4~5μm 紅外光照射大腸桿菌 24 小時，可增強生長代謝，和刺激外膜蛋白 (OmpA , OmpF) 表現量。
5. 多波段紅外光源與偵測器成功應用於氣體 (酒精) 偵測系統。
6. 化學修飾之原子力顯微術探針技術應用於病原體檢測。

研究計畫 Research Projects

1. 前瞻技術產學合作計畫 -7-5nm 半導體技術節點研究 (5/5)
   Pathfinding for 7-5nm Semiconductor Technology Nodes

E-mail:sclee@ntu.edu.tw
Phone:+886-2-33662000/33664962
Office: 電機二館 440 (EE2-440)
Website: http://sclee.ee.ntu.edu.tw/
Lab. Phone: +886-2-33663700*451
Lab. : 電機二館 451 (EE2-451)

李百祺 特聘教授

Pai-Chi Li, Distinguished Professor

科技部醫學工程學門召集人
國立臺灣大學電機資訊學院副院長
國立臺灣大學生醫電子與資訊學研究所特聘教授
國立臺灣大學電機工程學系特聘教授
國家衛生研究院醫工組兼任研究員

Convener, Biomedical Engineering Program, Ministry of Science and Technology, Taiwan/Associate Dean, College of Electrical Engineering and Computer Science/ Distinguished Professor, Department of Electrical/Engineering and Graduate Institute of Biomedical/Electronics and Bioinformatics, National Taiwan University/Adjunct PI, National Health Research Institutes

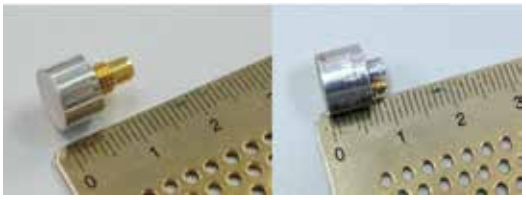
超音波影像實驗室

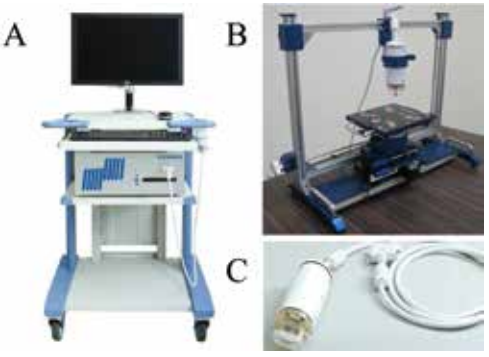
Ultrasonic Imaging Lab.

本實驗室由李百祺教授成立於 1997 年，主要從事醫學電子與影像物理相關研究，目前以生醫超音波技術與光聲影像等領域為研究重點。本實驗室在上述領域已產出許多具體貢獻並在全世界有很高之能見度。此外，本實驗室之成員來自電子、資訊、工程、生命科學及醫學等各領域，多年來亦積極與國內外單位進行合作，合作夥伴包括產、研、學各界，領域更涵蓋基礎科學、工程技術與臨床研究。跨界整合研究資源，致力前瞻生醫科技研究，提升健康與醫療品質，是本實驗室之成立宗旨與具體目標。

Ultrasonic Imaging Laboratory was founded by Professor Pai-Chi Li in 1997, with the main research focus in biomedical electronics and imaging physics. In the past few years, we have conducted a number of research projects in biomedical ultrasound and photoacoustic imaging. We have also made several critical contributions and are now one of the most visible research laboratories in this field in the world. Members of the lab come from various backgrounds, including electronics, informatics, engineering, life sciences and medicine. We have also been actively collaborating with research labs throughout the world, covering industry, research institutes and universities, from basic sciences, engineering to clinical research. Integrating multi-disciplinary research efforts, exploring advanced biomedical technologies, and improving healthcare quality is the mission of this lab.





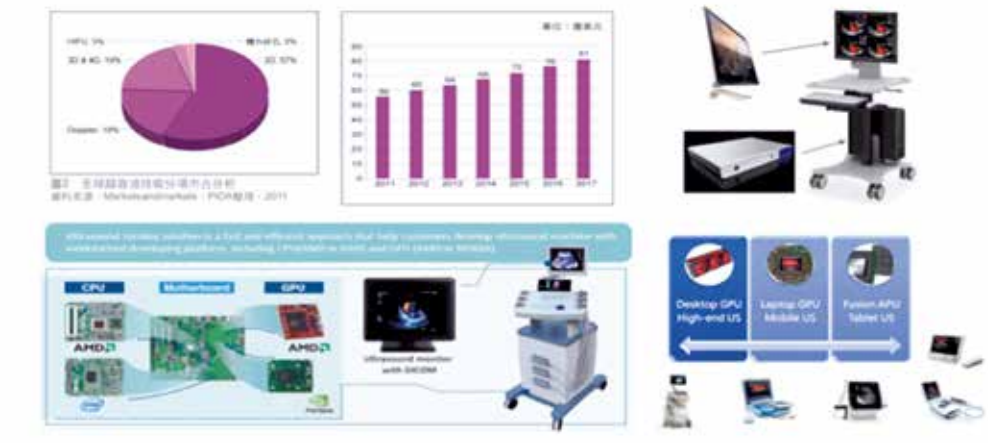
主要研究領域 Major Research Areas

生物醫學工程、超音波影像、生醫光聲影像
Biomedical Engineering, Ultrasound Imaging, Biomedical Photoacoustics

研究計畫 Research Projects

1. 自動化三維超音波乳房影像檢查
   Automatic 3D ultrasound breast screening
2. 剪力波斷層掃描影像儀技術創新與治療應用 (重點主題 C3) 總計畫兼子計畫 – 斷層掃描式剪力波影像技術開發與系統實現
   Technology development and system implementation of shear wavecomputed tomography
3. 光學式彈性成像技術開發與三維細胞研究應用
   Optical Shear Wave Elasticity Imaging and Applications to 3D CellStudies
4. 高階診斷超音波系統商品化與事業化計畫
   Development and integration of high-end diagnostic ultrasound systems
5. 發展微流道三維細胞培養系統以進行運用金奈米液滴之光熱治療研究
   Microfluidic 3D cell culture systems for studying photothermal therapy using gold nanodroplets
6.. 高教深耕計畫特色領域研究中心─電子科技整合研究中心子計畫二
   【阻塞性睡眠呼吸中止症之影像與分子診斷】

■ **研究計畫** - 高階診斷超音波系統商品化與事業化計畫
Development and integration of high-end diagnostic ultrasound systems 之代表圖及說明：



E-mail:paichi@ ntu.edu.tw
Phone:+886-2-33663551
Office: 博理館 425 (BL-425)
Website: http://ultrasound.ee.ntu.edu.tw
Lab Phone: +886-2-33669752
Lab.: 明達館 731(MD-731)

李心予 教授

Hsinyu Lee, Professor

國立臺灣大學生醫電子與資訊學研究所 教授
國立臺灣大學電機工程學系 教授
國立臺灣大學生命科學系 教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Professor, Department of Electrical Engineering, National Taiwan University
Professor, Department of Life Science, National Taiwan University

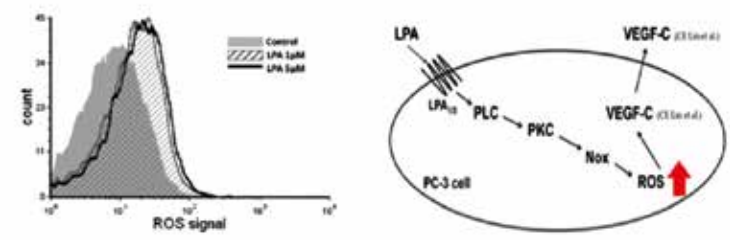
內皮細胞分子生物學實驗室

Laboratory of Endothelial Cell Molecular Biology

Research on Lysophospholipids

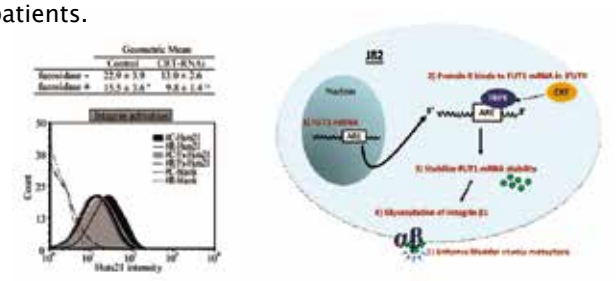
Lysophosphatidic acid (LPA) and sphingosine 1-phosphate (S1P) are two low molecular weight lysophospholipids (LPLs) highly enriched in serum. They are derived from enzymatic cleavage of membrane phospholipids. Through the efforts of my laboratory, we have demonstrated that LPLs enhance endothelial cell proliferation, migration and secretion of proteases. These observations strongly suggested that LPLs are regulators for vessel formation. In addition, LPLs also enhance ICAM-1 expression, CD31 phosphorylation and IL-8, MCP-1 secretion from endothelial cells through activating specific G-protein coupled receptors. These results suggested that LPLs are important regulators for inflammation processes. Our most recent findings suggested that LPA is also an important regulator for lymphatic vessel development. These results strongly suggested that LPA might be an important regulator for cancer metastasis. LPLs are also demonstrated by our laboratory to be important regulators for tumor development and cancer cell survival. Therefore, we expanded our research to LPL biology in different cancer models.

■ **右圖說明：**
Lysophosphatidic acid induces reactive oxygen species generation by activating protein kinase C in PC-3 human prostate cancer cells
Biochem Biophys Res Commun. 2014. 440(4):564-9



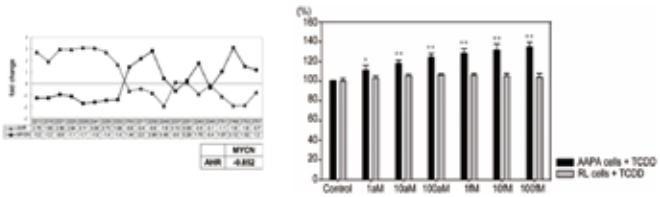
Research on Cancer cell biology

Through collaboration with colleagues at NTU hospital, we extended our research to identify neuroblastoma and hepatoma related cancer markers and exploring their potential roles in tumor formation. Calreticulin (CRT) was therefore identified as an important target. Based on these observations, we further explore the roles of CRT in bladder tumor development. Our results demonstrated that alteration of CRT levels affected cell adhesion and metastasis in bladder cancer. Furthermore, we observed that CRT regulated cell adhesion through modifying α1,2-linkaged glycan on β1-integrin, which was catalyzed by fucosyltransferase 1 (FUT1). Most importantly, we made a novel finding that higher levels of fucosylation catalyzed by FUT-1 directly activate β1-integrin. Moreover, mechanistic investigation demonstrated that CRT affected FUT1 levels through regulating mRNA stability. Our results may provide a potential clinical treatment strategy for bladder cancer patients.



■ 右圖說明：

Calreticulin activates β1 integrin via fucosylation by fucosyltransferase 1 in J82 human bladder cancer cells
Biochem J. 2014 May 15;460(1):69-78

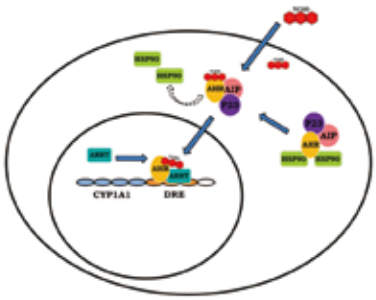


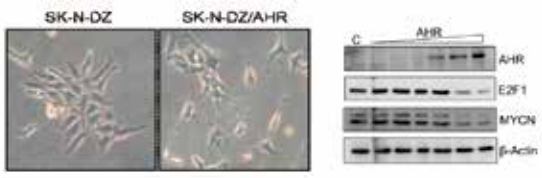
■ 右圖說明：

Aryl Hydrocarbon Receptor Down-regulates MYCN Expression and Promotes Cell Differentiation of Neuroblastoma PLoS One. 2014 Feb 21;9(2):e88795.

Dioxin detection systems and bioassay development

In the past ten years, our laboratory has intensively exploring the possibility of developing more sensitive and low cost bioassay for dioxin like compounds. Two assays, including FRET and BRET based dioxin detection systems were developed.





■ 上圖說明：

Establishment of a cell-free bioassay for detecting dioxin-like compounds
Toxicol Mech Methods. 2013 Jul;23(6):464-70

E-mail: hsinyu@ntu.edu.tw
Phone: +886-2-33662499
Office: 生命科學館 504 室 (Life Science Building-504)

林致廷 教授

Chih-Ting Lin, Professor

國立臺灣大學生醫電子與資訊學研究所 教授
國立臺灣大學電機工程學系 教授
國家臺灣大學電子工程學研究所 教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Professor, Department of Electrical Engineering, National Taiwan University
Professor, Graduate Institute of Electronics Engineering, National Taiwan University

生醫晶片技術實驗室

CMOS Biotechnology Lab.

本實驗室成立於 2006 年，主要研究方向為電子生醫晶片技術相關研究，目前以生物分子檢測技術、微細胞監測晶片技術、軟性電子材料與無線感測器網路系統等領域為研究重點。進一步的說明，整合現今蓬勃發展的奈微米製程科技與傳統生物科學知識，可以發展出極具應用及發展潛力之關鍵性跨領域技術，因此，本實驗室致力於開發不同之生醫電子應用晶片與系統，期能在相關領域獲得良好之成果與能見度。本實驗室之成員來自電機系、機械系及醫工等工程相關領域，以此為基礎，積極與生醫相關領域學者進行合作，合作領域及研究範疇涵蓋基礎科學、工程技術與臨床研究等。

A series of bio-chemical molecular sensors can be developed by utilizing nano-scale electrical devices. Based on the superior fabrication facilities and skills in Complementary Metal-Oxide-Semiconductor (CMOS) and Nano/Micro Electro-Mechanical System (N/MEMS), moreover, micro protein sensor arrays technologies and living cell monitoring systems are also envisioned to be an exciting research direction. In summary, our research is aiming at developing innovative and integrated systems for nano/bio research fields.

主要研究領域 Major Research Areas

奈微米生物機電系統、生物晶片、生物分子量測技術、奈米製程技術、生物微感測器、軟性噴墨電子技術
Bio-NEMS, Bio-Chip, Nano fabrication, Biomolecular Detection Technology, Inkjet Printing Organic Electronics

研究計畫 Research Projects

1. 有機電子噴墨技術與標準半導體電子製程技術整合之異質三維系統晶片架構之研發 (NSC 101-2628-E-002-022-MY3)
2. 噴墨式高介電質有機材料之開發及應用元件之研發 (MOST 104-2628-E-002-014-MY3)
3. 低維度奈米結構於固液界面之表面位能檢測技術之研發與應用 (MOST 105-2221-E-002-232-MY3)

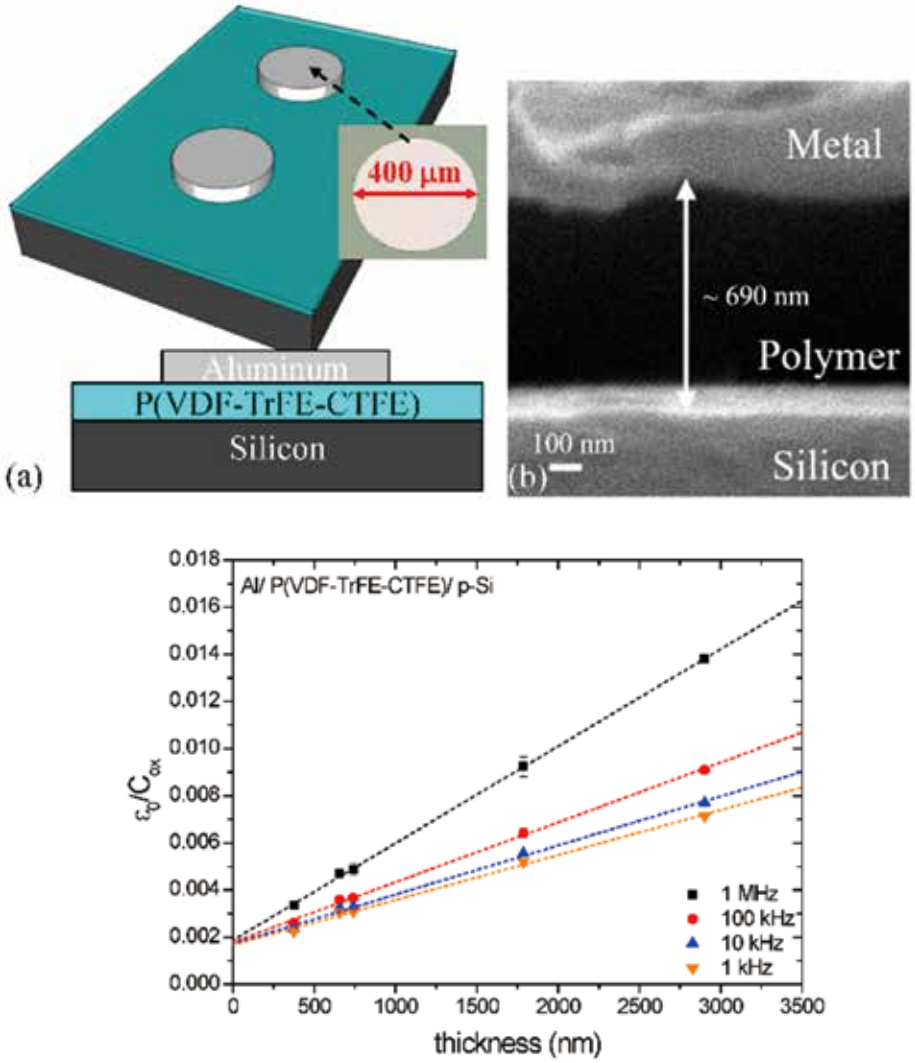
■ **研究計畫：** 噴墨式高介電質有機材料之開發及應用元件之研發
補助單位：行政院科技部
計畫期間：2015/08/01 - 2018/07/31

介電質材料 (dielectric material) 由於可以用於控制或儲存電荷與能量，並且也是電子產品或電力系統中關鍵的材料，如場效電子元件特性除了與基本半導體材料有關之外，最重要的即為介電質材料，亦即一個理想的場效電晶體需要擁有高的電流調變能力 (on/off ratio) 與較佳的次臨限擺幅，可利用高介電常數可以提升有機薄膜電晶體之電流調變能力及次臨限擺幅。因此，利用 P(VDF-TrFE-CTFE) 做為閘極絕緣材料用以改善閘極對於汲極電流的調變能力對於未來有機薄膜電晶體的發展是一個可行方向。本研究計畫目的在整合自製自動化有機材料噴墨系統、電子電路系統設計與奈微米有機材料元件的製作能力，以可噴印式高介電質有機材料研發為基礎，利用整合性自動化有機噴墨系統於可撓式基板上發展具低成本及高性能之有機薄膜元件，用以因應未來可撓性有機電子產業的需求與應用。

Project title: The development of inkjet printable devices based on P(VDF-TrFECTFE)
Supported by: Ministry of Science and Technology
Project period: 2015/08/01 – 2018/07/31

Dielectric material is one of the most important materials in electronics because it can be used to control and storage charges and electrical potential. This project aims to develop an inkjet-printable high-k dielectric material, P(VDF-TrFE-CTFE), for different kinds of organic field-effect devices, such as transistor and memory. To achieve this goal, this project integrates a self-construct inkjet-printing system, micro/nano fabrication technologies, and semiconductor device designs to implement a series of inkjet-printing, low-cost, and high-performance organic thin film devices on flexible substrates for future applications in flexible organic electronics. Within three years, this project aims to achieve 1. Inkjet-printable high-k dielectrics for organic thin film devices; 2. An inkjet-printing flexible non-volatile memory device based on the developed high-k dielectrics; 3. An inkjet-printing logic circuit implemented with a flexible substrate; 4. Implement a flexible-integrated circuit based on the developed inkjet-printing materials and technologies.

代表圖及中英文說明：



左圖為 PVDF-TrFE-CTFE 有機高介電材料電子顯微鏡照片；右圖為介電特性對材料厚度與頻率的作圖。

E-mail: timlin@ntu.edu.tw
Phone: +886-2-33669603
Office: 電機二館 447 (EE2-447)
Website: http://biocmos.ntumems.net/
Lab. Phone: +886-2-33663719
Lab. : 電機二館 450 (EE2-450)

林啟萬 教授
Chii-Wann Lin, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學醫學工程研究所教授
國立臺灣大學電機工程學系教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/
Graduate Institute of Biomedical Engineering/
Department of Electrical Engineering, National Taiwan University

醫用微感測器暨系統實驗室
Medical Micro Sensor and System Lab.

本實驗室致力於配合醫療儀器認證與驗證法規之推動與精神體現，以微機電技術與光學感測方式進行生醫奈微米微感測器元件與系統整合之研究與應用－包括表面電漿共振 (surface plasmon resonance) 原理，表面電漿子感測器設計、微型系統整合、軟硬體介面溝通，主旨在於發展快速、便利、正確、與人性化醫用感測儀器，以促進個人化醫學 (personalized medicine) 與電子化醫療 (e-health) 之研究與產業發展。

We have devoted to apply microfabrication technologies and optical sensing mechanisms to develop nano/micro sensors and integrated system for the medical applications with compliance of medical device regulations and standards. Our research currently focus on the theoretical development for novel Surface Plasmon Resonance (SPR) devices, design of SPR nano/micro sensor, bioplamonics, and the heterogeneous integration of micro-system from hardware to software. The aim is to develop the fast diagnosis, easy to use, and user-friendly medical devices toward the success of personalized medicine and e-health.

2015 年校友回娘家參訪新實驗室

主要研究領域 Major Research Areas

生物微感測器與系統、生醫晶片、生醫光電、類神經網路、醫材法規

Bioelectronics, Biomedical Micro sensors and System, Biochip, Biomedical Optics, Artificial Neural Networks, Regulatory Affairs

研究計畫 Research Projects (103學年度：1030801-1050731)

1. 針對大腸腫瘤及淋巴结轉移的早期發現和清除的光電醫學診斷與治療關鍵問題研究 102-2218-E-002 -014-MY3
2. 無線充電高頻脈衝電刺激貼片於腕隧道症候群之應用研發　102-2320-B-002 -040 -MY2
3. 國立臺灣大學萌芽創業推廣計畫 – 拋棄式表面電漿子共振晶片原型開發與前臨床驗證 103-2812-8-002-003-
4. 以軟體鎖相偵測與智慧手機實現無所不在的表面電漿子共振生物感測平台 MOST 105-2221-E-002 -016 -MY3

E-mail: cwlinx@ntu.edu.tw
Phone: +886-2-33665272
Office: 永齡生醫工程館 526
Website: http://bionems.bme.ntu.edu.tw/

林發暄 教授
Fa-Hsuan Lin, Professor

國立臺灣大學醫學工程研究所教授
國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學腦與心智科學研究所教授
國立臺灣大學醫學院醫學系放射線科教授

Professor, Institute of Biomedical Engineering, National Taiwan University
Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Professor, Graduate Institute of Brain and Mind Sciences, National Taiwan University
Professor, Department of Radiology, School of Medicine, National Taiwan University

人腦實驗室
Lab of Brain Imaging and Modeling

近年來，科學界逐漸了解複雜的人類行為與認知功能是藉由腦中不同階層的神經系統交互作用所表現出來，而非由單一的結構所掌控，有鑑於此，欲進一步了解人腦功能，則需要在結構與功能層面上研究以下三個問題：(1) 什麼地方發生活動 (2) 這些活動是何時發生以及其發生順序為何 (3) 是如何藉由在大規模的神經網路中的訊息傳遞完成這些認知行為。現代非侵入性的醫學影像技術可幫助我們獲得高空間與時間解析度的神經活動資料，而定量的系統模擬將有助於解譯隱含於這些神經影像資料中協同完成感官，認知，與行為歷程的動態神經活動．

本實驗室的研究方向為整合硬體研發，資料分析，與數值模擬等工程技術來幫助我們了解複雜的人腦功能．進行中的研究計畫集中於結合結構與功能性核磁共振影像，腦磁圖與腦電圖之高時間空間解析度的神經影像技術，以及系統階層的神經信號模擬．以了解神經活動與行為間的關係．

Complex behavior and cognitive functions of the human brain are suggested to be "mapped at the level of multi-focal neural systems rather than specific anatomical sites, giving rise to brain-behavior relationships that are both localized and distributed". Further understanding of these brain mechanisms requires both structural and functional knowledge to answer (i) where are the foci of activity, (ii) when are these areas activated and what is the temporal sequence of activations, and (iii) how does the information flow in the large-scale neural network during the execution of cognitive and/or behavioral tasks. Advanced noninvasive medical imaging/recording modalities are able to localize brain activities at high spatial and temporal resolution. Quantitative modeling to interpret these data is needed to understand how large-scale distributed neuronal interactions underlying perceptual / cognitive / behavioral functions emerge and change over time.

Our research interests include the integration of hardware development, data analysis, and mathematical modeling to facilitate our understanding of brain cognition. Current research projects try to explore challenges of spatiotemporal brain imaging and modeling by using a combination of hardware and analytical approaches to enhance the spatiotemporal resolution of single (MRI) or combined (MRI/fMRI and MEG/EEG) modalities. In addition, mathematical approaches for identifying large-scale neural networks and their correlation to behavioral measurements are investigated.

主要研究領域 Major Research Areas

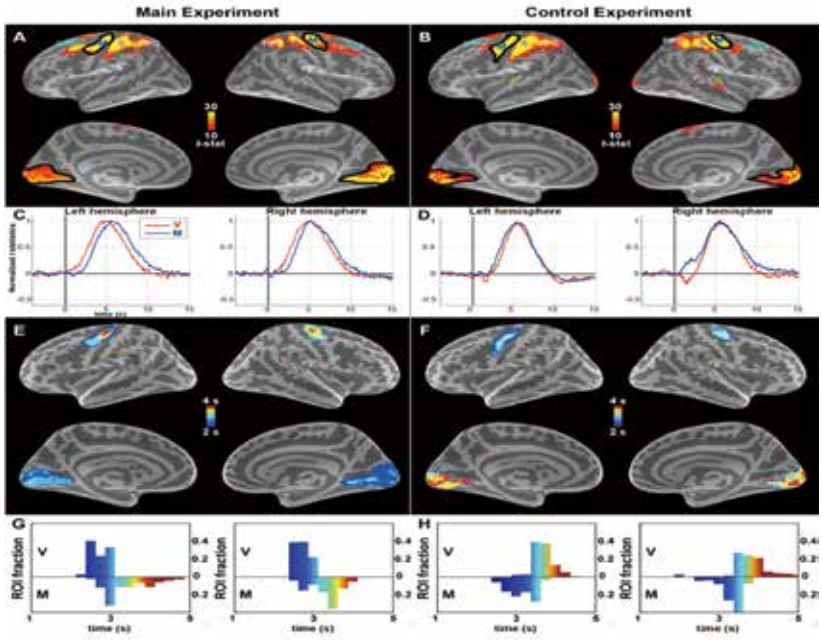
神經影像、核磁共振影像、腦磁圖、腦電圖、神經系統模擬
Neural imaging, Magnetic resonance imaging, Magnetoencephalography (MEG), Electroencephalography (EEG), Neuronal modeling

研究計畫 Research Projects

1. 科技部計畫 -【利用超快速功能性核磁共振影像技術於人腦神經血液動力耦合之研究】
   Human neuro-vascular coupling revealed by ultra-fast functional magnetic resonance imaging method
2. 科技部計畫 -【人腦γ- 氨基丁酸與麩胺酸核磁共振頻譜與頻譜影像診斷系統 (重點主題 :C3)-- 總計畫兼子計畫一 : 高敏感度多通道核磁共振頻譜與頻譜影像偵測與校正系統】
   Development of field probes and shim coil system for magnetic resonance spectroscopy and spectroscopic imaging

E-mail: fhlin@ ntu.edu.tw
Phone: +886-2-33665264
Office: 展書樓 703(JanShu Hall-703)
Lab. Phone: +886-2-33669702
Office: 展書樓 701/702(JanShu Hall-701/702)

■ **研究計畫：** 利用超快速功能性核磁共振影像技術於人腦神經血液動力耦合之研究
Human neuro-vascular coupling revealed by ultra-fast functional magnetic resonance imaging method 之代表圖及中英文說明：



(A) During the main (visuomotor) experiment, both visual (V) and motor (M) cortices were activated. The black outlines indicate the ROIs thresholded from these statistical images. PPC: posterior parietal cortex; S: somatosensory cortex; preM: premotor cortex (B) During the control (motor-visual) task, V and M cortices were activated. Again, the black outlines indicate the ROIs; these were over 80% overlapping with the main experiment ROIs in panel A. PPC: posterior parietal cortex; S: somatosensory cortex; preM: premotor cortex (C-D) The corresponding ROI-specific BOLD responses (peak amplitudes normalized across ROIs, group level). The order of activations clearly follows the order of external events (stimuli and task). The signal-to-noise ratio across all ROIs was 29. (E – F) Spatial distribution of latencies (TTH) within the visual and motor ROIs. Variability within ROIs was much smaller than delays across ROIs, suggesting that voxel-to-voxel variability did not confound the results. (G – H) Histograms of latencies (TTH) within the visual and motor ROIs.

(A) 與 (C)：在主要實驗中，受試者在從事視覺 – 運動作業下會引發位於視覺區與感覺運動區的血氧信號。利用 100 毫秒解析度 INI 重建之功能性核磁共振影像 (fMRI) 技術，可發現位於左腦與右腦的群體視覺區活動先於感覺運動區。(B) 與 (D)：而進行另一項控制實驗 (先手部運動後視覺刺激) 時，位於視覺區與感覺運動區的血氧信號順序則會與主要實驗相反：感覺運動區的血氧信號會早於視覺區數百毫秒。(E) 與 (F) 二圖顯示此二腦區的血氧信號到達 50% 最大強度的時間點之空間分佈圖。(G) 與 (H)：視覺區與感覺運動區的血氧信號到達 50% 最大強度的時間點之直方圖。

孫啟光 特聘教授

Chi-Kuang Sun , Distinguished Professor

國立臺灣大學生醫分子影像研究中心 核心實驗室召集人
國立臺灣大學生醫電子與資訊學研究所 特聘教授
國立臺灣大學光電工程學研究所 特聘教授
國立臺灣大學電機工程學系 特聘教授
國立臺灣大學醫療器材與影像研究所 教授
中央研究院應用科學研究中心 合聘研究員
中央研究院物理研究所 合聘研究員

Head of Core Laboratory, Molecular Imaging Center, National Taiwan University
Distinguished Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University.
Distinguished Professor, Graduate Institute of Photonics and Optoelectronics, National Taiwan University.
Distinguished Professor, Department of Electrical Engineering, National Taiwan University.
Professor, Institute of Medical Device and Imaging, National Taiwan University
Adjunct Research Fellow, Research Center for Applied Sciences, Academia Sinica.
Adjunct Research Fellow, Institute of Physics, Academia Sinica.

光學分子影像核心實驗室

Optical Molecular Imaging Core Lab.

本實驗室在致力於發展非侵入式光學顯微分子影像術，以於臨床受試者或活體動物體內取得三維深層次微米解析之次細胞級影像。所發展之獨特技術包含倍頻顯微術、超解析雙光子顯微術、雙光子聲光顯微術等。所發展的技術，可於臨床受試者皮膚與黏膜內，在無傷害且不須染色切片的情況下，直接取得病理切片級的光學顯微影像(稱之為光學虛擬切片影像)，並將此技術應用於腦神經連結影像、早期癌症檢測、次微米活體臨床神經影像、與術前、術中、術後之臨床即時檢測、手術邊緣鑑定與療效追蹤。

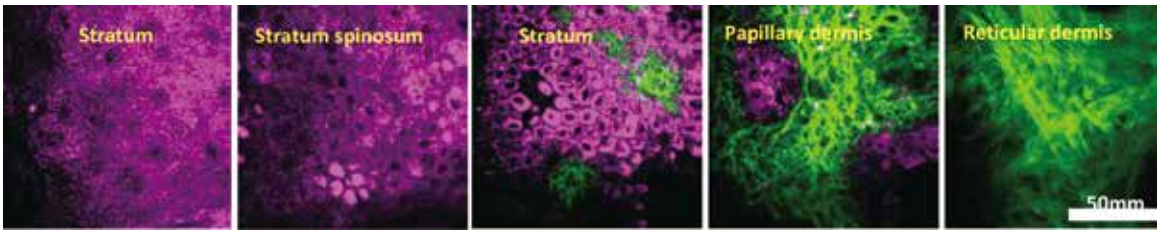
主要研究領域 Major Research Areas

主要研究領域 Major Research Areas：
非侵入式光學臨床影像、虛擬光學切片病理影像、與超解析神經影像
Non-invasive optical microscopy for clinical imaging, virtual biopsy imaging for histopathological diagnosis, super-resolution neuron imaging

研究計畫 Research Projects

1. 頻譜解析三倍頻顯微術 (3/3): 科技部
   Spectrally-resolved Third Harmonic Generation Microscopy
2. 阿茲海默症多尺度跨領域之研究 – 建構先進非線性光學顯微術以從事小鼠全腦腦連結體影像：國立台灣大學
   Volumetric deep-tissue imaging of connectomes in intact whole mouse brains by developing advanced nonlinear microscopy
3. 發展先進倍頻顯微術以用於皮膚色素疾患之治療評估 (1/3): 科技部
   Advanced harmonic generation microscopy for treatment assessment of cutaneous pigmentary disorder

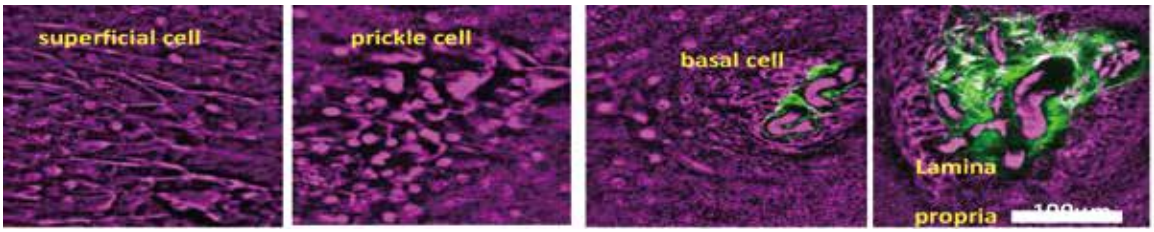
■ 代表圖及中英文說明 -1：



In *vivo* HGM images of human skin

In *vivo* harmonic generation microscopic images of human skin, taken at different depths.
於人體活體皮膚不同深度所取得之倍頻式光學虛擬切片影像。

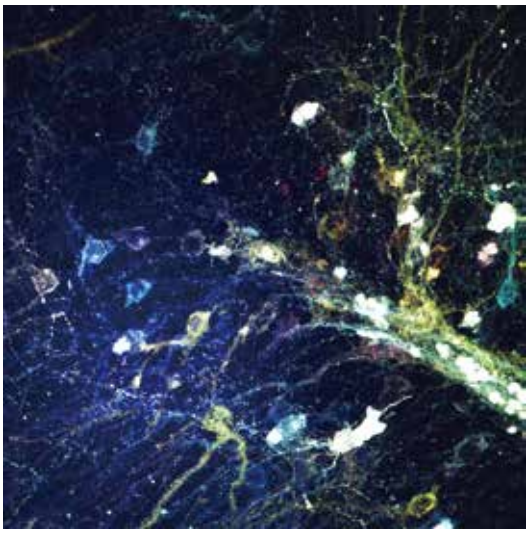
■ 代表圖及中英文說明 -2：



In *vivo* HGM images of human oral mucosa

In *vivo* harmonic generation microscopic images of human oral mucosa, taken at different depths.
於人體活體口腔黏膜不同深度所取得之倍頻式光學虛擬切片影像。

■ 代表圖及中英文說明 -3：



Neurons surrounding the dentate gyrus of the mouse were infected by the Brainbow AAV and randomly expressed multiple fluorescent proteins. We apply this technique to reveal the detail morphological details of each distinct neuron in the interested region.

圍繞在小鼠海馬體齒狀迴的神經元，以 brainbow AAV 病毒感染，隨機表現不同顏色的螢光蛋白，以彰顯個別神經的細微結構。

E-mail: sun@ntu.edu.tw
Phone: +886-2-3366-5085
Office: +886-2-3366-1552
Website: http://ufo.ee.ntu.edu.tw
Fax: +886-2-3366-1552

宋孔彬 副教授

Kung-Bin Sung, Associate Professor

國立臺灣大學生醫電子與資訊學研究所副教授
國立臺灣大學電機工程學系副教授

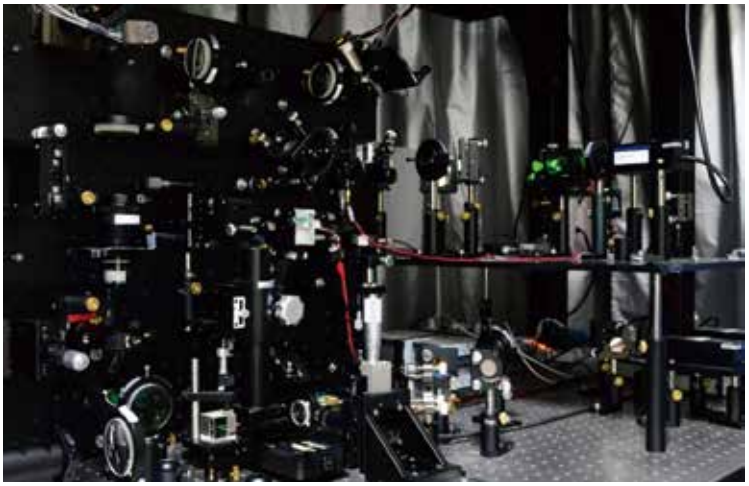
Associate Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Associate Professor, Department of Electrical Engineering, National Taiwan University

生醫光譜與影像實驗室

Biomedical Optical Spectroscopy and Imaging Lab.

我們實驗室目前的研究重點是以光學方法來觀察生物組織、細胞與分子，主要分為各種光譜的偵測分析以及光學影像系統的開發，以期對生物醫學領域的研究有所助益，並開發新的輔助醫學診斷的工具。長期的目標是發展可應用於活體的工具，協助疾病如上皮癌前病變之診斷，以及生理狀況的長期監測。

Current research in our laboratory is focused on pushing forward optical spectroscopy and microscopy technologies and utilizing these methods to aid biomedical research and develop new diagnostic tools. The long-term objectives are to develop in-vivo tools for diagnosing disease such as epithelial precancers and monitoring physiological status.



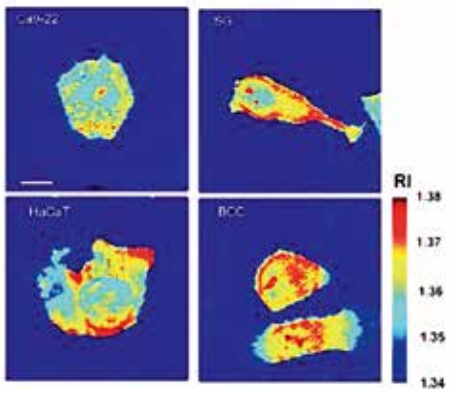
主要研究領域 Major Research Areas

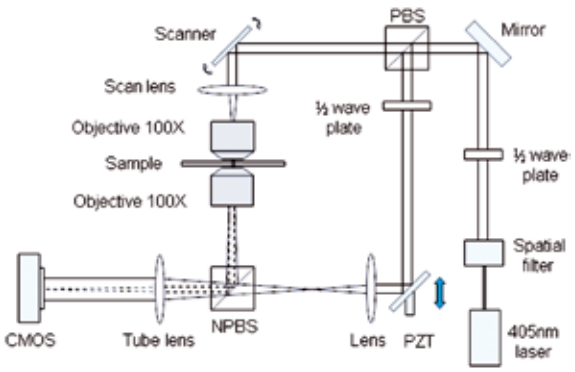
生醫光電、生醫工程
Biomedical Optics, Biomedical engineering

研究計畫 Research Projects

1. 以光學虛擬切片分子影像從事早期疾病診斷 (共同主持人)
   Advanced Optical Virtual Biopsy for Early Disease Diagnosis (co-PI)
2. 三維折射率活細胞顯微術 (主持人)
   Three-dimensional refractive-index microscopy for live cell imaging (PI)
3. 非侵入性高光譜顯微影像系統進行食道癌域理論之光學定量分析 (共同主持人)
   Optical quantification of field carcinogenesis in the esophagus with a non-invasive hyperspectral imaging system (co-PI)
4. 針對大腸腫瘤及淋巴结轉移的早期發現和清除的光電醫學診斷與治療關鍵問題研究 (共同主持人)
   Integrated optoelectronic approaches for early diagnosis and precision treatment of metastasis colorectal cancer and lymph node (co-PI)
5. 創新非侵入式中央靜脈血氧飽和濃度儀 (共同主持人)
   Innovation and noninvasive central venous oximetry (co-PI)
6. 以背向散射光譜進行活體白血球計數 (主持人)
   In vivo White Blood Cell Count with Backscattering Spectroscopy(PI)
7. 手持式偵測皮膚組成系統之開發 (主持人)

■ **研究計畫：** 三維折射率活細胞顯微術 (Three-dimensional refractive-index microscopy for live cell imaging, Supported by: Ministry of Science and Technology) 之代表圖及中英文說明：





上圖為本計畫所建構的光學相位斷層掃描系統，利用此系統可以得到細胞的三維折射率的分布，下圖為四種不同細胞株 (CA9-22, BCC, HaCaT 及 SG) 於聚焦平面之折射率分布。圖中白色線代表 10 μm。

The figure at the top shows a schematic diagram of an optical tomographic phase microscope developed in this project. We have used this novel technique to acquire three-dimensional distributions of refractive index of living cells. The four figures at the bottom show refractive index images of four cell lines at the focal plane.

E-mail: kbsung@ntu.edu.tw
Phone: +886-2-33669675
Office: 明達館 715 (MD-715)
Website: http://www.ee.ntu.edu.tw/profile?id=739
Lab. Phone: +886-2-33669600
Lab. : 明達館 703(MD-703)

楊泮池 特聘教授

Pan-Chyr Yang, Distinguished Professor

國立臺灣大學生醫電子與資訊學研究所特聘教授
國立臺灣大學醫學院內科教授
中央研究院生物醫學研究所合聘研究員
中央研究院院士
國立臺灣大學講座教授

Distinguished Professor, Graduate Institute of Biomedical Electronics and Bioinformatics
Department of Internal Medicine, College of Medicine, National Taiwan University
Research Fellow, Institute of Biomedical Sciences, Academia Sinica
Academician, Academia Sinica
Chair Professor, National Taiwan University

中研院生醫所
IBMS RM511

我們主要研究工作有下列四方面（1）找尋國人肺癌之危險基因。（2）建立體外癌轉移模式，全基因體搜尋癌轉移相關基因。（3）發現新的癌轉移基因及機轉做為診斷及治療標的。（4）研究癌細胞與周邊微環境之交互作用，特別是發炎細胞與癌細胞的互動。我們以 cDNA 基因微陣列研究基因之調控，訊息傳遞及功能。在基因流行病學研究我們已找到數個國人肺癌之危險基因，我們更以自己建立之肺腺癌之細胞株，利用侵襲篩選之細胞培養方式，篩選出高侵襲能力之子細胞株，並在老鼠實驗動物模式證明高侵襲肺癌細胞株也同時具有高轉移能力，利用以一體外模式及 cDNA 微陣列，我們可以全基因體找尋癌轉移之相關基因，在含 9600 基因之微陣列中我們找到近 600 個基因與肺癌轉移有關，我們將利用這些基因製成癌轉移檢測晶片推廣至臨床使用。同時在這些癌轉移相關基因中，我們發現新的抑癌轉移基因及促癌轉移基因如 Collapsin Response Mediator Protein-1 (CRMP-1)，LCRMP-1，HLJ1 及 Slug 等。這些基因在癌轉移之分子調控機制為目前主要研究之重點，且此類新的癌轉移相關蛋白也成為治療主要標誌分子，我們也用基因微陣列之研究模式，剖析這些基因之下游基因。最近，我們正著重於研究這些新的癌轉移相關蛋白之訊息傳遞途徑及功能和蛋白交互作用機制。

Our research teams are interested in studying the molecular pathogenesis of lung cancer in Taiwan and mechanisms of cancer metastasis. We focus on four aspects: (1) identification of novel risk genes for lung cancer in Taiwan, (2) molecular signature for prognostic prediction and personalized therapy of lung cancer, (3) identify novel genes and mechanisms involved in cancer metastasis for potential diagnosis and treatment targets, and (4) interaction of cancer cells and microenvironments, especially the cross talks between cancer cells and microenvironment inflammatory cells. Our team has identified several candidate risk genes for lung cancer. Cancer metastasis is a complicated process that may involve numerous genetic changes. To identify invasion/metastasis associated genes, we used DNA microarray and invasion/metastasis lung cancer cell line model and identified a panel of genes associated with

lung cancer metastasis. We also developed gene expression signature and microRNA signature that can predict survival and metastasis of lung cancer patients. These molecular signatures may be helpful for personalized therapy of lung cancer patients. We have also identified novel invasion/metastasis suppressor genes such as collapsin response mediator protein-1 (CRMP-1), long form CRMP, HLJ-1 and invasion promoting gene slug. Currently, we are investigating the molecular mechanisms and signaling pathways and protein interaction maps of these novel metastasis related genes.

主要研究領域 Major Research Areas

基因體醫學、細胞生物學、轉譯醫學
Genomic medicine, Cell Biology, Translational Medicine

研究計畫 Research Projects

1. 探討 HIPK2 與 Slug 在致癌性及癌轉移的角色
   HIPK2 regulates slug-mediated tumorigenesis and metastasis
2. 研究促癌轉移基因 Slug 在細胞週期扮演的角色
   The invasion promoter Slug is a novel cell cycle regulator
3. 整合性功能基因體學核心實驗室 II
   Integrated Core Facility for Functional Genomics (II)
4. 多功能轉錄因子 YY1 和肺癌生成關係之探討
   Multifunctional Transcription Factor YY1 and Lung Cancer Progression
5. 整合性功能基因體學核心實驗室 I
   Integrated Core Facility for Functional Genomics (I)
6. 癌轉移之外基因調控
   Epigenetic Control of Cancer Metastasis

E-mail: pcyang@ntu.edu.tw
Phone: +886-2-33662000
Lab Phone: +886-2-33661778

周迺寬 臨床副教授

Nai-Kuan Chou, Clinical Associate Professor

國立臺灣大學生醫電子與資訊學研究所合聘臨床副教授
國立臺灣大學醫學系外科臨床副教授
國立臺灣大學醫院附設醫院外科加護病房主任
國立臺灣大學醫院附設醫院器官勸募小組召集人

Clinical Associate professor of Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University
Clinical Associate professor of surgery, National Taiwan University, College of Medicine
Director of Intensive Care Unit of Department of Surgery, National Taiwan University Hospital
Convener m of Organ Procurement Organization, National Taiwan University Hospital

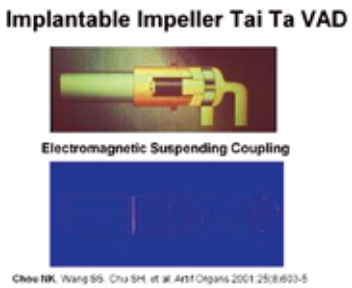
臺大醫院第七共同研究室

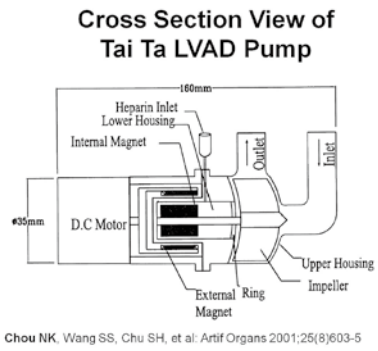
Laboratory

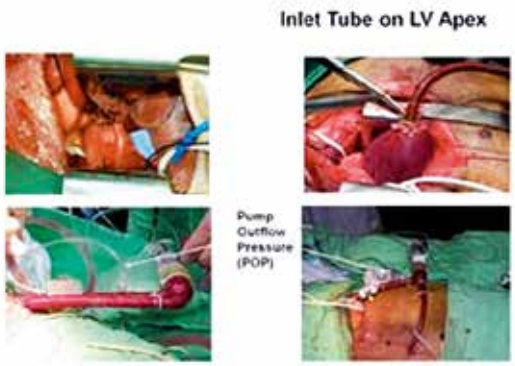
實驗室結合研究團隊的各實驗室，成員如下：應力所邵耀華教授、電機系汪重光教授、獸醫系徐久忠教授、高分子所謝國煌教授、包舜華博士、戴浩志醫師、王碩盟醫師、劉亮廷醫師

1. 小動物實驗模型
2. 醫療儀器、訊號分析處理
3. 超音波影像處理
4. 實驗室儀器：雙向心臟血管用X光射影系統、多頻道生理記錄分析系統(Polygraphy)、Injector、Autoinjector、多頻道心理生理電腦化記錄分析儀(EP recording)、CARTO、電氣生理刺激器、血管內導線壓力儀器(PressureWire)、OCT、電燒機、血管內超音波(i-LAB)、血液凝固測試儀(ACT)、波士頓科技羅塔培特控制台系統、IABP、電擊器、血中含氧測定儀、非侵入式自動血壓計、微量點滴控制器(Syringe pump)、人工心律調整器、血氧飽合濃度監視器、血壓血氧ECG監視器、電刀機、點滴幫浦、耳溫槍、血糖機、JJ電燒機等等。

Laboratory animals, animal models of heart failure and artherosclerosis, establishes computerized database for laboratory animal science and assists in various experiments, disease diagnosis, and health monitoring.







E-mail: nickchou@ntu.edu.tw
Phone: +886-2-23123456#65066
Fox: +886-2-23956934
Office: 台大醫院新大樓臨床研究大樓 8 樓
外科研究室 08-11 室

魏安祺 助理教授

An-Chi Wei, Assistant Professor

國立臺灣大學生醫電子與資訊學研究所助理教授

Assistant Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University

生醫系統工程實驗室

Biomedical System Engineering Lab.

線粒體是細胞的能量工廠，線粒體也在細胞中扮演了其他重要的角色，例如調節細胞凋亡與維持離子平衡。也因此線粒體功能與許多重要的疾病與生理現象有密切的關係，像是心臟疾病、神經退化疾病、糖尿病、癌症以及多種代謝疾病都與線粒體的功能都有關聯。

本實驗室的研究方向為整合計算模擬與實驗，用系統生物學的角度來了解細胞能量的供應與需求。研究方法以發展線粒體計算模型為基礎，並由直接的實驗測量來驗證，透過緊密的理論與實驗的配合，提供線粒體如何影響正常和病變的能量狀態的全面了解。該模型可被用於優化治療的設計，以達到最大的保護作用。開發線粒體模型，可在未來提供更全面的細胞、器官模型及藥物設計的基礎。

Mitochondria, the powerhouse of the cell, are organelles found in most types of cells.In addition to being the main site of energy production, mitochondria also play important roles in regulating ion homeostasis, and apoptosis. Mitochondrial dysfunction is related to rare inborn errors of metabolism, and some of the most common human diseases, such as cardiac vascular disease, diabetes, neurodegeneration, and cancer. Because of their important roles in basic biology and clinical medicine, mitochondria are an excellent model for systems biology.

The objective of our lab is to apply recent advances in systemic and quantitative methods to characterize the properties of crucial ion transporters in mitochondria, examine their functional roles in the mitochondrial ion circuits, and develop computational model of mitochondrial ion dynamics and energetics. The goal is to elucidate the roles of mitochondrial ion transport in energy supply and demand matching, integrated cell function, and the progression of disease. The model may ultimately be used to optimize the design of therapeutic agents in order to maximize protective effects.

主要研究領域 Major Research Areas

線粒體、生物能量與代謝、系統生物學、生物系統模型建構模擬

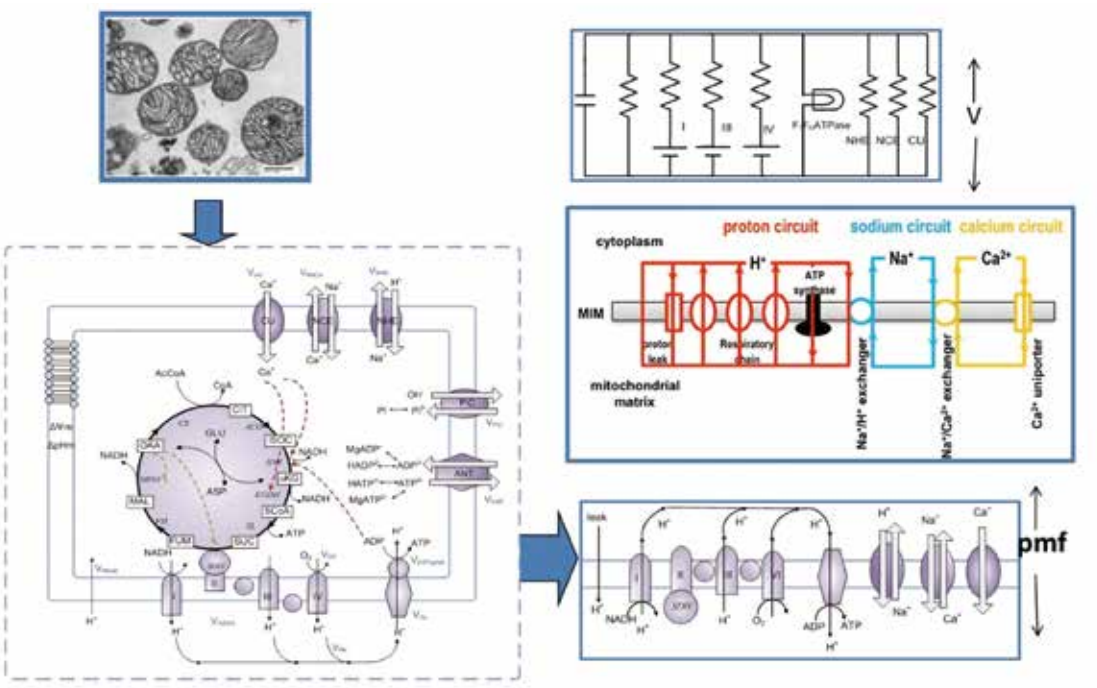
Mitochondria, bioenergetics and metabolism, systems biology, modeling and simulation of biological systems

研究計畫 Research Projects

1.【研發細胞線粒體的計算模型】

Developing mitochondrial computational model in the cell to elucidate the interplay between ion balance, mitochondrial energy state, and redox status

研發細胞線粒體的計算模型，整合能量代謝，離子調節，與氧化還原。



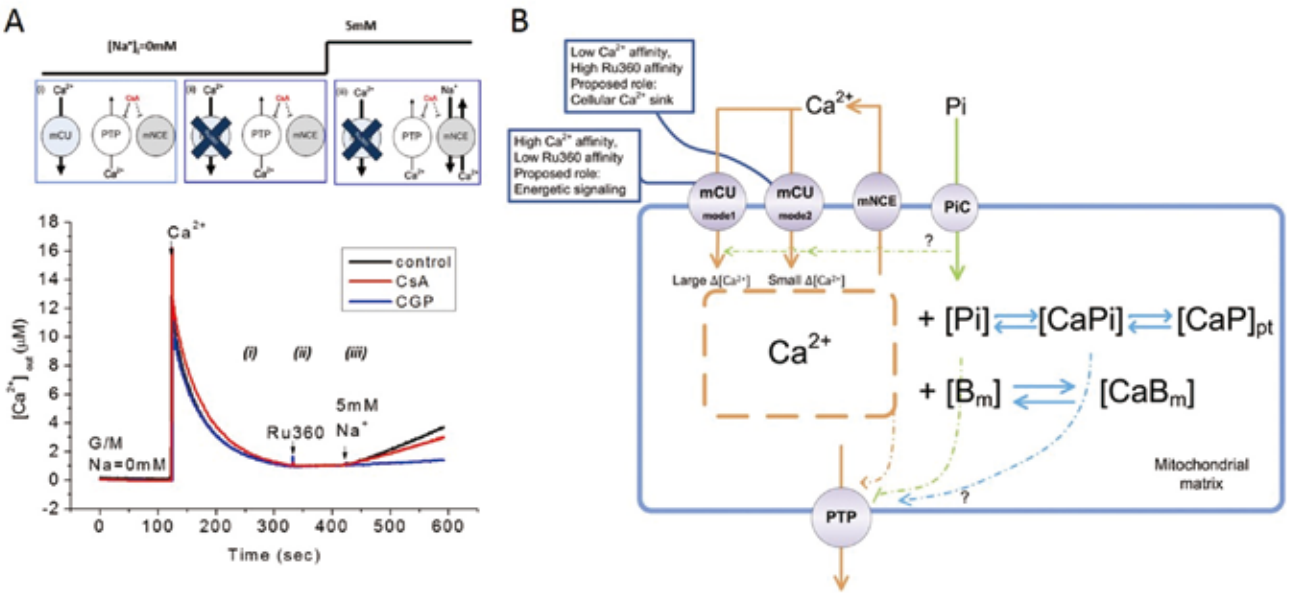
圖一 線粒體系統和電路模型之類比

Figure 1. Mitochondrial ion circuit as an analog of an electrical circuit:By making analogies between the complex mitochondrial system and a simple electrical circuit model, we will have a better understanding of the interactions between ion dynamics and energetics in a unique and intuitive manner.

2.【心肌細胞線粒體鈣離子調節之研究】

Study of mitochondrial calcium regulation in cardiac myocytes

研究線心肌細胞粒體鈣離子處理和緩衝。



E-mail:acwei86@ntu.edu.tw
Phone: +886-2-33668612
Office: 明達館 521
Lab. Phone: +886-2-33663543
Office：明達館 705 (MD-705)

張瑞峰 教授

Ruey-Feng Chang, Professor

國立臺灣大學生醫電子與資訊學研究所教授兼所長
國立臺灣大學資訊工程學系教授
國立臺灣大學資訊網路與多媒體研究所教授

Director and Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/Department of Computer Science and Information Engineering/Graduate Institute of Networking and Multimedia, National Taiwan University

醫學影像處理實驗室

Medical Image Processing Lab.

乳癌是近年來已全球化的婦女死亡的主要原因，如果可以及早查出腫瘤的存在，乳癌治癒的機會將大增不少。在臨床上，電腦輔助診斷系統 (CAD) 可以幫助醫師分辨惡性和良性的乳房腫瘤，如果電腦輔助診斷系統可以提供更高的準確率便可以大幅減少乳房切片檢查的需求。從 1998 年開始，我們致力於發展超音波電腦輔助診斷系統，也有了不錯的研究經驗與成果，成果計有 2D/3D 超音波、彩色超音波、PC-based 超音波、彈性超音波及自動超音波的電腦診斷系統。合作研究單位有美國芝加哥大學，美國 U-Systems 超音波公司，並與韓國漢城大學醫院、日本獨協大學醫院、台大醫院、台北榮總醫師均有密切合作研究。

In recent years, the breast cancer is globally the main causes of death for women. If a cancer can be found out earlier, the curability of the breast cancer will increase greatly. Clinically, the computer-aided diagnosis (CAD) systems can help physicians to differentiate the benign and malignant tumors.If the computer-aided diagnosis systems have higher accuracy, the demand of the breast biopsy can be reduced. Since 1998, we are devoted to develop the ultrasound (US) CAD systems including 2D/3D US, color Doppler US, color elastography, PC-based US, and automated US. The laboratory also collaborates with The University of Chicago and U-systems Inc., USA. We closely collaborate with physicians from Seoul National University Hospital, Dokkyo Medical University Hospital, National Taiwan University Hospital, and Taipei Veterans General Hospital.

主要研究領域 Major Research Areas

醫學影像電腦輔助診斷、影像視訊處理、多媒體系統及通訊
Medical Image Computer Aided Diagnosis, Image Processing, Multimedia Systems and Communication

研究計畫 Research Projects

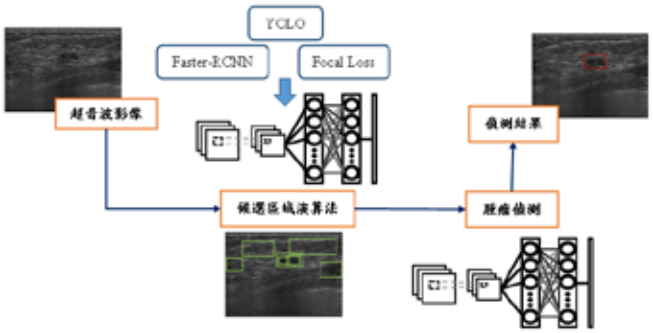
1. 應用深度學習於自動乳房超音波電腦輔助偵測與診斷 (AI 創新研究中心專案研究計畫)
Automated Breast Ultrasound Computer-aided Detection and Diagnosis Using Deep Learning

■ **研究計畫：** 自動乳房超音波之電腦輔助腫瘤偵測
補助單位：行政院科技部
計畫期間：2014/08/01 ~ 2017/07/31

乳房超音波是常用來發現及早期診斷腫瘤良惡性的檢測方法，雖然全乳房自動超音波 (ABUS) 已被用於臨床上的檢測，但大量的影像資訊導致醫師需耗費更多專注力與時間閱片。電腦輔助系統不僅可以偵測腫瘤位置並可提供量化後腫瘤特徵資訊給醫師作為診斷基礎的工具以減少診斷時間及錯誤。如果電腦輔助系統可架設於雲端，將可不必花費鉅資購買及維護硬軟體設備即可將影像資料上傳儲存於雲端系統，同時更可利用雲端系統強大的運算能力進行更複雜的電腦輔助偵測與診斷運算。近年來，由於深度學習與雲端計算技術的發展，使得雲端機器上部署深度學習模型的應用程式是一種重要且熱門趨勢，因此，本計畫提出在雲端上提供電腦輔助系統服務，醫生可隨時隨地在任一電腦透過雲端服務立即同時取得腫瘤影像及相關診斷資訊。本計畫將以深度卷積類神經網路架構開發系統，共分四年完成，第一年完成 Two-stage ABUS 腫瘤偵測系統與 2-D 超音波雲端診斷系統。第二年改進 ABUS 腫瘤偵測系統、開發全卷積網路 (FCN) 的 ABUS 腫瘤切割系統以及 Two-stage 2-D 雲端腫瘤偵測系統。第三年建立 ABUS 紋理以及形狀類神經網路擷取特徵並開發診斷系統，同時開發 2-D 雲端腫瘤切割系統。第四年增加生物標記診斷系統，完成 ABUS 與 2-D 電腦輔助系統並部署在雲端上。

Project title: Automated Breast Ultrasound Computer-aided Detection and Diagnosis Using Deep Learning
Supported by: Ministry of Science and Technology
Project period: 2018/01/01 ~ 2021/12/31

Breast ultrasound is the common examination for tumor detection and classification in early stage. Although the automated whole breast ultrasound (ABUS) had been used for examination in clinic, the physician might spend more vigor and time for reviewing several thousand ultrasound images for a patient. Computer-aided system is a useful tool that provides the quantitative features about a tumor for the physician to determine a tumor as benign or malignant. If the computer-aided diagnosis system can become a cloud system, a lot of money can be saved for purchasing and maintaining the computer hardware and software. Not only the medical images could be uploaded and stored in the cloud system but also more sophisticated computer-aided diagnosis system could be implemented based on the high cloud-based computing power. Recently, due to the development of deep learning and cloud computation, it is an important trend that the systems of object detection and pattern recognition are developed based on the deep learning and deployed on the cloud server. Therefore, in this project, the computer-aided systems based on the deep learning is proposed and will be deployed on the cloud server for physician to obtain the tumor image and diagnosis information at any computer. This project will be finished in the following four years and all systems are designed based on the deep learning architecture. In the first year, the two-stage ABUS tumor detection system and 2-D ultrasound cloud tumor diagnosis system will be designed and accomplished. In the second year, we will improve the ABUS tumor detection system, develop the fully convolution network (FCN) ABUS tumor segmentation system, and two-stage 2-D cloud tumor detection system. In the third year, the ABUS texture and shape convolution neural network will be constructed for feature extraction and develop the diagnosis system. In the same time, the 2-D cloud tumor segmentation system will be developed. Finally, in the last year, the information of biomarkers will be added for designing the biomarker prediction system. In additional, the system of detection, segmentation, and diagnosis in ABUS and 2-D ultrasound will be combined respectively as a computer-aided system and deployed in the cloud.



全自動乳房超音波腫瘤偵測系統
Automated Breast Ultrasound Tumor Detection System

E-mail:rfchang@csie.ntu.edu.tw
Phone: +886-2-33664888*331
Office: 德田館 331 (CSIE-331)
Website: http://www.csie.ntu.edu.tw/~rfchang/
Lab. Phone: +886-2-33664888*402
Lab: 德田館 402 (CSIE-402)

趙坤茂 教授

Kun-Mao Chao, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學資訊工程學系暨研究所教授
國立臺灣大學資訊網路與多媒體研究所合聘教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Computer Science and Information Engineering, National Taiwan University
Adjunct Professor, Graduate Institute of Networking and Multimedia, National Taiwan University

演算法與計算生物學實驗室

Algorithms and Computational Biology Lab.

演算法與計算生物學實驗室創立於 2002 年 8 月。我們的研究主軸為「序列」與「樹狀結構」主題相關的演算法設計，以及利用這些演算法為基礎的生物資訊軟體工具開發，可說是「計算理論為體，生物資訊為用」。在過去幾年裡，我們的研究主軸是關於序列及樹狀結構上的有效演算法設計與分析。在序列方面，包括生物序列分析，如：單套體預測問題、標記 SNP、複製數目變異問題、各種不同評分準則等，以及數列分析，如：最大總和區段問題、最大平均區段問題、不同條件的最佳化問題等。在樹狀結構方面，包括樹的建構問題，如：演化樹建構、最小繞線代價伸張樹問題等，以及樹的探索問題，如：樹邊分割問題、樹的查詢問題、樹邊置換問題等。這是非常有樂趣及成果的研究歷程，我們最終的目標是開發更多關於序列及樹狀結構的基本性質，並充分運用它們來設計解決這方面計算難題的實用演算法。

The Algorithms and Computational Biology Laboratory was established in August, 2002. We are interested in all aspects of the design and analysis of combinatorial algorithms. In particular, we solve algorithmic problems arising in computational molecular biology and networking. For the past few years, we have been mostly focused on the design and analysis of efficient algorithms for analyzing sequences and trees. For sequences, we mainly work on problems related to biological sequence analysis (haplotype vs. genotype; tag SNPs; copy number variations; variant scoring schemes), and numerical sequence analysis (maximum-sum segments; maximum-average segments; other maximization criteria). For trees, we mainly work on some tree construction problems (evolutionary trees; minimum routing cost spanning trees), and tree exploring problems (tree edge partition; tree querying; swap edges). This has been a joyful and fruitful journey to us. Our ultimate goal is to reveal more properties related to sequences and trees, and fully utilize them to design practical algorithms for solving hard problems in that line of investigation.

主要研究領域 Major Research Areas

計算生物學及生物資訊學、演算法、套裝軟體
Computational Biology and Bioinformatics, Algorithms, Software Tools

研究計畫 Research Projects

1. 大眾化配對問題的延伸研究及其演算法設計 (104-2221-E-002-046-MY3)
2. 用於辨識布林網路特徵的新演算法 (103-2221-E-002-157-MY3)

E-mail: kmchao@csie.ntu.edu.tw
Phone: +886-2-23625336*423
Office: 德田館 423 (CSIE-423)
Website: http://www.csie.ntu.edu.tw/~kmchao
Lab. Phone : +886-2-33664888*432
Fax: +886-2-23628167
Lab. : 德田館 432 (CSIE-432)

傅楸善 教授

Chiou-Shann Fuh, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學資訊工程學系教授
國立臺灣大學資訊網路與多媒體研究所教授

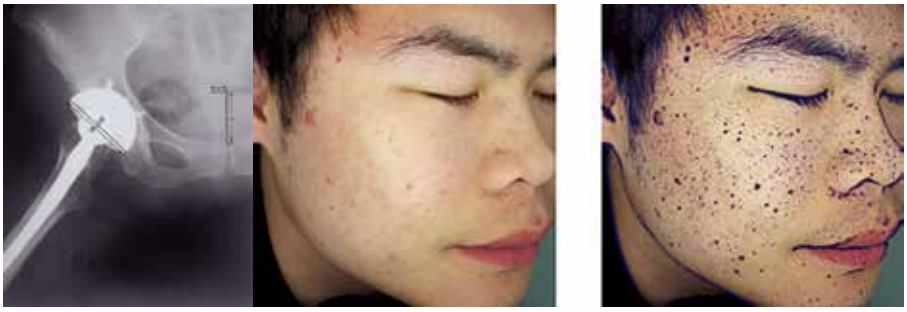
Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Computer Science and Information Engineering/ Graduate Institute of Networking and Multimedia, National Taiwan University

數位相機與電腦視覺實驗室

Digital Camera and Computer Vision Lab.

本實驗室由傅楸善教授成立於 2003 年，主要從事數位相機與電腦視覺相關研究。歷年來已執行多項研究計畫，目前以生醫數位相機、影像處理與自動光學檢測等領域為研究重點。本實驗室在上述領域已產出許多具體貢獻並在全世界有很高之能見度。此外，本實驗室之成員來自電子、資訊及醫學等各領域，多年來亦積極與國內外單位進行合作，合作夥伴包括產、研、學各界，例如：光寶科技、源浩科技、德律科技等。提升數位相機與自動光學檢測技術及其生醫應用，是本實驗室之成立宗旨與具體目標。

Digital Camera and Computer Vision Laboratory was founded by Professor Chiou-Shann Fuh in 2003, with the main research focus in digital camera and computer vision. In the past few years, we have conducted a number of research projects in digital image processing and automatic optical inspection. We have also made several critical contributions and are now one of the most visible research laboratories in this field in the world. Members of the laboratory come from various backgrounds, including electronics, informatics, and medicine. We have also been actively collaborating with research laboratories throughout the world, covering industry, research institutes, and universities, from basic sciences, engineering to clinical research, such as Liteon, Egis Technology, Lumens Digital Optics, Delta Electronics, D8AI, and TRI. Integrating multi-disciplinary research efforts, exploring advanced digital camera with biomedical applications, and automatic optical inspection are the mission of this laboratory.



主要研究領域 Major Research Areas

數位相機、電腦視覺、自動光學檢測、數位影像處理
Digital Camera, Computer Vision, Automatic Optical Inspection, Digital Image Processing

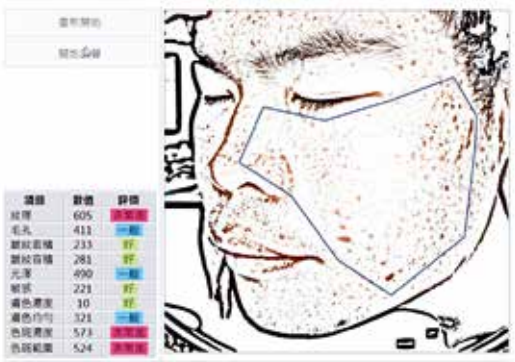
研究計畫 Research Projects

1. 用 X 光重建錫球三維空間形狀與瑕疵檢測：二維重建，三維重建，加速計算
   3D Solder Shape Reconstruction and Defect Inspection with X-Ray Images: 2D Reconstruction, 3D Reconstruction, Computation Acceleration
2. 數位相機之影像處理：高動態範圍影像，行人偵測，性別與年齡估計
   Image Processing for Digital Cameras: High Dynamic Range Image, Pedestrian Detection, Gender and Age Estimation
3. 數位相機之影像處理：降低雜訊，光線補償，臉色改善
   Image Processing for Digital Cameras: Noise Reduction, Light Compensation, Facial Color Enhancement

- Project title: 3D Solder Shape Reconstruction and Defect Inspection with X-Ray Images: 2D Reconstruction, 3D Reconstruction, Computation Acceleration Supported by: Ministry of Science and Techology Project period: 2015/08/01 ~ 2018/07/31

This is a three-year project to use computer vision and digital image processing methods and X-ray images for 2D reconstruction, 3D reconstruction, defect inspection, and computation acceleration research. We will study the best X-ray camera, light source, environment, distance, angle, and solder ball reconstruction and defect inspection algorithms and computation acceleration. In the first year, we will research algorithms and programs for 2D reconstruction and defect inspection such as open circuit, short circuit, too small solder ball, insufficient solder, or too much solder. After 2D reconstruction, in the second year, we will research 3D reconstruction and defect inspection with different X-ray camera and light source distances and angles. We aim to inspect defects of multiple-layer ball grid array and circuit boards with package on package and land grid array. After 3D reconstruction and defect inspection, due to enormous computation, we will research to accelerate computation with graphical processing units or streaming SIMD extension 4 instruction set. We aim to break Japanese and German patent and technology barriers in these three aspects and enhance Taiwan' s international competitiveness and market shares on semiconductor inspection equipment such as AOI, AXI, and SPI.

代表圖及中英文說明：Human Face Feature Detection and Analysi 人臉特徵偵測與分析



E-mail: fuh@csie.ntu.edu.tw
Phone: +886-2-33664888*327
Office: 德田館 327 (CSIE-327)
Website: http://www.csie.ntu.edu.tw/~fuh/
Lab. Phone: +886-2-33664888*328
Fax: +886-2-23628167
Lab.: 德田館 328 (CSIE-328)

黃俊升 教授

Chiun-Sheng Huang, Professor

國立臺灣大學生醫電子與資訊學研究所合聘教授
國立臺灣大學醫學系外科教授
國立臺灣大學醫學院附設醫院外科主治醫師

Adjunct Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University Professor, Department of Surgery, National Taiwan University
Attending Physician, Department of Surgery, National Taiwan University Hospital

主要研究領域 Major Research Areas

乳房外科、乳房超音波檢查、腫瘤外科、分子流行病學
Breast Surgery, Breast Ultrasound, Surgical Oncology, Molecular Epidemiology

研究計畫 Research Projects

一、 轉譯醫學研究 Translational Medicine Research
1. 針對亞洲年輕婦女急速增加 luminal type 乳癌發展新穎治療標的與生物標記 - (總計畫與子計畫一) 以多平臺全基因微陣列方法去分析及發現不同臨床生物表現之同 Luminal A 型態乳癌的特別基因特徵。
2. 微流體平台進行藥物篩選與化療療效監測。

二、 乳房超音波及其他影像檢查研究 Breast Ultrasound and Other Imaging Screening Research
1. 自動乳房超音波之電腦輔助診斷
2. 以乳房超音波及乳房攝影術進行台灣 40–49 歲婦女乳癌篩檢隨機試驗。
3. 乳房彩色彈性超音波之電腦輔助診斷。
4. 雙波段紅外線乳房影像系統之三維模型建立與血管增生定量分析。
5. 萌芽個案計畫 – 雙波段紅外線乳房影像系統：化療反應監控

三、 其他研究計畫 Other Research
1. 轉譯醫學資源中心之臨床試驗合作聯盟：乳癌

四、 臨床試驗 Clinical Trial (2014~ 至今)
1. Kristine：一個隨機分配、多中心、開放性、雙組的第三期試驗，比較 trastuzumab emtansine 併用 pertuzumab 與化學療法併用 trastuzumab 及 pertuzumab 做為 HER2 陽性乳癌患者之前置輔助療法。
2. Kaitlin：一個隨機分配、多中心、開放性的第三期試驗，比較使用 anthracyclines 後併用 trastuzumab、pertuzumab 及 taxane 與使用 anthracyclines 後併用 trastuzumab emtansine 及 pertuzumab 作為可手術切除的 HER2 陽性原發性乳癌患者之術後輔助治療。
3. BMN 673：一項第 3 期、開放性、隨機分配、平行、雙組、多中心試驗，比較 BMN 673 與醫師選用之藥物用於罹患局部晚期及 / 或轉移性乳癌，且過去接受過不超過 2 種轉移性疾病化學治療之生殖細胞 BRCA 突變患者的效果。

4. PPD_GO29227：一項以 AKT 抑制劑 Ipatasertib (GDC-0068) 與 Paclitaxel 併用，作為轉移性三重陰性乳癌病患第一線治療的隨機分配、第二期、多中心、安慰劑對照試驗。
5. AZ_OlympiAD：一個第三期、開放性、隨機、對照的多中心試驗，針對先天性 BRCA1/2 突變的轉移性乳癌患者，評估 Olaparib 之單一療法相較於醫師選用之化療的療效與安全性。
6. AZ_OlympiA：一個隨機、雙盲、平行組別、安慰劑對照的多中心第三期試驗，針對具有先天性 BRCA1/2 突變與高風險 HER2 陰性，且已完成明確的局部治療與前置輔助性 (neoadjuvant) 或輔助性化療的原發性乳癌患者，評估 olaparib 相較於安慰劑作為輔助療法之療效與安全性。
7. Abbvie：一項針對患有初期三重陰性乳癌 (TNBC) 受試者，以評估增添 Veliparib 加 Carboplatin 於標準前導性化療相較於增添 Carboplatin 至標準前導性化療相較於標準前導性化療的安全性與療效之隨機分配、安慰劑對照、雙盲、第 3 期試驗。
8. PPD Her2+：一項第 3 期、雙盲、隨機分配、平行分組、活性藥物對照試驗，比較 CT-P6 與 Herceptin 作為 HER2 陽性早期乳癌患者的新輔助性與輔助性療法，其療效與安全性。
9. Kailee：一項隨機、多中心、開放標示第三期臨床試驗，針對疾病進展或復發之 HER-2 陽性局部晚期或轉移性乳癌患者，評估 Trastuzumab emtansine (T-DM1) 對照 Trastuzumab 併用 Docetaxel，作為第一線治療之療效與安全性。
10. JPBL：一項隨機分配、雙盲、安慰劑對照的第 3 期試驗，使用 fulvestrant 搭配 LY2835219 (一種 CDK4/6 抑制劑) 或單獨使用 fulvestrant 治療荷爾蒙受體陽性、HER2 陰性的局部晚期或轉移性乳癌女性患者。
11. JPBM：一項隨機分配、雙盲、安慰劑對照的第 3 期試驗，使用非類固醇類芳香環轉胺酶抑制劑 (Anastrozole 或 Letrozole) 合併 LY2835219 (一種 CDK4/6 抑制劑) 或合併安慰劑，治療荷爾蒙受體陽性、HER2 陰性的局部復發或轉移性乳癌停經女性患者且此疾病未曾接受過全身性治療。
12. Pfizer：一項多中心、隨機分配、雙盲之第三期臨床試驗，以 Palbociclib (口服 CDK 4/6 抑制劑) 併用 letrozole，比對安慰劑併用 letrozole，治療具 ER (+)、HER2 (-) 晚期乳癌且不曾接受過治療之亞洲停經女性患者。
13. JPBY：第二期前導性試驗，評估於荷爾蒙受體呈陽性 (HR+)、人類上皮細胞生長因子受體 2 呈陰性 (HER2-) 乳癌停經後女性施予 2 週 Abemaciclib (LY2835219) 與 Anastrozole 合併療法，相較於使用 Abemaciclib 單一療法和 Anastrozole 單一療法的生物效應，以及評估後續 14 週 Abemaciclib(LY2835219) 與 Anastrozole 合併療法的臨床療效和安全性。
14. 1280.4：一項比較 BI 836845 聯合 Exemestane 和 Everolimus 與僅使用 Exemestane 和 Everolimus 用於治療患有局部晚期或轉移型乳癌的女性患者的 Ib / II 期隨機臨床試驗。
15. 評估 Afatinib 合併太平洋紫杉醇用於三重陰性乳癌之術前治療第 II 期臨床試驗的療效並尋求預測 Afatinib 有效性之生物標記。
16. 一項多國多中心，針對三陰性乳癌治療的長期結果與影響的長期追蹤研究。
17. 與賀爾蒙受體陽性、Her2 陰性的早期乳癌預後相關的單核 . 酸多型性變異的功能性分析暨探討次世代基因定序發現的單核 . 酸多型性變異在預後的重要性。

E-mail: huangcs@ntu.edu.tw
Phone: +886-2-23123456*65080
Office: 臺大醫院東址臨床研究大樓 825

阮雪芬 教授
Hsueh-FenJuan, Professor

國立臺灣大學生醫電子與資訊學研究所教授兼資訊組召集人
國立臺灣大學生命科學系教授
國立臺灣大學分子與細胞生物學研究所教授
國立臺灣大學基因體與系統生物學學位學程

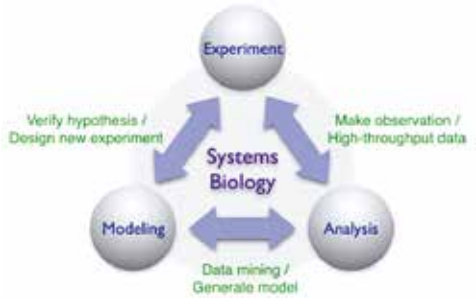
Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Life Science/ Institute of Molecular and Cellular Biology/ Genome and Systems Biology Degree Program, National Taiwan University

系統生物學研究室
Systems Biology Lab.

本研究室主要以系統生物學探討藥物在癌細胞的作用機制，內容包括運用各種體學資料進行各蛋白質間交互作用的預測和建構、基因網絡的模擬和建構，及非編碼核酸於其調控的蛋白質間交互作用及網路關係，期望進一步達到開發新藥的目地。主要的目標是利用系統生物學研究法來研究藥物誘導下胃癌、乳癌、肺癌及神經母細胞瘤細胞的分子作用機制；同時，利用系統生物學和合成生物學研究法開發新的治療方法。

The main research in our lab is to apply systems and synthetic biology for drug discovery. We discover novel drugs for cancer therapy and investigate the molecular mechanism of drugs in cancer cells.

MicroRNAs and long non-coding RNAs (lncRNAs) are non-coding RNA molecules which play a key role in post-transcriptional regulation of mRNAs. A non-coding RNA can affect many downstream targets which in turn form a complicated network. Our lab has characterized the roles of non-coding RNAs in the regulation of cellular networks and revealed that non-coding RNA-regulated network could be used as a novel therapeutic target for cancer as well as other diseases such as neurological and cardiovascular diseases.



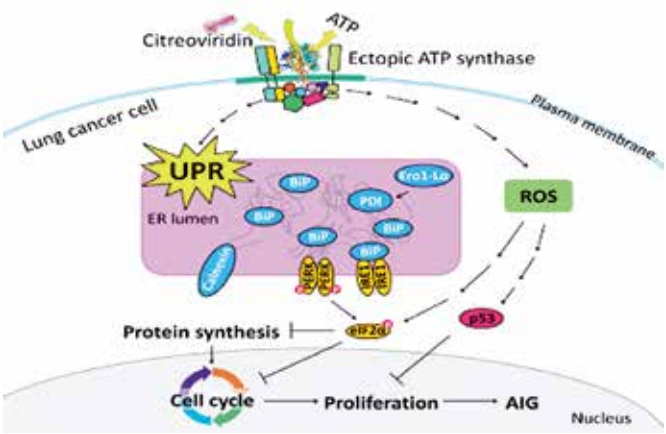
主要研究領域 Major Research Areas

系統生物學、蛋白質體學、生物資訊、合成生物學
Systems Biology, Proteomics, Bioinformatics, Synthetic Biology

研究計畫 Research Projects

1. 結合蛋白質體學和網路生物學研究細胞膜異位表達 ATP 合成酶的反應路徑
   Elucidating the response pathways of ectopic ATP synthase by combining proteomics and network biology
2. 新穎致癌蛋白 ZNF322A 之蛋白質交互作用網路與訊息路徑研究
   Studying protein interaction networks and signal pathways of novel oncoprotein ZNF322A
3. 重定位藥物探索於神經母細胞瘤治療：反應機制研究
   Drug repositioning for neuroblastoma therapy: investigation of the mechanism of action
4. 以系統生物學探索神經母細胞瘤中重要的長鏈非編碼核糖核酸
   Systems biology approach for key lncRNAs in neuroblastoma

■ **研究計畫** - 以蛋白體學技術探討受異位表達 ATP 合成酶運送影響之磷酸化與乙醯化交互作用動態變化
Elucidating the interplay of phosphorylation and acetylation dynamics in ectopic ATP synthase trafficking by proteomics approaches 之代表圖及中英文說明：



Summary of the plausible mechanisms in breast cancer cell death induced by combination therapy targeting ectopic ATP synthase and 26S proteasome.
本圖顯示藉由以 ATP 合成酶和 26S 蛋白酶體為標靶的合併治療而誘導乳癌細胞死亡的可能機制。

E-mail: yukijuan@ntu.edu.tw
Phone: +886-2-3366-4536
Office: 生命科學館1105 (Life Science Building-1105)
Website: http://juan.lifescience.ntu.edu.tw

賴飛羆 教授

Fei-Pei Lai, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學醫療器材與醫學影像研究所教授
國立臺灣大學資訊工程學系教授
國立臺灣大學電機工程學系教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Graduate Institute of Medical device and Imaging/Department of Electrical Engineering/Department of Computer Science & Information Engineering, National Taiwan University

醫學資訊實驗室

Medical Informatics Lab.

本實驗室成立於 1987 年，由賴飛羆教授所領導的研究群所組成。賴教授指導畢業的學生已有 30 餘名博士生及 120 餘名碩士生。目前實驗室成員包括博士班 10 餘人及碩士班 10 餘人。實驗室創立初期以研究計算機結構及低功率系統晶片設計為主，近年來改以醫療資訊系統、遠距照護、醫學資料探勘及資訊安全等領域為主要研究方向。

主要研究領域 Major Research Areas

醫學資訊　Medical Informatics

研究計畫 Research Projects

1. 臺大醫神－精準醫療人工智慧輔助決策系統

健康是人類目前最關心的議題。近年來醫學的蓬勃發展，除了大量的治療方式及藥物被開發出來之外，基因與疾病的關係也逐漸被瞭解。精準醫療，也就是提供每一個病患最佳的醫療計畫已不是夢想。然而醫藥知識的遽增卻也帶來解讀資訊的龐大負擔，因此 AI 便成為加值醫療產業的新希望。本計畫目標為研發一個「精準醫療 AI 輔助決策系統」，共包含四大工作項目：（1）電子病歷及醫學數據分析處理；（2）基因資訊庫與相關疾病之診斷與治療；（3）醫療期刊書籍文件資訊擷取；（4）精準醫療人工智慧開發。計畫將整合臺大醫院完整的電子病歷，涵蓋醫療、護理、檢驗、影像及復健等資料，並蒐集建立 10,000 名病患生活型態及環境因素的大數據庫；臺大基因醫學團隊將以 AI 技術探討基因結合遺傳疾病、癌症、藥物代謝及敏感、與多因子罕見疾病；臺大資訊工程團隊將以資料探勘及機器深度學習等技術，建立大數據知識網路，並研發進化基因相關疾病、肺癌、肝癌及敗血症之人工智慧決策輔助系統，再逐漸應用到所有的病人身上。分工明確且相互合作的研究團隊將致力完成本計畫。計畫成果具有國際級的高度醫學應用及學術研究價值，可顯著提升人民健康福祉，並建立起具有國際競爭力之醫療 AI 產業。

2. 智慧型傷口管理日誌 - 以人工智慧開發傷口感染及傷口癒合自動判讀為例

慢性傷口病患常不良於行，需耗費大量人力及時間成本才得以回診。考量現行傷口照護缺乏現代化資通訊技術的輔助，本計畫以臨床實務情境為主要研究場域，旨在研發智慧型傷口管理日誌手機應用程式，並整合多項資通訊及醫學影像技術。期望藉由行動醫療及智慧監測的前瞻創新應用，提供高品質且完備的智慧化傷口照護，並達到持續追蹤慢性傷口癒合狀況的目標，讓病患本身、其照護者及臨床人員皆可受惠於此。手機程式主要包含兩大功能：記錄管理、傷口感染及傷口癒合自動判讀功能。慢性傷口病患可以利用手機程式進行慢性傷口管理，包含記錄傷口照片、症狀及問卷評估等。同時藉由不同時期所拍攝的傷口照片，透過深度學習和時序影像分析，輔以傷口監測評分指標，提供慢性傷口癒合情形及風險等級之整體評估，如傷口有辨識到紅、腫、膿管或感染等不正常癒合之異常情形，可即時發送訊息通知和啟動緊急照護配套方案，以達到遠距監測和及早介入處置之目的。本計畫以資通訊技術加值醫療產業服務，可有效解決社會健康照護需求及臨床實務困境，減少病患就醫成本並提高醫療水準，具有高度醫學應用及學術研究價值，未來亦可結合各式健康雲服務，應用於長期照護等不同型態的照護機構，進而創造外部連結效益及醫療商業模式。

3. 結合多功能居家照護 ERICA 系統與基層醫療體系，建構個人化的居家照護模式，以減輕族群老化對個人與社會的衝擊

本計畫是以獨居老人為照顧目標，包括全時或部分時段獨居的老人。計畫的特點，在開發作業平台與運作架構，結合現代科技、網際網路及基層醫療體系，以受顧者為中心，兼顧人性考量、人際互動與社會連接，建構全時性、及時性、互動性的居家照顧模式，使受雇者能維持獨立自主的生活模式、與照顧者間能建立持久、信賴的互動機制，使照顧者具有成就感。而基層醫師能善盡醫療責任並藉由多元化的醫療作業模式，減輕充作壓力。此照顧模式具有廣泛的運用能力與擴展性，可以促進醫療科技的發展，也可減輕相關家屬負擔，增進其工作能力與生活品質。本計畫在研究過程將從生理、心理、社會（BPS）層面，探討獨居老人在日常生活的需求項目，開發運作平台與適用器材建立照護整合師 care manager, CM 的角色專長探討基層醫療的全時照護機制及與其他照護系統的整合模式，本計畫所需的運作成本有限，可以創造廣大的效益，具有永續經營的特點。開發運作平台與適用器材建立照護整合師 care manager 的角色專長探討基層醫療的全時照護機制及與其他照護系統的整合模式，本計畫所需的運作成本有限，可以創造廣大的效益，具有永續經營的特點。

4. 科技化與資訊化皮膚保存庫

皮膚是人體當中最大的器官，包裹在身體的表層，扮演著保護人體的重要角色。對於大面積嚴重的皮膚傷害，必須及早清創移除壞死組織，也必須給予傷口適當的覆蓋保護，使用捐贈者的皮膚（大體皮膚），仍舊是最理想的生物性敷料。因此，設置皮膚組織保存庫，處理及保存大體皮膚，在治療大面積皮膚傷害，就顯得非常重要了。近幾年來，台灣發生數起重大爆炸意外事件，造成大量大面積受傷病患，於是提升國內皮膚保存庫品質的計畫，有其必要性。為維持本院皮膚保存庫，進而提升品質至歐洲皮庫般完善，以及研發生物性人工皮膚的技術，可以成為邁向亞洲一流醫學中心的條件。本計畫預定深入研究皮膚保存方法，整合資訊系統，建置科技化與資訊化皮膚保存庫，計畫內容包含建置高規格之大體皮膚保存流程、提供高品質與安全之大體皮膚、進行大體皮膚研究、研發生物性人工皮膚、建置出入庫資訊管理系統、建置登錄系統（網路版）、整合捐贈者及受贈者電子病歷、與申請與通過衛生福利部皮膚保存庫認證。因此，在健全皮膚保存庫的架構下，提供量足質精的大體皮膚，造福更多大面積皮膚傷害的病患。

E-mail: flai@ntu.edu.tw
Phone: +886-2-33664924
Office: 德田館 419 (CSIE-419)
Website: https://sites.google.com/site/medinfolabatntu/home
Lab. Phone: +886-2-33664888*346
Lab.: 德田館 346 (CSIE-346)

歐陽彥正 教授
Yen-Jen Oyang, Professor

國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學資訊工程學系教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Computer Science and Information Engineering, National Taiwan University

分子生醫資訊實驗室
Molecular Biomedical Informatics Lab.

分子生醫資訊實驗室專注於設計先進的機器學習演算法以應用於生物醫學的研究上。近幾年，本實驗室與臨床醫師合作，將創新的機器學習演算法運用於臨床資料庫的分析上。主要的成果包括：

(1) 發現手術中麻醉藥的使用與罹患失智症的相關性；
(2) 發現長期服用安眠藥與罹患失智症的相關性；
(3) 發現婦女罹患子宮內膜異位與偏頭痛的相關性；
(4) 發現 4 個與精神分裂症相關的基因。

The Molecular Biomedical Informatics (MBI) laboratory focuses on design of advanced machine learning algorithms for biomedical applications. During the past few years, the MBI team has been collaborating with clinical physicians to conduct analyses on large medical databases. The main results include:

1. identified the risk of suffering dementia for patients who received anesthesia in surgery;
2. identified the risk of suffering dementia for insomnia patients who were long-term users of hypnotics;
3. identified the risk of suffering migraines for women with Endometriosis;
4. identified 4 genes that are associated with schizophrenia.

主要研究領域 Major Research Areas

生醫資訊學、機器學習　Biomedical informatics, Machine Learning

研究計畫 Research Projects

應用巨量資料探勘與地理空間資訊分析技術針對緊急救護服務之醫療資源管理、配置與未來規劃進行整體研究計畫 -- 應用巨量資料探勘方法分析緊急救護時間、空間、與醫療資訊之研究。

An integrated study on applying massive data mining and geographic information technologies to analyze the resource management, allocation, and future planning of Emergency Medical Service

E-mail: yioyang@csie.ntu.edu.tw
Phone: +886-2-33664888*431
Office: 德田館 431 (CSIE-431)
Website: http://mbi.csie.ntu.edu.tw/member/yjoyang.html
Lab. Phone: +886-2-33664888*410
Lab. : 德田館 410 (CSIE-410)

孫維仁 教授

Wei-Zen Sun, Professor

臺灣大學醫學院麻醉科教授
臺灣大學醫學院緊急醫療研究中心主任
臺灣大學神經科學及認知中心副主任
臺灣大學腦與心智科學研究所合聘教授
臺灣大學生物醫學與電子研究所合聘教授

Professor, Department of Anesthesiology, National Taiwan University
Vice Chair, Neurobiology and Cognitive Science Center, National Taiwan University
Chair, Center for Emergency Medical Service, National Taiwan University

臨床-生物醫學工程-產業融合實驗室

Merger Laboratory for Clinical Sciences, Biomedical Engineering and Industry

本融合實驗室由孫維仁教授成立於 1992 年，主要工作是從臨床服務的病患需求觀點，來提供醫療儀器與資訊處理之相關整合研究和產品研發。九〇年代開始，是以病患自控式鎮痛儀 (Patient-Controlled Analgesia, PCA) 導入數位化和無線化技術為主軸的急性疼痛服務提升，開發出 i-Pain® 整合平台，並已和領先全球品牌進行緊密的結合。〇三年經歷 SARS 氣管插管爆發群聚感染的致命性災難時，本融合實驗室針對非感染性醫材的迫切市場需求，研發出可拋式內視鏡 Sunscope®，獲得經濟部學界科專和產業的贊助，朝向全球商業市場邁進。三位一體的融合實驗室成立的宗旨就是要：敞開各專業的藩籬，主動並積極的邀集跨領域人才進行多元腦力激盪，讓一切研發終極目標導向臨床應用，通過醫師嚴格的臨床驗證，確保病患實際需求獲得超值滿足，以吸引產業關注和早期資本投入。

In 1992, Professor Wei-Zen Sun founded the merger laboratory in National Taiwan University Hospital. Based on the unmet demand from patient's perspective, we have successfully provided innovative development of medical devices and informatics through synergistic interaction among clinician, and biomedical engineer, and entrepreneur. We started by integrating the digital and wireless technology with conventional PCA pump (patient-controlled analgesia) to transform into an update web-based platform, i-Pain®. This product is currently adopted by a global leader brand and served as the major service module in Asia. In 2003, as SARS outbreak through non-protected endotracheal intubation, we developed the most advanced intubation device with disposable visual tube. This design totally eliminates the risk of air-borne lethal infection by avoiding close contact with patient' s airway. This innovative product, Sunscope®, has won a first prized award and is currently supported by government grant and industry investment. Collectively, we establish this merger laboratory to trigger brainstorming among multidisciplinary specialties and to make sure that the cross-reaction of

respective domain knowledge is taken place under the goal: to put forth any helpful effort and technology in synergy, to assess the product under critical assessment of clinicians, to bring in industry investment and commercial distribution for patient welfare.

主要研究領域 Major Research Areas

臨床與生物醫學工程與產業整合、疼痛醫學、麻醉醫學、緊急醫療
Integration of Clinical Science, Biomedical Engineering and Industry; Pain Medicine; Anesthesiology; Emergent Medical Service

研究計畫 Research Projects

1. i-Pain® (美商赫士睿公司技術轉移 , Hospira, USA)
2. 輸液幫浦研發 (經濟部學界科專委託計畫)
3. 應用巨量資料探勘、地理空間資訊分析技術與實證醫學針對我國緊急救護服務之醫療資源配置、管理與未來規劃進行整體研究計畫 (科技部委託計畫)
4. 基於生命之鏈週期探討智慧型穿戴式裝置之臨床應用─以急重症及術後照護為例 (科技部委託計畫)

E-mail: wzsun@ ntu.edu.tw
Phone: +886-2-23123456*65522
Office: 臺大醫院研究大樓四樓 (麻醉部第一實驗室)
永齡生醫工程館 706 室

曾宇鳳 教授
Y. Jane Tseng, Professor

國立臺灣大學藥物研究中心主任
臺灣生醫與醫材轉譯加值人才培訓計畫主持人
國立臺灣大學神經生物與認知研究中心副主任
國立臺灣大學生醫電子與資訊學研究所教授
國立臺灣大學資訊科學與工程學系教授
國立臺灣大學藥學系教授
國立臺灣大學生命科學院與中央研究院合辦-基因體與系統生物學學位學程教授
國立臺灣大學藥物研發暨跨領域轉譯醫學與生醫工程國際研究生博士學位學程教授
國立臺灣大學化學生物學暨分子生物物理學國際研究生博士學位學程教授
國立臺灣大學基因體醫學研究中心-代謝體核心實驗室主持人

Director, Drug Research Center, National Taiwan University
Director, SPARK Taiwan
Associate Director, The Neurobiology and Cognitive Science Center, National Taiwan University
Professor, Graduate Institute of Biomedical Electronics and Bioinformatics /Department of Computer Science and Information Engineering/School of pharmacy/ Genome and Systems Biology Degree Program, College of Life Science,/ International Graduate Program of Drug Discovery, Interdisciplinary Translational Medicine and Biomedical Engineering/ Chemical Biology and Molecular Biophysics Program, National Taiwan University
Principal Investigator, Metabolomics Core Lab, NTU Center of Genomic Medicine

計算分子設計與代謝體學實驗室
Computataional Molecular Design and Metabolomics Lab.

本實驗室是一個跨領域的實驗室，研究的方向有兩個主軸，一是以分子結構為中心探討分子結構與活體、活性、毒性之關係，包括計算化學用在藥物設計、計算毒理學、化學資訊、生物資訊及代謝體學等，本實驗室應用物理化學、數值分析及資訊統計的技術來解決各種生物、化學及醫學方面的問題。目前主要的研究包括：

1. 發展新的計算化學方法做為藥物篩選，化學結構資訊比對，臨床前藥物吸收、分佈、代謝及毒性之分析及新藥設計。
2. 應用代謝體之化學結構光譜找尋臨床上用來做為診斷、病程及癒後生物指標之結構及新藥設計。

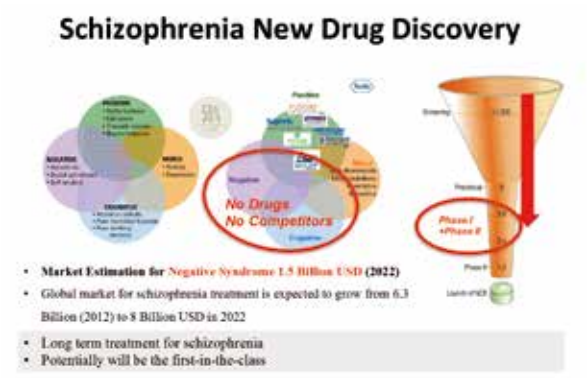
Bioinformatics and Cheminformatics Laboratory is a multidisciplinary lab. There are two main research themes in this lab. First and the major one is to analyze molecular structures such as drugs, endogenous molecules, proteins, and relate the structure for their pattern with biological activities, toxicities, and biological systems in the field of computational chemistry, computational toxicology, bioinformatics, cheminformatics, and metabonomics.

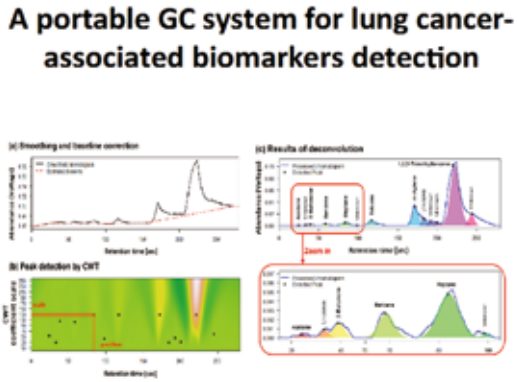
主要研究領域 Major Research Areas

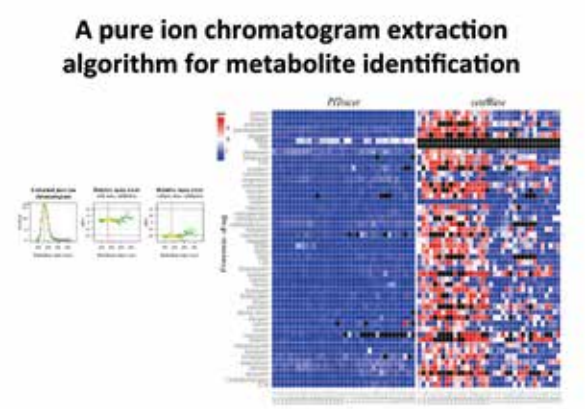
計算化學及計算毒理學 ,、生物資訊學、新藥開發、代謝體學
Computational Chemistry and Toxicology, Drug Discovery, Bioinformatics, and Metabolomics

研究計畫 Research Projects

1. 建教合作計畫【建構及發展藥物代謝動力學特徵及毒性人工智慧預測篩選平台】
2. 一般型研究計畫【開發一可攜式氣體分析儀應用於 K 他命檢測】
3. 補助學者提昇國際影響力【積極參與美國化學學會學術議程委員及藥物開發研討會主席以拓展國際新藥開發視野 (2/3)】
4. 產業前瞻技術計畫【RS-D7- 用於治療思覺失調症負性症狀的新型 NMDA 受體調節劑 (2/2)】
5. 優勢重點領域拔尖方案─最具競爭力團隊計畫【不同中樞神經系統疾病之腦腸軸表現型與特定 NMDA 受體調節藥物之藥物動力學分析】
6. 學術研究生涯發展計畫 - 深耕型研究計畫【腸胃道微生物及其相互作用對於思覺失調症與雙極性憂鬱症患者腦腸軸之作用】
7. 學術生涯發展計畫深耕型計畫【腸胃道微生物及其相互作用對於思覺失調症與雙極性憂鬱症患者腦腸軸之作用】







E-mail: yjtseng@csie.ntu.edu.tw
Phone: +886-2-33664888*529
Office: 德田館 529(CSIE-529R)
Webpage: http://www.csie.ntu.edu.tw/~yjtseng/
Lab. Phone: +886-2-33664888*404
Lab. : 德田館 404(CSIE-404)

柒 發表論文 Publications

陳志宏教授 Jyh-Horng Chen, Professor

學術期刊論文 Journal articles

1. Ai-Ling Hsu, Ping Hou, Jason M. Johnson, Changwei W. Wu, Kyle R. Noll, Sujit S. Prabhu, Sherise D. Ferguson, Vinodh A. Kumar, Donald F. Schomer, John D. Hazle1, Jyh-Horng Chen* and Ho-Ling Liu*, "IClinfMRI Software for Integrating functional MRI Techniques in Presurgical Mapping and Clinical Studies", Frontiers in Neuroinformatics, Mar 2018, doi.org/10.3389/fninf.2018.00011

研討會論文 Conference & proceeding papers

1. Hong-Yi Wu, Chih-Mao Huang, Jyh-Horng Chen, Changwei W. Wu, "Creativity Performance Reflected on the Activation of Divergent Thinking and Connectivity of Inferior Frontal Gyrus", Annual Meeting of International Society for Magnetic Resonance in Medicine, Paris, France, (2018) (Poster).
2. Ai-Ling Hsu, Ping Hou, Jason M Johnson, Changwei W Wu, Kyle R Noll, Sujit S Prabhu, Sherise D Ferguson, Vinodh A Kumar, Donald F Schomer, John D Hazle, Jyh-Horng Chen, Ho-Ling Liu, "A software package designed to integrate advanced fMRI methods for presurgical mapping and clinical studies (IClinfMRI)", Annual Meeting of International Society for Magnetic Resonance in Medicine, Paris, France, (2018) (Poster).
3. Ai-Ling Hsu, Jason M Johnson, Kyle R Noll, Sujit S Prabhu, Sherise D Ferguson, Donald F Schomer, Jyh-Horng Chen, Ho-Ling Liu, "Combining regional homogeneity and Meta-analysis to improve preoperative language mapping with resting-state functional MRI", Annual Meeting of International Society for Magnetic Resonance in Medicine, Paris, France, (2018) (Poster).
4. Ai-Ling Hsu, Ping Hou, Sujit S Prabhu, Rivka R Colen, Ashok J Kumar, Jason M Johnson, Donald F Schomer, Jyh-Horng Chen, Ho-Ling Liu, "Effect of Lesion Contaminated Nuisance Regressors on Resting-state fMRI Connectivity in Patients with Brain Tumors", Annual Meeting of International Society for Magnetic Resonance in Medicine, Hawaii, USA, (2017) (Poster).
5. Ai-Ling Hsu, Ping-Ni Wang, Ping Hou, Rivka R Colen, Ashok J Kumar, Sujit S Prabhu, Jyh-Horng Chen, Ho-Ling Liu, "Independent Component-based Denoising for Mapping Cerebrovascular Reactivity with Resting-State Fluctuation of BOLD Signal Amplitude in Patients with Gliomas", Annual Meeting of International Society for Magnetic Resonance in Medicine, Hawaii, USA, (2017) (Poster).
6. Wan-Ting Zhao, Meng-Chi Hsieh, Hon-Man Liu, Jyh-Horng Chen."Iron Deposition in Neurodegenerative Brains:A Quantitative Susceptibility Mapping Study". The 10th annual meeting of the World Molecular Imaging Congress, Philadelphia, USA, September 13-16, (2017) (Poster).
7. H.-Y. Wu, W.-T. Zhao, C.-H. Tseng, M.-C. Hsieh, J.H. Chen." Iron Deposition in the Aging Brain: A Quantitative Susceptibility Mapping Study" . The 10th annual meeting of the World Molecular Imaging Congress, Philadelphia, USA, September 13-16, (2017) (Poster).

成佳憲教授 Chia-Hsien Cheng, Professor

學術期刊論文 Journal articles

1. Tsai CL, Liu WL, Hsu FM, Yang PS, Yen RF, Tzen KY, Cheng AL, Chen PJ, Cheng JC*. Targeting histone deacetylase 4/Ubc9 impairs DNA repair for radiosensitization of hepatocellular carcinoma cells. Hepatology 2017 (in press) (SCI)
2. Hou WH, Huang CY, Wang CC, Lan KH, Chen CH, Yu HJ, Liu SP, Lai MK, Pu YS, Cheng JC*. Impact of androgen-deprivation therapy on the outcome of dose-escalation prostate cancer radiotherapy without elective pelvic irradiation. Asian J Androl 2017 (in press) (SCI)

3. Wang YJ, Huang CY, Hou WH, Wang CC, Lan KH, Yu HJ, Lai MK, Liu SP, Pu YS, Cheng JC*. Dual-timing PSA as a biomarker for patients with salvage intensity modulated radiation therapy for biochemical failure after radical prostatectomy. Oncotarget 7:44224-44235, 2016 (SCI)
4. Hsu FM, Hou WH, Huang CY, Wang CC, Tsai CL, Tsai YC, Yu HJ, Pu YS*, Cheng JC*. Differences in toxicity and outcome associated with circadian variations between patients undergoing daytime and evening radiotherapy for prostate adenocarcinoma. Chronobiology International 33:210-219, 2016 (SCI)
5. Tsai CL, Hsu FM, Cheng JC*. How to improve therapeutic ratio in radiotherapy of HCC. Liver Cancer 5:210-220, 2016 (SCI)
6. Hou WH, Wang CW, Tsai CL, Hsu FM, Cheng JC*. The ratio of weight loss to planning target volume significantly impacts setup errors in nasopharyngeal cancer patients undergoing helical tomotherapy with daily megavoltage computed tomography. Radiology and Oncology 50:427-432, 2016 (SCI)
7. Ohri N, Dawson LA, Krishnan S, Seong J, Cheng JC, Sarin SK, Kinkhabwala M, Ahmed MM, Vikram B, Coleman CN, Guha C. Radiotherapy for hepatocellular carcinoma: New indications and directions for future study. J Natl Cancer Inst 108:djw133, 2016 (SCI)
8. Chen Y, Zeng ZC, Shen X, Wu Z, Dong Y, Cheng JC. MicroRNA-146a-5p negatively regulates pro-inflammatory cytokine secretion and cell activation in lipopolysaccharide stimulated human hepatic stellate cells through inhibition oft Toll-like receptor 4 signaling pathways. International Journal of Molecular Sciences 17:1076, 2016 (SCI)
9. Park HC, Yu JI, Cheng JC, Zeng ZC, Hong JH, Wang ML, Kim MS, Chi KH, Liang PC, Lee RC, Lau WY, Han KH, Chow PK, Seong J. Consensus for radiotherapy in hepatocellular carcinoma from the 5th Asia-Pacific Primary Liver Cancer Expert Meeting (APPLE 2014): Current practice and future clinical trials. Liver Cancer 5:162-174, 2016 (SCI)

研討會論文 Conference & proceeding papers

1. Cheng JC, Liu WL, Tsai CL, Hsu FM. Preclinical study on radiosensitization by combining a novel drug Lipotecan with radiotherapy in hepatocellular carcinoma. Proceedings of the 58th Annual Meeting of the American Society for Radiation Oncology. Boston, U.S.A., September 25-28, 2016. (Abstract)
2. Cheng JC, Liu WL, Tsai CL, Hsu FM, Wang TE, Liu CY, Chen YJ. Superior radiosensitizing effect of a novel drug Lipotecan to sorafenib with radiotherapy in preclinical and clinical pilot studies on hepatocellular carcinoma. Proceedings of the 7th Asian Pacific Primary Liver Cancer Expert Meeting. Hong Kong, July 8-10, 2016. (Abstract)

莊曜宇教授 Eric Y. Chuang, Professor

學術期刊論文 Journal articles

1. Y.P. Lai, L.B. Wang, W.A. Wang, L.C. Lai, M.H. Tsai, T.P. Lu, E.Y. Chuang*, iGC—an integrated analysis package of gene expression and copy number alteration, BMC Bioinformatics
2. G. Lenka, M.H. Tsai, H.C. Lin, J.H. Hsiao, Y.C. Lee, T.P. Lu, J.M. Lee, C.P. Hsu, L.C. Lai, E.Y. Chuang*, Identification of Methylation-Driven, Differentially Expressed STXBP6 as a Novel Biomarker in Lung Adenocarcinoma, Scientific Reports
3. Y.C. Chiu, L.J. Wang, T.P. Lu, T.H. Hsiao, E.Y. Chuang*, Y. Chen, Differential correlation analysis of glioblastoma reveals immune ceRNA interactions predictive of patient survival, BMC Bioinformatics
4. K.L. Chiu, Y.S. Lin, T.T. Kuo, C.C. Lo, Y.K. Huang, H.F. Chang, E.Y. Chuang, C.C. Lin, W.C. Cheng, Y.N. Liu, L.C. Lai, Y.P. Sher, ADAM9 enhances CDCP1 by inhibiting miR-1 through EGFR signaling activation in lung cancer metastasis, Oncotarget
5. A.L. Woolston, P.C. Hsiao, P.H. Kuo, S.H. Wang, Y.J. Lien, C.M. Liu, H.G. Hwu, T.P. Lu, E.Y. Chuang, L.C. Chang, C.H. Chen, J.Y. Wu, M.T. Tsuang, W.J. Chen, Genetic loci associated with an earlier age at onset in multiplex schizophrenia, Scientific Reports
6. Y.C. Chiu, L.J. Wang, T.H. Hsiao, E.Y. Chuang*, Y. Chen, Genome-wide identification of key modulators of gene-gene interaction networks in breast cancer, BMC Genomics

7. S.C. Wei, H.F. Yang-Yen, P.N. Tsao, M.T. Weng, C.C. Tung, L.C.H. Yu, L.C. Lai, J.H. Hsiao, E.Y. Chuang, C.T. Shun, Y.H. Ni, R.J. Xavier, D.K. Podolsky, J.J.Y. Yen, J.M. Wong, SHANK3 Regulates Intestinal Barrier Function Through Modulating ZO-1 Expression Through the PKCε-dependent Pathway, Inflamm Bowel Dis
8. Y.F. Lee, C.Y. Lee, L.C. Lai, M.H. Tsai, T.P. Lu, E.Y. Chuang*, CellExpress: a comprehensive microarray-based cancer cell line and clinical sample gene expression analysis online system, DATABASE-OXFORD
9. T.H. Hsiao, Y.H. Chen, H.I. Chen, Y.C. Chiu, E.Y. Chuang, Y. Chen, Utilize Cancer–Functional Gene set –Compound Networks to Identify Putative Drugs for Breast Cancer, Combinatorial Chemistry & High Throughput Screening
10. H.C. Lin, C.C. Yeh, L.Y. Chao, M.H. Tsai, H.H. Chen, E.Y. Chuang, L.C. Lai, The hypoxia-responsive lncRNA NDRG-OT1 promotes NDRG1 degradation via ubiquitin-mediated proteolysis in breast cancer cells, Oncotarget
11. C.Y. Lee, P.H. Hsieh, L.M. Chiang, A. Chattopadhyay, K.Y. Li, Y.F. Lee, T.P. Lu, L.C. Lai, E.C. Lin, H. Lee, S.T. Ding, M.H. Tsai, C.Y. Chen, E.Y. Chuang*, Whole-Genome De Novo Sequencing Reveals Unique Genes that Contributed to the Adaptive Evolution of the Mikado Pheasant, GIGASCIENCE

研討會論文 Conference & proceeding papers

1. Genomics and Bioinformatics Approaches to Characterize non-coding RNAs for Radiosensitivity, the 63rd Annual Meeting of the Radiation Research Society, October 15-18, 2017, Cancun, Mexico.

專書 Book Chapters

1. 莊曜宇、王志軒,"別瞎忙了！健康的關鍵就在腸道菌", 2017, ISBN: 978-988-77840-4-3

黃念祖副教授 Nien-Tsu Huang, Associate Professor

學術期刊論文Journal articles

1. S.-H. Huang, Y.-S. Chang, J.-M. J. Juang, K.-W. Chang, M.-H. Tsai, T.-P. Lu, L.-C. Lai, E. Y. Chuang, and N.-T. Huang*, "An Automated Microfluidic DNA Microarray Platform for Genetic Variants Detection in Inherited Arrhythmic Diseases" Analyst, Volume 143, Issue 6, pp. 1367 - 1377, 2018/03. (Selected as the front cover image of Analyst) (Fields: Chemistry, analytical: 12/76, SCI, Impact Factor: 3.89)
2. N.-T. Huang*, Y. J. Hwong, R. L. Lai, "A microfluidic microwell device for immunomagnetic single-cell trapping" Microfluidics and Nanofluidics, 22:16, 2018. (Fields: Instruments & Instrumentation: 17/58, SCI, Impact Factor: 2.34)
3. Y. C. Wu, N. Lee, , Y.K. Tu, C.P. Huang, N.-T. Huang, Y.F. Chen, P.C. Chang, "Salivary biomarker combination prediction model for the diagnosis of periodontitis in a Taiwanese population", J. Formos. Med. Assoc. (in Press), 2017/11. (Fields: Medicine, General & Internal: 46/155, SCI, Impact Factor: 1.97)¬¬
4. J.-K. Lee, I. –S. Wang, C.-H. Huang, Y.-F. Chen, N.-T. Huang, C.-T. Lin, "Pre-Clinical Tests of an Integrated CMOS Biomolecular Sensor for Cardiac Diseases Diagnosis", Sensors, 17(12), 2733. 2017/11. (Fields: Instruments & Instrumentation: 10/58, SCI, Impact Factor: 2.68)
5. H. T.-H. Lin, C.-K. Yang, C.-C. Lin, A. M.-H. Wu, L. A. Wang and N.-T. Huang*, "A Large-Area Nanoplasmonic Sensor Fabricated by Rapid Thermal Annealing Treatment for Label-Free and Multi-Point Immunoglobulin Sensing" Nanomaterials, 7(5), pp. 100; 2017/05 (Fields: Materials science: 58/275, SCI, Impact Factor: 3.55)

研討會論文 Conference & proceeding papers

1. C.-C. Lin, J.-F. Luo, L. A. Wang, and N.-T. Huang, "A Nanoplasmonic Sensor Fabricated by Laser Interference Lithography (LIL) for Immunoglobulin Detection" CLEO: Applications and Technology 2018, May 13 to 18, 2018.
2. Yi-Ying Wang, Ho-Wen Cheng, Kai-Wei Chang, Juan-Kai Wang, Yuh-Lin Wang, Nien-Tsu Huang, "A Microfluidic System Combining Liquid Chromatography and Surface-enhanced Raman Scattering for Molecular Detection", IEEE NEMS, Singapore, April 22 to 26, 2018.
3. Shu-Hong Huang, Yu-Shin Chang, Kai-Wei Chang, Mong-Hsun Tsai, Nien-Tsu Huang, "An Automatic Microfluidic DNA Microarray Platform for SNP Detection Using a DNA Intercalating Dye and Graphene Oxide", μTAS 2017, Savannah, Georgia, October 22 to 26, 2017.

4. Yuh-Jen Hwong, Richard Lee Lai, and Nien-Tsu Huang, "A Microfluidic Device Integrating Microwell with a Permanent Magnet for Immunomagnetic Single Cell Trapping", μTAS 2017, Savannah, Georgia, October 22 to 26, 2017.
5. Yuh-Jen Hwong, Nien-Tsu Huang, "A microfluidic device with hydrodynamic trap arrays for white blood cell counting in peritoneal dialysis solution", 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'17), Jeju Island, Korea, July 11 to 15, 2017.
6. H. T.-H. Lin, C.-C. Lin, and N.-T. Huang*, "Localized surface plasmon resonance platform for multi-point and real-time biosensing" CLEO: Applications and Technology 2017, May 13 to 18, 2017.

鍾孝文教授 Hsiao-Wen Chung, Professor

學術期刊論文 Journal articles

1. Liu HS, Chiang SW, Chung HW, Tsai PH, Hsu FT, Cho NY, Wang CY, Chou MC, Chen CY. Histogram analysis of T2*-based pharmacokinetic imaging in cerebral glioma grading. Computer Methods and Programs in Biomedicine 2018;155:19-27.
2. Kuo YS, Yang SC, Chung HW, Wu WC. Toward quantitative fast diffusion kurtosis imaging with b-values chosen in consideration of signal-to-noise ratio and model fidelity. Medical Physics 2018;45:605-612.
3. Chu ML, Chang HC, Chung HW, Bashir MR, Cai J, Zhang L, Sun D, Chen NK. Free-breathing abdominal MRI improved by Repeated k-t-subsampling and artifact-minimization (ReKAM). Medical Physics 2018;45:178-190.
4. Chou MC, Ko CW, Chiu YH, Chung HW, Lai PH. Effects of b value on quantification of rapid diffusion kurtosis imaging in normal and acute ischemic brain tissues. Journal of Computer Assisted Tomography 2017;41:868-876.
5. Chiu SC, Lin TM, Lin JM, Chung HW, Ko CW, Buchert M, Bock M. Effects of RF pulse profile and intra-voxel phase dispersion on MR fingerprinting with balanced SSFP readout. Magnetic Resonance Imaging 2017;41:80-86.
6. Wu PH, Chung HW, Wu MT, Ko CW. Pixel-wise derivation of pulmonary regurgitation index could alter clinical decision: a phase-contrast MR imaging study on patients with repaired tetralogy of Fallot. European Journal of Radiology 2017;93:46-51.
7. Lin JM, Patterson AJ, Chao TC, Zhu C, Chang HC, Mendes J, Chung HW, Gillard JH, Graves M. Free-breathing black-blood CINE fast-spin echo imaging for measuring abdominal aortic wall distensibility: a feasibility study. Physics in Medicine and Biology 2017;62:N204-N218.
8. Tsai PH, Chou MC, Chiang SW, Chung HW, Liu HS, Kao HW, Chen CY. Early white matter injuries in patients with acute carbon monoxide intoxication: a tract-specific diffusion kurtosis imaging study and STROBE compliant article. Medicine 2017;96:e5982.
9. Chiu SC, Chang HC, Chu ML, Wu ML, Chung HW, Lin YR. De-aliasing for signal restoration in Propeller MR imaging. Magnetic Resonance Imaging 2017;36:12-15.

研討會論文 Conference & proceeding papers

1. Tsai PH, Liu HS, Hsu FT, Kao YC, Lu CF, Chung HW, Chen CY (2018) Sequential changes of diffusion anisotropy and mean kurtosis in cuprizone-induced demyelination: a rat model, in International Society of Magnetic Resonance in Medicine, 26th Annual Meeting, #1853, Paris, France.
2. Yu CY, Huang TY, Chung HW (2018) Single breath-hold MR T1-mapping in the heart: comparison of hybrid MOLLI and MOLLI53, in International Society of Magnetic Resonance in Medicine, 26th Annual Meeting, #2916, Paris, France.
3. Cheng CM, Yeh TC, Hsieh JC, Chung HW (2018) MR susceptometry based superior sagittal sinus venous oxygen saturation: effects of carbon dioxide based cerebral vascular reserve and anesthesia in Moyamoya patients, in International Society of Magnetic Resonance in Medicine, 26th Annual Meeting, #4934, Paris, France.
4. Shih SF, Chung HW (2017) A weighted least squares approach to reduce T1 estimation bias in DESPOT1, in European Society for Magnetic Resonance in Medicine and Biology, Barcelona, Spain.
5. Lin JM, Chang HC, Chao TC, Tsai SY, Patterson AJ, Chung HW, Gillard JH, Graves MJ (2017) L1-LAD: Iterative MRI reconstruction using L1 constrained least absolute deviation, in European Society for Magnetic Resonance in Medicine and Biology, Barcelona, Spain.
6. Chiu SC, Lin TM, Lin JM, Chung HW, Ko CW, Büchert M, Bock M (2017) Effects of RF pulse profile and within-slice phase dispersion on accuracy of MR fingerprinting with balanced SSFP readout, in International Society of Magnetic Resonance in Medicine, 25th Annual Meeting, #80, Honolulu, Hawaii, USA.

7. Lin JM, Tsai SY, Chang HC, Chung HW, Chen HC, Lin YH, Lee CW, Chen YF, Scoffings D, Das T, Gillard JH, Patterson AJ, Graves MJ (2017) Pseudo-inverse constrained (PICO) reconstruction reduces colored noise of PROPELLER and improves the gray-white matter differentiation, in International Society of Magnetic Resonance in Medicine, 25th Annual Meeting, #1524, Honolulu, Hawaii, USA.
8. Tsai PH, Chen YC, Chiang SW, Liu HS, Chou MC, Hsu FT, Kao YC, Lu CF, Chung HW, Chen CY (2017) Increased anisotropy as possible compensatory plasticity of ventral thalamic nuclei to gait disturbance in patients with idiopathic normal pressure hydrocephalus, in International Society of Magnetic Resonance in Medicine, 25th Annual Meeting, #2432, Honolulu, Hawaii, USA.
9. Lee MH, Chuang TC, Chung HW, Li JY, Lai PH (2017) White matter volume change of carbon monoxide intoxication: a 9-month follow-up study, in International Society of Magnetic Resonance in Medicine, 25th Annual Meeting, #2461, Honolulu, Hawaii, USA.
10. Wu PH, Chung HW, Wu MT, Ko CW (2017) The impact of heterogeneity on regurgitation classification for pulmonary artery after repaired Tetralogy of Fallot, in International Society of Magnetic Resonance in Medicine, 25th Annual Meeting, #3160, Honolulu, Hawaii, USA.

管傑雄教授 Chieh-Hsiung Kuan, Professor

研討會論文 Conference & proceeding papers

1. Chun Nien, Li-Cheng Chang, Jia-Hao Ye, Vin-Cent Su, Chao-Hsin Wu and Chieh-Hsiung Kuan (Aug, 2017). Proximity effect correction in electron-beam lithography based on computation of critical-development time with swarm intelligence. Journal of Vacuum Science & Technology B.
2. Li-Cheng Chang, Chun Nien, Jia-Hao Ye, Cheng-Huan Chung, Vin-Cent Su, Chao-Hsin Wu, and Chieh-Hsiung Kuan(Sept, 2017). A comprehensive model for sub-10nm electron-beam patterning through the shorttime and cold development. Nanotechnology.
3. Li-Cheng Chang, Chun Nien, Jia-Hao Ye, Cheng-Huan Chung, Vin-Cent Su, Chao-Hsin Wu, and Chieh-Hsiung Kuan (Sept, 2017). A comprehensive model for sub-10nm electron-beam patterning through the shorttime and cold development. Nanotechnology.
4. Kung-Chu Ho, Vin-Cent Su, Da-Yo Huang, Ming-Lun Lee, Nai-Kuan Chou, Chieh-Hsiung Kuan (Nov, 2017). Investigation of low frequency electrolytic solution behavior with an accurate electrical impedance method. Chemical Physics Letters.
5. Chen, P. H., Su, V. C., Wu, S. H., Lin, R. M., & Kuan, C. H (Jan, 2018). Defect reduction in GaN on dome-shaped patterned-sapphire substrates. Optical Materials.
6. Shuming Wang, Pin Chieh Wu, Vin-Cent Su, Yi-Chieh Lai, Mu-Ku Chen, Hsin Yu Kuo, Bo Han Chen, Yu Han Chen, Tzu-Ting Huang, Jung-Hsi Wang, Ray-Ming Lin, Chieh-Hsiung Kuan, Tao Li, Zhenlin Wang, Shining Zhu & Din Ping Tsai (Jan, 2018). A broadband achromatic metalens in the visible. Nature Nanotechnologyvolume.

研討會論文 Conference & proceeding papers

1. Chun Nien, Yi-Hsuan Li, Vin-Cent Su, Chieh-Hsiung Kuan (Mar, 2017). Ultra-sensitive molecular detection using surface-enhanced Raman scattering on periodic metal-dielectric nanostructures. SPIE Proceedings.
2. Vin-Cent Su, Po-Hsun Chen, Ta-Cheng Hsu, Yu-Yao Lin, Chieh-Hsiung Kuan (May, 2017). Enhanced Internal-Quantum Efficiency of GaN-based Light-Emitting Diodes with a Larger Post-Duty Cycle of Patterned-Sapphire Substrates. 2017 The Conference on Lasers and Electro-Optics (CLEO 2017).

郭柏齡副教授 Po-Ling Kuo, Associate Professor

學術期刊論文 Journal articles

1. Yu-Chiu Kao, Jhu-Rong Jheng, Huei-Jyuan Pan, Wei-Yu Liao, Chau-Hwang Lee, Po-Ling Kuo," Elevated hydrostatic pressure enhances the motility and enlarges the size of the lung cancer cells through aquaporin upregulation mediated by caveolin-1 and ERK1/2 signaling", Oncogene, 2017, 36(6):863-874.

2. Po-Ling Kuo, Ching-Che Charng, Po-Chen Wu, Pai-Chi Li, "Shear-wave elasticity measurements of three-dimensional cell cultures for mechanobiology", Journal of Cell Science, 2017, 130(1):292-302.

3. Chia-Lun Yeh, Po-Ling Kuo, Jean-Luc Gennisson, Javier Brum, Mickaël Tanter, and Pai-Chi Li, "Shear wave measurements for evaluation of tendon diseases", IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2016, 63(11), 1906.

研討會論文 Conference & proceeding papers

1. Yu-Chiu Kao, Huei-Jyuan Pan, Chau-Hwang Lee, Po-Ling Kuo, "Caveolin-1 phosphorylation drives elevated hydrostatic pressure-induced invasion of lung cancer cells", The Biophysical Society thematic meeting on the Mechanobiology of Disease, 2016 Sep, Singapore.

李枝宏特聘教授 Ju-Hong Lee, Distinguished Professor

學術期刊論文 Journal articles

1. Ju-Hong Lee, C.-J. Ciou, and Y.-H. Yang, "Two-dimensional symmetric half-plane recursive doubly complementary digital lattice filters," International Journal of Electrical, Computer, Energetic, Electronic and Communication Engineering, Vol. 10, No. 5, pp. 628-634, 2016.

2. Ju-Hong Lee and J.-S. Du, "Phase characteristics for the stability of 2-D quarter-plane recursive digital all-pass filters," IEEE Transactions on Circuits and Systems II, Vol. 63, No. 3, pp. 289-293, March 2016.

3. Ju-Hong Lee and J.-S. Du, "The phase characteristics for the stability of 2-D nonsymmetric half-plane digital allpass filters," IEEE Trans. on Circuits and Systems I, Vol. 63, No. 4, pp. 517-528, April 2016.

4. T.-W. Chiang and Ju-Hong Lee, "Finite SNR diversity-multiplexing tradeoff with spatial correlation and mutual coupling effects for Rayleigh MIMO channels," Journal of the Franklin Institute, Vol. 353, No. 12, pp. 2783-2813, August 2016.

5. T.-W. Chiang and Ju-Hong Lee, "Lower bound for finite-SNR DMT with position estimation errors in MIMO channels," IEEE Communications Letters, Vol. 20, No. 8, pp. 1691-1694, August 2016.

6. T.-W. Chiang and Ju-Hong Lee, "Finite-SNR diversity-multiplexing tradeoff with accurate performance analysis for fully correlated Rayleigh MIMO channels," IEEE Trans. on Vehicular Technology, Vol. 65, No. 11, pp. 8910-8924, November 2016.

7. Ju-Hong Lee and J.-S. Du, "Lattice structure realization for the design of 2-D digital allpass filters with general causality," IEEE Trans. on Circuits and Systems I, Vol. 64, No. 2, pp. 419-431, February 2017.

8. Ju-Hong Lee and C.-J. Ciou "Design of two-channel quincunx quadrature mirror filter banks using digital all-pass lattice filters," International Journal of Computer, Electrical, Automation, Control and Information Engineering, Vol. 11, No. 5, pp. 446-452, 2017.

9. Y.-F. Wang and Ju-Hong Lee, "A simple phase noise suppression scheme for massive MIMO uplink systems" IEEE Trans. on Vehicular Technology, Vol. 66, No. 6, pp. 4769-4780, June 2017.

10. Ju-Hong Lee and J.-Y. Lee, "Optimal beamforming-selection spatial precoding using population-based stochastic optimization for massive wireless MIMO communication systems," Journal of the Franklin Institute, Vol. 354, No. 10, pp. 4247-4272, July, 2017.

研討會論文 Conference & proceeding papers

1. Y.-F. Wang and Ju-Hong Lee, "A novel symbol-based near ML detection scheme with unequal error protection for MIMO systems," IEEE Wireless Communications and Networking Conference (WCNC), San Francisco, CA, USA, March 19-22, 2017.

李嗣涔特聘教授 Si-Chen Lee, Distinguished Professor

學術期刊論文 Journal articles

1. Y. J. Huang and S. C. Lee, 2017, "Graphene/h-BN Heterostructures for Vertical Architecture of RRAM Design",Sci. Rep. 7, 9679, doi:10.1038/s41598-017-08939-2

2. W. L. Huang, H. H. Hsiao, C. Y. Lin, M. R. Tang, and S. C. Lee, 2017, "Waveguide resonances with selectable polarization in an infrared thermal emitter", AIP Advance, 7,085112.

3. C. S. Chang Chien, H. M. Chang, W. T. Lee, M. R. Tang, C. H. Wu, and S. C. Lee, 2017, "High Performance MoS2 TFT using Graphene Contact First Process", AIP Advance, 8, 085018.

4. C. H. Hong, C. F. Hsieh, C. S. Tseng, W. C. Huang, C. Y. Guo, S. Lin, and S. C. Lee, 2017, "A nanobiosening method based on force measurement of antibody-antigen interaction for direct detection of enterovirus 71 by the chemically modified atomic force microscopic probe", Microbial Pathogenesis, Vol. 111, 292-297.
5. M. R. Tang, H. H. Hsiao, C. H. Hong, W. L. Huang, and S. C. Lee, 2018, "An uncooled LWIR-detector with LSPR enhancement and selective narrow absorption", IEEE Photon. Technol. Lett., accepted.

李百祺特聘教授 Pai-Chi Li, Distinquished Professor

學術期刊論文 Journal articles

1. P.-L. Kuo, C.-C. Charng, P.-C. Wu and P.-C. Li, "Shear-Wave Elasticity Measurements of Three-Dimensional Cell Cultures for Mechanobiology", Journal of Cell Science, Vol. 130, pp. 292-302, 2017.
2. J. Gao, P.-C. Li, J. Chen, W. He, L.-J. Du, R. Min and M. O'Dell, "Ultrasound Strain Imaging in Assessment of Biceps Muscle Stiffness and Dynamic Motion in Healthy Adults", Ultrasound in Medicine and Biology, Vol. 43-8, pp. 1729-1736, August, 2017.
3. J. Chen, M. O'Dell, W. He, L.J. Du, P.-C. Li and J. Gao, "Ultrasound shear wave elastography in the assessment of passive biceps brachii muscle stiffness: influences of sex and elbow position", Clinical Imaging, Vol. 45, pp. 26-29, 2017.
4. J. Gao, P.-C. Li, et al., "Ultrasound Strain Imaging to Assess the Biceps Brachii Muscle in Chronic Post-Stroke Spasticity", Journal of Ultrasound in Medicine, February, 2018.
5. C.-Y. Lee, T. L. Truong and P.-C. Li, "Automated Conformal Ultrasound Scanning for Breast Screening", Journal of Medical and Biological Engineering, Vol.38, pp. 116-128, February 2018.
6. K.-W. Wu, Y.-A. Wang and P.-C. Li, "Laser Generated Leaky Acoustic Waves for Needle Visualization", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol. 65, Issue 4, pp. 546-556, April 2018.
7. L. T.-L. Tseng, C.-L. Lin, K.-H. Pan, K.-Y. Tzen, M.-J. Su, C.-T. Tsai, Y.-H. Li, P.-C. Li, F.-T. Chiang, S.-C. Chang and M.-F. Chang, "Single allele Lmbrd1 knockout results in cardiac hypertrophy", Journal of the Formosan Medical Association, Vol. 117-6, pp. 471-479, June, 2018.
8. U-W Lok and P.-C. Li, "Micro-beamforming with Error Compensation", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control , Vol. 65, Issue 7, pp. 1153-1165, July 2018.

研討會論文 Conference & proceeding papers

1. P.-C. Li, "Photoacoustic imaging for preclinical research with 3D cell culture systems", keynote speech, International Forum on Medical Imaging in Asia, Okinawa, Japan, January 19-20, 2017.
2. P.-C. Li, "Ultrasound for preclinical research: shear wave imaging and photoacoustic imaging of 3D cell culture systems", invited talk, 2017 International Conference on Regulatory Approaches for Fostering Innovation in Drugs and Medical Devices, March 30-31, 2017.
3. Y.-P. Lai, Y.-S. Yang, L. Cao and P.-C. Li, "High Frequency Shear-Wave Elasticity Measurement in Matrix of 3D Gastric Cancer Invasion Model", European Molecular Imaging Meeting, Cologne, Germany, April 5-7, 2017.
4. P.-C. Li, "3D cell tracking with dual wavelength photoacoustic microscopy", invited talk, the 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Jeju Island, Korea, July 11-15, 2017.
5. P.-C. Li, "Cell tracking using dual-wavelength photoacoustic microscopy", invited talk, the 4th Gastrointestinal Endoscopic Molecular Imaging Forum, Beijing, China, August 25-27, 2017.
6. J. Gao, M. O'Dell, R. Min, J. Chen1 and P.-C. Li, "Ultrasound elastography in assessment of post-stroke spasticity of the biceps brachii muscle", IEEE International Ultrasonics Symposium (IUS), Washington, D.C., USA, September 6-9, 2017.
7. S.-C. Lin and P.-C. Li, "Estimating 2D Flow Vectors in Ultrasound Plane-Wave Fourier Imaging", IEEE International Ultrasonics Symposium (IUS), Washington, D.C., USA, September 6-9, 2017.
8. Y.A. Wang, U W. Lok and P.-C. Li, "Needle Guidance Using Laser Generated Leaky Acoustic Waves", IEEE International Ultrasonics Symposium (IUS), Washington, D.C., USA, September 6-9, 2017.

9. Y.-S. Yang, P.-Y. Chao and P.-C. Li, "Tomographic Shear Wave Imaging: Feasibility Study", IEEE International Ultrasonics Symposium (IUS), Washington, D.C., USA, September 6-9, 2017.
10. P.-Y. Chao, W.-W. Liu, S.-S. Hsu and P.-C. Li, "Laser Speckle Contrast Shear Wave Imaging of Three-Dimensional Cancer Metastasis Model", IEEE International Ultrasonics Symposium (IUS), Washington, D.C., USA, September 6-9, 2017.
11. P.-C. Li, "Multifunctional microbubbles in ultrasound theranostics", invited talk, the 16th World Federation for Ultrasound in Medicine and Biology Congress in 2017, Taipei, Taiwan, October 13-17, 2017.
12. T.-H. Wu, W.-W. Liu, Y.-H. Chen, C. J.-T. Lee, P.-C. Li and Y.-H. Hsu, "study of the nutrition deprived condition on the development of a microtumor", The 21st International Conference on Miniaturized Systems for Chemistry and Life Sciences, μTAS, Savannah, USA, October 22-26, 2017.
13. W.-W. Liu and P.-C. Li, "Ultrasound Modulates Piezo1-Mediated Mechanotransduction in Neuro2A Cells", 62nd Annual Meeting of the Biophysical Society, San Francisco, California, February 17-21, 2018.
14. J. Gao, J. Chen, M. O'Dell, P.-C. Li, J. Rubin, and R. Min, "Ultrasound Strain Imaging to Assess the Biceps Brachii Muscle in Chronic Post-Stroke Spasticity", The American Institute of Ultrasound in Medicine(AIUM2018) Convention, New York , USA, March 24-28, 2018.
15. P.-C. Li, "Adaptive Beamforming and Motion Estimation in Ultrafast Ultrasound Imaging", invited talk, the 13th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology in conjunction with ACUCI 2018, Seoul, Korea, May 23-26, 2018.
16. P.-C. Li, "Shear Wave Imaging for Preclinical Research", invited talk, the 13th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology in conjunction with ACUCI 2018, Seoul, Korea, May 23-26, 2018.
17. P.-C. Li, "Future Prospects of Basic Ultrasound Research", invited talk, the 13th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology in conjunction with ACUCI 2018, Seoul, Korea, May 23-26, 2018.

李心予教授 Hsinyu Lee, Professor

學術期刊論文 Journal articles

1. Chang HH, Liu YL, Lu MY, Jou ST, Yang YL, Lin DT, Lin KH, Tzen KY, Yen RF, Lu CC, Liu CJ, Peng SS, Jeng YM, Huang SF, Lee H, Juan HF, Huang MC, Liao YF, Lee YL, Hsu WM. A multidisciplinary team care approach improves outcomes in high-risk pediatric neuroblastoma patients. Oncotarget. 8(3): 4360-4372. doi: 10.18632/oncotarget.13874. Dec 10, 2017. (5.168, 44/217, 2016)
2. Hsia K, Yang MJ, Chen WM, Yao CL, Lin CH, Loong CC, Huang YL, Lin YT, Lander AD, Lee H* and J Lu*. S1P improves endothelialization with reduction of thrombosis in re-cellularized human umbilical vein graft by inhibiting syndecan-1 shedding in vitro. Acta Biomaterialia. 51:341-350. 2017. (6.319, 3/77, 2016)
3. Wang BJ, Her GM, Hu MK, Chen YW, Tung YT, Wu PY, Lee H, Jin LW, Huang, SL, Chen RP, Huang CJ and Liao YF. ErbB2 regulates autophagic flux to modulate the proteostasis of APP-CTFs in Alzheimer's disease. Proceedings of the National Academy of Sciences of the United States of America, 114(15): E3219-E3138. [Epub ahead of print, Mar 28, 2017], 2017. (9.661, 4/64, 2016)
4. Kuo CT, Wang JY, Wo AM, Chen BP* and Lee H*. ParaStamp and its application to cell patterning, drug synergy screening, and rewritable devices for droplet storage. Advanced Biosystems. DOI: 10. 1002/abdi.201770024. [Epub ahead of print, Apr. 25, 17], 2017. (Selected as cover image)
5. Kuo CT, Wang JY, Lin YF, Wo AW, Chen BP* and Lee H*. Three-dimensional spheroid culture targeting versatile tissue bioassays using a PDMS-based hanging drop array. Scientific Reports. 7(1): 4363. Jun 29, 2017. (4.259, 10/64, 2016)
6. Weng WC, Lin KH, Wu PY, Ho YS, Liu YL, Wang BJ, Chen CC, Liao YF, Lee WT, Hsu WM* and Lee H*. VEGF expression correlates with neuronal differentiation and predicts a favorable prognosis in patients with neuroblastoma. Scientific Reports. 7(1): 11212. Sep 11, 2017. (4.259, 10/64, 2016)
7. Lin YC, Ohbayashi N, Hongu T, Katagiri N, Funakoshi Y, Lee H and Kanaho Y. Arf6 in lymphatic endothelial cells regulates lymphangiogenesis by controlling directional cell migration. Scientific Reports. 7(1): 11240. Sep 12, 2017. (4.259, 10/64, 2016)
8. Lin KH, Li MW, Chang YC, Lin YN, Chang BE, Huang CJ, Yao CL* and Lee H*. Activation of lysophosphatidic acid receptor 3 inhibits megakaryopoiesis in human hematopoietic stem cells and zebrafish. Stem Cells and Development. 27 (3): 216-224. doi: 10.1089/scd.2017.0190. [Epub ahead of print Dec 14, 2017], 2018. (3.562, 34/128, 2016)

9. Lin YF, Shih HY, Shang ZF, Guo J, Du C, Lee H and BPC Chen. PIDD mediates the association of DNA-PKcs and ATR at stalled replication forks to facilitate the ATR signaling pathway. Nucleic Acid Research. 46(4): 1847-1859. doi: 10.1093/nar/gkx1298. [Epub ahead of print Jan 4, 2018], 2018 (10.162, 14/290, 2016)
10. Lee CY, Hsieh PH, Chiang LM, Chattopadhyay A, Li KY, Lee YF, Lu TP, Lai LC, Lin EC, Lee H, Ding ST, Tsai MH, Chen CY and Chuang EY. Whole-genome de novo sequencing reveals unique genes that contributed to the adaptive evolution of the Mikado pheasant. Gigascience. doi: 10.1093/gigascience/giy044. [Epub ahead of print May 4th, 2018], 2018. (6.681, 6/64, 2016)

研討會論文 Conference & proceeding papers

1. CT Kuo, JY Wang, AM. Wo, BPC Chen, and H Lee, "A novel round bottom μ-well array chip with biomimetic nano-cilia promotes 3D tumor cultures and metastatic bioassays," Proceedings of 19th International Conference on Solid-State Sensors, Actuators and Microsystems, Kaohsiung, Taiwan, June 18-22, 2017. (Transducers 2017) (Oral Presentation)
2. JC Chiang, WM Chen, KH Lin, and H Lee. Pharmacological activation of LPA receptors regulates murine erythro-megakaryocytic differentiation in myeloid lineage. ASCB 2017: B860, P2703, Philadelphia, USA.
3. WM Chen and H Lee. To investigate the roles of lysophosphatidic acid type 2 receptor in cell senescence. ASCB 2017: B596, P2446, Philadelphia, USA.
4. PY Chuang, YY Chan, PY Wu, PJ Chen and H Lee. Investigation of the roles of novel endogenous ligand of aryl hydrocarbon receptor in neural development. ASCB 2017: B527, P3240, Philadelphia, USA.
5. PY Chuang, YY Chan, PY Wu, PJ Chen and H Lee. Investigation of the roles of novel endogenous ligand of aryl hydrocarbon receptor in neural development. EB 2018: 864.19, San Diego, USA, 2018.
6. CY Chen, YC Chien and H Lee. Calreticulin stabilizes vascular endothelial growth factor-A mRNA via interaction with AU-rich element at 3'-UTR. EB 2018: 614.2, San Diego, USA, 2018.

林致廷教授 Chih-Ting Lin, Professor

學術期刊論文 Journal articles

1. Y.-C. Syu, W.-E. Hsu, C.-T. Lin, "Field-Effect Transistor Biosensing: Devices and Clinical Applications," ECS Journal of Solid State Science and Technology, 2018, 7, Q3196-Q3207, doi: 10.1149/2.0291807jss.
2. Y.-C. Kuo, C.-K. Lee, C.-T. Lin, "Improving sensitivity of a miniaturized label-free electrochemical biosensor using zigzag electrodes," Biosensors and Bioelectronics, 2018, 103, 130-137, doi:10.1016/j.bios.2017.11.065.
3. J.-K. Lee, I.-S. Wang, C.-H. Huang, Y.-F. Chen, N.-T. Huang, C.-T. Lin*, "Pre-clinical tests of an integrated CMOS biomolecular sensor for cardiac diseases diagnosis," Sensors, 2017, 17, 2733, doi:10.3390/s17122733.
4. C.-C. Wu, W.-Y. Chuang, C.-D. Wu, Y.-C. Su, Y.-Y. Huang, Y.-J. Huang, S.-Y. Peng, S.-A. Yu, C.-T. Lin*, and S.-S. Lu, "A Self-Sustained Wireless Multi-Sensor Platform Integrated with Printable Organic Sensors for Indoor Environmental Monitoring," Sensors, 2017, 17, 715, doi:10.3390/s17040715.
5. P.-H. Lin and C.-T. Lin*, "Effects of Silicon Interface and Frequency Dependence in Solution-Processed High-K Poly(Vinylidene Fluoride-Trifluoroethylene-Chlorotrifluoroethylene) Dielectric Characteristics," Thin Solid Films, 2017, 628, 75-80.

研討會論文 Conference & proceeding papers

1. T.-W. Wu, Y.-J. Huang, C.-H. Gao and C.-T. Lin, "Microelectrode Design for Electro-Impedance Cell Counting Technology," 11th IEEE International Conference on Nano/Molecular Medicine and Engineering, Shenzhen, China, Dec. 2017.
2. C.-T. Lin, "CMOS-Based Biomolecular Diagnosis Technologies," 12th Asian Conference on Chemical Sensors (ACCS 2017), Hanoi, Vietnam, Nov. 2017.
3. W.-Y. Chuang, H.-H. Chen, Y.-C. Su, and C.-T. Lin, "Printable sensing materials for low-power consumption applications," 18th International Union of Materials Research Societies International Conference in Asia, Taipei, Taiwan, Nov. 2017.

4. T.-W. Wu, C.-H. Gao, and C.-T. Lin, "Electrode spatial design for a new microfluidics impedance flow cytometer," The 21st International Conference on Miniaturized System for Chemistry and Life Science (μTAS 2017), Savannah, Georgia, U.S.A., Oct. 2017.
5. C.-T. Lin, "CMOS technologies for analytical bio-diagnosis," 5th Photonics Global Conference 2017, Singapore, Singapore, Jul. 2017.
6. C.-H. Gao, T.-W. Wu, and C.-T. Lin, "A Microfluidic Particle-analyzing Device with Novel Coplanar Electrode Design Based on Impedance Sensing," 17th IEEE International Conference on Nanotechnology, Pittsburgh, PA, U.S.A., Jul. 2017.
7. W.-Y. Chuang, C.-C. Wu, S.-S. Lu, and C.-T. Lin, "A printable conductive polymer CO2 sensor with high selectivity to humidity," 19th International Conference on Solid-State Sensors, Actuators, and Microsystem (Transducer 2017), Kaohsiung, Taiwan, Jun 2017.
8. H.-T. Hsueh, P.-H. Chen, F.-E. Chen, M.S. Tsai, T.-W. Wu, and C.-T. Lin, "Incremental Interface Surface Potential Measured with a Nano-Gap Coplanar Device Structure and Its Applications," 231st Electrochemical Society Meeting, New Orleans, LA, U.S.A., May 2017.
9. F.-E. Chen, T.-W. Wu, H.-T. Hsiao, P.-H. Chen, M.-S. Tsai, C.-T. Lin, "A Nano-Gap Field-Effect Biosensor Based on Solid-Liquid Interfacial Potential," 12th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2017), Los Angeles, CA, U.S.A., Apr. 2017
10. T.-W. Wu, C.-H. Gao, F.-E. Chen, and C.-T. Lin, "Impedance Spectroscopy for Microfluidic Particle-analyzing Device with Spatial-Coplanar Electrode Design," 12th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2017), Los Angeles, CA, U.S.A., Apr. 2017
11. T.-Y. Liu, P.-W. Yen, D.-Y. Chang, and C.-T. Lin, "CMOS-based Biomolecular Diagnosis Platform," 12th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2017), Los Angeles, CA, U.S.A., Apr. 2017

林啟萬教授 Chii-Wann Lin, Professor

學術期刊論文 Journal articles

1. A.-B Wang, P.-H. Fang, Y. Chu-Su, Y.-W. Hsieh, C.-W. Lin, Y.-T. Chen, Y.-C. Hsu, "A novel lab-on-a-chip design by sequential capillary-gravitational valves for urinary creatinine detection", Sensors and Actuators B 222: 721–727 (2016)
2. Y.-T. Lin, T.-H. Hsieh, S.-C. Chen, C.-H. Lai, T.-S. Kuo, C.-P. Chen, C.-W. Lin, S.-T. Young, C.-W. Peng, "Effects of pudendal neuromodulation on bladder function in chronic spinal cord-injured rats", Journal of the Formosan Medical Association (2016)
3. M. C. Lipford, K. Ramar, Y.-J. Liang, C.-W. Lin, Y.-T. Chao, J. An, C.-H. Chiu, Y.-J. Tsai, C.-H. Shu, F.-P. Lee, R. P.-Y. Chiang, "Biomarkers in Obstructive Sleep Apnea", Sleep Medicine Reviews, 28: 121-128 (2016)
4. C.-C. Chang, C.-P. Chen, C.-Y.Chen, C.-W. Lin*, "DNA base-stacking assay utilizing catalytic hairpin assembly induced gold nanoparticle aggregation for colorimetric protein sensing", Chem. Commun., 2016, DOI: 10.1039/C6CC01238H
5. X. Zhao, Y.-C. Tsao, F.-J. Lee, W.-H. Tsai, C.-H. Wang, T.-L. Chuang, M.-S. Wu, C.-W. Lin* "Optical Fiber Sensor Based on Surface Plasmon Resonance for Rapid Detection of Avian Influenza Virus Subtype H6: Initial Studies" Journal of Virological Methods, 233 (2016) 15–22
6. Mohit S. Verma, Shih-Chung Weix, Jacob L. Rogowski, Jackson M. Tsuji, Paul Z. Chen, Chii-Wann Lin, Lyndon Jones and Frank X. Gu, "Interactions between bacterial surface and nanoparticles govern the performance of "chemical nose" biosensors, Biosensors and Bioelectronic, http://dx.doi.org/10.1016/j.bios.2016.04.024
7. Zhao, Xihong; Chang, Chia-Chen; Chuang, tsung-liang; Lin, Chii-Wann*, "Detection of KRAS mutations of colorectal cancer with peptide nucleic acid mediated real-time PCR clamping", Biotechnology & Biotechnological Equipment, Accepted

林發暄教授 Fa-Hsuan Lin, Professor

學術期刊論文 Journal articles

1. "Cognitive Impairment and Hippocampal Atrophy in Chronic Kidney Disease", Chun-Yuan Chang, Chih-Ching Lin, Chia-Fen Tsai, Wu-Chang Yang, Shuu-Jiun Wang, Fa-Hsuan Lin, Jong-Ling Fuh, Acta Neurologica Scandinavica (in press)
2. "Relative latency and temporal variability of hemodynamic responses at the human primary visual cortex", Fa-Hsuan Lin, Jonathan Polimeni; Jo-Fu Lin; Kevin W Tsai; Ying-Hua Chu; Pu-Yeh Wu; Yi-Tien Li; Yi-Cheng Hsu; Shang-Yueh Tsai; Wen-Jui Kuo, NeuroImage (in press)

3. "Hippocampal atrophy is associated with altered hippocampus–posterior cingulate cortex connectivity in mesial temporal lobe epilepsy with hippocampal sclerosis", Yao-Chia Shih, Chieh-En Tseng, Fa-Hsuan Lin, Horng-Huei Liou, Wen-Yih Isaac Tseng, American Journal of Neuroradiology, (2017), doi: 10.3174/ajnr.A5039
4. "Mitigation of B1+ inhomogeneity using spatially selective excitation with jointly designed quadratic spatial encoding magnetic fields and RF shimming", Yi-Cheng Hsu, Riccardo Lattanzi, Ying-Hua Chu, Martijn A. Cloos, Daniel K. Sodickson, Fa-Hsuan Lin, Magnetic Resonance in Medicine (in press)
5. "Brain hemodynamic activity during viewing and re-viewing of comedy movies explained by experienced humor", Iiro P. Jääskeläinen, Juha Pajula, Jussi Tohka, Hsin-Ju Lee, Wen-Jui Kuo, Fa-Hsuan Lin, Scientific Reports, (6), Article number: 27741, doi:10.1038/srep27741
6. "Rotary scanning acquisition in ultra-low-field MRI", Yi-Cheng Hsu, Koos C.J. Zevenhoven, Ying-Hua Chu, Juhani Dabek, Risto J. Ilmoniemi, Fa-Hsuan Lin, Magnetic Resonance in Medicine (2016), Vol. 75(6), pp. 2255-2264
7. A 32-channel head coil array with circularly symmetric geometry for accelerated human brain imaging", Ying-Hua Chu, Yi-Cheng Hsu, Boris Keil, Wen-Jui Kuo, Fa-Hsuan Lin, PLoS ONE, 11(2): e0149446. doi:10.1371/journal.pone.0149446

研討會論文 Conference & proceeding papers

1. "Accurate dynamic magnetic field monitoring and diffusion-weighted image reconstruction using uncorrelated local field measurements", Ying-Hua Chu, Yi-Cheng Hsu, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 3915
2. "Attentional modulation on the fMRI signal at human visual cortex revealed by fine timing characteristics but not amplitudes", Ying-Hua Chu, Jo-Fu Lotus Lin, Pu-Yeh Wu, Kevin W-K. Tsai, Yi-Tien Li, Yi-Cheng Hsu, Shang-Yueh Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5251
3. "Characterization of k-space trajectory error using time delay correction for EPI", Yi-Cheng Hsu, Ying-Hua Chu, Maxim Zeitsev, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 1388
4. "Characterization of laminar profiles in human auditory cortex using a dense 24-channel temporal lobe array at 3T", Pu-Yeh Wu, Ying-Hua Chu, Jo-Fu Lotus Lin, Shang-Yueh Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5243
5. "Characterize the effect of regional variations in venule vasculature related to temporal variability of hemodynamic responses latency at the human primary visual cortex", Yi-Tien Li, Jo-Fu Lotus Lin, Pu-Yeh Wu, Kevin W.-K. Tsai, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5257
6. "Empirical model decomposition removes non-stationary EEG noise in simultaneous fMRI-EEG acquisition", Kevin W.-K. Tsai, Hsin-Ju Lee, Wen-Jui Kuo, Jo-Fu Lotus Lin, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5397
7. "Modulated the physiological response delay to prevent overestimating the disruption of default mode network in Alzheimer's disease", Yi-Tien Li, Chun-Yuan Chang, Yi-Cheng Hsu, Jong-Ling Fuh, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 2370
8. "The numerical limitation of multi-coil shim and orthogonal RF-shim coil", Jiazheng Zhou, Pu-Yeh Wu, Jason Stockmann, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 4332
9. "Relative latency and temporal variability of BOLD fMRI signal in the ventral visual pathway", Jo-Fu Lotus Lin, Ying-Hua Chu, Yi-Cheng Hsu, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5259
10. "The synchronization of brain activity in real-time human interaction revealed by fMRI hyperscanning", Jacky T.-Y. Lu, Claire H.-C. Chang, Shu-Yu Huang, Wen-Jui Kuo, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5284
11. "Uniform flip angle 3D tailored excitation for MR breast imaging at 3T", Yi-Cheng Hsu, Sebestian Littin, Ying-Hua Chu, Maxim Zeitsev, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 4927
12. "Where is physiological noise lurking in k-space?", Toni Karvonen, Arno Solin, Ángel García-Fernández, Filip Tronarp, Simo Särkkä, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2017); 5300
13. "Simultaneous Multi-Slice Inverse Imaging for High Temporal Resolution FMRI", Ying-Hua Chu, Yi-Cheng, Hsu, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 4282Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 946

14. “TMS Positioning in MRI Using NMR Probes”, Yi-Cheng Hsu, Ying-Hua Chu, Pu-Yeh Wu, Shang-Yueh Tsai, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 4282 Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 2150

15. “A Simultaneous FMRI-EEG Acquisition to Minimize the MR Gradient Artifact on Human Auditory System”, Kevin Wen-Kai Tsai, Hsin-Ju Lee, Ching-Po Lin, Li-Wei Kuo, Wen-Jui Kuo, Toni Auranen, Simo Sarkka, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 3768

16. “Sensitive Detection of Hemodynamic Responses to TMS Pulse at Human Sensorimotor Cortex”, Pu-Yeh Wu, Ying-Hua Chu, Aapo Nummenmaa, Thomas Witzel, Shang-Yueh Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 3523

17. “Relative Latency and Temporal Variability of BOLD FMRI Signal Within Human Visual Cortex”, Jo-Fu Lotus Lin, Jonathan Polimeni, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 644

18. “Reduce Multislice Excitation RF Power by ROI Optimization Method”, Yi-Cheng, Hsu, Ying-Hua Chu, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 1890

19. “Multi-Slice Spiral Imaging Trajectory Mapping Using High Density 25-Channel Field Probe Array”, Ying-Hua Chu, Yi-Cheng, Hsu, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 4282

20. “MRI-Compatible Wireless Multi-Purpose Game Controller for Social Neuroscience FMRI Experiments”, Ying-Hua Chu, Yi-Cheng, Hsu, Pu-Yeh Wu, Kevin Wen-Kai Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 3786

21. “High Spatial Resolution Functional Imaging of Human Temporal Lobe Cortical Layers at 3T”, Pu-Yeh Wu, Ying-Hua Chu, Shang-Yueh Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 3515

22. “Decoupling Between Coils in a Flexible Phased-Array Using Stacked Circumferential Shielding”, Jhy-Neng Tasso Yeh, Fa-Hsuan Lin, Intl. Soc. Mag. Reson. Med. (2016); 3522

孫啟光特聘教授 Chi-Kuang Sun, Distinguished Professor

學術期刊論文 Journal articles

1. G. Deka, C.-K. Sun, K. Fujita, and S.-W. Chu, “Nonlinear plasmonic imaging techniques and their biological applications,” Nanophotonics 6 (1), pp. 31-49 (2017). Review Article

2. C.-K. Sun, Y.-C. Tsai, Y.-J. E. Chen, T.-M. Liu, H.-Y. Chen, H.-C. Wang, and C.-F. Lo, “Resonant dipolar coupling of microwaves with confined acoustic vibrations in a rod-shaped virus,” Scientific Reports 7, 4611 (2017). DOI: 10.1021/acs.jpclett.7b02384

3. C.-C. Shen, M.-Y. Weng, J.-K. Sheu, Y.-T. Yao, and C.-K. Sun, “In situ monitoring of chemical reactions at a solid-water interface by femtosecond acoustics,” Journal of Physical Chemistry Letters 8, pp. 5430-5437 (2017).

4. H.-Y. Chen, Y.-R. Huang, H.-Y. Shih, M.-J. Chen, J.-K. Sheu, and C.-K. Sun, “Extracting elastic properties of an atomically-thin interfacial layer by time-domain analysis of femtosecond acoustics,” Applied Physics Letters 111 (21), 213101 (2017). https://doi.org/10.1063/1.4999369

5. L. Cahill, M. Giacomelli, T. Yoshitake, H. Vardeh, B. Faulkner-Jones, J. Connolly, C.-K. Sun, and J. G. Fujimoto, “Rapid virtual H&E histology of breast tissue specimens using a compact fluorescence nonlinear microscope,” Laboratory Investigation 98 (1), pp. 150-160 (2018).

6. A. A. Maznev, T.-C. Hung, Y.-T. Yao, T.-H. Chou, J. S. Gandhi, L. Lindsay, H. D. Shin, D. W. Stokes, R. L. Forrest, A. Bensaoula, C.-K. Sun, and K. A. Nelson, “Propagation of THz acoustic wave packets in GaN at room temperature,” Applied Physics Letters 112 (6), 061903 (2018).

7. C.-K. Sun, H.-Y. Chen, T.-F. Tseng, B. You, M.-L. Wei, J.-Y. Lu, Y.-L. Chang, W.-L. Tseng, T.-D. Wang, “High Sensitivity of T-Ray for Thrombus Sensing,” Scientific Reports 8, 3948 (2018).

研討會論文 Conference & proceeding papers

1. C.-K. Sun, M.-L. Wei, Y.-H. Su, W.-H. Weng, and Y.-H. Liao, “Molecular imaging of melanin and quantitative differential diagnosis pigmented skin lesions using harmonic generation biopsy,” Multiphoton Microscopy in the Biomedical Sciences XVII, Photonics West, paper 10069-4, San Francisco, CA (2017). Keynote Speaker

2. C.-T. Kao, M.-L. Wei, Y.-H. Liao, and C.-K. Sun, “3D imaging of hematoxylin and eosin stained thick tissues with a sub-femtoliter resolution by using Cr:forsterite-laser-based nonlinear microscopy,” in Photonics in Dermatology and Plastic Surgury, Photonics West, paper 10037-15, San Francisco, CA (2017).

3. L. C. Cahill, M. G. Giacomelli, C.-K. Sun, T. Yoshitake, H. Vardeh, D. B. Schmoltze, J. C. Connolly, J. G. Fujimoto, "Multiphoton fluorescence microscopy using a 1 m fiber laser for rapid evaluation of breast surgical specimens," Advanced Biomedical and Clinical Diagnosis and Surgical Guidance System XV, Photonics West, paper 10054-14, San Francisco, CA (2017).
4. T.-C. Hung, Y.-R. Huang, J.-K. Sheu, and C.-K. Sun, "How thin should a vitreous silica layer be for boson peak measurement," Ultrafast Phenomena and Nanophotonics XXI, Photonics West, paper 10102-54, San Francisco, CA (2017).
5. M.-L. Wei, W.-H. Weng, Y.-T. Shih, G.-L. Lin, Y.-H. Liao, and C.-K. Sun, "Optical virtual biopsy of melanin for the diagnosis, prognosis, and therapeutic decision by using in vivo non-invasive harmonic generation microscopy," in Photonics in Dermatology and Plastic Surgury, Photonics West, paper 10037-36, San Francisco, CA (2017).
6. J.-C. Lee, C.-T. Yen, and C.-K. Sun, "In vivo longitudinal observation of intraepidermal nerve fibers in the toe of mouse," in Program and Abstract Book of Focus on Microscopy (FOM 2017), paper P2-D/24, Bordeaux, France (2017).
7. K.-H. Lin, M.-L. Wei, Y.-H. Liao, G.-G. Lee, and C.-K. Sun, "Comparative analysis of skin type effect on intrinsic skin aging by in vivo harmonic generation microscopy," in Program and Abstract Book of Focus on Microscopy (FOM 2017), paper P2-C/8, Bordeaux, France (2017).
8. C.-K. Sun, "Imaging interface using femtosecond ultrasonics," in Program Book of Son & Lumiere 2017: Combining light and sound at the nanoscale, pp. 15, Les Houches, France (2017). Tutorial Talk
9. C.-K. Sun, "Noninvasive dermatological micro-imaging of melanin for histopathological diagnosis and treatment assessment," Proceedings of The 2017 EITA Conference on New Materials, Nanotechnology and New Energy (EITA-New Materials 2017), Ann Arbor, MI (2017). Plenary Talk
10. C.-K. Sun, "Third harmonic generation microscopy reveals dietary adaptions in the ultrastructure of dinosaur dentine," Proceeding of the International Nanophotonics Symposium, paper I-6, pp. 6, Ito, Shizuoka, Japan (2017). Invited Talk
11. C.-K. Sun, "THz spectroscopy and imaging of blood," The 25th International Conference on Advanced Laser Technologies (ALT'17), paper FB-I-5, Busan, Korea (2017). Invited Talk
12. C.-K. Sun, "In vivo virtual biopsy imaging of human skin by using harmonic generation microscopy," Proceeding of Optics & Photonics Japan 2017, paper 1aAS4, Tokyo, Japan (2017). Invited Talk
13. C.-K. Sun, "Resonant dipolar coupling of microwaves with confined acoustic vibrations in viruses," in Proceeding of Joint Conference of The 4th Microwave and Terahertz Science and Applications, Current Trends in Optical and X-Ray Metrologies of Key Enabling Nanomaterials/Devices for the Ubiquitous Society, Renewable Energy and health, and The 8th International Conference on Terahertz Nanoscience (MTSA2017-OptoX NANO-TeraNano 8), paper Iv57, Okayama, Japan (2017). Invited Talk
14. P.-J. Wang, V. E. Gusev, J.-K. Sheu, C.-K. Sun, "Probing the van der Waals coupling of 2D materials by using Terahertz Ultrasonics," in Abstract Book of International Congress on Ultrasonics Honolulu (2017 ICU Honolulu), paper 000247, Honolulu, Hawaii, USA (2017). R. W. B. Stephens Prize (Honorable Mention)
15. C.-K. Sun, "Probing interfaces using femtosecond acoustics," in Proceeding of the 10th Asian Conference on Ultrafast Phenomena, paper IT-21, pp. 31, Hong Kong, China (2018). Invited Speaker
16. C.-K. Sun, "Noninvasive histopathological imaging by using harmonic generation microscopy for onsite differential diagnosis and treatment assessment," OSA Biophotonics Congress: Biomedical Optics, Hollywood, Florida, USA (2018). Invited Speaker
17. S. Chakraborty, H.-C. Gao, C.-T. Yen, H.-Y. Huang, and C.-K. Sun, "Third Harmonic Generation Microscopy for Label-free Human Brain Imaging," in OSA Technical Digest of Conference on Lasers and Electro-Optics (CLEO), paper ATh3Q.4, San Jose, California, USA (2018).
18. C.-K. Sun, "Sub-atomic resolution imaging using femtosecond acoustics," in Program Book and Abstracts of The 16th International Conference on Phonon Scattering in Condensed Matter and The 4th International Conference on Phononics and Thermal Energy Science (Phonons 2018 & PTES 2018 Joint Conference), pp. 59-60, Nanjing, China (2018). Invited Speaker

宋孔彬副教授 Kung-Bin Sung, Associate Professor

學術期刊論文 Journal articles

1. P. H. Wang, V. R. Singh, J. M. Wong, K. B. Sung, and Y. Luo, "Non-axial-scanning multifocal confocal microscopy with multiplexed volume holographic gratings," Optics letters, 42(2), 346-349, 2017.
2. P. Y. Liu, L. K. Chin, W. Ser, H. F. Chen, C.-M. Hsieh, C.-H. Lee, K. B. Sung, T. C. Ayi, P. H. Yap, B. Liedberg, K. Wang, T. Bourouinaj and Y. Leprince-Wang, "Cell refractive index for cell biology and disease diagnosis: past, present and future," Lab on a Chip, 16(4), 634-644, Feb. 2016.

研討會論文 Conference & proceeding papers

1. Kung-Bin Sung, Yang-Hsien Lin, Fong-Jheng Lin, Chao-Mao Hsieh, Shang-Ju Wu, "Investigation of light scattering characteristics of individual leukocytes using three-dimensional refractive index maps," Proc. SPIE 10251, Biomedical Imaging and Sensing Conference, Yokohama, Japan (April 2017)
2. Fan-Hua Ko, Gen-Hao Tien, Min-Jie Chuang, Tsan-Hsueh Huang, Ming-Hua Hung, and Kung-Bin Sung, "In-vivo diffuse reflectance spectroscopy (DRS) of oral mucosa of normal volunteers," Biomedical Optics 2016: Optical Tomography and Spectroscopy, paper JTu3A.45, Fort Lauderdale, FL United States (April 2016).
3. Ting-Wen Yu, Gen-Hao Tien, Fang-Wei Hsu, and Kung-Bin Sung, "Extracting Fluorescence Efficiency with a GPU-Based Monte Carlo Model for Two-Layer Mucosal Tissue," Biomedical Optics 2016: Optical Tomography and Spectroscopy, paper JTu3A.10, Fort Lauderdale, FL United States (April 2016), – received OSA student travelling grant.
4. Andy Liao and Kung-Bin Sung, "Simulation Study on Optimal Probe Numerical Aperture for Diffuse Reflectance Spectroscopy," Biomedical Optics 2016: Optical Tomography and Spectroscopy, paper JM3A.17, Fort Lauderdale, FL United States (April 2016).

楊泮池特聘教授 Pan-Chyr Yang, Distinguished Professor

學術期刊論文 Journal articles

1. Lin PY, Lin CH, Yang PC: Factors in Association Between Parkinson Disease and Risk of Cancer in Taiwan-Reply. JAMA Oncol. 2016 Jan 1;2(1):145-6.
2. Ho BC, Yang PC, Yu SL: MicroRNA and Pathogenesis of Enterovirus Infection. Viruses. 2016 Jan 6;8(1). Review.
3. Wang Z, Seow WJ, Shiraishi K, Hsiung CA, Matsuo K, Liu J, Chen K, Yamji T, Yang Y, Chang IS, Wu C, Hong YC, Burdett L, Wyatt K, Chung CC, Li SA, Yeager M, Hutchinson A, Hu W, Caporaso N, Landi MT, Chatterjee N, Song M, Fraumeni JF Jr, Kohno T, Yokota J, Kunitoh H, Ashikawa K, Momozawa Y, Daigo Y, Mitsudomi T, Yatabe Y, Hida T, Hu Z, Dai J, Ma H, Jin G, Song B, Wang Z, Cheng S, Yin Z, Li X, Ren Y, Guan P, Chang J, Tan W, Chen CJ, Chang GC, Tsai YH, Su WC, Chen KY, Huang MS, Chen YM, Zheng H, Li H, Cui P, Guo H, Xu P, Liu L, Iwasaki M, Shimazu T, Tsugane S, Zhu J, Jiang G, Fei K, Park JY, Kim YH, Sung JS, Park KH, Kim YT, Jung YJ, Kang CH, Park IK, Kim HN, Jeon HS, Choi JE, Choi YY, Kim JH, Oh IJ, Kim YC, Sung SW, Kim JS, Yoon HI, Kweon SS, Shin MH, Seow A, Chen Y, Lim WY, Liu J, Wong MP, Lee VH, Bassig BA, Tucker M, Berndt SI, Chow WH, Ji BT, Wang J, Xu J, Sihoe AD, Ho JC, Chan JK, Wang JC, Lu D, Zhao X, Zhao Z, Wu J, Chen H, Jin L, Wei F, Wu G, An SJ, Zhang XC, Su J, Wu YL, Gao YT, Xiang YB, He X, Li J, Zheng W, Shu XO, Cai Q, Klein R, Pao W, Lawrence C, Hosgood HD 3rd, Hsiao CF, Chien LH, Chen YH, Chen CH, Wang WC, Chen CY, Wang CL, Yu CJ, Chen HL, Su YC, Tsai FY, Chen YS, Li YJ, Yang TY, Lin CC, Yang PC, Wu T, Lin D, Zhou B, Yu J, Shen H, Kubo M, Chanock SJ, Rothman N, Lan Q: Meta-analysis of genome-wide association studies identifies multiple lung cancer susceptibility loci in never-smoking Asian women. Hum Mol Genet. 2016 Feb 1;25(3):620-9.
4. Yang SY, Hsiung CN, Li YJ, Chang GC, Tsai YH, Chen KY, Huang MS, Su WC, Chen YM, Hsiung CA, Yang PC, Chen CJ, Wu PE, Yu JC, Shen CY, Hsu HM: Fanconi anemia genes in lung adenocarcinoma- a pathway-wide study on cancer susceptibility. J Biomed Sci. 2016 Feb 3;23:23.
5. Chen HY, Liu CH, Chang YH, Yu SL, Ho BC, Hsu CP, Yang TY, Chen KC, Hsu KH, Tseng JS, Hsia JY, Chuang CY, Chang CS, Li YC, Li KC, Chang GC, Yang PC: EGFR-activating mutations, DNA copy number abundance of ErbB family, and prognosis in lung adenocarcinoma. Oncotarget. 2016 Feb 23;7(8):9017-25.
6. Wu SG, Liu YN, Tsai MF, Chang YL, Yu CJ, Yang PC, Yang JC, Wen YF, Shih JY: The mechanism of acquired resistance to irreversible EGFR tyrosine kinase inhibitor-afatinib in lung adenocarcinoma patients. Oncotarget. 2016 Mar 15;7(11):12404-13.

7. Gu SY, Ho CC, Huang YK, Chen HW, Wang YC, Kuo CY, Teng SC, Fu WM, Yang PC, Wu CW, Peng FC, Ling TY: Acquisition of tumorigenic potential and enhancement of angiogenesis in pulmonary stem/progenitor cells through Oct-4 hyperexpression. Oncotarget. 2016 Mar 22;7(12):13917-31.

8. Chen CY, Jan CI, Pi WC, Wang WL, Yang PC, Wang TH, Karni R, Wang TC: Heterogeneous nuclear ribonucleoproteins A1 and A2 modulate expression of Tid1 isoforms and EGFR signaling in non-small cell lung cancer. Oncotarget. 2016 Mar 29;7(13):16760-72.

9. Yang CY, Lin MW, Chang YL, Wu CT, Yang PC: Programmed cell death-ligand 1 expression is associated with a favourable immune microenvironment and better overall survival in stage I pulmonary squamous cell carcinoma. Eur J Cancer. 2016 Apr;57:91-103.

10. Huang KY, Kao SH, Wang WL, Chen CY, Hsiao TH, Salunke SB, Chen JJ, Su KY, Yang SC, Hong TM, Chen CS, Yang PC: Small-molecule, T315, Promotes CBL-dependent Degradation of EGFR via Y1045 Autophosphorylation. Am J Respir Crit Care Med. 2016 Apr 1;193:753-66.

11. Chen LY, Molina-Vila MA, Ruan SY, Su KY, Liao WY, Yu KL, Ho CC, Shih JY, Yu CJ, Yang JC, Rosell R, Yang PC: Coexistence of EGFR T790M mutation and common activating mutations in pretreatment non-small cell lung cancer: A systematic review and meta-analysis. Lung Cancer. 2016 Apr;94:46-53.

12. Lin CW, Lin PY, Yang PC: Noncoding RNAs in Tumor Epithelial-to-Mesenchymal Transition. Stem Cells Int. 2016;2016:2732705.

13. Wu SG, Liu YN, Yu CJ, Yang PC, Shih JY: Association of BIM Deletion Polymorphism With Intrinsic Resistance to EGFR Tyrosine Kinase Inhibitors in Patients With Lung Adenocarcinoma. JAMA Oncol. 2016 Jun 1;2(6):826-8.

14. Hung PF, Chang YC, Hong TM, Yang PC, Pan SH: 78P LCRMP-1 associated aptamers inhibit tumor metastasis. J Thorac Oncol. 2016 Apr;11(4 Suppl):S88.

15. Chang YL, Yang CY, Lin MW, Wu CT, Yang PC: High co-expression of PD-L1 and HIF-1α correlates with tumour necrosis in pulmonary pleomorphic carcinoma. Eur J Cancer. 2016 Jun;60:125-35.

16. Machiela MJ, Zhou W, Karlins E, Sampson JN, Freedman ND, Yang Q, Hicks B, Dagnall C, Hautman C, Jacobs KB, Abnet CC, Aldrich MC, Amos C, Amundadottir LT, Arslan AA, Beane-Freeman LE, Berndt SI, Black A, Blot WJ, Bock CH, Bracci PM, Brinton LA, Bueno-de-Mesquita HB, Burdett L, Buring JE, Butler MA, Canzian F, Carreón T, Chaffee KG, Chang IS, Chatterjee N, Chen C, Chen C, Chen K, Chung CC, Cook LS, Crous Bou M, Cullen M, Davis FG, De Vivo I, Ding T, Doherty J, Duell EJ, Epstein CG, Fan JH, Figueroa JD, Fraumeni JF, Friedenreich CM, Fuchs CS, Gallinger S, Gao YT, Gapstur SM, Garcia-Closas M, Gaudet MM, Gaziano JM, Giles GG, Gillanders EM, Giovannucci EL, Goldin L, Goldstein AM, Haiman CA, Hallmans G, Hankinson SE, Harris CC, Henriksson R, Holly EA, Hong YC, Hoover RN, Hsiung CA, Hu N, Hu W, Hunter DJ, Hutchinson A, Jenab M, Johansen C, Khaw KT, Kim HN, Kim YH, Kim YT, Klein AP, Klein R, Koh WP, Kolonel LN, Kooperberg C, Kraft P, Krogh V, Kurtz RC, LaCroix A, Lan Q, Landi MT, Marchand LL, Li D, Liang X, Liao LM, Lin D, Liu J, Lissowska J, Lu L, Magliocco AM, Malats N, Matsuo K, McNeill LH, McWilliams RR, Melin BS, Mirabello L, Moore L, Olson SH, Orlow I, Park JY, Patiño-Garcia A, Peplonska B, Peters U, Petersen GM, Pooler L, Prescott J, Prokunina-Olsson L, Purdue MP, Qiao YL, Rajaraman P, Real FX, Riboli E, Risch HA, Rodriguez-Santiago B, Ruder AM, Savage SA, Schumacher F, Schwartz AG, Schwartz KL, Seow A, Wendy Setiawan V, Severi G, Shen H, Sheng X, Shin MH, Shu XO, Silverman DT, Spitz MR, Stevens VL, Stolzenberg-Solomon R, Stram D, Tang ZZ, Taylor PR, Teras LR, Tobias GS, Van Den Berg D, Visvanathan K, Wacholder S, Wang JC, Wang Z, Wentzensen N, Wheeler W, White E, Wiencke JK, Wolpin BM, Wong MP, Wu C, Wu T, Wu X, Wu YL, Wunder JS, Xia L, Yang HP, Yang PC, Yu K, Zanetti KA, Zeleniuch-Jacquotte A, Zheng W, Zhou B, Ziegler RG, Perez-Jurado LA, Caporaso NE, Rothman N, Tucker M, Dean MC, Yeager M, Chanock SJ: Female chromosome X mosaicism is age-related and preferentially affects the inactivated X chromosome. Nat Commun. 2016 Jun 13;7:11843.

17. Chen YF, Hsieh MS, Wu SG, Chang YL, Yu CJ, Yang JC, Yang PC, Shih JY: Efficacy of Pemetrexed-Based Chemotherapy in Patients with ROS1 Fusion-Positive Lung Adenocarcinoma Compared with in Patients Harboring Other Driver Mutations in East Asian Populations. J Thorac Oncol. 2016 Jul;11(7):1140-52.

18. Hsiao YJ, Su KY, Hsu YC, Chang GC, Chen JS, Chen HY, Hong QS, Hsu SC, Kang PH, Hsu CY, Ho BC, Yang TH, Wang CY, Jou YS, Yang PC, Yu SL: SPANXA suppresses EMT by inhibiting c-JUN/SNAI2 signaling in lung adenocarcinoma. Oncotarget. 2016 Jul 12;7(28):44417-44429.

19. Hsu KH, Tseng JS, Wang CL, Yang TY, Tseng CH, Chen HY, Chen KC, Tsai CR, Yang CT, Yu SL, Su KY, Yu CJ, Ho CC, Hsia TC, Wu MF, Chiu KL, Liu CM, Yang PC, Chen JJ, Chang GC: Higher frequency but random distribution of EGFR mutation subtypes in familial lung cancer patients. Oncotarget. 2016 Jul 19.

20. Pan SH, Su KY, Spiessens B, Kusuma N, Delahaye NF, Gruselle O, Myo A, de Creus A, Louahed J, Chang GC, Yu SL, Yang PC: Gene expression of MAGE-A3 and PRAME tumor antigens and EGFR mutational status in Taiwanese non-small cell lung cancer patients. Asia Pac J Clin Oncol. 2016 Aug 12.

21. Wang JY, Yang PC: Does a rifamycin-containing preventive regimen increase rifampicin resistance? An unresolved concern. Int J Tuberc Lung Dis. 2016 Aug;20(8):998.

22. Chang JG, Chen CC, Wu YY, Che TF, Huang YS, Yeh KT, Shieh GS, Yang PC: Uncovering synthetic lethal interactions for therapeutic targets and predictive markers in lung adenocarcinoma. Oncotarget. 2016 Sep 15.

23. Kuo TC, Li LW, Pan SH, Fang JM, Liu JH, Cheng TJ, Wang CJ, Hung PF, Chen HY, Hong TM, Hsu YL, Wong CH, Yang PC: Purine-Type Compounds Induce Microtubule Fragmentation and Lung Cancer Cell Death through Interaction with Katanin. J Med Chem. 2016 Sep 22;59(18):8521-34.

24. Lin MW, Yang CY, Kuo SW, Wu CT, Chang YL, Yang PC: The Prognostic Significance of pSTAT1 and CD163 Expressions in Surgically Resected Stage 1 Pulmonary Squamous Cell Carcinomas. Ann Surg Oncol. 2016 Sep;23(9):3071-81.

25. Chang IS, Jiang SS, Yang JC, Su WC, Chien LH, Hsiao CF, Lee JH, Chen CY, Chen CH, Chang GC, Wang Z, Lo FY, Chen KY, Wang WC, Chen YM, Huang MS, Tsai YH, Su YC, Hsieh WS, Shih WC, Shieh SH, Yang TY, Lan Q, Rothman N, Chen CJ, Chanock SJ, Yang PC, Hsiung CA: Genetic Modifiers of Progression-free Survival in Never-smoking Lung Adenocarcinoma Patients Treated with First-line TKIs. Am J Respir Crit Care Med. 2016 Sep 26.

26. Wu SG, Chang YL, Yu CJ, Yang PC, Shih JY: The Role of PIK3CA Mutations among Lung Adenocarcinoma Patients with Primary and Acquired Resistance to EGFR Tyrosine Kinase Inhibition. Sci Rep. 2016 Oct 13;6:35249.

27. Yang CF, Tsai WY, Chen WA, Liang KW, Pan CJ, Lai PL, Yang PC, Huang HC: Kinesin-5 Contributes to Spindle-length Scaling in the Evolution of Cancer toward Metastasis. Sci Rep. 2016 Oct 21;6:35767.

28. Chen CH, Chang WH, Su KY, Ku WH, Chang GC, Hong QS, Hsiao YJ, Chen HC, Chen HY, Wu R, Yang PC, Chen JJ, Yu SL: HLJ1 is an endogenous Src inhibitor suppressing cancer progression through dual mechanisms. Oncogene. 2016 Oct 27;35(43):5674-5685.

29. Thongprasert S, Yang PC, Lee JS, Soo R, Gruselle O, Myo A, Louahed J, Lehmann FF, Brichard VG, Coche T: The prevalence of expression of MAGE-A3 and PRAME tumor antigens in East and South East Asian non-small cell lung cancer patients. Lung Cancer. 2016 Nov;101:137-144.

30. Tseng SJ, Huang KY, Kempson IM, Kao SH, Liu MC, Yang SC, Liao ZX, Yang PC: Remote Control of Light-Triggered Virotherapy. ACS Nano. 2016 Nov 22;10(11):10339-10346.

31. Lai WY, Huang BT, Wang JW, Lin PY, Yang PC: A Novel PD-L1-targeting Antagonistic DNA Aptamer With Antitumor Effects. Mol Ther Nucleic Acids. 2016 Dec 13;5(12):e397.

32. Lin CW, Wang LK, Wang SP, Chang YL, Wu YY, Chen HY, Hsiao TH, Lai WY, Lu HH, Chang YH, Yang SC, Lin MW, Chen CY, Hong TM, Yang PC: Daxx inhibits hypoxia-induced lung cancer cell metastasis by suppressing the HIF-1α/HDAC1/Slug axis. Nat Commun. 2016 Dec 22;7:13867.

33. Seow WJ, Matsuo K, Hsiung CA, Shiraishi K, Song M, Kim HN, Wong MP, Hong YC, Dean Hosgood H 3rd, Wang Z, Chang IS, Wang JC, Chatterjee N, Tucker M, Wei H, Mitsudomi T, Zheng W, Kim JH, Zhou B, Caporaso NE, Albanes D, Shin MH, Ping Chung L, An SJ, Wang P, Zheng H, Yatabe Y, Zhang XC, Kim YT, Shu XO, Kim YC, Bassig BA, Chang J, Ho JC, Ji BT, Kubo M, Daigo Y, Ito H, Momozawa Y, Ashikawa K, Kamatani Y, Honda T, Sakamoto H, Kunitoh H, Tsuta K, Watanabe SI, Nokihara H, Miyagi Y, Nakayama H, Matsumoto S, Tsuboi M, Goto K, Yin Z, Shi J, Takahashi A, Goto A, Minamiya Y, Shimizu K, Tanaka K, Wu T, Wei F, Wong JY, Matsuda F, Su J, Kim YH, Oh IJ, Song F, Lee VH, Su WC, Chen YM, Chang GC, Chen KY, Huang MS, Yang PC, Lin HC, Xiang YB, Seow A, Yong Park J, Kweon SS, Chen CJ, Li H, Gao YT, Wu C, Qian B, Lu D, Liu J, Jeon HS, Hsiao CF, Sung JS, Tsai YH, Jung YJ, Guo H, Hu Z, Wang WC, Chung CC, Lawrence C, Burdett L, Yeager M, Jacobs KB, Hutchinson A, Berndt SI, He X, Wu W, Wang J, Li Y, Choi JE, Park KH, Sung SW, Liu L, Kang CH, Hu L, Chen CH, Yang TY, Xu J, Guan P, Tan W, Wang CL, Sihoe AD, Chen Y, Choi YY, Hung JY, Kim JS, Yoon HI, Cai Q, Lin CC, Park IK, Xu P, Dong J, Kim C, He Q, Perng RP, Chen CY, Vermeulen R, Wu J, Lim WY, Chen KC, Chan JK, Chu M, Li YJ, Li J, Chen H, Yu CJ, Jin L, Lo YL, Chen YH, Fraumeni JF Jr, Liu J, Yamaji T, Yang Y, Hicks B, Wyatt K, Li SA, Dai J, Ma H, Jin G, Song B, Wang Z, Cheng S, Li X, Ren Y, Cui P, Iwasaki M, Shimazu T, Tsugane S, Zhu J, Jiang G, Fei K, Wu G, Chien LH, Chen HL, Su YC, Tsai FY, Chen YS, Yu J, Stevens VL, Laird-Offringa IA, Marconett CN, Lin

D, Chen K, Wu YL, Landi MT, Shen H, Rothman N, Kohno T, Chanock SJ, Lan Q: Association between GWAS-identified lung adenocarcinoma susceptibility loci and EGFR mutations in never-smoking Asian women, and comparison with findings from Western populations. Hum Mol Genet. 2016 Dec 26.

周迺寬副教授 Nai-Kuan Chou, Clinical Associate Professor

學術期刊論文 Journal articles

1. Kung-Chu Ho, Vin-Cent Su, Da-Yo Huang, Ming-Lun Lee, Nai-Kuan Chou, Chieh-Hsiung Kuan. Investigation of low frequency electrolytic solution behavior with an accurate electrical impedance method. Chemical Physics Letters. 2017; 667 :120–123
2. Chou HW, Chang TI, Wang CH, Chou NK, Chi NH, Huang SC, Wu IH, Chan CY, Ponge LM, Wang YC, Chen YS. The outcome of patients requiring multiple extracorporeal membrane oxygenation: how many runs of ECMO is reasonable? Int J Artif Organs. 2016 Aug 19;39(6):288-93
3. Tsao CI, Chou NK, Chi NH, Huang SC, Tsan CY, Wang CH, Yu HY, Wu IH, Chen YS, Shun CT, Wang SS. Surveillance of Immunosuppression During Pregnancy After Heart Transplantation: Case Report. Transplant Proc. 2016 Apr;48(3):978-81.
4. Wang YJ, Chi NH, Chou NK, Huang SC, Wang CH, Wu IH, Yu HY, Chen YS, Tsao CI, Shun CT, Tsai JT, Wang SS. Low Incidence of Malignancy After Heart Transplantation in Taiwan. Transplant Proc. 2016 Apr;48(3):974-7
5. Wang YJ, Chi NH, Chou NK, Huang SC, Wang CH, Wu IH, Yu HY, Chen YS, Tsao CI, Shun CT, Tsai JT, Wang SS. Malignancy After Heart Transplantation Under Everolimus Versus Mycophenolate Mofetil Immunosuppression. Transplant Proc. 2016 Apr;48(3):969-73.
6. Lin SN, Huang SC, Chen YS, Chih NH, Wang CH, Chou NK, Yu HY, Wu IH, Shun CT, Wang SS. Case Series: Heart Transplantation After Fontan Operation-Single-Center Experience. Transplant Proc. 2016 Apr;48(3):959-6
7. Ting M, Wang CH, Tsao CI, Huang SC, Chi NH, Chou NK, Chen YS, Wang SS. Heart Transplantation Under Mechanical Circulatory Support for Acute Fulminant Myocarditis With Cardiogenic Shock: 10 Years' Experience of a Single Center. Transplant Proc. 2016 Apr;48(3):951-5.
8. Lin LY, Liao CW, Wang CH, Chi NH, Yu HY, Chou NK, Hwang JJ, Lin JL, Chiang FT, Chen YS. Effects of Additional Intra-aortic Balloon Counter-Pulsation Therapy to Cardiogenic Shock Patients Supported by Extra-corporeal Membranous Oxygenation. Sci Rep. 2016 Apr 1;6:23838.
9. Lin KH, Chen YS, Chou NK, Huang SJ, Wu CC, Chen YY. The Associations Between the Religious Background, Social Supports, and Do-Not-Resuscitate Orders in Taiwan: An Observational Study. Medicine (Baltimore). 2016 Jan;95(3):e2571.
10. Huang PM, Chou NK, Lin TH, Chen CN. Intrapleural Epinephrine Irrigation for Massive Malignant Hemothorax. Thorac Cardiovasc Surg. 2016 Apr;64(3):263-5.

魏安祺助理教授 An-Chi Wei, Assistant Professor

學術期刊論文 Journal articles

1. Ma J, Banerjee P, Whelan SA, Liu T, Wei AC, Ramirez-Correa G, McComb ME, Costello CE, O'Rourke B, Murphy A, Hart GW*. Comparative Proteomics Reveals Dysregulated Mitochondrial O-GlcNAcylation in Diabetic Hearts. Journal of Proteome Research, 2016, 15 (7), pp 2254–2264 (SCI)

研討會論文 Conference & proceeding papers

1. Wang Q, Luczak E, Viswanathan M, Wu Y, Wei AC, Gupta A, Corradini E, Heck A, Cammarato A, Weiss R, Anderson M, Mitochondrial CaMKII Plays Important Physiological and Pathological Roles" American Heart Association Basic Cardiovascular Sciences (BCVS) Scientific Sessions, Portland, U.S.A., July 2017.
2. Chiu ST, Leu JY, Wei AC, Information Transduction Capacity of Mitochondrial Retrograde Signaling. Biophysical Society Thematic Meeting- Single-Cell Biophysics: Measurement, Modulation, and Modeling, Taipei, Taiwan, June 2017.

3. Chang C, Ho YP, Wei AC, Mathematical Modeling of Mitochondrial Quality Control in Mitochondiral Life Cycle and its Role in Aging. Biophysical Society Thematic Meeting- Single-Cell Biophysics: Measurement, Modulation, and Modeling, Taipei, Taiwan, June 2017.

張瑞峰教授 Ruey-Feng Chang, Professor

學術期刊論文 Journal articles

1. Moon WK, Chen IL, Yi A, Bae MS, Shin SU, Chang RF*, 2018.08, "Computer-aided prediction model for axillary lymph node metastasis in breast cancer using tumor morphological and textural features on ultrasound," Computer Methods and Programs in Biomedicine, vol. 162, pp. 129-137.
2. Moon WK, JF Chang, Lo CM, Chang JM, Lee SH, Shin SU, Huang CS, Chang RF*, 2018.02, "Quantitative breast density analysis using tomosynthesis and comparison with MRI and digital mammography," Computer Methods and Programs in Biomedicine, vol. 154, pp. 99-107.
3. Huang YS, Takada E, Konno S, Huang CS, Kuo MH, Chang RF*, 2018.01, "Computer-Aided tumor diagnosis in 3-D breast elastography," Computer Methods and Programs in Biomedicine, vol. 153, pp. 201-209.
4. Moon WK, Lee YW, Huang YS, Lee SH, Bae MS, Yi A, Huang CS, Chang RF*, 2017.07, "Computer-aided prediction of axillary lymph node status in breast cancer using tumor surrounding tissue features in ultrasound images," Computer Methods and Programs in Biomedicine, vol. 146, pp. 143-150.
5. Chang CC, Chen HH, Chang YC, Yang MY, Lo CM, Ko WC, Lee YF, Liu KL, Chang RF*, 2017.07, "Computer-aided diagnosis of liver tumors on computed tomography images," Computer Methods and Programs in Biomedicine, vol. 145, pp. 45-51.
6. Moon WK, Huang YS, Lee YW, Chang SC, Lo CM, Yang MC, Bae MS, Lee SH, Chang JM, Huang CS, Lin YT, Chang RF*, 2017.07, "Computer-aided tumor diagnosis using shear wave breast elastography," Ultrasonics. vol. 78, pp. 125-133.
7. Huang CS, Yang YW, Chen RT, Lo CM, Lo C, Cheng CF, Lee CS, Chang RF*, 2017.05, "Whole-breast ultrasound for breast screening and archiving," Ultrasound in Medicine and Biology, vol. 43, no. 5, pp. 926-933.
8. Moon WK, Chen IL, Chang JM, Shin SU, Lo CM, Chang RF*, 2017.04, "The adaptive computer-aided diagnosis system based on tumor sizes for the classification of breast tumors detected at screening ultrasound," Ultrasonics. vol. 76, pp. 70-77.
9. Chan S, Chen JH, Li S, Chang R, Yeh DC, Chang RF, Yeh LR, Kwong J, Su MY, 2017.04, "Evaluation of the association between quantitative mammographic density and breast cancer occurred in different quadrants," BMC Cancer. vol. 17, no. 1, 274.

研討會論文 Conference & proceeding papers

1. Chang RF, 2018.07, "Artificial intelligence in breast ultrasound," 中華民國醫用超音波學會2018年第二次學術研討會, 台大醫學院基礎醫學大樓, Taipei, Taiwan, July 22, 2018. (Invited Talk)
2. Chang RF, 2018.07, "Breast ultrasound computer-aided diagnosis using deep learning," Artificial Intelligence Symposium, Taipei, Taiwan. (Invited Talk)
3. Chang RF, Lee YW, Huang YS, Huang CS, Moon WK, Lee SH, Bae MS, Yi A, Chang JM, 2018.06, "Tumor detection for automated breast ultrasound using 3-D convolutional neural network," CARS 2018 Computer Assisted Radiology and Surgery, Proceedings of the 32th International Congress and Exhibition, Berlin, German, June 20-23, 2018, vol. 13, supp. 1, p. S95.
4. Chang RF, 2018.05, " Breast ultrasound computer-aided diagnosis using deep learning," 13th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology (AFUMB 2018), Seoul, Korea. (Invited Talk)
5. Chang RF, 2017.10, "Computer-Aided Diagnosis for Breast Elastography," WFUMB (World Federation for Ultrasound in Medicine and Biology) World Congress 2017, Taipei, Taiwan. (Invited Talk)
6. Chang RF, 2017.10, "機器學習在台灣醫療領域的可能發展," 智慧醫療啟動大未來暨產學技術交流媒合會(科技部生醫產業創新推動方案執行中心), Tainan, Taiwan. (Invited Talk)
7. Chang RF, 2017.09, "Machine Learning for Computer Aided Diagnosis," UIUC-NTU Global Issues Forum, Champaign, IL, USA. (Invited Talk)
8. Huang YS, Chang RF, Lu YT, Huang CS, 2017.08, "Computer-Aided Tumor Diagnosis for Automated Breast Ultrasound," 30th IPPR Conference on Computer Vision Graphics and Image Processing (CVGIP), Nantou, Taiwan, C3-3.

9. Chang RF, Lee YW, Huang YS, Huang CS, Moon WK, Lee SH, Bae MS, Yi A, Chang JM, 2017.06, "Computer-aided prediction of axillary lymph node status using breast ultrasound," CARS 2017 Computer Assisted Radiology and Surgery, Proceedings of the 31th International Congress and Exhibition, Barcelona, Spain, June 20-24, 2017, vol. 12, supp. 1, p. S152.
10. Chang RF, 2017.03, "Computer-aided Diagnosis for Breast Ultrasound," 2017 annual meeting of the Radiological Society of Republic of China (RSROC) (中華民國放射線醫學會), Taipei, Taiwan. (Invited Talk)

專書 Book Chapters

1. Lo CM and Chang RF, 2018.01, "Intelligent Diagnosis of Breast Cancer Based on Quantitative B-Mode and Elastography Features," Invited Chapter, Artificial Intelligence in Decision Support Systems for Diagnosis in Medical Imaging, edited by Suzuki K, Chen Y, Springer, pp. 165-191.

趙坤茂教授 Kun-Mao Chao, Professor

學術期刊論文 Journal articles

1. Ho, B.-S., and Chao, K.-M., 2017, "Data-driven interdisciplinary mathematical modelling quantitatively unveils competition dynamics of co-circulating influenza strains," Journal of Translational Medicine, accepted. [SCI]

研討會論文 Conference & proceeding papers

專書 Book Chapters

1. 趙坤茂, 張雅惠, 黃寶萱 (2004年初版；2017年修訂第十二版)「計算機概論」，全華科技圖書公司。(ISBN 957-21-4554-1)

傅楸善教授 Chiou-Shann Fuh, Professor

研討會論文 Conference & proceeding papers

1. T. Y. Lin and C. S. Fuh, "Zero-Knowledge Realization of Software-Defined Gateway in Fog Computing," accepted by KSII Transactions on Internet and Information Systems, 2018. SCI 0.611 (Computer Science, Information Systems, SCIE, 137/148), EI
2. H. P. Liu, Y. Tsao, and C. S. Fuh, "Bone Conducted Speech Enhancement by Deep Denoising Autoencoder," accepted by Speech Communication, 2018. SCI 1.768 (Acoustics, 12/31), EI

黃俊升教授 Chiun-Sheng Huang, Professor

學術期刊論文 Journal articles

1. Chung-Ming Lo, Si-Wa Chan, Ya-Wen Yang, Yeun-Chung Chang, Chiun-Sheng Huang*, Yi-Sheng Jou, Ruey-Feng Chang*. Feasibility Testing: Three-dimensional Tumor Mapping in Different Orientations of Automated Breast Ultrasound. Ultrasound in Medicine and Biology, 2016 May 42(5): 1201–1210.
2. Po-Han Lin, Wen-Hung Kuo, Ai-Chu Huang, Yen-Shen Lu, Ching-Hung Lin, Sung-Hsin Kuo, Ming-Yang Wang, Chun-Yu Liu, Fiona Tsui-Fen Cheng, Ming-Hsin Yeh, Huei-Ying Li, Yu-Hsuan Yang, Yu-Hua Hsu, Sheng-Chih Fan, Long-Yuan Li, Sung-Liang Yu, King-Jen Chang, Pei-Lung Chen, Yen-Hsuan Ni*, Chiun-Sheng Huang*. Multiple Gene Sequencing for Risk Assessment in Patients with Early-Onset or Familial Breast Cancer. Oncotarget, 2016 Feb 16; 7(7): 8310-20.
3. Huey-Huey Chua, Chiun-Sheng Huang, Pei-Lun Weng, Te-Huei Yeh*. TSGΔ154-1054 splice variant increases TSG101 oncogenicity by inhibiting its E3-ligase-mediated proteasomal degradation. Oncotarget, 2016 Feb 16; 7(7): 8240-52
4. Nadia Harbeck, Chiun-Sheng Huang, Sara Hurvitz, Dah-Cherng Yeh, Zhimin Shao, Seock-Ah Im, Kyung Hae Jung, Kunwei Shen, Jungsil Ro, Jacek Jassem, Qingyuan Zhang, Young-Hyuck Im, Marek Wojtukiewicz, Qiang Sun, Shin-Cheh Chen, Rainer-Georg Goeldner, Martina Uttenreuther-Fischer,Binghe Xu*, Martine Piccart-Gebhart. Afatinib plus vinorelbine versus trastuzumab plus vinorelbine in patients with HER2-overexpressing metastatic breast cancer who had progressed on one previous trastuzumab treatment (LUX-Breast 1): an open-label, randomised, phase 3 trial. The Lancet Oncology, 2016 Mar; 17(3): 357-66.

5. Jie-Zhi Cheng, Dong Ni, Yi-Hong Chou*, Jing Qin, Chui-Mei Tiu, Yeun-Chung Chang, Chiun-Sheng Huang, Dinggang Shen*, Chung-Ming Chen*, Computer-Aided Diagnosis with Deep Learning Architecture: Applications to Breast Lesions in US Images and Pulmonary Nodules in CT Scans. Scientific Reports, 2016 Apr 15; 6: 24454.
6. Nakamura S, Kwong A, Kim SW, Iau P, Patmasiriwat P, Dofitas R, Aryandono T, Hu Z, Huang CS, Ginsburg O, Rashid MU, Sarin R, Teo SH, Current Status of the Management of Hereditary Breast and Ovarian Cancer in Asia: First Report by the Asian BRCA Consortium. Public Health Genomics, 2016; 19(1): 53-60.
7. Shih-Fan Lai, Yu-Hsuan Chen, MD, Wen-Hung Kuo, Huang-Chun Lien, Ming-Yang Wang, Yen-Shen Lu, Chiao Lo, Sung-Hsin Kuo*, Ann-Lii Cheng, Chiun-Sheng Huang*, Locoregional recurrence risk in postmastectomy breast cancer patients with T1–2 and 1–3 positive lymph nodes receiving modern systemic treatment without radiotherapy. Annals of Surgical Oncology, ASO-2016-04-0663.R1.

阮雪芬教授 Hsueh-Fen Juan, Professor

學術期刊論文 Journal articles

1. Huang, C.-T., Hsieh, C.-H., Oyang, Y.-J., Huang, H.-C.*, Juan, H.-F.* "A large-scale gene expression intensity-based similarity metric for drug repositioning" iSciecne (Cell Press, accepted)
2. Lin, M.-C., Chien, P.-H., Wu, H.-Y., Chen, S.-T., Juan, H.-F., Lou, P.-J.*, Huang, M.-C. (2018) "C1GALT1 predicts poor prognosis and is a potential therapeutic target in head and neck cancer" Oncogene Jun 21. doi: 10.1038/s41388-018-0375-0
3. Sahu, D., Ho, S.-Y., Juan, H.-F.*, Huang, H.-C.* (2018) "High-risk, expression-based prognostic long noncoding RNA signature in neuroblastoma" JNCI Cancer Spectrum 2(2): pky015.
4. Cheng, A.-N., Fan, C.-C., Lo, Y.-K., Kuo, C.-L., Wang, H.-C., Lien, I-H., Lin, S.-Y., Chen, C.-H., Jiang, S. S., Chang, I-S., Juan, H.-F., Lyu, P.-C., Lee, A Y.-L.* (2017) "Cdc7-Dbf4-mediated phosphorylation of HSP90-S164 stabilizes HSP90-HCLK2-MRN complex to enhance ATR/ATM signaling that overcomes replication stress in cancer" Scientific Reports 7(1):17024.
5. Cheung, H. Y. C., Hsu, C.-L., Chen, K.-P., Chong, S.-T., Huang, H.-C.*, Juan, H.-F.* (2017) "MCM2-regulated functional networks in lung cancer by multi-dimensional proteomic approach" Scientific Reports 7(1):13302.
6. Hsu, C.-L., Wang, J.-K., Lu, P.-C., Huang, H.-C.*, and Juan, H.-F.* (2017) "DynaPho: a web platform for inferring the dynamics of time-series phosphoproteomics" Bioinformatics 33(22):3664-3666.
7. Hua, K.-T., Liu, Y.-F., Hsu, C.-L., Cheng, T.-Y., Yang, C.-Y., Chang, J.-S., Lee, W.-J., Hsiao, M., Juan, H.-F., Chien, M.-H.*, Yang, S.-F.* (2017) "3'UTR polymorphisms of carbonic anhydrase IX determine the miR-34a targeting efficiency and prognosis of hepatocellular carcinoma" Scientific Reports 7:4466.
8. Cheung, C. H.-Y., Juan, H.-F.*. (2017) "Quantitative Proteomics in Lung Cancer" Journal of Biomedical Science 24:37.
9. Liao, S.-Y., Chiang, C.-W., Hsu, C.-H., Jen, J., Juan, H.-F., Lai, W.-W., and Wang, Y.-C.* (2017) "CK1δ/GSK3β/FBXW7α axis promotes degradation of the ZNF322A oncoprotein to suppress lung cancer progression" Oncogene 36(41):5722-5733.
10. Lin, T-.C., Chen, S.-T., Huang, M.-C., Huang, J., Hsu, C.-L., Juan, H.-F., Lin, H.-H., Chen, C.-H.* (2017) "GALNT6 expression enhances aggressive phenotypes of ovarian cancer cells by regulating EGFR activity" Oncotarget 8(26):42588-42601.
11. Lin, M.-C., Lin, J.-J., Hsu, C.-L., Juan, H.-F., Lou, P.-J.*, Huang, M.-C.* (2017) "GATA3 interacts with and stabilizes HIF-1α to enhance cancer cell invasiveness" Oncogene 36(30):4380.
12. Chang, H.-H., Liu, Y.-L., Lu, M.-Y., Jou, S.-T., Yang, Y.-L., Lin, D.-T., Lin, K.-H., Tzen, K.-Y. Yen, R.-F., Lu, C.-C., Liu, C.-J., Peng, S. S.-F., Jeng, Y.-M., Huang, S.-F., Lee, H., Juan, H.-F., Huang, M.-C., Liao, Y.-F., Lee, Y.-L.*, Hsu, W.-M.* (2017) "A multidisciplinary team care approach to improving outcomes in pediatric patients with high-risk neuroblastoma" Oncotarget 8(3):4360-72.

研討會論文 Conference & proceeding papers

1. Hsieh, C.-H., Huang, C.-T., Chung, Y.-H., Liu, Y.-L., Yang, T.-S., Chien, C. Y., Cho, C.-C., Hsu, C.-H., Hsu, W.-M., Huang, H.-C.* and Juan, H.-F.* "Targeting a key enzyme in serine/glycine metabolism for neuroblastoma therapy" Advances in Neuroblastoma Research 2018 (ANR2018), San Francisco, USA, May 9th - 12th, 2018 (Travel Award)
2. Tang, C.-W., Chang, Y.-W., Hsu, C.-L., Ye, S.-P., Huang, H.-C.* and Juan, H.-F.* "Targeting the E2F1/GAS5/p53 Axis as a Potential Therapeutic Strategy for Drug-Resistant Lung Cancer" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018. (Best Poster Award)

3. Cheung, H. Y. C., Hsu, C.-L., Tsuei, C.-Y., Kuo, T.-T., Huang, C.-T., Huang, H.-C.* and Juan, H.-F.* " MYCN mediates metabolic enzymes MTHFD2 and PAICS during neuroblastoma cell progression" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018. (Poster Award)
4. Lee, W.-C., Hsieh, C.-H., Huang, C.-T., Liu, Y.-L., Yang, T.-S., Hsu, W.-M., Huang, H.-C.* and Juan, H.-F.* "A Gene Expression-based Strategy Identifies the Anthelminthic Drug Niclosamide for High-risk Neuroblastoma Therapy" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018. (Poster Award)
5. Kao, Y.-C., Chang, Y.-W., Lai, C. P., Huang, H.-C.* and Juan, H.-F.* "Role of ATP synthase in extracellular vesicles" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018. (Poster Award)
6. Hou, J.-T., Huang, T.-Y., Chen, M.-C., Chang, Y.-W., H.-H., Tsai, Huang, H.-C.* and Juan, H.-F.* "Trafficking of ectopic ATP synthase" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018.
7. Lin, S.-H., Yang, T.-W., Sahu, D., Huang, H.-C.* and Juan, H.-F.* "Long Non-coding RNA SNHG1 in the regulation of neuroblastoma tumorigenesis" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018.
8. Cheng, P.-Y., Hsu, C.-L., Chen, K.-P., Juan, H.-F.* and Huang, H.-C.* "Web-based visualization system for individual gene variants and their associated diseases" 33th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2018.
9. Yin, C.-F., Kao, S.-C., Hsu, C.-L., Huang, H.-C.*, Juan, H.-F.* "Multi-omics analysis reveals dynamic heat shock protein 27 phosphorylation in tanshinone IIA-induced cell death" 2017 TPS Annual Meeting, Taipei, Taiwan, Nov. 25, 2017. (Best Poster Award)
10. Chang, Y.-W., Wu, C.-H., Cheung, H. Y. C., Wang, C.-C., Lee, J.-L., Huang, H.-C.*, Juan, H.-F.* "Integrative transcriptomics and phosphoproteomics analyses reveal the role of mesenchymal stem cell in tumor microenvironment" 2017 TPS Annual Meeting, Taipei, Taiwan, Nov. 25, 2017.
11. Chang, Y.-W., Hsu, C.-L., Chen, X.-J., Huang, H.-C.*, Juan, H.-F.* "ATP synthase blockade overcomes gefitinib-resistance though TOP2a/GAS5/p53 axis in lung cancer cells" 2017 The Taiwan Society for Biochemistry and Molecular Autumn Camp, Kaohsiung, Taiwan, Nov. 17-19, 2017. (Best Poster Award)
12. Cheung, H. Y. C., Hsu, C.-L., Chen, K.-P., Chong, S.-T., Huang, H.-C.*, Juan, H.-F.* "MCM2-regulated functional networks in lung cancer by multi-dimensional proteomic approach" 2017 The Taiwan Society for Biochemistry and Molecular Autumn Camp, Kaohsiung, Taiwan, Nov. 17-19, 2017.
13. Yin, C.-F., Kao, S.-C., Hsu, C.-L., Huang, H.-C.*, Juan, H.-F.* "Multilayer omics identify phosphorylation of heat shock protein 27 at serine 82 is crucial for tanshinone IIA-induced cell death" 2017 The Taiwan Society for Biochemistry and Molecular Autumn Camp, Kaohsiung, Taiwan, Nov. 17-19, 2017.
14. Sahu, D., Ho, S.-Y., Juan, H.-F.*, Huang, H.-C.* "High-risk, expression-based prognostic long noncoding RNA signatures in neuroblastoma" The 3rd Asia-Pacific Neuroblastoma Symposium (APSN2017), Oct. 6, 2017, Tokyo, Japan.
15. Huang, C-T., Hsieh, C.-H., Chung, Y.-H. Oyang, Y.-J., Huang, H.-C.*, Juan, H.-F.* "Combinatorial therapeutic discovery using recurrent perturbation gene relationships" The 76th Annual Meeting of the Japanese Cancer Association, Yokohama, Japan, Sep. 28-30, 2017. (Travel Grant Award)
16. Hsieh, C.-H Huang, C-T., Cho, C.-C., Chien, C.-Y., Hsu, C.-H., Huang, H.-C.*, Juan, H.-F.* "Reprograming serine metabolism by a new phosphoglycerate dehydrogenase inhibitor for neuroblastoma therapy" The 76th Annual Meeting of the Japanese Cancer Association, Yokohama, Japan, Sep. 28-30, 2017. (Travel Grant Award)
17. Yu, W.-H., Juan, H.-F., Huang, H.-C.* "Stratification of lncRNA modulation networks in cancer" The 76th Annual Meeting of the Japanese Cancer Association, Yokohama, Japan, Sep. 28-30, 2017.
18. Cheung, H. Y. C., Hsu, C.-L., Chen, K.-P., Chong, S.-T., Huang, H.-C., Juan, H.-F.* "Integrative phosphoproteome and proteome reveal key protein phosphorylation by MCM2 in lung cancer" Cascadia Proteomics Symposium, Seattle, USA, July 17-18, 2017. (3rd Prize)
19. Lin, M.-C., Juan, H.-F., Lou P.-J., and Huang, M.-C.* "C1GALT1 promotes EGFR activity and is a potential therapeutic target for head and neck squamous cell carcinoma" AMP Global Congress on Molecular Pathology, April 3-5, 2017 in Berlin, Germany (Global Young Investigation Poster Award)

20. Chung, Y.-H., Hsieh, C.-H., Huang, C.-T., Liu, Y.-L.*, Yang, T.-S., Cheung, H.-Y., Hsu, W.-M.*, Huang, H.-C.* and Juan, H.-F.* "A combination therapy for high-risk neuroblastoma" 32th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2017. (Poster Award)

21. Huang, T.-Y., Chen, M.-C., Hung, Y.-H., Huang, H.-C.* and Juan, H.-F.* "The role of microtubules in the trafficking of ectopic ATP synthase" 32th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2017. (Poster Award)

22. Hung, Y.-H., Chen, M.-C., Huang, T.-Y., Huang, H.-C.* and Juan, H.-F.* "Trafficking of ATP synthase to cell surface: mitophagy-dependent or independent?" 32nd Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2017.

23. Chen, M.-C., Huang, T.-Y., Cheng, C.-Y., Hung, Y.-H., Huang, H.-C.*and Juan, H.-F.* "Trafficking of Ectopic ATP Synthase via Mitochondrial Dynamics" 32th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2017.

24. Yang, T.-Z. , Divya Sahu, Huang, H.-C.* and Juan, H.-F.* "The role of long non-coding RNA SNHG1 in neuroblastoma" 32th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2017.

25. Wu, C.-H., Cheung, C. H. Y., Chang, Y.-W., Lee, J.-L., Huang, H.-C.* and Juan, H.-F.* "Phosphoproteomics reveals key phospho-signalings in lung cancer stem cell properties" 32nd Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 25-26, 2017.

專書 Book Chapters

1. Juan, H.-F. and Huang, H.-C. (2018) A Practical Guide to Cancer Systems Biology (World Scientific Publishing, Singapore)
2. Juan, H.-F. (2017) "Data Sources for herbal and traditional medicines" in Computational Systems Pharmacology and Toxicology, Edited by Dale Johnson and Rudy J Richardson (The Royal Society of Chemistry, Cambridge, UK), pp. 243-260.

賴飛羆教授 Fei-Pei Lai, Professor

學術期刊論文 Journal articles

1. Te-Wei Ho, Chun-Ta Huang, Sheng-Yuan Ruan, Yi-Ju Tsai, Feipei Lai, and Chong-Jen Yu, "Diabetes mellitus in patients with chronic obstructive pulmonary disease-The impact on mortality," PLoS One, 2017 April; 12(4): e0175794. PMID: 28410410
2. Jeng-Wei Lin, Wei Chen, Chia-Ping Shen, Ming-Jang Chiu, Yi-Huei Kao, Feipei Lai, Qibin Zhao, Andrzej Cichocki, "Visualization and Sonification of Long-Term EpilepsyElectroencephalogram Monitoring," Journal of Medical and Biological Engineering, 2018 January 23, pp: 1–10
3. Fong Ci Lin, Chen-Yu Wang, Rung-Ji Shang, Fei-Yuan Hsiao, Mei-Shu Lin, Kuan-Yu Hung, Jui Wang, Zhen-Fang Lin, Feipei Lai, Li-Jiuan Shen, Chih-Fen Huang, "Electronic clinical surveillancesystem to identify unmet treatment needs for patients encountering osteoporoticfracture," Journal of Medical Internet Research, 2018 Apr 24;20(4):e142.
4. Chien-Hui Wu, Te-Wei Ho, Jin-Ming Wu, Ting-Chun Kuo, Ching-Yao Yang, Feipei Lai, Yu-Wen Tien, "Preoperative biliary drainage associated with biliary stricture afterpancreaticoduodenectomy: a population-based study," Journal of Hepato-Biliary-Pancreatic Sciences, 2018 Jun; 25(6): 308-318.

研討會論文 Conference & proceeding papers

5. Te-Wei Ho, Fong-Ci Lin, Ching-Miao Lin, Feipei Lai, "Smart Computing Mechanism for Noise Detection and Elimination in ECG Signal," The 2017 IEEE International Conference on Big Data and Smart Computing (BigComp 2017), February 13-16, 2017, Jeju, Korea
6. Te-Wei Ho, Jin-Ming Wu, Yao-Ting Chang, Chung-Chieh Hsu, Feipei Lai, "A Intelligence Application of Health Information Monitoring and Telehealthcare for Surgical Operations on Elderly Patients," Informatics for Health 2017, April 24-26, 2017, Manchester Central, UK
7. Chun-Ta Huang, Te-Wei Ho, Sheng-Yuan Ruan, Feipei Lai, Chong-Jen Yu, "The Prognostic Role Of Type 2 Diabetes in Patients With Chronic Obstructive Pulmonary Disease," American Thoracic Society 2017, May 19-24, 2017, Washington, USA
8. Te-Wei Ho, Feipei Lai, "A Robust Automatic Mechanism for Electrocardiogram Interpretation in Telehealthcare," 39th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC'17), July 11-15, 2017, Jeju Island, Jeju, Korea.
9. Tsung-Chien Lu, Yi Chen, Te-Wei Ho, Yao-Ting Chang, Yi-Ting Lee, Yu-Siang Wang, Yen-Pin Chen, Chia-Ming Fu, Wen-Chu Chiang, Matthew Hueimin Ma, Cheng-Chung Fang, Feipei Lai, Anne M. Turner, "A Novel Chest Compression Depth Estimation Algorithm Based on a Smartwatch for High-Quality Cardiopulmonary Resuscitation," AHA Resuscitation Science Symposium 2017, Nov. 11-13, Anaheim, CA, USA.

10. Te-Wei Ho, Chia-Jui Tsai, Chung-Chieh Hsu, Yao-Ting Chang, Feipei Lai, "Indoor Navigation and Physician-Patient Communication in Emergency Department," 2017 the 3rd International Conference on Communication and Information Processing (ICCIP 2017), November 24-26, 2017, Tokyo, Japan.
11. Te-Wei Ho, Jin-Ming Wu, Chien-Hsu Chen, Feipei Lai, "Evaluation of Surgical Wound Segmentation using Quantitative Analysis," 2017 the 3rd International Conference on Communication and Information Processing (ICCIP 2017), November 24-26, 2017, Tokyo, Japan.
12. Te-Wei Ho, Juliet Fong, Feipei Lai, "Compliance with clinical guidelines for chronic obstructive pulmonary disease: a nationwide database study," 2017 the 3rd International Conference on Communication and Information Processing (ICCIP 2017), November 24-26, 2017, Tokyo, Japan.
13. Te-Wei Ho, Jin-Ming Wu, Hao-Chih Tai, Chun-Che Chang, Chien Hsu Chen and Feipei Lai, "Automated Scale Calibration and Color Normalization for Recognition of Time Series Wound Images," ADVANCE 2018: 6th International Workshop on ADVANCEs in ICT INfrastructures and Services, 11-12 January 2018, Santiago De Chile, CHILE.
14. Fong-Ci Lin, Meng-Tse Lee, Feipei Lai, and Chien-Chang Lee, "Web-based Dashboard for the Interactive Visualization and Analysis of National Risk Standardized Mortality Rates of Sepsis in the US," AMIA 2018 Informatics Summit, March 12-15, 2018, San Francisco, CA, USA.
15. Chia-Tung Wu, Yu-Han Hung, Chien-Hsu Chen, Te-Wei Ho, Feipei Lai, "A Zenbo Robot Application for Improving Life Quality and Social Contact for the Elderly," e-CASE & e-Tech 2018, Osaka, Japan, April 1~3, 2018.
16. Chang, Yu-Hsuan, Hung, Yu-Han and Feipei Lai, "Automatic ICD-10 classification system from free-text data," e-CASE & e-Tech 2018, Osaka, Japan, April 1~3, 2018.
17. Yu-Chien Chang, Ting-Fu Chen, Yu-Hsuan Chang, Shu-Tzu Huang, Chia-Chi Ying and Feipei Lai, "Web Service of relevance comparison of Chinese Medical Regulations based on Natural Language Processing," e-CASE & e-Tech 2018, Osaka, Japan, April 1~3, 2018.
18. Ting-Fu Chen, Ching Hsu, Hann-Chang Hsiung, Kan-Yu Tai, Ni-Chung Lee, Yin-Hsiu Chien, Wuh-Liang Hwu, and Feipei Lai, "Using MViewer and text mining to facilitate variant interpretation in exome data," 2018 ACMG Clinical Genetics Meeting, Charlotte, North Carolina, April 10-14, 2018.
19. Ying Lin, Hsin-Yun Chou, Kun-Yih Huang, Chen Lin, and Feipei Lai, "Increased vagal tone in Therapists when interacting with complex, suicidal patients: a pilot study," 2018 IASP Asia Pacific Conference, Waitangi, New Zealand, May 2-5.
20. Yuan-Chia Chu, Yen-Fu Cheng, Shang-Liang Wu, Feipei Lai, Wen-Huei Liao, "A Smartphone-based Hearing Screening in the School-aged Children," 6th East Asian Symposium on Otology (EASO 2018), Seoul, South Korea, May 24-26, 2018.
21. Wen-Chi Huang, Pei-Lin Lee, Yu-Ting Liu, and Feipei Lai, "Prediction of Obstructive Sleep Apnea using Machine Learning Technique," SLEEP 2018 - the 32nd Annual Meeting of the APSS, Baltimore, Maryland, US, June 2-6, 2018.

孫維仁教授 Wei-Zen Sun, Professor

學術期刊論文 Journal articles

1. Yu-Chang Yeh, Linda Chia-Hui Yu, Chun-Yu Wu, Ya-Jung Cheng, Chen-Tse Lee, Wei-Zen Sun, Jui-Chang Tsai, Tzu-Yu Lin: Effects of Endotoxin Absorber Hemoperfusion on Microcirculation in Septic Pigs. J Surg Res, May 1, 2017;211:242-250. doi: 10.1016/j.jss.2016.12.026.
2. Hsin-Chia Lin, Hao-Pai Lin, Hsin-Hui Yu, Li-Chieh Wang, Jyh-Hong Lee, Yu-Tsan Lin, Yao-Hsu Yang, Wei-Zen Sun*, Bor-Luen Chiang*: Tai-Chi-Chuan Exercise Improves Pulmonary Function and Decreases exhaled nitric oxide level in both Asthmatic and Non-Asthmatic Children and Improves Quality of Life Children with Asthma, Evid Based Complement Alternat Med, 2017;2017:6287642. doi: 10.1155/2017/6287642. Epub 2017 Apr 13.
3. Chih-Peng Lin, Kai-Hsiang Kang, Huang-Ju Tu, Ming-Yueh Wu, Tzu-Hung Lin, Houng-Chi Liou, Wei-Zen Sun*, Wen-Mei Fu*: CXCL12/CXCR4 Signaling Contributes to the Pathogenesis of Opioid Tolerance: A Translational Study. Anesth Analg, 124(3):972-9, 2017.

4. Yow-Shan Lee, Wei-Zen Sun*: Epidemiology of anaphylaxis: A retrospective cohort study in Taiwan. Asian J Anesth, Jan 20, 2017.
5. Kuang-Cheng Chan, Jia-Rong Yeh, Wei-Zen Sun*: The role of autonomic dysfunction in Predicting One-Year Mortality after Liver Transplantation. Liver International, Jan 20, 2017.
6. Jim Reynold, Wei-Zen Sun*: Journeys and Journals East and West, Acta Anaesthesiol Taiwan, 54(4):103-105, 2016.
7. I-Wen Su, Fang-Wei Wu, Keng-Chen Liang, Kai-Yuan Cheng, Sung-Tsang Hsieh, Wei-Zen Sun, Tai-Li Chou*: Pain Perception Can Be Modulated: A Resting-state fMRI Study. Frontiers in Human Neuroscience, Nov 10, 10;10:570, 2016.
8. Muammar Sadrawi, Wei-Zen Sun, Mathew M Ma, Chun-Yi Dai, Maysam F Abbod, Jiann-Shing Shieh: Cardiopulmonary Resuscitation Pattern Evaluation Based on Ensemble Empirical Mode Decomposition Filter via Nonlinear Approaches. BioMed Res Inter, 2016;2016:4750643, 2016.
9. Jui-Hung Kao, Fei-pei Lai, Bo-Cheng Lin, Wei-Zen Sun, Kuan-Wu Chang, Ta-Chien Chan: Spatial analysis and data mining techniques for identifying risk factors of Out-of-Hospital Cardiac Arrest. Inter J Inform Manage, May 24, 2016.
10. Jim Reynold, Chen-Hsing Yang, Wei-Zen Sun*: Measuring and Reducing Perioperative Anesthetic-Related Mortality: View from East Asia, Acta Anaesthesiol Taiwan, 54(2)41-3, 2016.
11. Albert Y. Chen, Tsung-Yu Lu, H. M. Mathew Ma, Wei-Zen Sun*: Demand forecast using machine learning for the pre-allocation of ambulances, IEEE J Biomed Health Informatics, 20(4):1178-87, 2016.
12. Yu-Chang Yeh, Chun-Yu Wu, Ya-Jung Cheng, Chih-Min Liu, Jong-Kai Hsiao, Wing-Sum Chan, Zong-Gin Wu, Linda Chia-Hui Yu, Wei-Zen Sun*, NCMMR: Effect of Dexmedetomidine on Intestinal Microcirculation and Intestinal Epithelial Barrier in Endotoxemic Rats. Anesthesiology, 125(2):355-67, 2016.
13. Ming-Cheng Chang, Chen YL, Chiang YC, Chen TC, Tang YC, Chi-An Chen, Wei-Zen Sun*, Wen-Fang Cheng*: Anti-CD40 Antibody and Toll-like Receptor 3 Ligand Restore Dendritic Cell-mediated Anti-tumor Immunity Suppressed by Morphine. Am J Cancer Res, 6(2):157-72, 2016.
14. Wei-Han Chou, Feng-Sheng Lin, Chih-Peng Lin, Wen-Ying Lin, Jr-Chi Yie, Wei-Zen Sun*: Mirtazapine, in orodispersible form, for pre-operative psychologically distressed patients: a pilot study. Acta Anaesthesiol Taiwan, 54(1)16-23, 2016.
15. Ming-Cheng Chang, Chen YL, Chiang YC, Chen TC, Tang YC, Chi-An Chen, Wei-Zen Sun, Wen-Fang Cheng*: Mesothelin-specific cell-based vaccine generates antigen-specific immunity and potent anti-tumor effects by combining with IL-12 immunomodulator. Gene Ther, 23(1):38-49, 2016.

研討會論文 Conference & proceeding papers

1. 孫維仁：應用巨量資料探勘與地理空間資訊分析技術針對緊急救護服務之醫療資源管理、配置與未來規劃進行整體研究計畫。台灣地理資訊學會年會暨學術討會, July 4, 2017
2. Jiann-Shing Shieh, Muammar Sadrawi, Wei-Zen Sun, Matthew Huei-Ming Ma, Maysam F. Abbod: The Evaluation of the Fuzzy C-Mean and Random Classifications for the Unbalanced Data in the Emergency Medical System via Artificial Neural Networks. 2017 World Conference on Innovation, Engineering, and Technology (IET 2017), Kyoto, Japan, June 27-9, 2017.
3. Wei-Zen Sun: Soreness across east and west medicine (plenary lecture). 2017 Congress of Chinese Society of Integrative Anesthesiology (ICMLC), Xiaan, Jun 22-5, 2017.
4. Wei-Zen Sun, Ming-Yu Lo: Assessing acupuncture effect on migraine: the role of dynamic biomarker for cerebral and muscular microcirculation (Plenary Lecture). The Second International Taiwanese Congress of Neurology (2nd ITCN), 2017 Annual Meeting of Taiwan Neurological Society (2017 AMTNS), May 19, 2017.
5. Wei-Zen Sun: Treatment of diabetic peripheral neuropathic pain in Taiwan (plenary lecture). 38th Annual Meeting of the Endocrine Society and the Diabetes Association of ROC (Taiwan), April 8-9, 2017.
6. 孫維仁：跨越中西藩籬的痠痛感--從纖維肌痛症、針刺得氣、到控酸離子通道的分子遺傳機制研究(大會演講)。台北國際中醫藥學數論壇, 2017 Taipei Traditional Chinese Medicine International Forum, Taiwan, s73, March 12, 2017.
7. 孫維仁：結合醫學、運動、政府、產業的人力培訓藍圖 (大會演講), 2017 OlympiCare Forum, Taipei, Taiwan, March 11, 2017.
8. 孫維仁：臺灣疼痛專科醫師在健保制度下的角色(大會演講), 2017 Annual Congress of Taiwan Pain Society, Taipei, Taiwan, March 4, 2017.

9. Jr-Chi Ye, Chih-Peng Lin, Wei-Han Chou, Wen-Ying Lin, Feng-Sheng Lin, Wei-Zen Sun: An anesthesiologist in the community medicine: share of our experience in NTUH Jin-Shan branch. 2017 Annual Congress of Taiwan Pain Society, Taipei, Taiwan, March 4, C19, 2017.
10. Chih-Fan Chen, Yi-Shiuan Lin, Wei-Han Chou, Cheng-Yuan Hsieh, Jr-Chi Ye, Chih-Peng Lin, Wen-Ying Lin, Feng-Sheng Lin, Wei-Zen Sun: Satisfaction of patient controlled epidural analgesia after cesarean section. 2017 Annual Congress of Taiwan Pain Society, Taipei, Taiwan, March 4, B06, 2017.
11. 孫維仁：超聲如何推動台灣麻醉的典範轉移(大會演講)。2016超聲技術在麻醉科的應用, 福州, 中國，Dec 30, 2016.
12. 孫維仁：圍術期鎮痛治療的衛生經濟學(大會演講)。2016第一屆圍術期多學科疼痛管理高峰論壇, Beijing, China, Nov 27, 2016.
13. Wei-Zen Sun: 麻醉醫師職業生涯規劃(大會演講)。2016 Annual Congress of Taiwan Society of Anesthesiologists, Taipei, Taiwan.
14. 孫維仁：新世代自控式止痛裝置-- 我們的研發理念和創新(大會演講)。2016 Annual Congress of Taiwan Society of Anesthesiologists, Taipei, Taiwan.
15. Chih-Fan Chen, Jr-Chi Yeh, Wei-Han Chou, Chih-Peng Lin, Wen-Ying Lin, Feng-Sheng Lin, Wei-Zen Sun: PainDETECT questionnaire for neuropathic pain after burn injury (one-year follow-up). 2016 Annual Congress of Taiwan Society of Anesthesiologists, Taipei, Taiwan.
16. Yi-Chun Chen, Tzu-Su Wang, Wei-Zen Sun: Effect of menopause on post-operative cognitive dysfunction in midlife women. 2016 Annual Congress of Taiwan Society of Anesthesiologists, Taipei, Taiwan.
17. Wei-Zen Sun: A novel role of ketorolac in multimodal analgesia. (Plenary Lecture) 兩岸重症麻醉新進展學習班 南京, July 2, 2016.
18. Wei-Zen Sun: Cerebral hemodynamic measurement as a powerful dynamic biomarker for acupuncture research in migraine headache. 2016 Congress of Chinese Society of Integrative Anesthesiology (ICMLC), Chengchou, Jun 24, 2016.
19. 孫維仁：重大公共安全緊急救護系統。台灣安全研究與教育學會，Jun 22, 2016
20. Wen-Ying Lin, Yu-Hsin Huang, Wen-Hua Chu, Chen-Tung Yen, Wei-Zen Sun: Positron emission tomography of supraspinal antinociceptive modulation in rat neuropathic and cancer-induced bone pain models. 2016 Annual Congress of Taiwan Pain Society, Taipei, Taiwan.
21. Wei-Zen Sun: Next-generation PCA pump: Our innovation and design (Plenary Lecture), 2016 Annual Congress of Taiwan Pain Society, Taipei, Taiwan.
22. Jhe-Nan Lin, Wei-Zen Sun, Meng-Han Yang: Analyzing Seasonal Incidence Patterns of Epileptic Seizure Using Various Statistical Methods. International Conference of Machine Learning and Cybernetics (ICMLC), Hong Kong, 2016.
23. 孫維仁：從傳統武術到健康促進-太極拳的應用。Active approach to musculoskeletal pain. 台灣脊骨矯治醫學會，May-01-2016

專書 Book Chapters

1. 許惠恒、王署君、王治元醫師、朱志勳、李奕德、杜思德、孫維仁、張鳴宏、郭清輝、陳榮福、黃禹堯 (台灣糖尿病周邊神經病變工作小組Taiwan Diabetic Peripheral Neuopathic Pain Advisory Board)合著: Taiwan Clinical Guideline for Diabetic Peripheral Neuropathy 台灣糖尿病周邊神經病變臨床指引。台灣糖尿病醫學會出版，1st ed, pp1-97, 2017.
2. 黃安年、孫維仁、余廣亮:末期疾病疼痛治療之新觀念及進展。IN: 黃安年:末期疾病疼痛治療學(Pain Management for Terminal Diseases, ISBN 978-986-126-924-5)，台灣安寧緩和醫學學會, 3rd ed, pp1-42, 2016.
3. Jui-Hung Kao, Feipei Lai, Bo-Cheng Lin, Wei-Zen Sun, Kuan-Wu Chang, Ta-Chien Chan: Application of Cloud Computing for Emergency Medical Services: A Study of Spatial Analysis and Data Mining Technology. IN: Frontier Computing, Chapter 88, 2016.

曾宇鳳教授 Y. JaneTseng, Professor

學術期刊論文 Journal articles

1. Kuo, T. C., Tseng, Y. J.* (2018) LipidPedia: a comprehensive lipid knowledgebase. Bioinformatics, bty213. (IF=7.307, Ranking=2/57, 4%, Category: Mathematical & Computational Biology)
2. Lin, F. Y., Esposito, E. X., Tseng, Y. J.* (2018) LeadOp+R: Structure-Based Lead Optimization With Synthetic Accessibility. Frontiers in Pharmacology, 9, 96. (IF=4.400, Ranking=40/251, 16%, Category: Pharmacology & Pharmacy)
3. Harn, Y. C., Su, B. H., Ku, Y. L., Lin, O. A., Chou, C. F., Tseng, Y. J.* (2017) NP-StructurePredictor: Prediction of Unknown Natural Products in Plant Mixtures.Journal of Chemical Information and Modeling, 57 (12), 3138-3148 (IF=3.760,Ranking=14/146, 9%, Category: Computer Science, Information Systems)
4. Su, B. H., Shen, M. Y., Harn, Y. C., Wang, S. Y., Schurz, A., Lin, C., Lin, O. A.,Tseng, Y. J.* (2017) An efficient computer-aided structural elucidation strategy for mixtures using an iterative dynamic programming algorithm. Journal of Cheminformatics, 9:57 (IF=5.894, Ranking=3/104, 3%, Category: Computer Science, Interdisciplinary Applications)
5. Schurz, A., Su, B. H., Tu, Y. S., Lu, T. Y., Lin, O. A., Tseng, Y. J.* (2017)G.A.M.E.: GPU-accelerated mixture elucidator. Journal of Cheminformatics, 9:50(IF=5.894, Ranking=3/104, 3%, Category: Computer Science, Interdisciplinary Applications)
6. Chen, H. L., Lu, T. Y., Hsu, C. C., Tseng, Y. J., Lim, T. S., Chen, P. Y. (2017) Directly monitor protein rearrangement on a nanosecondto-millisecond time-scale. Scientific Reports, 7:8691 (IF=4.847, Ranking=8/64, 13%, Category: Multidisciplinary Sciences)
7. Chang, C. H., Chung, C. H., Tu, Y. S., Tsai, C. C., Hsu, C. C., Peng, H. C., Tseng, Y. J.*, Huang, T. F. (2017) Trowaglerix venom polypeptides as a novel antithrombotic agent by targeting immunoglobulin-like domains of Glycoprotein VI in Platelet. Arteriosclerosis Thrombosis And Vascular Biology, 37, 1307-1314 (IF=5.969, Ranking = 4/63, 6%, Category: Peripheral Vascular Disease)
8. Chao, H. C., Chen, G. Y., Hsu, L. C., Liao, H. W., Yang, S. Y., Wang, S. Y., Li, Y. L., Tang, S. C., Tseng, Y. J., Kuo C. H. (2017) Using precursor ion scan of 184 with liquid chromatography-electrospray ionization-tandem mass spectrometry for concentration normalization in cellular lipidomic studies. Analytica Chimica Acta, 971, 68-77 (IF=4.712, Ranking = 8/75, 11%, Category: Chemistry, Analytical)
9. Lee, M. Y., Lin, Y. R., Tu, Y. S., Tseng, Y. J., Chan, M. H., Chen, H. H. (2017) Effects of sarcosine and N, N-dimethylglycine on NMDA receptor-mediated excitatory field potentials. Journal of Biomedical Science , 24(1), 18-28 (IF=2.935, Ranking = 45/124, 36%, Category: Medicine, Research & Experimental)

研討會論文 Conference & proceeding papers

11. Hsu, M. T., Chow, L. P., Ling, T. Y., Chen, H. W. Kuo, C. H., Tseng, Y. J.*,Molecular landscape of lung cancer stem cell-derived exosomes. 2017 Exosomes and Liquid Biopsies Asia, Taoyuan, Taiwan, June 19-20. 2017.
12. Wang, S. Y., Tseng, Y. J.*, Tseng, T. H., Kuo, C. Y., Huang, P. K., Huang, Y. M., Hsieh, W. C., Huang, Y. J., Kuo, P. H., Yu, S. A., Tian, W. C., Lee, S. C., and Lu, S.-S., "Lung Cancer Associated Volatile Organic Compounds Detection Using a Novel Portable Gas Chromatographic Device Integrated MEMS and CMOS Technology," 12th International Conference of the Metabolomics Society, Dublin, Ireland, June 27-30. 2016.
13. Tseng, Y. J., Scaffold analysis of Ames mutagenicity, 251th ACS National Meeting & Exposition, San Francisco, San Diego, March. 13-17. 2016

捌 教師得獎、專利及技術轉移
Award、patents and Technology Transfer

一、教師得獎

Award

※ 2018

1. 李百祺，107年度中國工程師學會傑出工程教授獎，2018。
2. 李百祺，2018 IFMBE Vladimir K. Zworykin Award。

※ 2017

1. 莊曜宇，國立臺灣大學電資學院106年學術貢獻獎，2017。
2. 曾宇鳳，國立臺灣大學電資學院106年學術貢獻獎，2017。
3. 曾宇鳳教授團隊，2017未來科技展未來科技突破獎，2017
4. 李百祺，第15屆有庠科技講座 (Y. Z. HSU SCIENCE AWARD)，2017。
5. 李百祺，神基講座教授 (Getac Chair)，2017。
6. 孫啟光，106年度瑞軒科技講座主持人，2017。
7. 孫啟光，教育部第61屆學術獎，2017。

※ 2016

1. 莊曜宇，國立臺灣大學105年校內服務優良獎，2016。
2. 李百祺，神基講座教授(Getac Chair)，2016。
3. 黃念祖，第十六屆旺宏金矽獎優勝獎，2016。
4. 呂學一，臺大教學傑出獎，2016。
5. 鍾孝文，臺大教學優良獎，2016。
6. 張家禎、陳震宇、莊琮亮、吳子珩、魏淑鈐、廖洪恩、林啟萬，臺灣化學感測器科技協會105年度傑出論文獎，2016。
7. 林致廷，臺灣化學感測器科技協會年度最佳論文獎，2016。
3. 林致廷，旺宏金矽獎優勝，2016。
4. 周迺寬，教育部與所屬機關 (構) 學校105年模範公務人員，2016。
5. 曾宇鳳，諾華創投導師計畫，2016。

6. 曾宇鳳，第13屆國家新創獎，2016。
7. 曾宇鳳，景康青年教師獎，2016。
8. 陳志宏，傑出技術移轉貢獻獎，2016。
9. 林發暄，臺大教學優良獎，2016。

※ 2015

1. 楊泮池，美國國家發明家學會 (NAI) 院士， 2015。
2. 林啟萬，科技部103年度傑出特約研究員獎，2015。
3. 陳志宏，103年度國家發明創作獎～發明獎銀牌，2015。
4. 李百祺，SPIE Fellow, 2015.
5. 林致廷，科技部吳大猷先生紀念獎。
6. 林致廷，臺灣化學感測器科技協會年度最佳論文獎，2015。
7. 林致廷，國家晶片系統設計中心優良晶片特別設計獎，2015。
8. 林致廷，國家晶片系統設計中心優良晶片特優設計獎，2015。
9. 林致廷，國家晶片系統設計中心優良晶片優等設計獎，2015。
10. 林致廷，旺宏金矽獎優勝，2015。
11. 曾宇鳳，2015 IBM Faculty Award，2015。
12. 曾宇鳳教授、田維誠教授、李嗣涔教授與呂學士教授實驗室，2015優良晶片特別設計獎，2015。
13. 曾宇鳳，2015老藥新用獎，2015。
14. 呂學一，灣大學教學優良獎，2015。
15. 莊曜宇，The 5th Excellent Research Award on Breast Cancer, Taiwan Breast Cancer Foundation。
16. 田維誠，旺宏金矽獎 應用組 最佳指導教授獎，2015。
17. 田維誠，青年論文獎，2015。
18. 阮雪芬，2015 Emerging Information and Technology Association (EITA) Service Award，2015。

二、專利

Patents

※ 2018

1. C.-K. Sun, Y.-H. Lai, C.-F. Chang, and S.-Y. Lee, "Optical microscopy systems based on photoacoustic imaging," USA patent US 9618445 B2. Issued Date: 4/11/2017
2. C.-K. Sun and S.-Y. Chen, "Vacuum-pump sucker," USA patent US 9795340 B, 24/10/2017-3/27/2031.
3. "維先導藥物最適化之以結構為基礎的片段遷越及合成可行性之改良"，曾宇鳳、林芳宇，中華民國專利申請號102107081號(2018/01~2033/02)
4. NOVEL SUBSTITUTED BENZIMIDAZOLE DERIVATIVES AS D-AMINO ACID OXIDASE (DAAO) INHIBITORS，曾宇鳳、劉玉麗、孫仲銘、胡海國、劉智民、賴文崧，USA WOUS17051610 (2017/09/14公告)
5. USE OF KNOWN COMPOUNDS AS D-AMINO ACID OXIDASE INHIBITORS，曾宇鳳、劉玉麗、孫仲銘、胡海國、劉智民、賴文崧，USA US15125716 (2017/02/09公告)
6. "作為D - 胺基酸氧化酶抑制劑之已知化合物之用途"，曾宇鳳、劉玉麗、孫仲銘、胡海國、劉智民、賴文崧，中華民國申請號104114104，(　(2016/03/16公告)
7. "用於核磁共振光譜之基線校正的方法與系統"，曾宇鳳、王三源、王國清、郭錦樺，中華民國專利I472788號，(2015/02~2033/06)
8. 藥物組合預測系統及藥物組合預測方法，劉韋驛、邱育賢、徐仁徽、謝嘉珊、蔡孟勳、盧子彬、賴亮全、莊曜宇、蕭暉議，中華民國專利I622012號(2018/04/21公告)

※ 2017

1. "影像補償系統及其補償方法"，李百祺、陸裕威，中華民國專利I575247號(2017/03/21公告)。
2. "彈性分布影像生成系統"，李百祺，中華民國專利I580960號 (2017/05/01公告)
3. 次世代定序分析系統及其次世代定序分析方法，鄭少樺、邱育賢、莊曜宇、盧子彬、董恆元，中華民國專利I571763號(2017/02/21公告)
4. 用以分析細菌菌種之定序資料的系統及其方法，鄭佳揚、徐仁徽、劉韋驛、

蔡孟勳、盧子彬、賴亮全、莊曜宇，中華民國專利I582631號(2017/05/11公告)

※ 2016

1. C.-K. Sun and W.-C. Kuo, "Virtual spatial overlap modulation microscopy for resolution improvement," USA patient US9384537 B2.Application date : 8/31/2014; Issued Date 07/05/2016.
2. "無線功率傳輸系統、無線功率傳送裝置與無線功率接收裝置"，李百祺，中華民國專利I551071號(2016/9/21公告)。
3. Method for manufacturing flexible substrate with surface structure copying from a template, 李嗣涔、楊介宏、薛淳元，美國專利US9346196 B2 (2016/5/24~2034/2/18)
4. 紙鈔序號辨識方法，廖士鋐、傅楸善、盧毅，中華民國I549099 (2016/09/11-2034/09/22)

5. 心電訊號的分析系統及方法，何德威、賴飛羆、何奕倫、洪啟盛、王昱傑、賴弘毅，中華民國I555506 (2016/11/1~2034/4/14)
6. RRAM devices, 黃義仁，潘正勝，李嗣涔，美國專利US14/721,939 (2016/12/20~2034/1/20)
7. 量子點紅外線偵測器，李嗣涔，李政暻，吳宗銘，美國專利US9520514 B2，(2016/12/13~2033/8/3)
8. "利用光聲效應產生超音波之系統與成像方法"，李百祺、趙珮妤、吳凱文，中華民國專利I529391號 (2016/4/11公告)
9. An automatic microfluidic device for Long QT syndrome genetic screening, N.-T. Huang. U.S. Patent number 62325440, Pub.2016/4/20
10. System and method for magnetic resonance imaging using multiple spatial encoding magnetic fields, Fa-Hsuan Lin .U.S. Application number： 9329251, (公告日2016/5/3)
11. 孫啟光、劉子銘，"一種以微波共振吸收消滅病毒的方法/Microwave Resonant Absorption Device for a Virus Inactivation)"， 中華民國專利，發明第I522133號，Issued Date 2016/02/21。
12. Method for reconstructing images of a multi-channel MRI system, Fa-Hsuan Lin, United States Patent 9,229,080. Pub.2016/01/05
13. 血管支架之加工方法，林聖堯、陳政順、周迺寬、陳益祥，中華民國專利TW201215380號 (2016.03.21-2030.10.03)
14. RS-D7: new formulation，曾宇鳳，美國，2016/3/23申請中。
15. RS-D7: combined use with D-serine，曾宇鳳，美國，2016/5/20申請中。
16. RS-D7: analogs & prodrugs，曾于鳳，美國，2016/7/1 申請中。
17. Method and Apparatus for 3D Magnetic Resonance Imaging，J.-H. Chen and T.-D. Chiueh，日本專利#5866396，(有效日2016/02/17-)。
18. 取得磁共振影像訊號方法及裝置，J.-H. Chen and T.-D. Chiueh，中華民國專利# I529405，(有效日2016/04/11-)。
19. Method and Apparatus for 3D Magnetic Resonance Imaging，J.-H. Chen and T.-D. Chiueh，美國專利#9632157，(有效日2017/01/12-)。

※ 2015

1. "超音波影像補償方法"，李百祺、魏裕明，中華民國專利I 485420 (2015/05/21公告)。
2. "An ultrasound imaging system", P.-C. Li and Y.-F. Li U.S. Patent number 9,007,869, 2015/04/14.
3. "A method of compensating ultrasound image", P.-C. Li and Y.-M. Wei U.S. Patent number 9,008,403, 2015/04/14.
4. "超音波自動掃描系統及其掃描方法"，李百祺，中華民國專利I476403號(2015/03/11公告)。
5. "超音波成像系統"，李百祺、李彥鋒，中華民國專利I 493507號 (2015/7/21公告)。
6. "An image generation system", P.-C. Li and B.-Y. Hsieh U.S. Patent number 9,039,622, 2015/5/26.
7. "三維細胞培養結構及其製造方法"，李百祺、郭柏齡、蔡錦雄，中華民國專利I512101 (2015/12/11公告)。
8. 氣體偵測系統以及用於氣體偵測系統之發光元件，李嗣涔，陳鴻欣，陳俊翰，蔡尚儒，林世明，中華民國專利101142677號 (2015/02/11公告)
9. 紅外線發射器，李嗣涔，陳鴻欣，林世明，中華民國專利103214469號(2015/01/11公告)
10. 製作極化彩色率光片的方法，李嗣涔，莊方慈，江昱維，陳鴻欣，中華民國專利101109167號 (2015/01/21公告)
11. 光偵測器 (Photo Detector) ，李嗣涔，陳鴻欣，陳世晏，US 14/468,451. Pub. 2015/08/18

12. Implantable Medical Device and System，Jian-Hao Pan, Chii-Wann Lin, Chi-Heng Chang, US 20150209590 A1. Pub. July 30,2015
13. Porous film microfluidic device for automatic surface plasmon resonance quantitative analysis, Tsung-Liang Chuang, Chii-Wann Lin, Chia-Chen Chang, Shih-Chung WEI, US 20150010916 A1. Pub. Jan.8,2015
14. METHOD OF QUANTIFYING MELANIN MASS DENSITY IN VIVO，孫啟光，劉威民/國立臺灣大學/Andrew Z. Weaver，US 14/614532, Pub.2015/2/5
15. 利用脈衝雷射光源產生的聲學信號之造影系統，孫啟光，賴昱宏，張界逢，李思宇，中華民國102113270號(2015/01/01公告)
16. OPTICAL MICROSCOPY SYSTEMS BASED ON PHOTOACOUSTIC IMAGING, Chi-Kuang Sun, Yu-Hung Lai, Chieh-Feng Chang, and Szu-Yu Lee, US 14/100,032. Pub.2015/06/11
17. 具有微電極陣列的微流到元件，林詳淇、林致廷、董奕鐘、宋昱龍，中華民國專利I 511790 (2015公告)
18. 微流體裝置，林詳淇, 嚴沛文, 宋昱龍, 林致廷，中華民國專利I499778(2015公告)
19. Microfluidic Particle Separation Device, S.-C. Lin, C.-T. Lin, Y.-C. Tung, and Y.-U. Sung, US 20150014171 A1. Pub.2015
20. 乳房超音波影像掃描及診斷輔助系統，張瑞峰、周宜宏、黃俊升、張允中、章少謙、楊閔淳、黃耀賢、羅崇銘，中華民國專利I 473598號 (2015/2/21- 2032/5/17)。
21. 超音波影像之腫瘤偵測系統及其方法，張瑞峰、黃俊升、周宜宏、張允中、徐位文、沈毅偉、黃彥皓，中華民國專利I 483711 號 (2015/11-2032/7/9)
22. “利用光聲效應產生超音波之系統與成像方法”，李百祺、趙珮妤、吳凱文，中華民國申請號104102102 (申請日2015/01/22)
23. 利用脈衝雷射光源產生的聲學信號之造影系統，孫啟光，賴昱宏，張界逢，李思宇，中華民國申請號102113270。
24. RS-D7 novel indications, including but not limited to schizophrenia，曾宇鳳，中華民國，2015/4/30申請中。
25. TSL3-001 & TSL3-002 series of analogs for treatment of negative symptoms of schizophrenia and other CNS related indications，美國，2015/9/17申請中。

※ 2014

1. Programmable Segmented Volumetric Modulated Arc Therapy for Respiratory Coordination in Cancer Radiotherapy, 成佳憲，吳簡坤U.S.A. Application number: 14/459,705 (2014/8/14公告日)
2. “System and method for treating a nerve symptom”, Chii-Wann Lin, Yeong-Ray Wen, Shey-Shi Lu,Hung-Wei Chiu, Yao Joe Yang, Win-Pin Shih,Chi-Heng Chang, Wei-Tso LIN, Application number: US8855776 B2, Application date: Oct 7, 2014.
3. “利用超寬頻雷達偵測物體之運動狀態之成像方法及系統”，李百祺、陳宗銓，中華民國專利I 453415號(2014/09/21公告)。
4. “Implantable Medical Device and System “, Jian-Hao Pan, Chii-Wann Lin, Chi-Heng Chang , Application number: US 20150209590 A1, Application date: Jul 30, 2015.
5. “Programmable segmented volumetric modulated arc therapy for respiratory coordination”, J-C Cheng (filed for U.S. Patent, 13/364,014, 2014/04/25)

6. “Programmable Segmented Volumetric Modulated Arc Therapy for Respiratory Coordination in Cancer Radiotherapy”, Jason C.-H. Cheng, J.-K. Wu, Application number: 13/364,014
7. 用於偵測光源頻率的偵測方法，陳世明、戴宏碩、黃春福、傅楸善，中華民國專利I434130號 (有效日2014/04/11-)。
8. “解析中文輔助閱讀發音之方法及系統 ”，高成炎、朱學亭，中華民國專利第I 432978號 (2014/04/01公告)。
9. “超音波診斷系統及其手持式超音波診斷裝置”，李百祺、李彥鋒，中華民國專利I431256 (2014/03/21公告)。
10. “醫學成像系統及其醫學成像方法”，李百祺、陳婉雅，中華民國專利I 430778 (2014/03/21公告)。
11. 電子束漂移偵測裝置及偵測電子束漂移之方法，顏家鈺、陳永耀、郭逸宏、吳政儒，中華民國發明第I 426359號 (2014.2.11~2031.4.10)
12. “A METHOD OF CALIBRATING ULTRASOUND VELOCITY”, P.-C. Li and Y.-M. Wei (filed for US Patent, 14/164566, 2014/01/27)
13. “A METHOD OF COMPENSATING ULTRASOUND IMAGE”, P.-C. Li and Y.-M. Wei (filed for US Patent, 14/164588, 2014/01/27)
14. “A Three-Dimensional Cell Culture System and Manufacturing Method Thereof”, P.-C. Li , P.-L. Kuo and C.-H. Tsai (filed for US Paten, 14/208006, 2014/03/13)
15. 用於偵測光源頻率的偵測方法，陳世明、戴宏碩、黃春福、傅楸善，中華民國I434130號(有效日2014/04/11-)。
16. 一種增進顯微術空間解析度的方法，孫啟光、郭唯誠，申請美國專利，申請日2014/04/23。
17. 電子束漂移偵測裝置及偵測電子束漂移之方法，顏家鈺、陳永耀、郭逸宏、吳政儒，中華民國發明專利第I 426359號 (有效日2014/2/11~2031/4/10)
18. “Porous film microfluidic device for automatic surface plasmon resonance quantitative analysis “, Tsung-Liang Chuang, Chii-Wann Lin, Chia-Chen Chang, Shih-Chung WEI, Application number: US 20150010916 A1, Application date: Jan 8, 2015.
19. 電子貼紙及其系統，翁紹航、林晨弘、陳威廷、王文昱、吳挺睿、王詠文、林致廷，中華民國發明專利第I 444897號。(2014公告)
20. System and method for learning concept map, H.-P. Yueh, C.-T. Lin, S.-K. Hsu, J.-Y. Huang, J.-J. Pan, J.-Y. Chen, Y.-L. Chou, US 8,655,260. Pub.2014.

※ 2013

1. “基因測序序列的組合系統及方法”，朱學亭、高成炎、陳麗貞，中華民國專利第I420007號(2013/12/21公告)。
2. “概念圖學習系統及方法,”， 岳修平、 林致廷、 徐式寬、 黃若詒、潘貞君、 陳俊宇、周彥良， 中華民國專利 I 402786號，2013。
3. “三維細胞培養結構及其製造方法”，李百祺、郭柏齡、蔡錦雄，中華民國申請號102142071 (申請日2013/11/19)
4. 多截面/區塊磁共振訊號之控制方法、成像方法及系統，陳志宏、闕志達、吳億澤、郭立威，中華人民共和國專利第ZL200810211671.7號(2013.11.6公告)
5. “A method to determine the chronological age of human skin”，孫啟光、廖怡華，申請美國專利，申請日2013/10/08。
6. “A method and apparatus to differentiate pigmented skin lesions”，孫啟光、廖怡華，蔡明容，申請美國專利，申請日2013/10/18。
7. “超音波聲速校正方法”，李百祺、魏裕明，中華民國專利申請號102136744 (申請日2013/10/11)
8. “超音波影像補償方法”，李百祺、魏裕明，中華民國專利申請號102135058 (申請日2013/9/27)

9. “Structure-Based Fragment Hopping For Lead Optimization And Improvement In Synthetic Accessibility”, Tseng YJ, Lin FY, U.S. Patent No. US 2013/0226549 A1, August 29, 2013
10. “A stepped-shape structure”, P.-C. Li and Y.-C. Wu (filed for US Patent, 13/966576 , 2013/8/14)
11. “True ion pick (TIPick): a denoising and peak picking algorithm to extract ion signals from liquid chromatography/mass spectrometry data”, Tseng YJ, Ho TJ, Kuo CH, U.S. Provisional Patent No. 61/861544, August 2, 2013
12. “特定群核酸序列組合之最小群多用引子及特異群雙重探針及其鑑別檢測應用方法”，張春梵、黃友正、高成炎，中華民國專利第I403587號(2013/08/01公告)。
13. “光聲成像系統、編碼雷射發射裝置與光聲訊號接收裝置”，李百祺，中華民國專利I403784號(2013/08/01公告)。
14. “影像探頭”，李百祺、謝寶育，中華民國專利I402054號(2013/7/21公告)
15. “A Distribution-based Classification Method for Baseline Correction of Metabolomic 1D Proton Nuclear Magnetic Resonance Spectra”, Tseng YJ, Wang KH, U.S. Provisional Patent No. 61/137048, June 24, 2013
16. “檢測一胃癌預後程度方法”，阮雪芬、陳炯年、曾建偉、張金堅，中華民國專利第Ⅰ399541號(2013.6.21~2029.5.26)
17. “高密度微電極陣列及其序列式控制方法”，林啟萬、陳志宏、楊豐旗，097147521(2013/05/23核准)
18. 發光裝置及其製造方法，李嗣涔、江昱維、吳奕廷、蔡明瑋、張沛恩，中華民國專利第I 396308號(2013.05.11~2032.03.16)
19. “Method for k-space reconstruction in magnetic resonance inverse imaging“, Fa-Hsuan Lin, issued on March 19, 2013 (United States Patent 8,400,152)
20. “用於生物分子鑑定之雙頻帶微平面倒F型天線及其鑑定方法”，林啟萬、邱南福、李世光、吳光鐘，中華民國I359269號，有效日2027/10/29
21. “以導電金屬氧化物為中介層改善表面電漿共振特性之方法”，林啟萬、邱南福、馮偉意、張家禎、何國川、李世光、吳光鐘，中華民國I364533號，有效日2027/12/24
22. “應用於侵入式裝置之階梯結構”，李百祺、吳宜瑾，中華民國專利申請號102115021(申請日2013/04/26)。
23. “利用脈衝雷射光源產生的聲學信號之造影系統”，孫啟光、賴昱宏、張界逢、李思宇，申請中華民國專利，申請號102113270，申請日2012/4/15。
24. “Ultrasonic diagnostic system and portable ultrasonic diagnostic apparatus thereof ”, P.-C. Li and Y.-F. Li (filed for US Patent, 13/849607, 2013/3/25).
25. “An image generation system”, P.-C. Li and B.-Y. Hsieh (filed for U.S. Patent, 13/803657, 2013/03/14).
26. “低複雜度位移補償波束成像系統及其方法”，何寬育、吳安宇、李百祺、詹承洲、陳郁豪，中華民國專利申請號102106388 (申請日2013/02/23)。
27. “超音波探針”，李百祺、劉建宏，中華民國專利I384252號。(2013/2/1公告)
28. “An ultrasound imaging system”, P.-C. Li and Y.-F. Li (filed for U.S. Patent, 13/746548, 2013/01/22).

29. “影像生成系統”，李百祺、謝寶育，中華民國專利申請號102101627 (申請日2013/01/16)。

30. “A multi-bits parallel prefix adder and the domino logics for implementing the adder”, 陳中平, 專屬I406172。

※ 2012

1. “結構物即時安全監測系統,”，林致廷、 曾惠斌、 韓仁毓，中華民國專利M443724號， 2012。

2. “變位監測系統,”， 韓仁毓、 曾惠斌、 林致廷， 中華民國專利 M443725號， 2012。

3. “Method for detecting the motion of object by ultra-wideband radar imaging and system thereof”, P.-C. Li and T.-C. Chen (filed for U.S. Patent, 13/726274, 2012/12/24).

4. 預測食道癌病患對於化學暨放射線療法之反應的生物標記，陳佩君、程蘊菁、賴亮全、蔡孟勳、陳星光、楊珮雯、李章銘、莊曜宇、蕭朱杏，中華民國I380018號，專利權起/迄日2012/12/21~2029/10/19

5. “超音波影像處理系統及其超音波影像處理方法”，李百祺，中華民國專利I378255號。(2012/12/1公告)

6. “耐受醇類之大腸桿菌之製備方法”，阮雪芬、森浩禎、張心儀、黃宣誠、黃翠琴、廖俊智，中華民國專利第I 37990號 (2012.12.21~2028.10.28)

7. “預測食道癌病患對於化學暨放射線療法之反應的方法及套組”，陳佩君、程蘊菁、賴亮全、蔡孟勳、陳星光、楊珮雯、李章銘、莊曜宇、蕭朱杏，中華民國I 380018號(有效日2012/12/21)。

8. “Contrast improvement method and system for photoacoustic imaging”, P.-C. Li and C.-W. Wei (filed for US patent, 13/557202, 2012/7/24; publication date 2012/11/22, US 2012/0294518).

9. “Ultrasonic scanhead”, P.-C. Li and J.-H. Liu, U.S. Patent number 8,308,645, 2012/11/13.

10. “超音波成像系統”，李百祺、李彥鋒，中華民國專利申請號101141329 (申請日2012/11/07)。

11. “Device and Method for Obtaining Clear Image”, Y. C. Lin, C. W. Chen, C. S. Fuh, and M. H. Shih (USA patent granted, 8,306,360, 2012/11/06-).

12. “利用超寬頻雷達偵測物體之運動狀態之成像方法及系統”，李百祺、陳宗銓，中華民國專利申請號101140755(申請日2012/11/02)。

13. 遠距照護裝置以及儲存遠距照護方法之電腦可讀取紀錄媒體，林明燦、賴飛羆、吳經閔、蘇醒宇，申請日102/10/23

14. “Imaging probe”, P.-C. Li and B.-Y. Hsieh, U.S. Patent number 8,262,576, 2012/09/11.

15. “影像校正方法及影像校正積體電路”，張博思、傅楸善、尤智人士、陳俊宇，中華民國I370411號(有效日2012/08/11-2028/01/15)。

16. “Photoacoustic imaging system, coded laser emitting apparatus and photoacoustic signal receiving apparatus”, P.-C. Li (filed for US Patent, 13/098611, 2011/5/2; publication date 2012/07/05, US 2012/0167694).

17. “Medical imaging system and medical imaging method thereof ”, P.-C. Li and W.-Y. Chen (filed for US Patent, 13/116286, 2011/5/26; publication date 2012/06/28, US 2012/0165677).

18. “Wireless power transmission system, wireless power transmitting apparatus and wireless power receiving apparatus”, P.-C. Li (filed for US Patent, 13/071813, 2011/3/25; publication date 2012/06/21, US 2012/0157019).

19. “Quinazolinone and quinazoline compounds and their pharmaceutical uses”, Fu WM, Kang KH, Liou HH, Liou HC, Tseng, YJ, U.S. Provisional Patent No. 61/649425, May 21, 2012

20. “用電磁波偵測血糖含量的方法與裝置/Method and device for detecting a blood glucose level using an electromagnetic wave”，孫啟光、蔡沅甫、陳華，申請中華民國專利，申請號101114805，申請日2012/4/25。

21. “Noninvasive measuring device and noninvasive measuring method for probing an interface”, C.-K. Sun, C.-C. Chen, and Y.-C. Wen, USA patent pending. Application date: 2012/07/31. Application number: 13/563,467
22. “Method and device for detecting a blood glucose level using an electromagnetic wave” , C.-K. Sun, Y.-F. Tsai, and H. Chen, USA patent pending. Application date: 2012/11/23. Application number:13/684,408
23. “Dual-Spectrum Heat Pattern Separation Algorithm for Assessing Chemotherapy Treatment Response and Early Detection(用於評估化療效果與早期偵測的雙波段熱圖譜分離演算法)”，李佳燕、李嗣涔、李婉柔、張哲瑋、簡鈺峻、陳中明，美國專利，專利號：US82,955,72 B2，專利期間：2012年10月23日至2012年10月23日止。
24. “Biomarkers for predicting response of esophageal cancer patient to chemoradiotherapy”,Chen;Pei-Chun (Taipei, TW),Chen;Yen-Ching (Taipei, TW),Lai;Liang-Chuan (Taipei, TW),Tsai;Mong-Hsun (Taipei, TW),Chen;Shin-Kuang (Taipei, TW),Yang; Pei-Wen (Keelung, TW),Lee; Jang-Ming(Taipei, TW),Chuang; EricY. (Taipei, TW),Hsiao;ChuhsingK. (Taipei, TW),Application number :

12/582357 (2012/09/18-2029/10/20)

25. “Light Emitting Device and Method of Manufacturing the Same”，李嗣涔、江昱維、吳奕廷、蔡明瑋、張沛恩，美國專利，專利號：US8,242,527 B2，專利期間：2012年8月14日至至2027年8月5日。
26. “抑制唾液酸轉移酶之石膽酸類似物”，李文山、王憶卿、阮雪芬，中華民國專利第I 369361號 (2012.8.1~2026.7.5)
27. “用於增進導電元件導電特性之奈米孔洞陣列上開發明” ,管傑雄、黎中立, 美國 台灣 97電661 US 8,232,475 B2 I375984, Jul. 2012
28. “HIGH-DENSITY MICRO ELECTRODE ARRAY AND SERIAL CONTROL METHOD THEREOF”，US 8,195,268 B2，Chii-Wann Lin ,Jyh-Horng Chen, Feng-Chi Yang，Pub. : Jul. 5,2012
29. “健康監控裝置及人體電訊處理方式”，顏家鈺、顏凡哲、李世光、林啟萬、吳光鐘、曾慶恩，中華民國專利I365062號 (2012/06/01核准到2029/06/14止)
30. “Method and Apparatus for Simultaneously acquiring multiple slices/slabs in magnetic resonance system”，J.-H. Chen and T.-D. Chiueh，中華民國專利(有效日2012/05/21-)。
31. “Compact abbe's kernel generation using principal component analysis”, Charlie Chung Ping Chen, and Lawrence S. Melvin , United States Patent, US008136054B2,2032/3/13(2012/3/13)
32. “Programmable Segmented Volumetric Modulated Arc Therapy for Respiratory Coordination in Cancer Radiotherapy”, Chia-Hsien Cheng and Jian-Kuen Wu (filed for U.S. Patent, 13/364014, 2012/02/01).
33. “一種以雷射光點控制電腦滑鼠游標之系統”，J.-H. Chen ,Y.-P. Lin and C.-C. HO，中華民國I357063號(有效日2012/01/21-)。
34. “Structure-Based Fragment Hopping For Lead Optimization And Improvement In Synthetic Accessibility”, Tseng YJ, Lin FY, US-61603501 (申請日2012/02/27)
35. “Image Brightness Adjusting Method”, Y. J. Huang, C. S. Fuh, and H. T. Chen (USA patent granted, 8,107,763, 2012/01/31-).
36. “自動曝光測量方法”，林錦池、羅瑞祥、傅楸善、朱峻賢，中華民國I311884號(有效日2012/01/21-)。

※ 2012年

1. 一種相位空間差異即時分析生理訊號的快速方法及其裝置，林啟萬、蕭子健、劉建昇，Tw. U.s I353242 (2011/12/1公告)
2. Method for magnetic resonance imaging with parallel and localized spatial encoding magnetic fields, Fa-Hsuan Lin, U.S. Application number : 8,334,696 (2011/10/6公告日)
3. Suppression of noise in MR images and MR spectroscopic images using signal space projection filtering, Fa-Hsuan Lin, U.S. Application number : 7,683,620 (2010/3/23公告日)
4. Dynamic magnetic resonance inverse imaging using linear constrained minimum variance beamformer, Fa-Hsuan Lin, U.S. Application number : 7,570,054 (2009/8/4公告日)
5. Dynamic magnetic resonance inverse imaging, Fa-Hsuan Lin, U.S. Application number : 7,394,251 (2008/7/1公告日)
6. Regularlized GRAPPA reconstruction, Fa-Hsuan Lin, U.S. Application number : 7,394,252 (2008/7/1公告日)
7. Method for parallel image reconstruction using automatic regularization, Fa-Hsuan Lin, U.S. Application number : 7,053,613 (2006/5/30公告日)
8. “Compact abbe's kernel generation using principal component analysis”, 陳中平,專屬 US008136054B2。
9. “具個別調適功能之數位弱視影像輔助系統 ”,
10. “幼兒型心室輔助器”,王水深、徐久忠、邵耀華、周迺寬、朱樹勳，新型第M 323290號，2007/12/11-2017/03/21。
11. “具個別調適功能之數位弱視影像輔助系統”, 林啟萬、林鑫志、蕭子健，中華民國181945 (2003/07/00 ~2021/08/00)
12. “具分子深度解析能力之表面電漿子共振檢 測方法 Sensor system of Surface Plasmon Resonance (SPR) and meas ”，林啟萬，中華民國0059399(2003/06/ ~2021/12/)。
13. “一種多功光電生物醫 學晶片檢測儀”, 李世光、薛順成、李舒昇、吳俊彥、林啟萬、林世明，中華民國194931(2004/01/00~ 2021/05/00) 。
14. “改變表面漸逝波共振狀況之對稱與不對稱奈米複層膜結構” ， 林啟萬、黃振剛、林世明、 李世光、張培仁、李舒昇，中華民國203961(2004/06~/2023/06/)。
15. “燒燙傷光譜分析系統及用於該系統之裝置,An optical spectral apparatus for burn wound assessment” ，楊永健、林啟萬、 蕭子健，中華民國00512058(2002/12/00~2019/06/0) 。
16. “一種使用於生物晶片 上之攪拌構造” ，林世明、 林啟萬等，中華民國00541202(2003/07/00~2020/12/00) 。
17. “陣列式生物晶片之微 流道系統” ，林世明、 林啟萬等，中華民國00538004(2003/06/00~2020/12/00) 。
18. “Organic Luminescent surface plasmon resonance sensor” ，chii-WanLin,Taipei(TW), Nan-Fu Chiu, Taipei(TW),Jiun-HawLee,Taipei(TW),Lung-Jieh Yang, Taipei， 美國0229836 A1(2006/08/00~2020/08/00) 。
19. “有機電致發光表面電 漿共振型感測裝置”， 林啟萬、邱南福、李君浩、楊 龍杰、楊燿州、李世光，國立台灣大學I304707 (2008/12/~2025/11/) 。
20. “氫氧基烷酸化合物及 正-溴基烷酸之合成方法” ，林啟萬、李世元、李世光 、林世明、蕭文欣、王淑惠、張瑀庭、朱淑芳，中華民國204996(2004/06~2021/12/)。
21. “具個別調適功能之數 位弱視影像輔助系統”, 林啟萬，林鑫志，蕭子健， 美國US6,912,301B1(2005/06/~2021/11/)。

三、技術轉移

Technology Transfer

1. 李百祺，超音波影像優化之影像參數關聯資料庫建置技術，瑞傳科技股份有限公司，NT$500,000，2016/06/01-2019/05/31。
2. 李百祺，超音波陣列影像系統與成像技術，生訊科技股份有限公司，NT$2,000,000，2015/04/01-2018/03/31。
3. 張瑞峰，磁波定位乳房超音波報告及腫瘤偵測診斷系統，太豪生醫股份有限公司，$180,000，2013/12/01-2017/11/30。
4. 傅楸善，鈔票序號辨認，佳世達，NT$130,435元，2013/09/01。
5. 張瑞峰，自動化乳房超音波影像診斷電腦輔助系統，愛樺企業股份有限公司，$180,000，2013/06/01-2017/05/31。
6. 李百祺，高頻超音波小動物影像系統之處理系統，思銳生醫科技股份有限公司，NT$1,000,000，2012/11/1-2015/10/31。
7. 張瑞峰，自動化乳房超音波影像診斷電腦輔助系統，資拓宏宇國際股份有限公司$180,000，2012/06/01-2016/05/31。
8. 林啟萬，Toward prevention of sudden cardiac death on smart ECG patches，宏達國際電子股份有限公司，$153,000，2012/03/26。
9. 孫維仁，結腸灌流內視鏡技術及其相關專利，昇航科技有限公司，$3,000,000，2012/02/01-2016/01/31。
10. 李百祺，低功耗之頻率鍵移接受器，生訊科技股份有限公司，$500,000，2011/06/01-2014/05/31。
11. 李百祺，陣列超音波前端子系統，生訊科技股份有限公司，$1,000,000，2011/06/01-2014/05/31。
12. 林啟萬，一種相位空間差異即 時分析生理訊號的快 速方法及其裝置， 立創生醫科技股份有限公司，2012/05/07~2015/05/06。
13. 李百祺，“超音波陣列影像系統與成像技術”, 生訊科技股份有限公司, NT$2,000,000, 2015
14. 陳志宏，寬頻磁共振造影技術：同時取得多截面/區塊共振訊號之控制方法、成像方法及系統，合昇發生醫科技有限公司，$22,000,000，2012/12/13。
15. 黃俊升，Automatic Breast Ultrasound Diagnosis Computer-aided System, 101/7/1~105/6/30
16. 黃俊升，Automated breast ultrasound image viewer system, 102/7/1~106/6/30
17. 黃俊升，Breast ultrasound magnetic tracking and tumor detection/diagnosis system, 103/12/1~107/11/30

國立臺灣大學生醫電子與資訊學研究所

Graduate Institute of
Biomedical Electronics and Bioinformatics,
National Taiwan University

E-mail： ntubebi@ntu.edu.tw
Website：http://www.bebi.ntu.edu.tw/
Address：10617台北市大安區羅斯福路4段1號 博理館410室
Room 410, Barry Lam Hall, No. 1, Sec. 4, Roosevelt Road,
Taipei, Taiwan (ROC) 10617
Phone： +886-3366-4961
Fax： +886-3366-3754